High School Counselors' Perceptions of Career and Technical Education

by

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Abstract

This study sought to determine if a relationship exists among high school counselors' specific demographics, the educational experiences (i.e., professional development, training, and other coursework) of public high school counselors, the factors that influence public high school counselors to advise college-bound students to enroll in career and technical education; the factors that influence public high school counselors to advise career-bound students to enroll in career and technical education, and their perceptions of career and technical education. High school counselors in the states of Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia were surveyed for this study.

Data were analyzed using Descriptive Statistics, One-Way Analysis of Variance (ANOVA), Simple Regression, and Wilcoxon Signed-Rank Tests. A total of 5,572 surveys were distributed via email; 281 responded (N = 281). Most respondents were Caucasian (75.38%), female (86.36%), with an average age of 44.56 (SD = 10.762). Over half of the respondents reported holding a master's degree (56.39%). Most of the respondents (67.97%) indicated they had previously been a core academic teacher (i.e., English Language Arts, Social Studies, Math, Science); only 7.29% reported previously teaching career and technical education.

No statistical significance was presented regarding counselors' educational experiences (i.e., professional development, training, and other coursework) and their perceptions of career and technical education. When analyzing certain factors that might be influential in advising students to enroll in career and technical education, varying results were yielded depending upon the factor under investigation. Factors revealing statistical significance included GPA, grades in core academic courses, career plans, gender, and participation in extracurricular activities.

Most respondents (76.47%) strongly agreed that career-bound students should take career and technical education courses in high school, but only 46.64% strongly agreed that college-bound students should enroll in career and technical education. Even though the investigation indicated that counselors advise career-bound students (75.49%) more frequently than college-bound students (61.11%) into career and technical education courses, overall, high school counselors indicated a positive perception of career and technical education. The researcher determined that this study should be repeated in other states.

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All my love and lots of extra special thanks go to my husband, Chuck, the most selfless person I know, who has been supportive, encouraging, helpful, understanding, loving, patient, and kind every day of this journey. I love you.

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Chapter 1

Introduction and Background

High school counselors are empowered to lead and advise students in course selection throughout high school which will prepare them for occupations that will be imminent in our nation's future workforce, as well as be of vital interest to the students. These persons of influence have an enormous impact on whether students participate in career and technical education (CTE). Gaunt's (2005) study confirmed this belief. Thornburg (2016) stated it clearly: "High school counselors are the key holders in the dissemination of career information for students" (p. 20). They should be readily available with current information about predicted workforce needs and well-informed about opportunities available in CTE, so they can wisely direct students down career pathways that match their interests and abilities. Handy and Braley (2012) found in their study that high school counselors who understand that hands-on learning is important would usually recommend that students enroll in CTE courses. Unfortunately, as Adams (2014) confirmed, "Research has shown that counselors have been a mostly untapped, and insufficiently trained, resource in such efforts" (p. 8). If high school counselors hold such a vital stake of influence over students' decisions to participate in CTE, they should be educated on the benefits and opportunities of CTE. These opportunities can transfer into students participating in CTE, earning industry-based credentials (IBCs), receiving dual enrollment credit, and partaking in experiential work-based learning opportunities. A

study by Spaulding and Steffen (2011) revealed that high school counselors have stereotypical perceptions of CTE and careers that are available in CTE, feel pressured with the lack of resources and training where CTE is concerned and would appreciate professional development in the form of seminars and workshops to learn more about the current options available in CTE. Another study by Jordan and Dechert (2012) affirmed that improved perceptions of CTE would cause more students to enroll in high school CTE coursework.

CTE is a significant element of education as it represents a major contributing factor to our nation's workforce. Decreasing enrollment in CTE coursework is disturbing, as it represents reduced training and education for the workforce and economy. Determining factors that might be contributing to decreasing enrollment could be advantageous to the education system and the future workforce, as career and technical educators seek to better CTE programs and increase participation on the high school level. Thornburg (2016) stated, "this study can affect social change by compelling improvements in counselor training programs to better educate high school counselors" (p. 19) on CTE, its' benefits, opportunities, and requirements. Summers (2013) discussed in her research that "counselors may need to remain, or become, aware of what occupational needs are currently exhibited in our economy and how to work to eliminate these needs" (p. 7).

The number of students who choose business- and computer-related majors in college continues to grow, comprising 20% of all bachelor's degrees conferred in 2011-12 and the largest number of master's degrees conferred that year (Fast facts, 2015). Office occupations comprise essentially half of all middle level jobs, those jobs that do

not require a bachelor's degree but do require education and training beyond the secondary level, in the United States (Carnevale, Jayasundera, & Hanson, 2012). The Louisiana Workforce Commission (2012) predicted that the top 25 occupational categories adding the largest number of workers to Louisiana's workforce through the year 2022 will include only 1,060 jobs that require a bachelor's degree. Of the 30,570 occupations added, 2,610 of them will require an associate degree, and the remaining 26,900 will require postsecondary non-degree awards or less. According to the Association for Career and Technical Education (2018), "of the 55 million job openings created by 2020, 30% will require some college or a two-year associate degree" (CTE Works for Businesses and the Economy, para. 4).

Industry-sponsored credentials, including globally recognized software certifications such as those offered by Microsoft, Adobe, Intuit, Comp TIA, ProStart, OSHA, ServSafe, NCCER, and Certified Internet Web Professional (CIW), are offered in public high schools to students who enroll in the corresponding courses. Industry certifications are a vital component to those entering the workforce, and these certifications propose a route in which students can sometimes avoid the added expense and time commitment of a four-year university degree (Dadgar & Trimble, 2015; Ahearn, Rosenbaum, & Rosenbaum, 2016; Bartlett, Horwitz, Ipe, and Liu, 2005; Adams & Demaiter, 2008). IBCs, as well as associate degrees, are highly helpful in obtaining employment and securing a wage that is higher than for those who do not hold these credentials. Obtaining IBCs suggests that students are more trainable and competent than those who do not pursue credentialing. Employers are seeking potential employees who hold IBCs because of the expertise that it takes to acquire certifications and realize that

those who have earned highly acclaimed certifications are far ahead of job seekers without them.

Dual enrollment coursework whereby high school students receive both secondary and postsecondary credit because they are dually enrolled in both a secondary and a postsecondary institution, is now available and encouraged not only in academic courses, such as mathematics and science, but also in CTE. “By and large, the dual enrollment programs first adopted by states in the 1980s directed students toward participation in traditional academic coursework and did not make explicit mention of CTE programs” (Zinth, 2013). Earning college credit while still a high school student is advantageous for numerous reasons, such as, monetary savings and a quicker route to a degree or certificate.

Data suggests that students who participate in CTE programs have better academic skills (Gray, 2004) than those who do not. The Association for Career and Technical Education (ACTE Online, 2018) quoted The U.S. Department of Education, Office of Career, Technical and Adult Education (2014) concerning graduation rates of high school students: “The average high school graduation rate for students concentrating in CTE programs is 93 percent, compared to an average national freshman graduation rate of 80 percent.” Gifted and talented students reported having positive outcomes from participating in CTE programs (Gentry, Hu, Peters, & Rizza, 2008). Loera, Nakamoto, Oh, & Rueda (2013) advocated that CTE programs provide students with career readiness skills. According to Carnevale, Jayasundera, & Hanson (2012), high school CTE provides:

> career exploration for all students, programs of study that align with postsecondary programs as well as employer-based training, and an alternative

> applied pedagogy that encourages persistence to high school graduation as well as academic development and stronger transitions to postsecondary education (p. 4).

Hyslop & Imperatore (2015) indicated that high-quality CTE removes the stigma of the old vocational ideas that have stereotyped CTE. It is becoming more the norm to use CTE as college prep, as referenced by Todd (2015), where CTE "serves as a solid stepping stone to college by immersing students in their field of interest while still in high school" (p.15). A flyer created by Advance CTE referenced the National Research Center for Career and Technical Education (NRCCTE) concerning the myth that CTE is only for disadvantaged students. They stated that myth can now be replaced with the fact that ninety-two percent of high school students take some CTE, making it the norm for just about everyone. And, despite conventional wisdom, 33 percent of students in the highest socio-economic status quartile took three or more CTE credits, as well as 44 percent of students in the second highest socio-economic status quartile (Advance CTE, 2017).

Louisiana's Department of Education (http://www.louisianabelieves.com) has recently developed a new paradigm for bettering CTE on the secondary level known as Jump Start. State education officials (2015) have stated that the "Jump Start programs shall prepare participating students to participate in high-growth, high-wage, and regionally-relevant job sectors while also enabling them to continue their post-secondary education and career development" (p. 1). One of the primary requirements that differentiates Jump Start from previous CTE programs is the requirement of students to attain an IBC prior to graduation from a Louisiana public high school. Jump Start is in alignment with Louisiana's economic development strategies; therefore, industry credentials that are necessary in Louisiana's workforce are obtainable through CTE in Louisiana high schools. University-bound students are encouraged to participate in CTE

because they can graduate high school with credentials and certifications, college credit acquired through dual enrollment, and career readiness skills, in addition to their rigorous college prep academic credits. Jump Start truly represents the best of both academic and career preparatory worlds.

Other states are following along the same trajectory as Louisiana in that they are aligning their CTE programs with local and regional industry so that workforce needs can be met. Georgia has aligned their pathway course offerings "with industry and higher education to ensure students have the skills they need to thrive in the future workforce" (Georgia Department of Education, n.d.) by offering more than 130 career pathways within seventeen Career Clusters. In addition to Microsoft and Adobe certifications, students can also earn credentialing by NOCTI for diverse subject areas that are in high demand in the corporate business realm, as well as, PrintEd and SkillsUSA in the graphics communication workplace. Just like Louisiana and Georgia's CTE students, Alabama's secondary level CTE students have opportunities to earn industry credentials in multiple subject areas such as those offered by Microsoft and Adobe, as well as Brainbench and ASK Institute. The State of Alabama refers to these credentials as career readiness indicators. If a student earns one or more of these certifications, they are presumed career ready in that subject area. The Alabama State Department of Education website states:

> We consider Alabama's Career and Technical Education (CTE) program to be the foundation for our state's future. CTE is focused on developing the skills of K-12 students and strives to prepare them for postsecondary learning and workforce opportunities. It also provides them essential leadership skills through participation in student organizations. CTE is learning that works for Alabama (Alabama State Department of Education, n.d.).

The State of Florida's Department of Career and Technical Education is also on board with preparing their future workforce through the secondary school system. Their website (Florida Department of Education, Office of Career and Technical Education, 2016) claims that "out of the 50 fastest-growing occupations in Florida, less than one-third require a four-year college degree or higher. The majority (58 percent) of these occupations require a postsecondary adult vocational (PSAV) certificate or associate degree" (para. 1). Florida has gone as far as passing legislation that provides a statewide planning partnership between learning institutions and industry so that students are afforded the opportunities they need to prepare for higher education and/or the workforce. The Florida Career and Professional Act was passed in 2007 with the focus of growing and sustaining a vibrant, knowledge-based economy (Florida Department of Education, Office of Career and Technical Education, 2016).

In the state of Arkansas, career coaches have been implemented into the high schools because CTE groups have "identified higher-quality advising as a top goal" (Gewertz, 2017, p. 2) for students needing guidance about future careers and the courses they need to help them fulfill their plans. This plan seems to be working because college enrollment in these school districts has risen by 22 percentage points. Mississippi boasts the fact that 94 percent of their high school graduates are CTE concentrators, which is a boost for their labor market since middle-skill jobs account for "58 percent of Mississippi's labor market" (Advance CTE, 2018, p. 1). Kentucky is proud of the apprenticeship programs that allow their CTE students to transfer immediately after high school into a participating employer's Registered Apprenticeship program. These programs are paid programs where the students receive both classroom and on-the-job

training. IBCs are also available for the students to earn while participating in this program (Career and Technical Education Resources TRACK: Tech ready apprentices for careers in Kentucky, 2018).

CTE is becoming more prevalent in Tennessee as educators have implemented mechatronics courses to train students for manufacturing. Mechatronics is a blend of electronics and engineering, as well as the brains behind much advanced manufacturing. This approach should provide trained employees for many future job openings in rural Tennessee manufacturing facilities (Gewertz, 2017). In Virginia, nearly 400 high schools and Science, Technology, Engineering, and Mathematics (STEM) Academies have implemented the Microsoft IT Academy Program. This program provided approximately 31,000 certifications to students in the 2013-2014 school year (Advance CTE, 2015). Their neighboring state, West Virginia, by partnering with the Southern Regional Education Board (SREB), has adopted the Advanced Career (AC) Energy and Power pathway. They are proud to boast that they have the "second-highest number of schools in offering AC in the nation" (Bottoms, 2017, para. 7). West Virginia has also implemented SREB's Teaching to Lead program for their CTE teachers, which has produced highly qualified teachers for their CTE centers.

South Carolina and North Carolina have grounded their CTE programs in preparing students for the local industries that are prevalent in their states. North Carolina asserts that they have over 350 bioscience companies, which opens the door of opportunity for biotechnology pathways in the high schools (North Carolina Biotechnology Center Education and Training Program, 2006). North Carolina also has the largest CTE enrollment, approximately 900,000, of the twelve states studied in this

inquiry. South Carolina has a much smaller CTE enrollment, roughly 187,000, but has exciting opportunities available for students who are interested in careers in the aerospace cluster (Advance CTE, 2018). South Carolina's State Superintendent of Education claims that "employment in the aerospace cluster is growing at a rate eight times higher than the state's average" (Jeter, 2017, para. 7).

With all the exciting and lucrative opportunities available for students in CTE, high school counselors must be on board in support of CTE and advising students in these pathways. If counselors' educational experiences with vocational education of the past left a negative impression in their minds, maybe additional training on current CTE initiatives and programs, and how CTE is beneficial to not only career diploma students but university diploma students, as well, would be beneficial to counselors in public high schools in overcoming yesteryear's vocational education stigma. Finlayson (2009) claimed, "Students need accurate, well-informed advice from school counselors to help them choose an education and career plan that will continue well after high school graduation" (p. 4). Postured at the top of the list of Appropriate Activities for School Counselors included in the *Louisiana School Counseling Model – A Comprehensive Student Development Program* (Louisiana Department of Education, 2010) is "individual student academic program planning" (p. 39). That planning includes advising students to enroll in courses that are matching their interests and abilities. For college-bound students, that translates into helping students choose electives wisely that can benefit their future college experience, as well as their careers. For career-bound students, that means helping them choose a CTE pathway that will allow them to be successful in the

workplace immediately following high school or in a community college program where they can advance their chosen skills.

Purpose of the Study

The purpose of this quantitative study was to determine if a correlation exists among high school counselors' specific demographics, their educational experiences (i.e., professional development, training, and other coursework), the factors public high school counselors consider when advising college-bound students to enroll in CTE, the factors public high school counselors consider when advising career-bound students to enroll in CTE, and public high school counselors' perceptions of CTE. The independent variables in this study are the specific demographics of public high school counselors, the relationship between the educational experiences (i.e., professional development, training, and other coursework) of public high school counselors and their perceptions of CTE, the factors public high school counselors consider when advising college-bound students to enroll in CTE, and the factors public high school counselors consider when advising career-bound students to enroll in CTE. The dependent variable is the perceptions of CTE held by high school counselors. In this study, an online questionnaire (Appendix 1) was distributed to high school counselors employed at public high schools in the states of Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia. These states were chosen because they are the twelve southern states that make up the Southern Business Education Association. The data collected was used to determine if a correlation exists between the independent and dependent variables.

Statement of the Problem

Enrollment in CTE, including business, technology- and computer-related courses, should be at an all-time high due to the number of business majors recorded on the postsecondary level and the increased use of technology worldwide. There are innumerable reasons for high school students to participate in CTE courses, yet enrollment is less than ideal. According to the Carl D. Perkins Career and Technical Education Act of 2006 Consolidated Annual Report (Perkins Web Portal, n.d.), secondary CTE enrollment in the twelve states under inquiry in this study has vacillated extensively. Figure 1 below shows the enrollment statistics for the years 2007-08 through 2015-16. North Carolina reported with the largest CTE enrollment in the states under study, while West Virginia conveyed the lowest enrollment. According to Boyington (2018), "unfortunately, many students have inadequate information about the career choices open to them" (p. 23). In many instances the career choices are not provided to them and, therefore, the courses available that lead to possible career choices are not offered to them. Many of these courses that would lead to numerous and opportune careers are CTE courses.

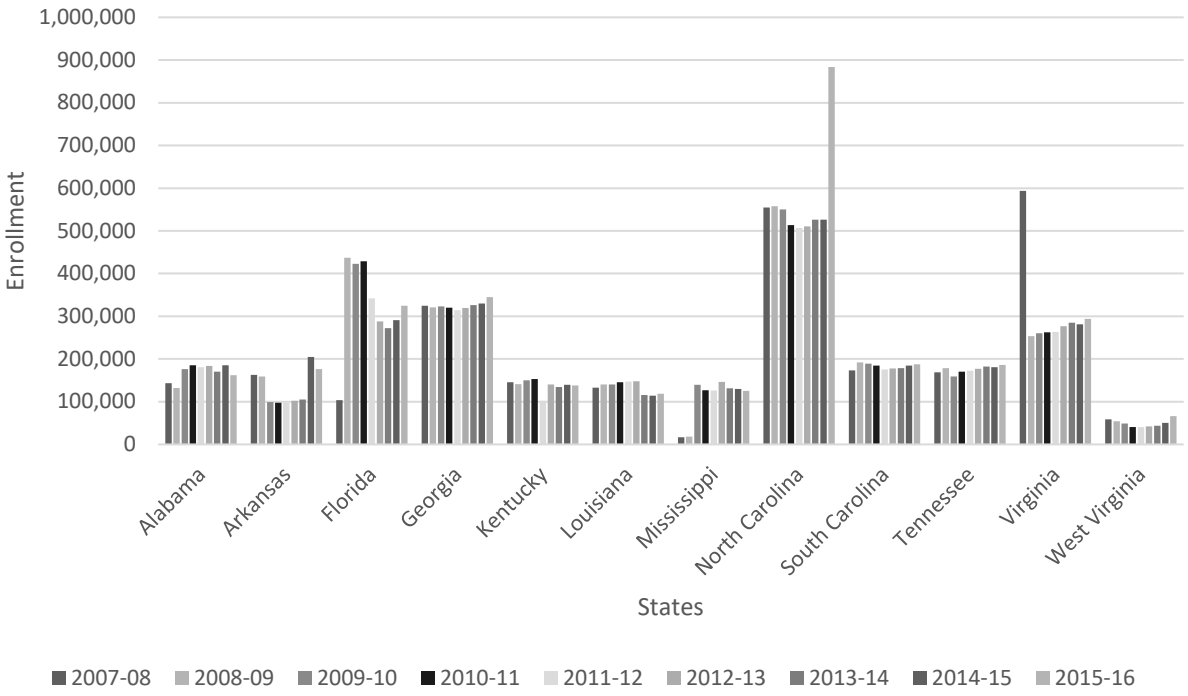

Figure 1. Overall CTE enrollment in the states of Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia is represented. Even though there is a 14.27% increase overall in the total CTE enrollment characterized in these twelve states, the increase is not significant enough to reduce concerns over enrollment.

Research Questions

The research questions in this study were:

1. Is there a relationship between specific demographics of public high school counselors and their perceptions of career and technical education?
2. Is there a relationship between the educational experiences (i.e., professional development, training, and other coursework) of public high school counselors and their perceptions of career and technical education?
3. What factors influence public high school counselors to advise college-bound students to enroll in career and technical education; what factors influence public high school counselors to advise career-bound students to enroll in career and technical education?
4. To what degree are public high school counselors supportive of career and technical education?

Definition of Terms

Career and Technical Education: “Career Technical Education (CTE) provides students of all ages with the academic and technical skills, knowledge and training necessary to succeed in future careers and to become lifelong learners. In total, about 12.5 million high school and college students are enrolled in CTE across the nation. CTE prepares these learners for the world of work by introducing them to workplace competencies and makes academic content accessible to students by providing it in a hands-on context” (Advance CTE: State Leaders Connecting Learning to Work, 2016).

Counselors: “High school counselors advise students in making academic and career plans. Many help students overcome personal issues that interfere with their academic development. They help students choose classes and plan for their lives after graduation. Counselors provide information about choosing and applying for colleges, training programs, financial aid, and internships and apprenticeships. They may present career workshops to help students search and apply for jobs, write résumés, and improve their interviewing skills” (Bureau of Labor Statistics, United States Department of Labor, 2015).

Industry-Based Certifications (IBCs): “An Industry-Based Certification is an independent third-party credential that is industry-accepted and results from a process whereby an individual's knowledge and/or skill in a particular area is verified against a set of pre-determined standards” (Louisiana Workforce Commission, 2017).

Dual-Enrolled: “It is when high school students (usually juniors and seniors) earn college credits while enrolled in separate courses that are not part of their high school

curriculum. This is known as concurrent enrollment. You may also see "early college" as a way to describe dual enrollment" (Dumbauld, 2017).

Theoretical Framework

This study falls under the post positivist worldview, which is sometimes referred to as the scientific method, according to Creswell (2014). Post positivism is a "deterministic philosophy in which causes determine effects or outcomes" (Creswell, 2014, p. 7). As a teacher of CTE in a Louisiana public high school who works closely with students and counselors, it has become apparent to the researcher that there could be negative perceptions held by counselors concerning CTE. If counselors are not properly informed about CTE, or do not understand how their state's CTE program is designed to benefit high school students and their futures, this could be reasoning behind enrollment decreases in CTE in states under investigation in this study.

Limitations

Limitations to this study could include "sampling errors due to an under-representation of small schools and an over-representation of large schools in the sample" (Thornburg, 2016, p. 17) based on the surveys that were completed. Public high school counselors may have been unwilling to participate in the study "due to the perceptions that the study is questioning the motivation and knowledge level" (Thornburg, 2016, p. 17) they hold concerning CTE. Several state departments of education were not willing to share email addresses for counselors in their state because they stated that would be

violating a privacy issue or they did not have that specific database available to share. Other limitations of conducting a correlational research include the fact that you cannot reach beyond the data that you collect (McLeod, 2008). In other words, you cannot make assumptions on data that you do not have. Secondly, with correlational research one cannot imply that a cause is a correlation. It cannot and should not be assumed that just because there is a relationship or correlation between two variables that those variables caused the outcome (McLeod, 2008). Another limitation could be that of using a survey instrument developed by the researcher. The survey instrument used in this study, Assessment of High School Counselors' Perceptions of CTE, is one that was designed for this inquiry. Reliability was assessed using Cronbach's alpha which is "the most commonly used internal consistency reliability estimate used by researchers" (Ross & Shannon, 2011, p. 239). Threats to internal validity could include the selection process of participants for the study. Externally, the threat of "interaction of history and treatment" (Creswell, 2014, p. 176) could come into play with this study; hence, the study may need to be repeated in the future.

Delimitations

Delimitations to this study could have included the size of the sample, in the event not a large enough sample responded to the survey. The study may not be representative of public high school counselors' perceptions of CTE in other states because only southern states were studied.

Chapter 2

Introduction

As research has shown us, today's CTE is so much more than the Smith-Hughes Act provided for in 1917. This act "first established vocational education in public schools to provide students with job-specific skills in the areas of agriculture, home economics, trade, and industry" (Jocson, 2015, p. 7). Fitzpatrick (2012) clarified that the language used in the Smith-Hughes Act of 1917 was to educate individuals for the workforce. CTE is not only a new name for vocational education; it now "combines academic standards with career and technical curriculum" (Jocson, 2015, p. 8). Today's CTE is highly advanced skills-based education revolving around "16 career clusters and programs of study recognized by the Office of Vocational and Adult Education and the National Association for State Directors of Career and Technical Education Consortium" (Jocson, 2015, pp. 8-9). The career clusters are Agriculture, Food & Natural Resources; Architecture & Construction; Arts, A/V Technology & Communications; Business Management & Administration; Education & Training; Finance; Government & Public Administration; Health Sciences; Hospitality & Tourism; Human Services; Information Technology; Law, Public Safety, Corrections & Security; Manufacturing; Marketing; Science, Technology, Engineering & Mathematics; and Transportation, Distribution & Logistics.

Many legislative acts have made provision for CTE since the Smith-Hughes Act of 1917. One of those acts was the Wagner Act of 1935, "which protected workers' right to unionization" (Fitzpatrick, 2012, p. 3). According to Fitzpatrick, both acts were written with a "manufacturing-driven economy" in mind (2012, p. 3). During this time, it appeared that workers needed to be trained to accomplish repetitive tasks that required little or no thought or judgement. Students earning only a high school diploma at that time could earn a decent living by learning a much-needed skill for employment in the manufacturing industry that was so prevalent. McCourt (2005), in his memoir of teaching in a New York vocational school, eluded that vocational training seemed to be a dumping ground for students who were not academically-inclined. He surmised that the general population was snobbish and did not understand that there were individuals who wanted to become auto mechanics, plumbers, and cosmetologists. As McCourt (2005) spent thirty years in a vocational classroom, he witnessed extraordinary individuals, who were not academically motivated, become successful and fluent professionals in their chosen trades.

The Carl D. Perkins Vocational and Technical Education Act first appeared in 1984, with reauthorizations in 1998 and 2006. The original goal of the Perkins Act was "to provide individuals with the academic and technical skills needed to succeed in a knowledge- and skills-based economy" (Fitzpatrick, 2012, p. 7). The main distinction of the Smith-Hughes Act of 1917 and the Carl D. Perkins Vocational and Technical Education Acts were that the Perkins Acts sought to prepare individuals for not only careers, but also for post-secondary education. "In 2006, the Act was reauthorized as the

Carl D. Perkins Career and Technical Education Improvement Act of 2006" (Perkins Act Fact Sheet), which has as its focus:

- academic achievement of CTE students;
- strengthening connections between secondary and postsecondary education; improving state and local accountability (Jocson, 2015, p. 9); and
- stronger focus on business and industry (Gordon, 2008, p. 113).

This was also the first slice of legislation that used the term "career and technical education" instead of vocational education (Gordon, 2008). Legislators have realized that CTE is vastly more than what we have all previously known as vocational education, and should include components stressing academia, IBCs, and dual enrollment, as well as secondary and postsecondary alignment. Even though these components created challenges of implementation and reform, vocational education required rehabilitation and transformation so that all students, no matter their background, could realize success in their careers (Stipanovic, Lewis, & Stringfield, 2012). Fitzpatrick (2012) declared that "the focus on CTE is on ensuring that students are well-prepared for further education, including four-year post-secondary institutions and beyond when appropriate, as well as being prepared for life-long learning and satisfying careers" (p. 7). According to Visher and Stern (2015), CTE pathways provide both academic and technical coursework that help prepare them for college and careers.

Even with all the positives of CTE that have been presented thus far in this study, CTE educators continue to overcome the stigma that was placed on this form of education generations ago. As Thornburg (2016) endorsed, "Years of poor perceptions of CTE will not be replaced overnight. It will take a concentrated effort by the key

stakeholders to highlight the critical need and opportunities available through CTE avenues" (p. 111). Researchers have presented much about the benefits of CTE and its vital role in our country's economy. As society realizes the benefits and implications available for our workforce, and educational institutions and educators recognize that CTE has the resources to keep our workforce complete, yesterday's stigma of vocational education will dwindle out of sight.

The Benefits and Value of CTE

CTE is a significant element of today's educational system as it represents a chief contributing factor to our nation's workforce. CTE provides opportunities for students to earn IBCs from global industries, receive dual enrollment credit which provides for them to graduate high school with college credit, and participate in experiential work-based learning that is recognized as on-the-job training.

IBCs, including globally recognized software certifications such as those offered by Microsoft, Adobe, Intuit, Comp TIA, ProStart, OSHA, ServSafe, NCCER, and Certified Internet Web Professional (CIW), are offered in many of America's public high schools to students who enroll in the corresponding courses. Industry certifications are a vital component to those entering the workforce, and these certifications propose a route in which students can sometimes avoid the added expense and time commitment of a four-year university degree (Dadgar & Trimble, 2015; Ahearn, Rosenbaum, & Rosenbaum, 2016; Bartlett, Horwitz, Ipe, and Liu, 2005; Adams & Demaiter, 2008). IBCs, as well as associate degrees, are highly helpful in obtaining employment and securing a wage that is higher than for those who do not hold these credentials. Obtaining

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The number of students who choose business- and computer-related majors in college continues to grow, comprising 20% of all bachelor’s degrees conferred in 2011-12 and the largest number of master’s degrees conferred that year (Fast facts, 2015). Office occupations comprise essentially half of all middle level jobs, those jobs that do not require a bachelor’s degree but do require education and training beyond the secondary level, in the United States (Carnevale, Jayasundera, & Hanson, 2012). The Louisiana Workforce Commission (2012) predicted that the top 25 occupational categories adding the largest number of workers to Louisiana’s workforce through the year 2022 will include only 1,060 jobs that require a bachelor’s degree. Of the 30,570 occupations added, 2,610 of them will require an associate degree, and the remaining

26,900 will require postsecondary non-degree awards or less. According to the Association for Career and Technical Education (2018), "of the 55 million job openings created by 2020, 30 percent will require some college or a two-year associate degree" (para 18).

Data suggests that students who participate in CTE programs have better academic skills than those who do not (Gray, 2004). The Association for Career and Technical Education (2018) quoted The U.S. Department of Education, Office of Career, Technical and Adult Education (2014) concerning graduation rates of high school students: "The average high school graduation rate for students concentrating in CTE programs is 93 percent, compared to an average national freshman graduation rate of 80 percent" (p. 1). An interesting fact concerning gifted and talented students, who are not typically advised to participate in CTE, is that they reported having positive outcomes from involvement in CTE programs (Gentry, Hu, Peters, & Rizza, 2008). Other researchers have advocated that CTE programs provide students with career readiness skills (Loera, Nakamoto, Oh, & Rueda, 2013). According to Carnevale, Jayasundera, & Hanson (2012), CTE provides:

> career exploration for all students, programs of study that align with postsecondary programs as well as employer-based training, and an alternative applied pedagogy that encourages persistence to high school graduation as well as academic development and stronger transitions to postsecondary education (p. 4).

Blowe and Price (2012) completed a study that dealt with academic achievement and graduation rates of students in Virginia. Their findings resulted in positivity for CTE as students known as CTE completers were found to "outperform their non-CTE counterparts on mathematics standards of learning (SOLs). Second, the pass rate for CTE

completers was higher than that of the non-CTE completers on Grade 11 English reading SOL" (p. 7). This study also revealed higher graduation rates of 6-13% for the CTE completers over the non-CTE completers.

Hyslop & Imperatore (2015) indicated that high-quality CTE removes the stigma of the old vocational ideas that have stereotyped CTE. It is becoming more the norm to use CTE as college prep, as referenced by Todd (2015), where CTE "serves as a solid stepping stone to college by immersing students in their field of interest while still in high school" (p.15). A flyer created by Advance CTE (2017) referenced Aliaga, Kotamraju, & Stone (2012) in an investigation funded by the National Research Center for Career and Technical Education (NRCCTE) concerning the myth that CTE is only for disadvantaged students. They stated that myth can now be replaced with the fact that

> ninety-two percent of high school students take some CTE, making it the norm for just about everyone. And, despite conventional wisdom, 33 percent of students in the highest socio-economic status quartile took three or more CTE credits, as well as 44 percent of students in the second highest socio-economic status quartile (p. 2).

Recent findings by The Brookings Institution reiterated what we as CTE educators have known all along: "CTE can motivate students to attend school more frequently and be more engaged, and therefore improve core academic skills" (Jacob, 2017, p. 2). Another benefit of CTE is that CTE participants typically have an edge in the labor market as indicated by an investigation into career academies. This study produced findings that "provide convincing evidence that increased investments in career-related experiences during high school can improve students' postsecondary labor market prospects" (Kemple & Willner, 2008, p. 37).

Stevens, Kurlaender, and Grosz (2018, 2015) concluded in their study that dealt with labor market outcomes in regard to CTE programs that evidence exists "for a broad group of CTE students that many programs produce substantial earnings gains" (p. 37). Their research resolved that for students who complete CTE programs, their earnings are higher than for those students who do not complete CTE programs. Xu and Trimble (2016) completed a study that focused on labor market rewards regarding CTE certifications in two southern states, Virginia, and North Carolina. Their findings revealed that there are "significant, positive impacts" (p. 288) on earnings for those who hold CTE certificates in those two states, particularly in the areas of allied health and nursing.

In San Diego, California, a descriptive case study focused on the outcomes of CTE was completed by Bachofer, Betts, & Zau (2014). Their research led them to understand that

> both staff and students mentioned career awareness and exploration, acquisition of workplace and life skills, hands-on learning experiences, and making industry contacts as important benefits – and students were eager to provide rich examples for each benefit named (p. 98).

As has been presented earlier in this study, these findings are not the first realization by CTE teachers and students that CTE is a beneficial, valuable, and positive route for students to gain the tools needed to be successful in their future educational pursuits and careers.

Additionally, a study funded by NRCCTE at the University of Minnesota divulged impressive findings regarding high school drop outs and transition to postsecondary. The study showed that "the odds of dropping out declined as the

proportion of the high school experience invested in CTE courses increased. In terms of transition to postsecondary, more students reported having a post-high school plan than their comparison school counterparts" (Castellano, Stone, Stringfield, Farley-Ripple, Overman, & Hussain, 2007, p. v). A study by Plank, DeLuca, and Estacion (2008) confirmed the findings concerning dropouts as they stated that "CTE may help students more readily see the value of school in preparing them for careers of interest and can encourage students to define their career goals" (p. 360). Gottfried and Plasman (2018) discussed their study's findings which revealed that CTE students might persist through high school because they made the connection between school work and their future beyond high school. They noted that CTE coursework is a way for students to realize the relevance of school and for them to be more engaged in their studies. The findings of Gottfried and Plasman's (2018) research also revealed the principle that students who participated in multiple CTE courses in the 11th and 12th grades were less likely to drop out of high school than those students who enrolled in the 9th and 10th grades.

In another longitudinal study by Castellano, Sundell, Overman, & Aliaga (2012) that involved 9th and 10th grade students in two school districts, the researchers discovered that by the end of the 10th grade students who had completed a CTE program of study had improved academically over those students who had not participated in CTE. These findings led the researchers to assume that CTE programs of study will be more heavily integrated into the school district's curriculum.

Specifically, in the state of Florida, a study was completed under the support of the Florida Department of Education and Adobe that was focused on student performance in CTE. The findings of this study revealed that students who completed a minimum of

one technology course and earned the IBC in that course not only had better attendance but also had higher grade point averages than students of similar demographics who had not completed a technology course or earned an IBC (Grunwald Associates LLC, 2012).

According to a study by Rojewski (2002),

> students claiming that attending CTE classes was a learning experience for them were indeed supported by the concept that CTE plays a significant role in providing opportunities for large numbers of students as they explore career options, gain confidence with higher-order thinking in a relevant and hands-on atmosphere, and make realistic postsecondary plans (p. 82).

CTE in the States

"In 2015 alone, 39 states instituted 125 new laws, policies or regulations relating to CTE, many of which increased state funding for such programs" (Jacob, 2017, p. 1.). Many of these laws, policies, and regulations were instituted in southern states.

Louisiana

Louisiana's Department of Education (http://www.louisianabelieves.com) has recently developed a new paradigm for bettering CTE on the secondary level known as Jump Start. State education officials (2015) have stated that the "Jump Start programs shall prepare participating students to participate in high-growth, high-wage, and regionally-relevant job sectors while also enabling them to continue their post-secondary education and career development" (p. 1). One of the primary requirements that differentiates Jump Start from previous CTE programs is the requirement of students to attain an IBC prior to graduation from a Louisiana public high school. Jump Start is in alignment with Louisiana's economic development strategies; therefore, industry credentials that are necessary in Louisiana's workforce are obtainable through CTE in

Louisiana high schools. University-bound students are encouraged to participate in CTE because they can graduate high school with credentials and certifications, college credit acquired through dual enrollment, and career readiness skills, in addition to their rigorous college prep academic credits. Jump Start truly represents the best of both academic and career preparatory worlds. Additionally, "Louisiana's Graduation Index values college preparation and career preparation equally, with the most points going to students who demonstrate both college and career readiness" (Advance CTE, 2018, p. 2).

Getting industry involved in CTE is a big plus when it comes to ensuring students are prepared for the coming workforce needs. According to an article in the *Lake Charles American Press* (Smith R. B., 2018), Phillips 66 recently funded a $30,000 grant to add coding and robotics to the information technology programs at two CTE centers in the Calcasieu Parish School District. Approximately 72 students will be served in the first year through this program that was developed by the Carnegie Mellon Robotics Institute.

Georgia

Other states are following along the same trajectory as Louisiana in that they are aligning their CTE programs with local and regional industry so that workforce needs can be met. The Georgia Department of Education (GaDOE) has aligned their pathway course offerings "with industry and higher education to ensure students have the skills they need to thrive in the future workforce" (Georgia Department of Education, n.d.) by offering more than 130 career pathways within seventeen Career Clusters. In addition to Microsoft and Adobe certifications, students can also earn credentialing by NOCTI for diverse subject areas that are in high demand in the corporate business realm, as well as, PrintEd and SkillsUSA in the graphics communication workplace. As stated on the

Georgia ACTE website, “GaDOE currently serves over 577,000 CTAE students annually in 181 systems with 96% graduation rate” (Greene C. , 2018, para. 8).

A stimulating account about a former Georgia CTE student is one where a female student studied architectural drafting and engineering under her teacher-mother at Union Grove High School. The student went on to college and became a CTE teacher following in her mother’s footsteps. Her mother retired, and she secured her mother’s former position. Recently, the Trade & Industrial Educators of Georgia (TIEGA) and the Georgia Association for Career & Technical Education (GACTE) recognized this former-CTE-student-now-turned-CTE-teacher as “New Teacher of the Year”. The story continues as she is teaching her high school students to interact with elementary school students “who are already demonstrating some creative interest in designing and constructing buildings” (Hayslett, 2016, para. 5). The original practice was one that her mother instituted, and now she has developed a ““Jump into STEM” program created by SKillsUSA to introduce elementary school students to the practical applications of science, technology, engineering, and math” (Hayslett, 2016, para. 5). Many of her students have won national design competitions because of her innovative instructional practices and her passion for CTE.

Alabama

Just like Louisiana and Georgia’s CTE students, Alabama’s secondary level CTE students have opportunities to earn industry credentials in multiple subject areas such as those offered by Microsoft and Adobe, as well as Brainbench and ASK Institute. The State of Alabama refers to these credentials as career readiness indicators. If a student

earns one or more of these certifications, they are presumed career ready in that subject area. The Alabama State Department of Education website states:

> We consider Alabama's Career and Technical Education (CTE) program to be the foundation for our state's future. CTE is focused on developing the skills of K-12 students and strives to prepare them for postsecondary learning and workforce opportunities. It also provides them essential leadership skills through participation in student organizations (n.d., para.1).

CTE is learning that works for Alabama (Alabama State Department of Education, n.d.) and Alabama legislators are making sure that it has priority as this state has "launched a $50 million workforce development package called the 21st Century Workforce Act that helped upgrade CTE equipment and align programs with high-demand, fast-growth jobs. The initiative led to at least 75 new programs while discontinuing 20 outdated programs" (Advance CTE, 2017). To further show the importance of CTE in Alabama, "Alabama adopted a new accountability system under ESSA that measures ACT WorkKeys, dual credit and industry certification" (Association for Career and Technical Education; Advance CTE, 2018, p. 5). A new initiative, "Strong Start, Strong Finish," that is focused on early childhood education, computer science in middle school and high school, and workforce preparedness was announced in 2017 by Alabama's governor that will "bring all stakeholders to the table and provide coordination that will help students succeed in school and after they graduate" (Office of The Governor, State of Alabama, Press Releases, n.d.).

Florida

The State of Florida's Department of Career and Technical Education is on board with preparing their future workforce through the secondary school system. Their website (Florida Department of Education, Office of Career and Technical Education, 2016)

claims that “out of the 50 fastest-growing occupations in Florida, less than one-third require a four-year college degree or higher. The majority (58 percent) of these occupations require a postsecondary adult vocational (PSAV) certificate or associate degree” (para. 1). Florida has gone as far as passing legislation that provides a statewide planning partnership between learning institutions and industry so that students are afforded the opportunities they need to prepare for higher education and/or the workforce. The Florida Career and Professional Education Act (CAPE) was passed in 2007 with the focus of growing and sustaining a vibrant, knowledge-based economy (Florida Department of Education, Office of Career and Technical Education, 2016). According to Advance CTE, “Florida high school students have earned more than 297,000 industry certifications since 2007 through CAPE” (Advance CTE, 2018).

As reported by Mokher, Sun, and Pearson (2015), Florida’s largest projected high-growth, high-wage job openings from 2014-2022 are in the Health Science Career Cluster with the Business Management & Administration cluster following close behind. The researchers recommended that Florida public schools use this data to determine which Career Clusters and pathways they should be offering so that students will have the opportunity to fill the positions that will be available to them in the future.

Arkansas

Few high school students can boast that they have worked for NASA; however, students at the Northeast Arkansas Career & Technical Center (NEACTC) possess that distinction because their CTE center was accepted into NASA’s High Schools United with NASA to Create Hardware (HUNCH) program. NASA created the HUNCH program to involve students who are interested in manufacturing, welding, machinery,

and other skills that are used at NASA (Northeast Arkansas students are now a part of NASA, 2017). One student commented that “being able to make parts for NASA is just amazing opportunity that most people will never get the chance to do” (2017, para. 9). Another student stated, “We’ll be able to put on our résumé that we’ve run parts for NASA and that’s a pretty big thing” (2017, para. 11). This program is quite an accomplishment for Arkansas’s CTE program and could be one reason why this state’s CTE concentrators “earn more in the year after high school than their peers” (Advance CTE, 2018).

As CTE is getting a facelift in Arkansas, students are taking notice and realizing that CTE has much to offer and can boost their chances of finishing high school and pursuing postsecondary education that fits their needs. A step in the right direction for Arkansas CTE has been the implementation of career coaches in over half of the public high schools. Gewertz (2017) states that “The coaches’ work has made an impact. Between 2009—the year before the coaching program began as a pilot—and 2015, college enrollment in districts with coaches rose by 22 percentage points, compared with 4 points statewide” (2017, p. 2). CTE groups have “identified higher-quality advising as a top goal” (2017, p. 2) for students needing guidance about future careers and the courses they need to help them fulfill their plans and Arkansas’ career coaches appear to be providing the higher-quality advising that students need to make wise decisions about their futures.

Kentucky

In the state of Kentucky, students are on the road to a career because of the Tech Ready Apprentices for Careers in Kentucky (TRACK) youth apprenticeship program.

The program is a partnership between the Kentucky Department of Education's Office of Career and Technical Education and the Kentucky Labor Cabinet. After completion of the program in high school, students can immediately transfer into the employer's Registered Apprenticeship program. TRACK is a paid program for students and they receive both classroom and on-the-job training. Students also can earn an IBC through the program (Career and Technical Education Resources TRACK: Tech ready apprentices for careers in Kentucky, 2018). According to Advance CTE (2013), 13 high schools participated in the TRACK program during the 2013-14 manufacturing pilot. One hundred percent of the students in the pilot program moved directly into a full-time apprenticeship after completion of the high school program. The program has expanded into double the original number of programs and now includes the construction and health science fields (Advance CTE, 2013).

Additionally, Kentucky's New Skills for Youth Initiative is in its second year of pairing school districts with postsecondary institutions to offer training that meets the needs of regional employers. This initiative was made possible through a grant from JP Morgan Chase and the Council of Chief State School Officers. Through this program, students can walk out of the classroom with credentials and IBCs that help to provide them with a good-paying job (Pruitt, 2018).

Kentucky has multiple CTE partnerships and initiatives going strong in the state. According to *Kentucky Teacher* (2017), Kentucky has joined the Engineering byDesign (EbD) Consortium of States. Being a partner in this network that connects schools and teachers who want to teach engineering/technological literacy curricula through STEM

coursework will assist in discovering students who are interested in these fields and thus provide the next generation of engineers, innovators, designers, and technologists.

Mississippi

Mississippi has had their CTE programs in place and thriving for many years. The Mississippi Department of Education (MDE) and the Mississippi Construction Education Foundation (MCEF) collaborated in 1996 to offer the National Center for Construction Education & Research (NCCER) curriculum to high school students. At the time of this article's publication in 2013, NCCER delivered 198 programs in 106 CTE centers across the state (Wilder, 2013). According to Advance CTE (2018), Mississippi's enrollment in CTE on the secondary level is approximately 125,680 with 89% of "high school graduates enrolling in college, enlisting in the military or working within six months" (p. 1). Ninety-four percent of Mississippi's high school graduates are CTE concentrators which is optimistic for the state's labor market with middle-skill jobs accounting for "58 percent of Mississippi's labor market" (2018, p. 1). In September 2017 the Mississippi State Board of Education implemented changes in the graduation requirements for ninth grade students entering high school in the 2018-19 school year. Those changes include completing "one unit of college and career readiness and selecting an endorsement prior to the ninth grade" (Association for Career and Technical Education, 2018). Mississippi high school students who earn a CTE diploma endorsement "must complete four units of CTE electives, earn an overall GPA of 2.5, earn a silver level on the ACT WorkKeys assessment, earn two additional Carnegie units" (Association for Career and Technical Education, 2018) and complete either a CTE dual enrollment course, receive work-based learning experience, or earn a state-approved national credential.

North Carolina

Of the twelve states under study in this investigation, North Carolina has the largest enrollment in secondary level CTE with nearly 900,000 students (Advance CTE, 2018). Credentialing is a top priority among CTE educators in North Carolina and in 2017 students earned 160,224 various IBCs "making this the first year the total number of credentials earned by CTE students has exceeded the State Board of Education's goal of 144,700" (MacDonald, 2017). North Carolina students can choose from 96 different credentials that measure general job skills necessary for many different careers, such as Microsoft and the Career Readiness Credential from ACT WorkKeys, as well as specific job-related proficiency, such as NCCER, OSHA 10-Hour Construction, CPR Health Care Provider, and ServSafe Food Protection Managers Certification (MacDonald, 2017).

North Carolina's priority on credentialing students has paid off for many students but especially for one student at Green Hope High School. Roettgen (2018) discusses in her article a shy and introverted young man whom she convinced to enroll in the Microsoft IT Academy courses offered in the CTE department at Green Hope. The student immediately found his passion and enrolled in another course the following semester. In one semester he certified in every 2010 Microsoft Office Specialist (MOS) software available at the school and became a Microsoft Master. The student then competed in the MOS North Carolina State Championship, "which required participants achieve a perfect score on a certification test, in the fastest time possible" (Roettgen, 2018, p. 58). He won the Word 2010 test in the state championship competition and then went on to contend for the national championship in Orlando, Florida, where he won the MOS U.S. National Championship for Word 2010. Roettgen's student did not stop there

as he went on to earn the silver medal in Word 2010 at the MOS World Championship (Roettgen, 2018). This is an exceptional testimony to the possibilities available in CTE once students get plugged in, discover their talents, and find their passions.

One specific area where North Carolina's CTE programs are focused is in biotechnology. With North Carolina home to over 350 bioscience companies, the third largest concentration of biotechnology companies in the U.S., this career pathway is an exciting and opportune route with a wide range of career possibilities. Getting an early start in high school on an exciting career in this industry opens doors usually in an earlier timeframe than waiting until postsecondary study (North Carolina Biotechnology Center Education and Training Program, 2006).

South Carolina

South Carolina has a 98% graduation rate for CTE concentrators according to Advance CTE (2018). One reason for this outstanding statistic may be attributed to the fact that public schools in South Carolina offer programs such as the Partnership Response in Manufacturing Education (PRIME) opportunity to their CTE students. PRIME is situated in only 32 schools nationwide and Wando High School in Mt. Pleasant is one of them. Wando's staff includes "three full-time guidance-certified career counselors on staff dedicated to the goal of ensuring students graduate from high school with viable, individualized career/college plans" (Reddy, Rauschenberger, Hurt, & Bray, 2015, p. 10). Students at Wando High School undergo extensive career engagement activities beginning in the ninth grade which culminates in their senior year with the Myers-Briggs Personality Inventory. Community engagement such as that of the local chapter of the Society of Manufacturing Engineers (SME) and a dedicated and highly

trained counseling staff, contributes to the success of students at Wando and other high-functioning CTE programs in South Carolina.

Another exciting opportunity happening in South Carolina's CTE classrooms is the aerospace program being offered at the Sumter Career and Technology Center, along with five other high schools in Pickens, Greenwood, Cordova, and Beaufort (Jeter, 2017). State School Superintendent Molly Spearman was quoted in Jeter's article:

> Employment in the aerospace cluster is growing at a rate eight times higher than the state's average, and private-sector aerospace employees are compensated an average of over $70,000 per year. Ensuring students are aware of and prepared for jobs and careers within the industry is critical (2017, para. 7).

South Carolina joined the cause when the Southern Regional Education Board (SREB) offered a $50,000 grant from the Bill and Melinda Gates Foundation, as well as another $50,000 from the South Carolina Department of Education, which covered state-of-the-art equipment and teacher training costs, to schools that would participate in the program. The program has afforded students the opportunity to partake in a rigorous math-based, project-based curriculum that is hands-on and industry-specific in a location that is chock-full of aerospace, military, and aviation facilities. Career opportunities in this industry will be promising for South Carolina's students who take advantage of their state's $19 billion-dollar aerospace CTE options (Jeter, 2017).

Tennessee

Tennessee is aiming to increase the number of credentials earned by students in their public high schools because of the high demand for workers in the fields of health science, information technology, and manufacturing. The Tennessee Department of

Education recently announced that 21 new CTE certificates will be implemented in schools in the 2018-2019 school year. Tennessee's Education Commissioner stated

> As we seek to prepare more students for college and careers – especially in our state's high demand industries, such as information technology and health science – we must provide more opportunities for students to earn meaningful credentials and certifications while in high school (Knox News, 2018).

An interesting option that Warren County High School in McMinnville, Tennessee, brought about was to phase out their two-cycle and four-cycle engine repair courses for mechatronics, which is a blend of electronics and engineering and the brains in many advanced manufacturing companies. Students can earn starting salaries of $45,000 in rural Tennessee right out of high school with certifications in this field. Many of the students participating in this pathway are planning to attend college in pursuit of a bachelor's degree (Gewertz, 2017).

As per Tennessee's Department of Education 2016-2017 State Report Card (2017), there were nearly 191,000 students enrolled in CTE courses with only 17.5% of those students being CTE concentrators. A study by Mokher, Sun, and Pearson (2015) that sought to identify high-growth and high-wage occupations in the state of Tennessee and the associated CTE Career Clusters disclosed that "Business Management & Administration; Health Science; Education & Training; Transportation, Distribution, & Logistics; and Advanced Manufacturing are the five CTE Career Clusters associated with the greatest number of projected annual high-growth, high-wage job openings statewide between 2012 and 2022" (p. i). With the increased number of certification opportunities being set forth in Tennessee in the 2018-2019 school year, students who participate in CTE should be able to align with a career opportunity upon graduation. An additional

bonus for students who are enrolled in CTE in Tennessee and earn an IBC along with minimum scores on the ACT or SAT is that they will be designated as a “tri-star scholar” in their diploma, according to (Gewertz, 2017).

CTE students in Tennessee public schools have also been given the opportunity to delve into STEM lessons through the Learning Blade platform created by Battelle Education. Results from one survey conducted by the pilot programs in several states indicated a “69 percent increase in students recognizing that ‘what they learn in school will be useful later in life’” (Boyington, 2018, p. 26). Programs like Learning Blade can help students to gain knowledge about STEM careers and other CTE careers that can help them to make career decisions early and move down the best path for their future, whether it be an immediate career or postsecondary education that eventually leads to a career.

Virginia

In a study completed by Crespin, Holzman, Muldoon, and Sen (2017) from the University of Virginia Weldon Cooper Center for Public Service, Demographics Research Group, in collaboration with the Virginia Department of Education (VDOE), workplace readiness skills that have been identified by Virginia employers and educators as being essential for employee success in the workplace were investigated to determine if Virginia’s workplace readiness skills are up-to-date. The researchers found that “generally speaking, Virginia’s current set of workplace readiness skills strikes a good balance in terms of the number, type, specificity, and organization of its skills” (2017, p. 6). To determine the results, a survey was sent to 2,400 Virginia employers and workplace professionals; 395 invitees participated. The largest number of respondents

were of the Government and Public Administration Career Cluster. Recommendations for refining the current skill set were given instead of having a major revision of the skills. In regard to CTE completers and IBCs, other data from the VDOE revealed that "96% or more of the CTE completers graduated high school with a Standard or Advanced Studies Diploma" (2015-2016, p. 5), and 137,248 credentialing exams were passed in the 2015-2016 school year.

In the 2013-2014 school year, Virginia was reported as having 23 Governor's Science, Technology, Engineering, and Mathematics (STEM) Academies across the state, nine Governor's Health Sciences Academies, and 367 high schools implementing the Microsoft IT Academy Program. The VDOE reported that nearly 285,000 students are enrolled in CTE Career Cluster pathways, 50,000 students have enrolled in CTE priority courses that correlated to the Microsoft IT Academy program, and almost 31,000 Microsoft IT Academy certifications were earned by students with 145 of those students earning the Microsoft Master Level Certification (Advance CTE, 2015).

CTE programs and initiatives that have helped Virginia to achieve its goals of preparing college- and career-ready students are High Schools That Work (HSTW), Project Lead the Way (PLTW), and the Virginia Automobile Dealers Association – Automotive Youth Education Partnership (Virginia Department of Education, 2018). Work-based learning (WBL) is also priority for Virginia's CTE students. According to an investigation into work-based learning in Virginia by the VDOE, WBL methods that are prevalent in Virginia's high schools are job shadowing, mentorships, service learning, internships, clinical experiences, cooperative education, Youth Registered Apprenticeships (YRA), and Registered Apprenticeships (2017). Each of these programs

bring together CTE and academia to prepare students for future careers and further education.

West Virginia

West Virginia made the headlines with their leading-edge CTE programs as noted by the Southern Regional Education Board's (SREB) Senior Vice President Gene Bottoms (2017) as he spoke regarding the adoption of the Advanced Career (AC) Energy and Power pathway. He conferred how the West Virginia Department of Education

> partnered with SREB and seven other states to design and develop the Advanced Career Energy and Power pathway and AC pathways in eight other STEM-intensive fields with support from industry leaders, postsecondary faculty, and master teachers. It was the first state to dedicate funding for schools and CTE centers to adopt any of AC's nine pathways. It also boasts the second-highest number of schools in offering AC in the nation (2017, para. 7).

Bottoms (2017) went on to discuss how "West Virginia wants its CTE teachers to succeed" (para. 8) by adopting SREB's Teaching to Lead program that builds "teachers' competence, self-efficacy, and career commitment" (para. 8). Thus far, 137 teachers have participated in the program and as a result, CTE center directors claim these teachers are the "best prepared teachers they've ever hired" (para. 9).

Counselors and CTE

Stipanovic, Lewis, and Stringfield (2012), in their study concerning the history and refunding efforts of CTE, discussed programs of study within CTE. They noted that the U. S. Department of Education developed a framework for programs of study (POS) in CTE that included 10 components. One of those components is described as "guidance counseling and academic advisement: Guidance counseling and academic advisement

help students to make informed decisions about which POS to pursue" (2012, p. 91). From that same study, which highlighted numerous other research efforts, the authors confirmed the need for increased counseling for students to determine the appropriate courses to schedule that match their chosen careers. These expanded efforts presented options on how counseling and services are provided in high schools that offer CTE programs of study (Stipanovic, Lewis, & Stringfield, 2012). On that same note, the California Department of Education published a framework for CTE in California public high schools. One component of the framework speaks to career awareness and guidance. In short, it states that

> counselors have a unique role and a responsibility to provide information and resources to help students build the skills they need to choose, train for, and manage their careers. To carry out this important task, counselors need CTE-specific training and information to guide all students through appropriate choices and scheduling. They need a deep understanding of CTE course sequencing and integrated two- and four-year programs as well as clarity about CTE programs, industry sectors and pathways, and career options. With these tools they can use industry-sector resources to help students plan their education with a career technical goal in mind. (California CTE Standards and Framework Advisory Group, 2007, p. 88)

As stated by California's education system above, counselors need to be experts in CTE counseling and how all the CTE programs work. Course advising and career counseling on the secondary level is an extremely important and vital aspect of a counselor's responsibilities.

A research project by Loera, Nakamoto, Oh, and Rueda (2013) focused on motivation and academic engagement in CTE by studying 267 urban youth in the 11th and 12th grades. Their study used a path model in probing into the associations between students and such factors as adults' impact on their decision to enroll in college, their aspirations to attend college, and the quality of their CTE program of study. A social

cognitive concept was utilized in this study to "examine how CTE contextual variables influence students' educational and career aspirations" (p. 174). Questionnaires were used to assess the students' perceptions of teachers, parents, and other educators, such as counselors, in determining their satisfaction with advising and guiding them in their college and career choices. Loera, et al, (2013) determined, "If teachers develop and expose students to a career-related curricula program, those students may be more likely to continue in their education and career preparation after high school and feel better prepared for the future" (p. 183). The researchers recommended further study on the satisfaction of career and educational counseling by school personnel, such as teachers and counselors. Smith (2015), in her qualitative inquiry that was directed at African American students and their perceptions of CTE, further revealed that students perceived their counselors to be key in guiding students in course selection and college and career counseling. "The researcher suggests that the guidance counselors are perceived by students to be very influential and important in helping them choose their career cluster and courses." (p. 69). She also referred to counselors as the "conduit that gave them access to their classes" (2015, p. 78).

However, a study focused on career counseling by Reddy, et al (2015) referenced a National Center for Education Statistics (NCES) survey of high school counselors which revealed that "only 8 percent saw their primary role 'as to help students plan and prepare for their work after high school'" (p. 12). That same study divulged that 51 percent of high school counselors considered helping students plan and prepare for their work after high school to be their lowest priority (2015). Findings from Osborn and Baggerly's (2004) study that dealt with career counseling and career testing in Florida

revealed that counselors would like to increase the time they spend on career counseling. They discussed that administrative duties and other non-counseling duties accounted for time they needed to expend on counseling students concerning their coursework and future careers. In this study conducted in Florida, "only 16.8% high school counselors reported spending much/most of their time on career counseling" (Osborn & Baggerly, 2004, p. 54). A study by Pierce (2017) that was immersed on counselors' valuation of CTE in Mississippi revealed that counselors believe they do not have time resources available to focus on career planning; therefore, their focus is college planning. Thornburg's (2016) study revealed that counselors conveyed they spend "less than five hours per year providing career counseling to each student" (p. 106). One study by Spaulding and Steffen (2011) revealed that high school counselors have stereotypical perceptions of CTE and careers that are available in CTE, feel pressured with the lack of resources and training where CTE is concerned and would appreciate professional development in the form of seminars and workshops to learn more about the current options available in CTE.

As it has been determined that counselors do not appear to be spending enough time advising students in course selections that will prepare them for their future careers, counselors noted having positive beliefs toward CTE. Pierce's (2017) study showed that Mississippi middle and high school counselors place value on CTE and its' offerings. Counselors surveyed in her study were reported as strongly agreeing

> that CTE greatly assists students in their post high school goals, offers students a highly competitive advantage in regard to employability, allows students more exposure to career options, and benefits participating students. In this study, counselors reported that they would strongly encourage students to enroll in CTE programs and expressed an understanding that CTE programs are for both collegebound and work-bound students. (Pierce, 2017, p. 95)

On the opposite side of the coin, another study regarding the value of one component of CTE, business education, Railsback and Hite (2008) studied public high schools from the perspective of high school principals, counselors, and boards of education in a Midwestern state. They chose to focus on counselors because they said, "they often recommend or do not recommend that certain students enroll in business education" (Railsback & Hite, 2008, p. 152). Their research was one of a descriptive nature, as they chose three groups to study whose perceptions have influence upon course offerings and student scheduling. Railsback and Hite (2008) used a questionnaire to survey 341 school principals and 341 counselors at public high schools, as well as 304 elected board of education presidents. Of the 986 surveys mailed, the principals completed thirty-one percent of the surveys, the counselors completed 40 percent of the surveys, and only 19 percent of surveys mailed to school board presidents were completed. Findings of the study concluded that all three groups perceived skills learned in business education courses to be important and vital for students to possess; however, the counselors presented with the lowest support. The researchers recommended that business education teachers work closely with counselors to insure they encourage students to enroll in business courses offering practical life skills due to the consensus that counselors seem to be the weakest link in supporting business education.

Throughout this investigation it appeared that even though counselors claim to support CTE there is a disconnect when it comes to advising students to enroll in CTE on the secondary level. In searching for ideas, circumstances, or experiences that influence counselors' perceptions of CTE, the impression was given that many counselors are not true advocates for CTE, even though they allege to be supportive. Huss and Banks (2001)

wrote that “school counselors have a great deal of influence with course selection and therefore are key participants in CTE, but in some cases the school counselor is not an advocate for CTE” (p. 3). Finlayson (2009) claimed, “Students need accurate, well-informed advice from school counselors to help them choose an education and career plan that will continue well after high school graduation” (p. 4). Herr (1987) and Rossetti’s (1989) studies reiterated that high school counselors have influence on students and their decisions concerning course selections. Abayomi, Tyrell, and Bennett (2013) suggested that “the counselors' knowledge of the curriculum paths students must choose affects the guidance offered to students when choosing a path of study in high school (p. 3)”. When investigating perceptions of school counselors regarding service-sector careers, which fall under CTE, Samuels (1991) discovered that counselors do not sell service-sector career opportunities to the students they counsel.

Handy and Braley (2012, 2013) investigated to identify and categorize the perceptions of CTE as held by administrators, counselors, and teachers of CTE and academia in their study using control group actions’ perceptual control theory (PCT). In their qualitative study comprised of 110 educators that utilized surveys and face-to-face interviews, Handy and Braley (2012) discovered that “a counselor who believes that hands-on experience is important may encourage students to participate in experiential learning courses or internship opportunities” (p. 18). Using a grounded theory approach, the researchers determined in their study that there are those providing advice and direction to students who view “CTE as unhelpful for students bound for postsecondary education” (Handy & Braley, 2012, p. 17). In another study by Handy and Braley (2013) where they investigated the perceptions of administrators, counselors, CTE teachers, and

academic core teachers, the researchers discovered three themes emerging that included an individualized approach to learning, the importance of blending CTE and academic content, and the obstacles to integrating the two areas. High school counselors must be informed, concerned, and unbiased when it comes to giving students direction about scheduling courses; they must be able to share the beneficial facts about CTE. Another study, which focused on factors that promote motivation and academic engagement in CTE gave indication of students making wiser and better educational and career choices when their role models (i.e., teachers, counselors, and parents) encouraged and supported their choices (Loera, Nakamoto, Oh, & Rueda, 2013). Hence, if counselors are not promoting CTE to their students, and not encouraging them to pursue CTE options, students will not likely follow these pathways when choosing high school coursework. Advance CTE found that 84% of prospective high school students trust school counselors for information regarding CTE, and 82% of the parents of prospective high school students trust school counselors to provide factual and helpful information about CTE (Advance CTE, 2017).

Brown (2003) considered the image of CTE in a study that offered strategies to improve perceptions of CTE. One of the main ideas behind the strategies presented was to address the misconceptions that people have that all students should attend college to seek four-year degrees. Brown (2003) quoted Cohen and Besharow (2002) in reference to business, education, and government leaders in saying, “These leaders believe that trade and technical schools should offer more appealing options for high school graduates” (p. 1). CTE now offers better options for high school students and graduates, and Brown suggested that counselors be reeducated on the options (2003). She also noted, “Many

guidance counselors overlook CTE and focus only on the four-year college option" (Brown, 2003, p. 2). Another study revealed

> School counselors can be key figures in the advancement of Career and Technical Education (CTE). School counselors have a great deal of influence with course selection and therefore are key participants in CTE, but in some cases, the school counselor is not an advocate for CTE. (Huss & Banks, 2001, p. 3)

Their brief, based on research findings of the *Major Needs of Career and Technical Education in the Year 2000* project of the National Dissemination Center for Career and Technical Education conducted by Lewis (2001), included recommendations that could be implemented within school districts' guidance and counseling programs to increase awareness and knowledge concerning CTE. Whereas the data from this study is somewhat dated, it continues to be relevant to the topic at hand.

A series of research projects relevant to counselors' perceptions of CTE were conducted by Spaulding and Steffen (2011) in Illinois. In the first project, they aspired to determine the knowledge level and perceptions of the counselors concerning CTE opportunities in agriculture. In the second project, they sought to assess knowledge levels and counselors' perceptions of CTE, as well as to identify ways to help the counselors become more knowledgeable about CTE to properly guide and counsel students. In the first portion of the study, Spaulding and Steffen (2011) sent a paper survey about agriculture education to a stratified random sample of counselors in Illinois. The next project used an electronic survey with questions pertaining to all areas of CTE. The Delphi technique was applied in the third phase of the study, according to Spaulding and Steffen (2011). After all segments of the study were completed, the researchers (Spaulding & Steffen, 2011) found that "school counselors often have stereo-typical

perceptions of jobs available, are unsure of where higher ed opportunities are in CTE fields in Illinois, and struggle with time issues and lack of resources" (p. 2). Another study by Jordan and Dechert (2012) affirmed that improved perceptions of CTE would cause more students to enroll in high school CTE coursework. Finlayson's (2009) research involving counselors' perceptions in both middle and high schools revealed that the majority of those surveyed believe it is more important for students to spend time on academics than CTE. On the other hand, about half of them confirmed that CTE programs might prevent high schoolers from dropping out of school. In addition, counselors from both levels of schools stated that equally girls and boys should be encouraged to participate in CTE. Finlayson (2009) stated that "Of the counselors surveyed, 51.2% of both groups disagreed with the statement that taking CTE classes hinders students from further education after high school" (p. 41). She recommended, "More effort needs to be made by administrators and counselors to inform students of CTE programs as well as career choices" (Finlayson, 2009, p. 52).

Public high school counselors' educational experiences (i.e., professional development, training, and other coursework) involving CTE were examined as a major influence on the perceptions they hold concerning CTE. Thornburg's (2016) study was purposed to explore the educational backgrounds of high school counselors, their knowledge of CTE, and the amount of time they spend advising students. The constructivist theory was applied in this exploratory research study because the investigator related it to the counselors' experiences with CTE. Thornburg (2016) used a cross-sectional design to study the effects that the previously noted variables had on the counselors' perceptions of CTE. His research involved 286 school districts in the state of

Kansas. Thornburg (2016) stated, “I have found that they rely on CTE programs as a last option for the better students and as the first option for students who struggle academically” (pp. 12-13). He found that knowledge level of counselors’ is extremely important and is influential in how they advise students with their course scheduling in high school. Thornburg’s (2016) study revealed “over 84% of the respondents did not have a CTE background” (p. 106); however, many of the respondents were positive concerning CTE. This study presented implications for social change as counselors’ perceptions of CTE change and they increase their knowledge of CTE, and the benefits it should offer students.

Johnson’s (2016) study investigated a Colorado initiative where 220 new counseling positions were created over an eight-year period. Counselors who were hired for these positions received specialized training in dropout prevention and college access strategies. Dropout rates declined from 5.5% to 3.7% and college attendance and persistence increased by 13%. The fact that is important in relation to CTE is that student participation in CTE “more than doubled” (2018, p. 36) because of this initiative and the training that the new counselors received. Maybe it would be beneficial for other states to note this “important unintended consequence” (2018, p. 36) and follow suit in efforts to increase enrollment in CTE.

Ahearn, Rosenbaum, and Rosenbaum (2016) suggested that because many public high schools present with high counselor-student ratios; therefore, CTE teachers might be in a better position to assist students with course selection and career counseling. They conducted interviews with 23 CTE teachers in a large urban school district and discovered they develop strong relationships with their students because they spend quite

a bit of time with them over the course of high school. According to the findings, the CTE teachers interviewed offer understanding about careers but do not seem very knowledgeable about the options available at community colleges. They recommended providing resources to the teachers that would be beneficial in career exploration and community college programs, so the students can be adequately informed of their options (Ahearn et al., 2016).

CTE is the connecting force between academics and America's workforce. Finlayson's (2009, p. 26) study concerning middle and high school counselors' perceptions of CTE affirmed that "students who see a direct link between school and the future are more definite in their career and postsecondary goals." Summers (2013) asserted that "counselors may need to remain, or become, aware of what occupational needs are currently exhibited in our economy and how to work to eliminate these needs" (p. 7).

Whether specific demographics of public high school counselors have influenced their perceptions of CTE and how they advise students to pursue coursework that is vital to their future was an essential topic of this study. The notion that these influences might play a role in how counselors direct students and which diploma path students choose to pursue has been an underlying factor in this study.

Students' Perceptions of CTE

Numerous studies dealing with CTE have concentrated on students' perceptions and attitudes toward CTE. One such study completed by Farmer (2015) revealed positive perceptions and attitudes from 35 students consisting of four females and 31 males,

mostly Hispanic, in their junior and senior years. One student who participated in the mixed design study stated “We make mistakes also in here so that it prepares us for the real, real world and for college as well” (Farmer, 2015, p. 30). Another student in Houston, Texas, was excited to reveal in an article published in *National Journal* that he met his future employer because he had developed a plan with his CTE teachers that afforded him the training it required to become a towboat captain in the maritime industry at the Port of Houston (DeRuy, 2015). Another student at the same school stated “The way I look at it is we’re getting a step closer to career-readiness” (DeRuy, 2015, p. 4). In a study of college graduates and college non-graduates who studied CTE, “students reported that their reasons for enrollment were related to the fact that they viewed career and technical education as a worthwhile alternative to a college education; that they have positive perceptions of career and technical education” (Summers, 2013, p. 129). Smith’s (2015) study reinforced the belief that students view CTE as “a vehicle for future advancement and a way to improve their future” (p. 77).

Based in Michigan, Gaunt’s (2005) investigation focused on designing a CTE student profile based on their socioeconomic background and academic standing. His study also zeroed in on high school students’ perceptions of CTE and the people surrounding these perceptions. Gaunt’s (2005) results were encouraging, especially in a time when this topic was not overrun with data; indications from students were positive where CTE coursework is concerned as they determined it can be beneficial to students of all academic and socioeconomic levels.

In a national survey conducted by Advance CTE (2017), 92% of current CTE students agreed strongly that finding a career they are passionate about is important, 90%

of those students agreed strongly that the more job experience they gain increases their chances of success, and 83% wished they could get more real-world knowledge and skills during high school. In that study, “only two percent of CTE students responding that they don’t know what they will do after high school, compared to eight percent of non-CTE students” (Advance CTE, 2017, p. 4). These findings lean to CTE being a positive experience for students as far as future college and career plans are concerned.

Browder’s (2007) qualitative investigation into students’ views of CTE revealed diverse understandings of CTE. Her study involved eight students, three of whom were CTE concentrators, two presenting as Advanced Placement (AP)/CTE combined students with the remaining three students being enrolled solely in AP courses, from an 81% white high school of 1,717 students. The students who were enrolled in CTE coursework “responded favorably to CTE instruction, its teachers, and the preparation they were receiving for their future careers” (Browder, 2007, p. 54). Two of the AP-focused students viewed CTE courses a “form of social or recreation entertainment” (Browder, 2007, p. 55). All the students who participated in the study realized a sense of community in the CTE courses, whether as a student or an observer, and indicated this is an important aspect and should be inclusive of all classes. All eight of the students suggested that hands-on instruction and group work should be all-encompassing of courses, whether CTE, AP, or traditional, and “to be positive for learning and beneficial for all students” (Browder, 2007, p. 58).

Findings from a study by Hagen (2010) revealed that students are motivated to graduate, learn, and prepare for the real world when they participate in CTE coursework. This investigation also showed that students who participated in CTE “believed that CTE

classes influenced their future" (Hagen, 2010, p. 52). Thirty-eight percent of the students who participated in Hagen's (2010) study indicated they would have liked to have taken more CTE classes.

Ryan (2016), in his study of Millennials and Generation X, determined that participation in CTE programs influences post-secondary decisions. His study also revealed that students who participated in his research have a more positive view of CTE than was originally perceived.

A recent article written by D'Antoni and Burch (2018) discussed a program that was implemented by the West Virginia Department of Education (WVDE) to address the employability skills and academic and technical skillsets needed to meet the needs of the West Virginia workforce. The authors stated that the "WVDE, in collaboration with local and state businesses, developed powerful learning environments that maximize students' learning experiences by transforming the traditional classroom into student-led simulated workplace companies" (D'Antoni & Burch, 2018, p. 25). These simulated workplaces have created not only a different kind of classroom, but because of the kinds of projects the students are creating, the state of West Virginia is recognizing positive economical returns. The writers discussed how the students collaborated and brainstormed ways to help their family, friends, and neighbors after the devastating flood in June 2016. The result was the construction of 15 tiny homes by student leadership groups at 12 schools throughout the state. One senior student commented "Simulated Workplace is an amazing experience. I love working hands-on with my colleagues and getting to experiment through the tiny home project. I would love to come back and do it again" (D'Antoni & Burch, 2018, p. 27). Another student stated that "My Simulated Workspace experience is

the most rewarding one I've had in my high school career" (D'Antoni & Burch, 2018, p. 29)! To top it all off, D'Antoni and Burch referenced Hamrick's (2017) research which disclosed that "92 percent of students feel their critical thinking skills have improved as a result of participating in Simulated Workplace" (2018, p. 29). Additionally, another senior student commented about the program: "Simulated Workplace turns okay students into great students, and great students into leaders" (D'Antoni & Burch, 2018, p. 29).

A grounded theory study by Niver (2010) revealed that students who participated in CTE during the high school years "valued the equality that existed in the program" (p. 76), and felt a connection with the CTE teachers who engaged them in the coursework instead of lecturing and/or simply telling them to complete a task. Niver's (2010) study was focused on the notion that American high schools need comprehensive high school curriculums that provide rigorous CTE programs for students.

Teachers' Perceptions of CTE

Hagen's (2010) study offered evidence that academic core teachers believe that students who enroll in CTE coursework do not take it seriously, and only enroll in CTE courses because their friends are enrolled in those courses, whereas, 67% of the CTE teachers interviewed in this inquiry indicated that students enroll in CTE coursework because they are interested in the course. Other findings from this study denoted that 80% of the academic core teachers interviewed believed that students who participate in CTE courses "gain exposure to different fields" (Hagen, 2010, p. 69); 67% of the CTE teachers interviewed also conveyed this belief. Both academic core teachers and CTE

teachers perceived “that CTE classes improve the grades of students” (Hagen, 2010, p. 69). One academic core teacher stated:

> We compared achievement gains in academic classes and on standardized tests and found astonishing improvements. Now, some of my colleagues don’t want to believe the results, but they’re pretty hard to dismiss. It has really been remarkable. I have these data and have shared them with anyone who will listen (Hagen, 2010, pp. 69-70).

Handy and Braley (2012) concluded in their study analyzing educators’ perceptions of CTE that educators believe students learn differently and must have options available that promote assorted methodologies. Their research revealed that students “have a more valuable learning experience” (2012, p. 21) when academic content and hands-on learning are combined. Educators who participated in this qualitative study recognized the significance of and advantages of providing real-world learning opportunities for all students.

Gammill’s (2015) article told of her experiences of transitioning from an English teacher to a CTE teacher in a Mississippi public high school. Colleagues whom she had previously worked with revealed shock when she made the move from teaching core courses to teaching CTE courses because “in their eyes, she had downgraded from a rigorous academic course to an easy (and therefore unimportant) one that wasn’t even required for graduation” (p. 18). What Gammill (2015) learned from the switch was that “career-technical education is not a lesser form of learning; it’s a *different* form of learning” (p. 18).

Public Perceptions of CTE

Scott and Sarkees-Wircenski (2008) noted that "some advocates of college education oppose CTE because they fear it discourages young people from continuing their education at the postsecondary level" (2008, p. 7). Their writing further discussed that many proponents who believe that all students should attend college also believed that CTE provided training for only low-paying jobs and skills that only the underprivileged could complete.

Jordan, Dechert, Seymour, and Hierholzer (2016) studied the stigma from vocational education of the past that has remained a negative perception for today's CTE held by many Mississippi residents. Their study revealed that 45% of the state's residents could not name any program offered by their local high schools that was associated with CTE. Forty-four percent of the participants in this study also divulged that "students who were disadvantaged in one way or another, such as students who are not college bound, students in poverty, or students with poor grades" (p. 2) were the students who had the most to gain from participating in CTE. Only 48% of those surveyed stated that CTE would help college-bound students. Unsurprisingly, this study produced a correlational relationship "between low knowledge of CTE programs and poor or incorrect perceptions of CTE" (p. 3).

An investigation into the perceptions of CTE held by the residents of Alabama conducted by Baldwin (2011) provided findings that denote a positive perception of CTE. The findings of this study revealed that "over 95 percent of the respondents felt it was either important or very important to offer career technical education in Alabama's schools" (Baldwin, 2011, pp. 105-106). However, that perception was not always

evident. Vocational education, the former name for CTE, was not typically looked upon favorably. Popular public opinion included a thought process that labeled CTE as "the presumptive placement for low-performing students" (Dougherty, 2016, p. 4).

Herian's findings from his study of Nebraska residents' perceptions of CTE showed overall that their perceptions are positive in that they believe CTE is equally as important as academic subjects. However, results indicated that most residents believe that CTE students are not regarded as highly as students who are devoted to academia (2010).

A survey study that sought to understand public perception of the difference between what students learn in school and what they need to know for a successful career completed by Edge Research and K12 Inc. (2017) revealed that

> Parents disagree with the conventional wisdom that a college degree is always the best path to success, with more than three times as many parents saying two years of work experience is more valuable than a four-year liberal arts degree.
>
> Three out of four parents say middle and high school is the best time for students to start exploring career paths. They also believe students should be exposed to career options and training through Career Technical Education (CTE) courses, with 90% of Americans surveyed saying CTE should be offered in every high school (p. 1).

This study further revealed that when given options, Millennials preferred health care courses over biology, business administration over economics, information technology over science, and manufacturing over physics. Millennials and Generation Xers were also found to recommend CTE for college-bound students (2017).

Gifted and Talented Students in CTE

Gentry, Hu, Peters, and Rizza (2008) conducted a study involving gifted and talented students who attended an exemplary CTE center. Historically, CTE was not encouraged for students considered gifted and talented, but this study suggested that CTE is a viable option for them. Gentry, et al. (2008) conferred the creative/productive thinking, leadership ability, general intellect, and academic aptitude of gifted and talented students serves them well in a CTE setting because it is in CTE their creativity can be put into action, their leadership skills applied to business settings, and their intellect and academic aptitude demonstrated in practical real-life situations. This study was included because it raises the issue of high school counselors not promoting CTE to a group of students who are typically overlooked when counseling for career and technical education.

Gentry, Peters, and Mann (2007) also studied gifted and talented students and their perceptions of CTE. Sixteen gifted and talented students, along with 35 general students were participants in this study who made comparisons about their courses at both the CTE center and the traditional high school. Positive impressions about their CTE curriculum emerged from all the students participating. A prominent component of counselors' obligations in public high schools is to provide college and career planning, as is clearly stated in *The Louisiana School Counseling Model* (Louisiana Department of Education, 2010). Counselors should feel an obligation to share equal information about both CTE, and academic curricula. CTE helps students experience a connection to the world of work. Gentry et al (2007), confirmed talented students felt a "literal connection that learning had to a field, profession, or workplace" (p. 389) when participating in CTE.

Gentry, et al. (2007) stated, “The goal of CTE is to prepare students for postsecondary careers upon graduation from high school or college” (p. 372). Hence, the reasoning, once again, for counselors to provide proper college and career counseling to students, whether in regular education or gifted and talented.

Greene’s (2005) study concerning counseling for gifted students suggested that teachers serve as counselors for high school students. She noted that gifted students many times admitted they received better advice from their teachers than from the school counselors. This is certainly a noteworthy idea since teachers spend more quality time with the students than do counselors. Greene (2005) stated, “Teachers have a long tradition of helping students with personal and career decisions, with students looking to them for advice, guidance, and support” (p. 227). Although this research was not directed specifically at CTE, theoretically, it can be applied to CTE. It seems that even gifted and talented students have concerns with counselors and their perceptions of not only CTE, but college and career counseling and guidance, as well.

Summary

The researcher has revealed mixed thoughts and discernments concerning CTE and its’ benefits, the perceptions about CTE held by various stakeholders, and why CTE is vital to not only high school students in this generation and the ones to come, but also to college students. Proponents of CTE continue to have much work to accomplish in convincing some populations about the value and relevance of CTE, and how CTE knowledge must be properly grasped and dispersed for the benefit of our nation’s workforce and economy. As CTE educators move forward until CTE receives the

recognition due, supporters must continue to display the facts where they can be seen. Facts that must be accepted by administrators, teachers, parents, students, counselors and the public because it is time for all to realize that CTE not only represents lifelong learning, “CTE is relevant for all age groups” (O'Brien, 2017, p. 46) in all sectors of life.

Chapter 3

Introduction

High school counselors are empowered to direct students to enroll in courses that will prepare them for occupations that will be imminent in our nation's future workforce. Thornburg (2016) clearly stated: "High school counselors are the key holders in the dissemination of career information for students" (p. 20). They should be readily available with current information about predicted workforce needs and well-informed about opportunities available in career and technical education (CTE), so they can wisely direct students down career pathways that match their interests and abilities. Gaunt (2005) confirmed that high school counselors have opportunities to influence and guide students in their selection of courses throughout the high school years. These opportunities can transfer into students participating in CTE, earning IBCs, receiving dual enrollment credit, and partaking in experiential work-based learning opportunities. Another study by Jordan and Dechert (2012) affirmed that improved perceptions of CTE would cause more students to enroll in high school CTE coursework. Handy and Braley (2012) found in their study that high school counselors who understand that hands-on learning is important would usually recommend that students enroll in CTE courses. Unfortunately, as Adams (2014, p. 8) confirmed, "Research has shown that counselors have been a mostly untapped, and insufficiently trained, resource in such efforts." If high

school counselors hold such a vital stake of influence over students' decisions to participate in career and technical education, they should be educated on the benefits and opportunities of CTE. A study by Spaulding and Steffen (2011) revealed that high school counselors have stereotypical perceptions of CTE and careers that are available in CTE, feel pressured with the lack of resources and training where CTE is concerned, and would appreciate professional development in the form of seminars and workshops to learn more about the current options available in CTE. If their educational experiences with vocational education of the past have left a negative impression in their minds, additional training on the benefits and advantages of today's CTE for all students would be indispensable to public high school counselors in overcoming yesteryear's vocational education stigma.

Being that career and technical education has so much to offer students in ways that will improve their future, it is puzzling to grasp that many secondary level CTE courses struggle to remain on the master schedule due to low enlistment. Enrollment in CTE courses, especially business, technology- and computer-related courses, should be at an all-time high due to the number of business majors recorded on the postsecondary level and the increased use of technology worldwide. The number of students who choose business- and computer-related majors in college continues to grow, comprising 20% of all bachelor's degrees conferred in 2011-12 and the largest number of master's degrees conferred that year (Fast facts, 2015). There are innumerable reasons for high school students to participate in CTE courses, yet enrollment is less than ideal.

Purpose of the Study

The purpose of this quantitative study was to determine if a relationship exists among high school counselors' specific demographics and their perceptions of CTE, the educational experiences (i.e., professional development, training, and other coursework) of public high school counselors and their perceptions of CTE, the factors that influence public high school counselors to advise college-bound students to enroll in CTE; the factors that influence public high school counselors to advise career-bound students to enroll in CTE, and their perceptions of CTE. The independent variables in this study are the specific demographics of public high school counselors, the educational experiences (i.e., professional development, training, and other coursework) of public high school counselors, and the factors public high school counselors consider when advising students to pursue CTE coursework. The dependent variables are the perceptions of CTE held by high school counselors. In this study, an online questionnaire (Appendix 1) was delivered via email to high school counselors employed at public high schools in the states of Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia. The data collected from this survey was analyzed to determine if a relationship exists.

Research Questions

The research questions are:

1. Is there a relationship between specific demographics of public high school counselors and their perceptions of career and technical education?

2. Is there a relationship between the educational experiences (i.e., professional development, training, and other coursework) of public high school counselors and their perceptions of career and technical education?
3. What factors influence public high school counselors to advise college-bound students to enroll in career and technical education; what factors influence public high school counselors to advise career-bound students to enroll in career and technical education?
4. To what degree are public high school counselors supportive of career and technical education?

Research Design

A correlational, quantitative design was chosen for this study because the relationship between two or more variables was under investigation (Creswell, 2014). The relationship between the specific demographics of public high school counselors, the educational experiences (i.e., professional development, training, and other coursework) of public high school counselors, the factors that influence public high school counselors to advise college-bound students to enroll in CTE along with the factors that influence public high school counselors to advise career-bound students to enroll in CTE, and their perceptions of CTE, as well as the degree to which public high school counselors are supportive of CTE. One strength of a correlational design "is that it provides more information about the sample's scores on the measured variable than is typically possible with group comparison research" (Gall, Gall, & Borg, 2010, pp. 265-266). Another strength of a correlational design is that the independent variables cannot be manipulated

(Gall, et al.); which in the case of this study are the specific demographics of public high school counselors in the states of Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia, as well as the educational experiences (i.e., professional development, training, and other coursework) of public high school counselors, the factors that influence public high school counselors to advise college-bound students to enroll in CTE along with the factors that influence public high school counselors to advise career-bound students to enroll in CTE, as well as the degree to which public high school counselors are supportive of CTE. The dependent variable of this study is the perceptions of CTE held by high school counselors.

Disadvantages of conducting a correlational research include the fact that one cannot reach beyond the data that is collected (McLeod, 2008). In other words, one cannot make assumptions on data they do not have. Secondly, with correlational research one cannot imply that a cause is a correlation. It cannot and should not be assumed that just because there is a relationship or correlation between two variables that those variables caused the outcome (McLeod, 2008).

Population

Counselors at public high schools in the states of Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia were emailed inviting their participation in the study. These states were chosen because they are the twelve southern states that make up the Southern Business Education Association. Mississippi and Alabama distributed the survey to

approximately 1,900 public high school counselors in their states. These states would not allow the researcher to access their counselor databases due to privacy concerns. Many states have implemented privacy laws to protect personally identifiable information (PII) of teachers, students, and other educational staff from falling into the hands of those with fraudulent or illegal aspirations. State departments of education in Louisiana and Arkansas provided their states' counselor databases of roughly 1,162 counselors to the researcher for survey purposes. The remaining email addresses for approximately 2,510 counselors were gathered by searching district and school websites in the states of Florida, Georgia, Kentucky, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia. Approximately 5,572 emails were distributed to public high school counselors in the twelve states. A total of 281 (N=281) respondents submitted the survey which translates into a five percent response rate.

Instrumentation

The instrument used for data collection in this quantitative, cross-sectional survey study was a researcher-developed questionnaire that was delivered through Qualtrics, an online survey system. The instrument was used to gather information from counselors at public high schools in the states of Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia. The survey instrument employed was the Assessment of High School Counselors' Perceptions of CTE. The researcher developed the survey instrument after determining from the review of literature that an appropriate survey instrument was not available. However, the literature was referenced when developing the survey questions.

A survey design was chosen because it "provides a quantitative or numeric description of trends, attitudes, or opinions of a population by studying a sample of that population" (Creswell, 2014, p. 155). A cross-sectional survey describes "snapshots of the populations about which they gather data" (Cross-Sectional Survey Design, 2011). The online survey was employed to determine if a correlation exists between the specific demographics of public high school counselors, the educational experiences (i.e., professional development, training, and other coursework) of public high school counselors, what factors influence public high school counselors when advising college-bound students to enroll in CTE along with the factors that influence public high school counselors to advise career-bound students to enroll in CTE and their perceptions of CTE, as well as whether public high school counselors support CTE for all students.

The survey was composed of four sections: Section A – Demographics of School Counselors (13 questions); Section B – Educational Experiences (five questions with 20 subgroups); Section C – Factors that Influence Advisement (one question with 18 subgroups); Section D – Support of CTE (three questions).

Section A of the survey instrument collected specific demographic data from public high school counselors. Data collected included (1) the number of years they had been a high school counselor, (2) whether they had previously been a classroom teacher, (3) on what levels they had taught if they indicated they had been a classroom teacher, (4) in what subject areas they had taught if they indicated they had been a classroom teacher, (5) their highest level of education, (6) their areas of certification, (7) the state in which they are employed, (8) whether the school where they are employed is in a rural or urban location, (9) the number of students that are enrolled in the school where they are

employed, (10) the scheduling type used by the school where they are employed, (11) their age, (12) their gender, and (13) their ethnicity.

Section B of the survey instrument collected data concerning the educational experiences (i.e., professional development, training, coursework on any level) of the counselors. The questions asked (1) if the counselors had ever taken any CTE courses on any level, (2) from which Career Cluster had they taken CTE courses if they indicated that they had taken CTE coursework, (3) if they had received any formal training or professional development about CTE, and (4) what type of training or professional development they had received if they indicated they had received CTE training or professional development. This section also presented a series of statements about CTE that were confirmed by research as factual in nature (ACTE Online, 2018; Gottfried & Plasman, 2018; Carnevale, Jayasundera, & Hanson, 2012; Plank, DeLuca, & Estacion, 2008; Todd, 2015; Association for Career and Technical Education, 2018; Association for Career & Technical Education, 2017; Association for Career and Technical Education, 2018; Association for Career and Technical Education, 2016; Advance CTE, 2017) that the researcher discovered in the review of literature. A 5-point Likert scale was provided in the survey for these statements to determine whether the counselors agreed or disagreed with the statements. The respondents were instructed to rate whether they (a) Strongly agreed, (b) Somewhat agreed, (c) Neither agreed nor disagreed, (d) Somewhat disagreed, or (e) Strongly disagreed.

Section C of the survey instrument measured factors that influenced advisement of students. Respondents were instructed to use a 5-point Likert scale to indicate the level of importance of each factor listed: (a) Extremely important, (b) Very important, (c)

Moderately important, (d) Slightly important, or (e) Not at all important. Counselors utilized this scale separately in consideration for students who indicated they were college-bound and for students who indicated they were career-bound after high school. The items being measured for all students were (1) GPA, (2) grade in core academic courses, (3) career plans, (4) college plans, (5) attendance, (5) discipline record, (6) gender, (7) participation in extracurricular activities, (8) participation in sports, (9) socio-economic status, (10) current grade level, (11) popularity, (12) class size of course, (13) teacher recommendation, (14) student's desire to take a course, (15) parental expectations, and (16) counselor's knowledge of a course. Respondents were also instructed to indicate other factors not listed that they believe are important when advising students, college-bound and career-bound, to enroll in CTE coursework.

Section D of the survey instrument consisted of two questions concerning the percentage of college-bound and career-bound students the respondents believe they advise to enroll in CTE courses per academic year. A sliding scale representing 0 – 100% was provided for the respondents to answer. The last question was an open-ended question instructing the respondents to state any additional information they would like to share with the researcher regarding the advisement of students in CTE or their perceptions of CTE.

An information letter (Appendix 2) was provided via email to the population that included a link to the researcher-developed survey instrument. The email explained the purpose of the survey along with the study's necessity and importance, and the population that had been chosen to participate in the inquiry. The survey instrument was well-organized with specific instructions as to how to respond and submit answers.

Permission was obtained from the Institutional Review Board (IRB) at Auburn University to conduct the study (Appendix 3). The IRB granted permission to conduct research on March 16, 2018.

Validity and Reliability

The basis for the survey items was designed from the objectives of the research and the review of literature. The topics in the review of literature included the benefits and value of CTE, CTE in the states, counselors and CTE, students' perceptions of CTE, teachers' perceptions of CTE, public perceptions of CTE, and gifted and talented students in CTE.

To evaluate content validity and reliability, a panel of expert judges was chosen to evaluate the survey instrument. The panel consisted of university faculty members who are accomplished researchers known for their expertise in descriptive survey research design, survey instruments, and data collection. The panel was asked to assist in developing a survey that accurately displayed the purpose and scope of the study by thorough questioning that was clear and understandable, organized in content, and would properly uncover appropriate findings.

Ross and Shannon (2011) stated that "internal consistency evaluates the reliability of an evaluation instrument in terms of how consistent the actual items are within the instrument" (p. 238). The test for internal consistency is Cronbach's Alpha, which was calculated for this study using SPSS software. The resulting Cronbach's Alpha for survey items questioning counselors' perceptions was .929, for survey items related to college-bound students was .865, and for survey items related to career-bound students was .832.

All scores indicated the survey instrument to be internally consistent, according to Bas (2013), who noted that a Cronbach's Alpha score should be at least .70.

Data Collection

Qualtrics survey platform was chosen for the distribution of this survey because of the ease and manageability in designing and administering the survey instrument, convenience for participants, and the availability of real-time data collection. According to Sheehan (2006), electronic surveys are cost-effective, undeliverable emails are easy to track, and they promise a quicker response time. Dillman, Smyth, & Christian noted that electronic surveys "are the fastest growing form of surveying occuring in the United States" (2014, p. 301). Unfortunately, response rates for email surveys are not as high as response rates for other forms of surveys (Nulty, 2008).

In preparation to distribute the survey, the researcher gathered potential respondents' high school of employment information and email addresses in multiple ways. A database of all the public high schools in Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia was obtained from the Digest of Education Statistics (National Center for Education Statistics, 2015). Additionally, the researcher emailed the state CTE departments asking permission to email the counselors in the public high schools of their state. The states of Louisiana and Arkansas provided their state's counselor databases of roughly 1,162 counselors to the researcher for survey purposes. The states of Mississippi and Alabama, due to privacy concerns, distributed the survey to approximately 1,900 public high school counselors in their states. The remaining email addresses for

approximately 2,510 counselors were gathered from the database that was retrieved from the Digest of Education Statistics (National Center for Education Statistics, 2015) and by searching district and school websites in the states of Florida, Georgia, Kentucky, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia.

As previously noted, potential respondents were emailed inviting their participation in the study. An information letter was included in the invitation email, along with a link for the survey entitled Assessment of High School Counselors' Perceptions of CTE. The information letter provided the potential participants with details and knowledge of the research project as well as assurance that participation in the survey is strictly voluntary and that responses will not contain any personally identifiable information (Baldwin, 2011). Data was collected for approximately one month with three reminders being sent intermittently throughout the month. A follow-up email was sent approximately one month later to thank those who had responded and to remind potential participants who had not responded to complete the survey (Dillman, Smyth, & Christian, 2014). After data collection, the researcher determined a response rate of five percent, based on 281 surveys being submitted out of 5,572 surveys distributed.

Data Analysis

Demographic data was analyzed using descriptive statistics, One-Way ANOVA, Wilcoxon-Signed Ranks Tests, and simple linear regression procedures as three independent variables and one dependent variable were examined in this study. Using One-Way ANOVA procedures allowed the researcher to determine what influence each independent variable has, if any, on the dependent variable. Using simple linear

regression allowed the researcher to study relationships between two continuous variables and summarize their effects (Stat 501 Regressions methods, 2018). Statistical Package for Social Sciences (SPSS) software was employed to run statistical tests.

To analyze research question 1, (Is there a relationship between the specific demographics of public high school counselors and their perceptions of career and technical education), one-way ANOVA, simple linear regression, and descriptive statistics were utilized to determine "the relative importance of independent variables" (Cohen J. &., 1975, p. 1), which are the specific demographics of public high school counselors. The demographical data are categorical. The dependent variable is the perceptions of CTE as held by public high school counselors.

For research question 2, (Is there a relationship between the educational experiences [i.e., professional development, training, and other coursework] of public high school counselors and their perceptions of career and technical education), the researcher used a one-way ANOVA to determine whether there were any statistically significant differences of among public high school counselors' educational experiences (i.e., professional development, training, and other coursework) and their perceptions of CTE. This study sought to explain the relationship between the independent variable in research question 2, which are the educational experiences (i.e., professional development, training, and other coursework) of CTE held by public high school counselors, and their perceptions of CTE, which is the continuous dependent variable.

To analyze research question 3, (What factors influence public high school counselors to advise college-bound students to enroll in career and technical education; what factors influence public high school counselors to advise career-bound students to

enroll in career and technical education?), the researcher utilized a 5-point Likert scale (1=Extremely important and 5=Not at all important) with lower values "indicating a more positive response" (Ross & Shannon, 2011, p. 103). The independent variable of research question 3 are the factors that influence public high school counselors in their decision to advise college-bound students to enroll in CTE, and the factors that influence public high school counselors to advise career-bound students to enroll in CTE, while the dependent variable is the perceptions of CTE held by public high school counselors.

For research question 4, (To what degree are public high school counselors supportive of career and technical education), data was collected using a 5-point Likert scale 1 (strongly agree) to 5 (strongly disagree) with lower values "indicating a more positive response" (Ross & Shannon, 2011, p. 103). Data were explored using descriptive statistics because they "can reveal the prevalence of problems, opinions, academic achievement, and other phenomena across an entire defined population" (Gall, et al., p. 209).

Chapter 4

Introduction and Restatement of the Problem

This quantitative study was designed to understand public high school counselors' perceptions of CTE. Despite the many benefits and advantages of CTE, many states report low enrollment in CTE classes. The research questions are:

1. Is there a relationship between specific demographics of public high school counselors and their perceptions of career and technical education?
2. Is there a relationship between the educational experiences (i.e., professional development, training, and other coursework) of public high school counselors and their perceptions of career and technical education?
3. What factors influence public high school counselors to advise college-bound students to enroll in career and technical education; what factors influence public high school counselors to advise career-bound students to enroll in career and technical education?
4. To what degree are public high school counselors supportive of career and technical education?

In this study, an online survey (Appendix 1) was distributed to high school counselors employed at public high schools in the states of Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia. The data collected was used to determine if a relationship exists

between the independent and dependent variables. To understand the specific demographics of the respondents in this survey study, descriptive and inferential statistics were run using SPSS.

Discussion of Research Questions

Research Question 1: Is there a relationship between specific demographics (IV) of public high school counselors and their perceptions (DV) of CTE?

The independent variables related to research question 1 are the specific demographics of public high school counselors and their perceptions of CTE. To analyze the specific demographics of public high school counselors' descriptive statistics, including means and standard deviations, were determined. A one-way ANOVA was used to determine whether there were any statistically significant differences in the perceptions of CTE among the 12 states chosen for this study. Tukey's post-hoc test was used to conduct multiple comparisons for states that indicated statistical significance. Simple linear regression was used to determine counselors' perceptions of CTE using the continuous variables, number of years a counselor had been employed as a counselor and size of enrollment of the high school where they are employed, and whether there were any statistically significant differences among these variables.

Table 1 represents the first categorial demographic independent variable analyzed for research question 1 which was the state in which public high school counselors are employed (Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, or West Virginia). Levene's test showed that the variances were equal, $p = .095$. There was no statistically significant difference in the

counselors' perception toward CTE among the 12 states regarding the state where counselors are employed as determined by a one-way ANOVA, $F(11,225) = 0.936$, $p = .506$.

Table 1

CTE Perception of Counselors by State

State	N	Mean	Std. Deviation
Alabama	16 (6.75%)	32.06	10.82
Arkansas	44 (18.57%)	31.27	9.91
Florida	21 (8.86%)	31.95	8.60
Georgia	17 (7.17%)	30.29	6.94
Kentucky	4 (1.68%)	29.75	6.60
Louisiana	45 (18.98%)	33.73	11.09
Mississippi	9 (3.80%)	26.22	5.31
North Carolina	63 (26.58%)	32.60	10.30
South Carolina	3 (1.27%)	21.00	1.73
Tennessee	4 (1.69%)	35.50	9.33
Virginia	8 (3.38%)	30.25	8.05
West Virginia	3 (1.27%)	30.33	12.34
Total	237	31.81	9.78

Table 2 represents analysis of the subject area taught by the counselors, if they indicated they had been a classroom teacher prior to becoming a high school counselor, to determine if there was a relationship between this independent variable and their perceptions of CTE. Levene's test showed that the variances were not equal, $p = .001$. This reveals no statistically significant difference in the counselors' perception toward

CTE based on the subject area they had previously taught, if they indicated in the survey that they had been a classroom teacher prior to becoming a counselor, as determined by a one-way ANOVA, $F(38,200) = 0.741$, $p = .863$.

Table 2

CTE Perception of Counselors by Subjects Previously Taught

Subject	N	Mean	Std. Deviation
Math	41 (16.60%)	31.34	9.54
Science	34 (13.77%)	30.50	8.03
English Language Arts	47 (19.03%)	32.19	9.40
Social Studies	44 (17.81%)	31.86	8.29
Fine Arts	6 (2.43%)	41.67	14.71
Foreign Language	5 (2.02%)	27.40	11.71
CTE	18 (7.29%)	24.17	4.96
Special Education	21 (8.50%)	29.71	7.99
Health and/or Physical Education	11 (4.45%)	33.09	11.04
Other	20 (8.10%)	34.40	8.22
Total	247		

The researcher analyzed the data to determine if there was a relationship between the number of years the participants had been a counselor (.5 to 45 years) and their perceptions of CTE. A simple linear regression was calculated to predict counselors' perceptions of CTE based on number of years they have been a counselor. No statistical significance was found $F(1,235) = 0.420$, $p = .518$, with an R^2 of .002.

Table 3

CTE Perception of Counselors by Number of Years as A Counselor

Years as A Counselor	N	Mean	Std. Deviation
Counselors' Perception of CTE	237 (100%)	31.76	9.70
Number of Years as A Counselor	237 (100%)	9.19	7.35
Total	237		

The researcher analyzed the data to determine if there was a relationship between counselors in rural schools and counselors in urban schools and their perceptions of CTE. Levene's test showed that the variances were not equal, $p = .430$. There was no statistically significant difference in the counselors' perception toward CTE based on the whether the counselors work in a rural or urban school, as determined by a one-way ANOVA, $F(1,237) = 0.312$, $p = .577$.

Table 4

CTE Perception of Counselors' by School Location

School Location	N	Mean	Std. Deviation
Rural	162 (67.78%)	32.04	10.14
Urban	77 (32.22%)	31.29	9.03
Total	239	31.80	9.79

The researcher analyzed the data to determine if there was a relationship between the size of student enrollment where the counselors were employed and their perceptions of CTE. There was no statistically significant difference in the counselors' perception toward CTE based on the student enrollment of the school where the counselors work, as determined by simple regression, $F(1,223) = 0.301$, $p = .584$, with an R^2 of .001.

Table 5

CTE Perception of Counselors by School Enrollment Where Counselors Work

Enrollment	N	Mean	Std. Deviation
Counselors' perception of CTE	225 (100%)	31.64	9.70
Enrollment of high school where counselors are employed	225 (100%)	1051.27	698.67
Total	225		

The researcher analyzed the data to determine if there was a relationship between the counselors' ages (24 – 76) and their perceptions of CTE. Simple regression showed that there was no statistically significant difference in the counselors' perception toward CTE based on their ages, $F(1,233) = 0.001$, $p = .971$. $R^2 = .002$.

Table 6

CTE Perception of Counselors by Age

Age	N	Mean	Std. Deviation
Counselors' Perception of CTE	235 (100%)	31.81	9.84
Counselors' Ages	235 (100%)	44.89	10.61
Total	235		

The researcher analyzed the data to determine if there was a relationship between the counselors' gender and their perceptions of CTE. Levene's test showed that the variances were equal, $p = .539$. There was no statistically significant difference in the counselors' perception toward CTE based on their gender, as determined by a one-way ANOVA, $F(1,235) = 2.074$, $p = .151$.

Table 7

CTE Perception of Counselors by Gender

Gender	N	Mean	Std. Deviation
Male	28 (11.81%)	34.29	10.54
Female	209 (88.19%)	31.45	9.68
Total	237	31.79	9.81

The researcher analyzed the data to determine if there was a relationship between the levels on which counselors had previously taught (i.e., post-secondary, secondary, middle school, elementary) and their perceptions of CTE. Levene's test showed that the variances were equal, $p = .129$. There was no statistically significant difference in the counselors' perception toward CTE based on the level on which they had taught, as determined by a one-way ANOVA, $F(4,234) = 2.383$, $p = .052$.

Table 8

CTE Perception of Counselors by Levels on Which Counselors Have Taught

School Levels	N	Mean	Std. Deviation
Post-secondary	18 (7.29%)	30.00	10.25
High school 9-12	102 (41.30%)	30.52	9.82
Middle school 6-8	80 (32.39%)	30.54	8.68
Elementary school K-5	42 (17.00%)	33.00	8.03
Other	5 (2.02%)	32.80	8.11
Total	247		

The researcher analyzed the data to determine if there was a relationship between the levels of education held by the counselors and their perceptions of CTE. Levene's test

showed that the variances were equal, $p = .461$. There was no statistically significant difference in the counselors' perception toward CTE based on their level of education, as determined by a one-way ANOVA, $F(4,234) = 1.175$, $p = .322$.

Table 9

CTE Perception of Counselors by Level of Highest Education

Degree	N	Mean	Std. Deviation
Bachelor's degree	2 (0.84%)	30.00	1.41
Master's degree	134 (56.07%)	31.76	9.79
Master's +30	65 (27.20%)	30.31	10.05
Specialist degree	33 (13.81%)	34.45	9.19
Doctoral degree	5 (2.09%)	35.40	10.29
Total	239	31.80	9.78

The researcher analyzed the data to determine if there was a relationship between ethnicity of the counselors and their perceptions of CTE. Levene's test showed that the variances were equal, $p = .958$. There was no statistically significant difference in the counselors' perception toward CTE based on their ethnicity, as determined by a one-way ANOVA, $F(4,233) = 0.437$, $p = .782$.

Table 10

CTE Perception of Counselors by Ethnicity

Ethnicity	N	Mean	Std. Deviation
African American	48 (20.17%)	32.17	9.44
Caucasian	182 (76.47%)	31.71	9.91
Hispanic	4 (1.68%)	36.50	10.54
Native American or Alaska Native	2 (0.84%)	26.00	8.49
Other - Please specify.	2 (0.84%)	33.50	9.19
Total	238	31.85	9.77

Research Question 2: Is there a relationship between the educational experiences (i.e., professional development, training, and other coursework) of public high school counselors and their perceptions of career and technical education?

The independent variables related to research question 2 are the educational experiences (i.e., professional development, training, and other coursework) of public high school counselors. The dependent variable is the counselors' perceptions of CTE. To analyze the educational experiences (i.e., professional development, training, and other coursework) of public high school counselors, descriptive statistics were calculated. A one-way ANOVA was used to determine whether there were any statistically significant differences between the counselors' educational experiences and their perceptions of CTE. Tukey's post-hoc test was used to conduct multiple comparisons for states that indicated statistical significance.

Levene's test showed that the variances were equal, $p = .247$. There was no statistically significant difference in the counselors' perception toward CTE based on their educational experiences (i.e., professional development, training, and other coursework) as determined by a one-way ANOVA, $F(1,237) = 2.723$, $p = .100$.

Table 11

CTE Perception of Counselors by Educational Experiences

Educational Experiences	N	Mean	Std. Deviation
No	85 (35.56%)	33.20	8.79
Yes	154 (64.44%)	31.03	10.24
Total	239	31.80	9.78

Research Question 3: What factors influence public high school counselors to advise college-bound students to enroll in career and technical education; what factors influence public high school counselors to advise career-bound students to enroll in career and technical education?

The independent variables in research question 3 are the factors public high school counselors consider when advising college-bound students to enroll in CTE, and the factors public high school counselors consider when advising career-bound students to enroll in CTE. The dependent variable is the perceptions of CTE held by high school counselors. To analyze the factors that influence public high school counselors to advise college-bound students to enroll in CTE and the factors that influence public high school counselors to advise career-bound students to enroll in CTE, a non-parametric statistical hypothesis test was used to compare the factors.

A Wilcoxon Signed-Ranks Test indicated that counselors consider students' GPA for career-bound students, *Mdn = 3.00,* statistically significantly more important than for college-bound students, *Mdn = 2.00,* when advising students to enroll in CTE, as shown in the results, Z = -5.130, $p <$. 001.

When considering students' grades in core academic courses, a Wilcoxon Signed-Ranks Test indicated that counselors consider career-bound students' grades in core academic courses, *Mdn = 3.00,* statistically significantly more important than college-bound students' grades in core academic courses, *Mdn = 2.00,* when advising students to enroll in CTE, as shown in the results, Z = 5.090, $p <$ .001.

As indicated in the results of the Wilcoxon-Signed Ranks Test, Z = 4.370, $p <$ .001, counselors consider students' career plans for career-bound students, *Mdn = 1.00,* statistically significantly more important than college-bound students' career plans, *Mdn = 1.00,* even though the medians are equal.

As indicated in the results of the Wilcoxon-Signed Ranks Test, Z = 4.931, $p <$ .001, counselors consider students' college plans for college-bound students, *Mdn = 1.00,* statistically significantly more important than career-bound students' college plans, *Mdn = 2.00.*

When considering students' attendance, a Wilcoxon Signed-Ranks Test indicated that counselors consider career-bound students' attendance, *Mdn = 2.00,* and college-bound students' attendance, *Mdn = 2.00,* equally when advising students to enroll in CTE, as shown in the results, Z = 1.439, p = .150. There is no statistical significance for this factor.

When considering students' discipline record, a Wilcoxon Signed-Ranks Test indicated that counselors consider career-bound students' discipline record, *Mdn = 2.00,* and college-bound students' discipline record, *Mdn = 2.00,* equally when advising students to enroll in CTE, as shown in the results, Z = .721, p = .471. There is no statistical significance for this factor.

As indicated in the results of the Wilcoxon-Signed Ranks Test, Z = 2.565, p = .010, counselors consider the gender of career-bound students, *Mdn = 5.00,* statistically significantly more important than the gender of college-bound students', *Mdn = 5.00,* even though the medians are equal.

As indicated in the results of the Wilcoxon-Signed Ranks Test, Z = 5.511, p < .001, counselors consider students' participation in extracurricular activities for college-bound students, *Mdn = 4.00,* statistically significantly more important than career-bound students' participation in extracurricular activities, *Mdn = 3.00.*

When considering students' participation in sports, a Wilcoxon Signed-Ranks Test indicated that counselors consider career-bound students' participation in sports, *Mdn = 4.00,* and college-bound students' participation in sports, *Mdn = 4.00,* equally when advising students to enroll in CTE, as shown in the results, Z = 4.292, p < .001. However, there is statistical significance for this factor.

When considering students' socio-economic status, a Wilcoxon Signed-Ranks Test indicated that counselors consider career-bound students' socio-economic status, *Mdn = 5.00,* and college-bound students' socio-economic status, *Mdn = 5.00,* equally when advising students to enroll in CTE, as shown in the results, Z = .167, p = .867. There is no statistical significance for this factor.

When considering students' current grade level, a Wilcoxon Signed-Ranks Test indicated that counselors consider career-bound students' current grade level, *Mdn = 3.00,* and college-bound students' current grade level, *Mdn = 3.00,* equally when advising students to enroll in CTE, as shown in the results, Z = .751, *p* = .453. There is no statistical significance for this factor.

As indicated in the results of the Wilcoxon-Signed Ranks Test, Z = .372, *p* = .710, counselors consider students' popularity for college-bound students, *Mdn = 5.00,* and students' popularity for career-bound students, *Mdn = 5.00,* equally when advising students to enroll in CTE.

As indicated in the results of the Wilcoxon-Signed Ranks Test, Z = 1.950, *p* = .051, counselors consider class size of course for college-bound students, *Mdn = 3.00,* and class size of course for career-bound students, *Mdn = 3.00,* equally when advising students to enroll in CTE.

When considering teacher recommendation of a course, a Wilcoxon Signed-Ranks Test indicated that counselors consider career-bound students, *Mdn = 3.00,* and college-bound students, *Mdn = 3.00,* equally when advising students to enroll in CTE, as shown in the results, Z = .625, *p* = .532. There is no statistical significance for this factor.

When considering students' desire to enroll in a course, a Wilcoxon Signed-Ranks Test indicated that counselors consider career-bound students' desire to enroll in a course, *Mdn = 1.00,* and college-bound students' desire to enroll in a course, *Mdn = 1.00,* equally when advising students to enroll in CTE, as shown in the results, Z = .892, *p* = .373. There is no statistical significance for this factor.

When considering parental expectations, a Wilcoxon Signed-Ranks Test indicated that counselors consider parental expectations of career-bound students, *Mdn = 2.00,* and parental expectations of college-bound students, *Mdn = 2.00,* equally when advising students to enroll in CTE, as shown in the results, Z = 1.127, p = .260. There is no statistical significance for this factor.

When considering other factors as noted by respondents (i.e., known quality of instruction in CTE courses, student's immigration status, whether the course provides hands-on opportunities, teacher of the course, students' desire to work until they achieve something), a Wilcoxon Signed-Ranks Test indicated that counselors consider career-bound students, *Mdn = 2.00,* and college-bound students, *Mdn = 3.00,* equally when advising students to enroll in CTE, as shown in the results, Z = 1.000, p = .317, indicating there is no statistical significance for this factor.

Results were summarized in Table 12.

Table 12

Comparison of Factors that Influence Counselors in Advising College-Bound and Career-Bound Students

Factor	Z	*p*-value
Student's GPA	-5.130b	<.001
Student's grade in core academic courses	-5.090b	<.001
Student's career plans	-4.370c	<.001
Student's college plans	-4.931b	<.001
Student's attendance	-1.439c	0.150
Student's discipline record	-0.721c	0.471
Student's gender	-2.565c	0.010
Student's participation in extracurricular activities	-5.511b	<.001
Student's participation in sports	-4.292b	<.001
Student's socio-economic status	-0.167c	0.867
Student's current grade (9, 10, 11, 12)	-0.751b	0.453
Student's popularity	-0.372c	0.710
Class size of course	-1.950c	0.051
Teacher recommendation	-0.625b	0.532
Student's desire to take a course	-0.892c	0.373
Parental expectations	-1.127b	0.260
Your knowledge about a course	-1.153c	0.249
Other (Please specify.)	-1.000c	0.317

a Wilcoxon Signed Ranks Test
b Based on negative ranks
c Based on positive ranks

Research Question 4: To what degree are public high school counselors supportive of career and technical education?

To analyze the supportiveness of CTE by public high school counselors, descriptive statistics, including means and standard deviations, were determined. A Wilcoxon Signed-Ranks Test was also calculated to determine if there was a statistically significant difference in the percentage of career-bound students and college-bound students that counselors advise to enroll in CTE. As revealed in the results of this test, $Z = -6.736$, $p < .001$, there is a statistically significant difference in the percentage of career-bound and college-bound students whom counselors advise to enroll in CTE.

Table 13

Percentage Counselors Advise Students to Enroll in CTE

	N	Mean	Std. Deviation
On average, per academic year, what percentage of students who have indicated they are career-bound after high school, do you advise to enroll in career and technical education (CTE) coursework? - 0-100%	190	75.49	29.62
On average, per academic year, what percentage of students who have indicated they are college-bound after high school, do you advise to enroll in career and technical education (CTE) coursework? - 0-100%	189	61.11	27.11
Valid N (listwise)	189		

Chapter 5

Introduction

Career and technical education has been identified as an advantageous option for high school students but in many instances does not receive the recognition it deserves nor are students always encouraged to enroll in CTE courses. Research has echoed the beliefs that students are not always presented with all the options that can be beneficial to them when selecting courses that can contribute to their future postsecondary education and training, as well as their future careers. High school counselors can offer guidance and direction about career options to students through course selection and scheduling of courses. A research survey instrument (Appendix 1) was developed to assess public high school counselors' perceptions of CTE and to consider what influences their advisement of college-bound and career-bound students. Analyses were conducted to determine if specific demographics of public high school counselors influenced their perceptions of CTE, whether there is a relationship between the educational experiences (i.e., professional development, training, and other coursework) of public high school counselors and their perceptions of CTE, what factors influence public high school counselors to encourage college-bound and career-bound students to enroll in CTE, and to what degree public high school counselors support CTE.

In the previous chapter, data collected from public high school counselors in the states of Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North

Carolina, South Carolina, Tennessee, Virginia, and West Virginia utilizing the Assessment of High School Counselors' Perceptions of CTE researcher-developed survey instrument were presented and analyzed. This chapter includes a summary of the findings, conclusions, and recommendations.

Summary and Findings

Most respondents in this study were high school counselors in the states of North Carolina (26.58%), Louisiana (18.98%), and Arkansas (18.57%). High school counselors in the states of Florida (8.86%), Georgia (7.17%), Alabama (6.75%), Mississippi (3.80%), Virginia (3.38%), Tennessee (1.69%), Kentucky (1.68%), West Virginia (1.27%), and South Carolina (1.27%) comprised the remainder of the respondents who participated in the study. Most of the counselors who responded to the survey were female (86.36%), Caucasian (75.38%), with an average age of 44.56 (SD = 10.762) and hold a master's degree (56.39%). The mean number of years the respondents have served as a school counselor was 8.81. Fifty-four percent of the respondents were classroom teachers before becoming a school counselor while only 7.29% had been CTE teachers before becoming a school counselor. Most of the respondents had taught English Language Arts (19.03%), Social Studies (17.81%), Math (16.60%), and Science (13.77%). Sixty-eight percent of the respondents indicated they work in a rural-type school. Most respondents had taught on the high school level (40.15%) and many respondents had taught middle school (33.33%). Over half (57.47%) of the respondents indicated they had taken CTE courses in high school, 28.51% had taken post-secondary CTE courses, and 14.03% participated in CTE on the middle school level. Of the

respondents who had completed CTE coursework, 19.53% had taken courses in the Business Management & Administration Career Cluster, 16.27% had taken courses in the Education & Training Career Cluster, and 12.43% had participated in the Agriculture, Food, & Natural Resources Career Cluster. When the respondents were asked if they had received any formal professional development about CTE, 61.74% responded that they had received formal professional development about CTE.

Results from a one-way ANOVA indicated no statistical significance ($F(1,237) = 2.723$, $p = .100$) regarding counselors' educational experiences (i.e., professional development, training, and other coursework) of public high school counselors and their perceptions of CTE.

Public high school counselors in the states of Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia were asked about their perceived levels of CTE. Most respondents (70.59%) reported that they strongly agree that CTE prepares students for careers. Only 30.67% of the respondents strongly agreed that CTE prepares students for college. Respondents were asked their perceptions concerning CTE equipping students for life skills; 69.04% strongly agreed with this statement. Nearly 79% of the respondents strongly agreed that CTE provides hands-on experiential learning and 74.26% strongly agreed that CTE provides learning experiences that are useful in today's workplace. When respondents were asked if CTE is equally as important as core subjects regarding the education of the whole student, 57.14% strongly agreed. Sixty-one percent strongly agreed that CTE helps to decrease the dropout rate of high school students. Respondents were asked their perceptions concerning CTE providing opportunities for students to use

their creative/productive thinking skills; 65.55% strongly agreed with this statement. Many of the respondents (59.83%) strongly agreed that CTE provides opportunities for students to use their leadership skills. Over half of the respondents (57.81%) strongly agreed that CTE has vastly improved over the past decade. Half of the respondents (51.68%) strongly agreed that CTE fulfills employer needs in high-skill career areas and that CTE fulfills employer needs in high-demand career areas; 44.12% strongly agreed that CTE fulfills employer needs in high-wage career areas. Many respondents (57.20%) strongly agreed that CTE partners with business and industry to prepare students for tomorrow's workforce. Most respondents (69.20%) strongly agreed that CTE provides opportunities for students to earn IBCs. Many respondents (53.59%) strongly agreed that CTE provides opportunities for students to earn college credit while still in high school (dual-enrollment). Only a small portion of the respondents (25.21%) strongly agreed that the high school graduation rate for CTE concentrators is higher than the national graduation rate. A few of the respondents (28.45%) strongly agreed that CTE encourages students to attend college. When the respondents were asked if career-bound students should take CTE courses, 76.47% strongly agreed they should; when they were asked if college-bound students should take CTE courses, only 46.64% strongly agreed. These statements yielded a mean score ($M = 1.60$) while the scale contained the following choices: (1) = Strongly agree and (5) Strongly disagree; indicating most respondents in the 12 states surveyed perceived CTE to be very important for all students.

Respondents used a 5-point Likert scale (1 = Extremely important and 5 = Not at all important) to indicate the importance of possible factors that influence their advising of college-bound and career-bound students. Multiple Wilcoxon Signed-Ranks Tests

were utilized to determine if these factors presented with statistical significance. Results revealed that students' GPA (Z = -5.130, $p < .001$), grades in core academic courses (Z = 5.090, $p < .001$), career plans (Z = 4.370, $p < .001$), and gender (Z = 2.565, $p = .010$) of career-bound students were statistically significantly more important than for college-bound students when advising for CTE enrollment. Additionally, results revealed that students' college plans (Z = 4.931, $p < .001$) and participation in extracurricular activities (Z = 5.511, $p < .001$) were statistically significantly more important for college-bound students than for career-bound students. No statistical significance was indicated for college-bound students or career-bound students concerning students' attendance (Z = 1.439, $p = .150$), discipline record (Z = .721, $p = .471$), socio-economic status (Z = .167, $p = .867$), current grade level (Z = .751, $p = .453$), popularity (Z = .372, $p = .710$), class size (Z = 1.950, $p = .051$), teacher recommendation of a course (Z = .625, $p = .532$), students' desire to enroll in a course (Z = .892, $p = .373$), or parental expectations (Z = 1.127, $p = .260$) where advising to enroll in CTE is concerned. A few participants indicated other factors they consider when advising students to enroll in CTE, regardless of whether they are college-bound or career-bound students. (Appendix 4)

A statistically significant difference (Z = -6.736, $p < .001$) was revealed when the respondents were asked to indicate the percentage of career-bound students (M = 75.4895) and college-bound students (M = 61.1111) whom they advise to enroll in CTE.

Responses to an open-ended question that requested additional information regarding the participants' advisement of students in CTE or the participants' perceptions of CTE yielded numerous and wide-ranging results. Most of the results were positive towards CTE, although some comments included frustrations over college requirements

and the lack of course offerings. Comments were mostly consistent across the states under review in this study. (Appendix 5)

There appeared to be no differences in perceptions of counselors from state to state. No reasoning behind larger enrollment in some states surfaced throughout the study.

Conclusions

The following conclusions were based on the findings of the study.

1. Most of the respondents were Caucasian females with master's degrees from North Carolina, Louisiana, and Arkansas who had previously been core academic classroom teachers. Most had completed CTE courses while in high school and some had taken post-secondary CTE coursework. Most had received formal professional development about CTE.
2. No statistical significance was presented regarding counselors' educational experiences (i.e., professional development, training, and other coursework) of public high school counselors and their perceptions of CTE.
3. Regarding the influence of certain factors considered when advising students to enroll in CTE, most respondents indicated that GPA, career plans, a student's desire to take a course were extremely important for college-bound students but not for career-bound students. Many respondents indicated that a student's attendance for college-bound and career-bound students was extremely important. Many respondents

indicated that for college-bound students, parental expectations and teacher recommendation were very important. Counselors' knowledge about a course was ranked as very important for college-bound and career-bound students. Most respondents indicated that a student's discipline record, gender, participation in extracurricular activities, participation in sports, grade level, popularity, size of a class, and socio-economic status were not at all important in advising students, career-bound and college-bound, to enroll in CTE.

4. Concerning perceptions of CTE, most respondents strongly agreed that CTE prepares students for careers, equips students for life skills, provides hands-on experiential learning for students, provides students with learning experiences that are useful in today's workplace, and is equally as important as core subjects regarding the education of the whole student. Additionally, most respondents strongly agreed that CTE helps to decrease the dropout rate of high school, provides opportunities for students to use their creative/productive thinking skills, provides opportunities for students to use their leadership skills, and has vastly improved over the past decade. Most respondents strongly agreed that CTE provides opportunities for students to earn IBCs and dual-enrollment credit. Most respondents strongly agreed that CTE partners with business and industry to prepare students for tomorrow's workforce. Many respondents strongly agreed that CTE fulfills employer needs in high-skill career areas, high-demand career areas, and high-wage career areas. A few respondents

strongly agreed with the fact that the high school graduation rate for CTE concentrators is higher than the national graduation rate. Most respondents strongly agreed that career-bound students should take CTE courses in high school, but a much smaller percentage strongly agreed that college-bound students should enroll in CTE courses. Overall, a mean score of 1.60 on a scale where 1 = Strongly agree and 5 = Strongly disagree indicates most respondents in the 12 states surveyed perceived CTE to be very important for all students, whether career-bound and college-bound.

5. Regarding high school counselors' support of CTE and students they recommend enrolling in CTE, it was determined that counselors advise career-bound students to enroll in CTE more frequently than they do college-bound students.

Recommendations

Based on the conclusions, the following recommendations are made:

1. Consideration for up-to-date, rigorous, and more in-depth professional development concerning CTE is highly recommended for public high school counselors on a regular basis throughout the 12 states that were surveyed so that they are equipped to present the benefits and advantages to all students, college-bound and career-bound, enabling them to make appropriate decisions concerning their future post-secondary and/or career plans.

2. A follow-up study should be conducted in a reasonable amount of time to determine if current, rigorous, and more in-depth professional development has been implemented and applied.
3. Other studies involving parental perceptions, administrative perceptions, student perceptions, public perceptions, and business and industry perceptions of CTE should be conducted.
4. The study should be repeated in other states.
5. A follow-up study involving the participants who had previously taught CTE (7.29%) should be conducted to understand how their responses differ from counselors with other backgrounds.
6. Articles derived from this research should be submitted for publication in CTE and school counselor professional journals.

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Appendix 1

Researcher-Developed Survey

Assessment of High School Counselors' Perceptions of CTE

High School Counselors' Perceptions of Career and Technical Education (CTE)

About this Survey

As a doctoral candidate in the Department of Curriculum and Teaching at Auburn University, I would like to invite you to participate in my research study that will assess professional public high school counselors' perceptions of career and technical education (CTE). You may participate if you are a professional public high school counselor in the state of Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, or West Virginia. As a participant, you will be asked to dedicate approximately 10-15 minutes of your time to complete this online survey. Although there are no direct benefits for participating in this study, there is the potential of utilizing the revealed information to increase enrollment in career and technical education. By clicking the arrow in the bottom right corner, you are providing your consent to participate in this study.

Thank you.

The following questions are designed to collect demographics about high school counselors participating in this research study. Please select the appropriate choice for each question.

How many years have you been a high school guidance counselor?

_____

Were you a classroom teacher before becoming a high school guidance counselor?

- ☐ Yes
- ☐ No

What levels have you taught? (Select all that apply.)

- ☐ Post-secondary
- ☐ High school 9-12
- ☐ Middle school 6-8
- ☐ Elementary school K-5
- ☐ Other _____

If you taught prior to becoming a high school guidance counselor, indicate what subject area(s) you taught. (Select all that apply.)

- ☐ Math
- ☐ Science
- ☐ English Language Arts
- ☐ Social Studies
- ☐ Fine Arts
- ☐ Foreign Language
- ☐ Career & Technical Education (Agriscience, Business, Family & Consumer Science, etc.)
- ☐ Special Education
- ☐ Health and/or Physical Education
- ☐ Other (Please specify.) _____

What is your highest level of education? Please enter your major in the box.

- O Bachelor's degree _____
- O Master's degree _____
- O Master's +30 _____
- O Specialist degree _____
- O Doctoral degree _____

In what teaching area(s) are you certified? (Please list all areas.)

_____

_____

_____

_____

_____

In which state are you employed as a high school guidance counselor?

O Alabama

O Arkansas

O Florida

O Georgia

O Kentucky

O Louisiana

O Mississippi

O North Carolina

O South Carolina

O Tennessee

O Virginia

O West Virginia

Is your school in a rural or urban location?

- ☐ Rural
- ☐ Urban

How many students are enrolled in the high school where you teach? (Grades 9-12)?

_____

What is your scheduling type?

- O Block
- O Traditional
- O Other (Please specify)

_____

What is your age?

_____

What is your gender?

- O Male
- O Female
- O Prefer not to respond

What is your ethnicity?

- O African American
- O Asian
- O Caucasian
- O Hawaiian or other Pacific Islander
- O Hispanic
- O Native American or Alaska Native
- O Other - Please specify.

_____

The following questions are designed to collect information concerning your educational experiences (i.e., professional development, training, coursework on any level). Please select the appropriate choice(s) for each question.

If you have ever taken any career and technical education (CTE) courses, please indicate on what level? (Select all that apply.)

- ☐ Post-secondary
- ☐ High school
- ☐ Middle school
- ☐ N/A

If you indicated in the previous question that you have taken CTE courses, from which Career Cluster(s) were the course(s)? (Select all that apply.)

- [ ] Agriculture, Food, & Natural Resources
- [ ] Architecture & Construction
- [ ] Arts, A/V Technology, & Communications
- [ ] Business Management & Administration
- [ ] Education & Training
- [ ] Finance
- [ ] Government & Public Administration
- [ ] Health Science
- [ ] Hospitality & Tourism
- [ ] Human Services
- [ ] Information Technology
- [ ] Law, Public Safety, Corrections, & Security
- [ ] Manufacturing
- [ ] Marketing
- [ ] Science, Technology, Engineering, & Mathematics (STEM)
- [ ] Transportation, Distribution, & Logistics

Have you ever received any formal training or professional development about CTE?

- [ ] Yes
- [ ] No

If you indicated that you have received formal training or professional development about CTE, what type of training did you receive?

_____

_____

_____

_____

_____

The following question is designed to collect information concerning your knowledge of CTE. Please select the appropriate choice(s) for each question.

To what extent do you agree or disagree with the following statements?

	Strongly agree	Somewhat agree	Neither agree nor disagree	Somewhat disagree	Strongly disagree
CTE prepares students for careers.	O	O	O	O	O
CTE prepares students for college.	O	O	O	O	O
CTE equips students with life skills.	O	O	O	O	O
CTE provides hands-on, experiential learning.	O	O	O	O	O
CTE provides learning experiences that are useful in today's workplace.	O	O	O	O	O
CTE is equally as important as core subjects regarding the education of the whole student.	O	O	O	O	O
CTE helps to decrease the dropout rate of high school students.	O	O	O	O	O
CTE provides opportunities for students to use their creative/productive thinking.	O	O	O	O	O
CTE provides opportunities for students to use their leadership skills.	O	O	O	O	O

CTE encourages students to attend college.	O	O	O	O	O
CTE has vastly improved over the past decade.	O	O	O	O	O
CTE fulfills employer needs in high-skill career areas.	O	O	O	O	O
CTE fulfills employer needs in high-wage career areas.	O	O	O	O	O
CTE fulfills employer needs in high-demand career areas.	O	O	O	O	O
CTE partners with business and industry to prepare students for tomorrow's workforce.	O	O	O	O	O
CTE provides opportunities for student to earn industry-based credentials (IBCs).	O	O	O	O	O
CTE provides opportunities for students to earn college credit while still in high school (dual-enrollment).	O	O	O	O	O
The high school graduation rate for CTE concentrators is higher than the national graduation rate.	O	O	O	O	O

Career-bound students should take CTE courses.	O	O	O	O	O
College-bound students should take CTE courses.	O	O	O	O	O

The following questions are designed to collect information about the factors that influence your decision to advise a college-bound student to enroll in CTE and your decision to advise a career-bound student to enroll in CTE. Please select the appropriate choice for each question.

To what extent do you consider the following factors as important when advising students to enroll in career and technical education (CTE) courses? Please indicate importance for BOTH college-bound students (column 1) and career-bound students (column 2).

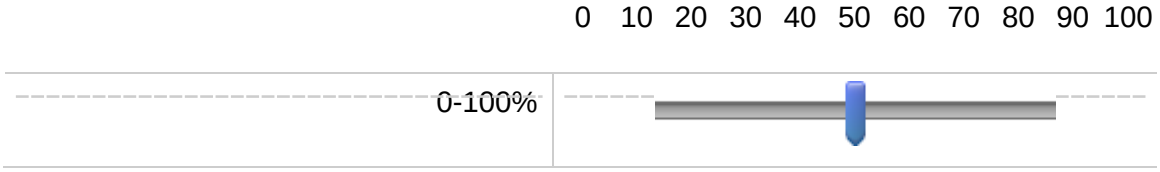
	College-bound students					Career-bound students				
	Extremely important	Very important	Moderately important	Slightly important	Not at all important	Extremely important	Very important	Moderately important	Slightly important	Not at all important

Student's GPA	O	O	O	O	O	O	O	O	O	O
Student's grade in core academic courses	O	O	O	O	O	O	O	O	O	O
Student's career plans	O	O	O	O	O	O	O	O	O	O
Student's college plans	O	O	O	O	O	O	O	O	O	O
Student's attendance	O	O	O	O	O	O	O	O	O	O
Student's discipline record	O	O	O	O	O	O	O	O	O	O
Student's gender	O	O	O	O	O	O	O	O	O	O
Student's participation in extracurricular activities	O	O	O	O	O	O	O	O	O	O
Student's participation in sports	O	O	O	O	O	O	O	O	O	O
Student's socio-economic status	O	O	O	O	O	O	O	O	O	O
Student's current grade (9, 10, 11, 12)	O	O	O	O	O	O	O	O	O	O
Student's popularity	O	O	O	O	O	O	O	O	O	O
Class size of course	O	O	O	O	O	O	O	O	O	O

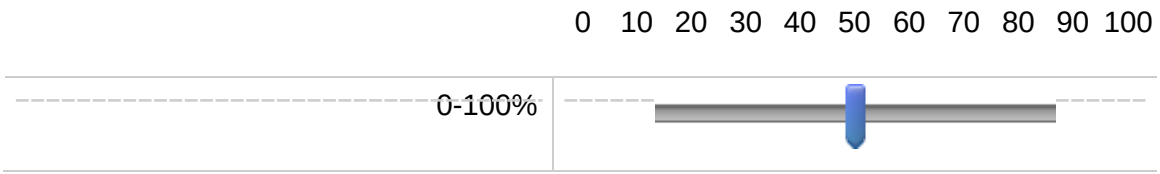
Teacher recommendation	O	O	O	O	O	O	O	O	O	O
Student's desire to take a course	O	O	O	O	O	O	O	O	O	O
Parental expectations	O	O	O	O	O	O	O	O	O	O
Your knowledge about a course	O	O	O	O	O	O	O	O	O	O
Other (Please specify.)	O	O	O	O	O	O	O	O	O	O

The following questions are designed to collect information about the students you advise in regard to CTE. Please select the appropriate choice for each question.

On average, per academic year, what percentage of students who have indicated they are career-bound after high school, do you advise to enroll in career and technical education (CTE) coursework?



On average, per academic year, what percentage of students who have indicated they are college-bound after high school, do you advise to enroll in career and technical education (CTE) coursework?



Please state any additional information you would like to add regarding the advisement of students in CTE or your perceptions of CTE.

_____

_____

_____

_____

_____

Thank you for your participation.

Appendix 2

Information Letter

Auburn University
College of Education
Curriculum & Teaching

INFORMATION LETTER
For a Research Study entitled
"High School Counselors' Perceptions of Career and Technical Education"

"**The Auburn University Institutional Review Board has approved this document for use on March 16, 2018. Protocol #18-105 EX 1803** "

Dear High School Counselor:

You are invited to participate in a research study that will be used in determining high school counselors' perceptions of career and technical education (CTE). One of the purposes of this study is to determine if there is a correlation between high school counselors' perceptions of CTE and enrollment in CTE on the secondary level. Mrs. Marie Nunnery Coleman, Business Teacher at Sam Houston High School, and Ph.D. Degree Candidate at Auburn University, is conducting this study, under the direction of Dr. Leane B. Skinner, Professor, Curriculum and Teaching, Auburn University. **You are invited to participate because you are a public high school counselor.**

If you decide to participate in this research study, you will be asked to participate in a 26-question survey. Your total time commitment will be approximately 10-15 minutes.

There are no risks associated with participating in this study.

You will not be compensated for participating in this study.

There are no costs involved for participating in this study.

Any data obtained in connection with this study will remain anonymous. Information collected through your participation will be used to fulfill an educational requirement, and may be published in a professional journal, and/or presented at a professional meeting or conference.

If you have questions about this study, please ask them now by contacting Marie Coleman at Sam Houston High School by phone (337) 217-4480 or email at marie.coleman@cpsb.org or mnc0014@tigermail.auburn.edu or Dr. Leane Skinner at Auburn University by email at skinnal@auburn.edu.

If you have questions about your rights as a research participant, you may contact the Auburn University Office of Research Compliance or the Institutional Review Board by phone (334) 884-5966 or email at

IRBADmin@auburn.edu or IRBChair@auburn.edu.

HAVING READ THE INFORMATION PROVIDED, YOU MUST DECIDE IF YOU WANT TO PARTICIPATE IN THIS RESEARCH PROJECT. IF YOU DECIDE TO PARTICIPATE, THE DATA YOU PROVIDE WILL SERVE AS YOUR AGREEMENT TO DO SO. THIS LETTER IS YOURS TO KEEP.

IF YOU DECIDE TO PARTICIPATE, PLEASE GO ONLINE AND ENTER THE LINK PROVIDED BELOW AND COMPLETE THE SURVEY. THANK YOU FOR YOUR PARTICIPATION.

https://proxy.qualtrics.com/proxy/?url=https%3A%2F%2Fauburn.qualtrics.com%2Fjfe%2Fform%2FSV_eM3IMwFRn7doh81&token=itw83QO0%2FEP05%2FWOMdn4IcDRiyFXeNK1nVmgXqba7wE%3D

Marie Nunnery Coleman — March 21, 2018
Investigator's Signature — Date

Appendix 3

IRB Approval Letter

Use IRBsubmit@auburn.edu for protocol-related submissions and IRBadmin@auburn.edu for questions and information.
The IRB only accepts forms posted at https://cws.auburn.edu/vpr/compliance/humansubjects/?Forms and submitted electronically.

Dear Marie,

Your protocol entitled "High School Counselors' Perceptions of Career and Technical Education" has been approved by the IRB as "Exempt" under federal regulation 45 CFR 46.101(b)(2).

Official notice:
This e-mail serves as official notice that your protocol has been approved. A formal approval letter will not be sent unless you notify us that you need one. By accepting this approval, you also accept your responsibilities associated with this approval. Details of your responsibilities are attached. Please print and retain.

Electronic Information Letter:
A copy of your approved protocol is attached. However you still need *to add the following IRB approval information to your information letter(s):* "The Auburn University Institutional Review Board has approved this document for use on March 16, 2018. Protocol #18-105 EX 1803"

You must use the updated document(s) to consent participants. *Please forward the actual electronic letter(s) with a live link so that we may print a final copy for our files*.

When you have completed all research activities, have no plans to collect additional data and have destroyed all identifiable information as approved by the IRB, please notify this office via e-mail. A final report is no longer required for Exempt protocols.

If you have any questions, please let us know.
Best wishes for success with your research!

IRB Admin
Office of Research Compliance
115 Ramsay Hall
Auburn University, AL 36849
334-844-5966

Appendix 4

Other Factors Counselors Consider When Advising Students to Enroll in CTE (included exactly as submitted by participants)

Known quality of instruction in CTE courses

Student's immigration status-really important to get them some kind of career training while in high school

If I know that will get hands on opportunities or if it is more bookwork.

I try to make sure students can be completers in some area of CTE.

On this campus, and others I have worked on, there are a number of CTE classes, usually business related, that students have no interest in taking. Classes like Principles of Business or Hospitality & Tourism, where students have difficulty knowing what they would be doing in that class or what it would mean to them long-term, are difficult to "sell" to a student. This means that there a empty seats in the class. So these classes become classes for late enrollees, because more popular classes are already full. Teachers can perceive this as "dumping". CTE classes that are directly relatable to a specific career, such as nursing/CNA or Cosmetology or Auto classes, are very popular, and can be very selective in deciding who enrolls.

The desire to work until they achieve something. This generation sometimes lack the drive it takes to pursue something worthwhile.

TEACHER

Appendix 5

Counselors' Comments

Please state any additional information you would like to add regarding the advisement of students in CTE or your perceptions of CTE. (The following comments were imported directly from Qualtrics; therefore, all keying is exactly as was entered in the survey.)

I will suggest it to student who are not strong academicly.

Our school is an early college and we do not have CTE courses available for students.

This is not easy , our students are in a select school for pre professional training in the Arts and a Competitive Academics Curriculum. I am open to assist students where there express an interest.

Scheduling courses to get in requirements for college admission and co-curricular courses (band for example) often impacts whether college-bound students are able to take CTE courses even though the interest is there and they may be beneficial courses. (2 or more years of world language, 3 lab sciences, etc.)

I wish area vocational centers were INCREASING the number of courses available instead of closing programs, like our high school is facing next year.

I would advise college bound students to take CTE courses in their intended major if available (ex. Health Science for future Nursing majors)

CTE courses provide a student a better opportunity to get their feet wet in a career field. With block scheduling it allows CTE and College Bound students time in their schedule to take courses on both sides if they are interested.

I feel that CTE classes provide students of all paths the opportunity to look at various career pathways in a more hands on and practical manor.

CTE classes are very meaningful for all students. They teach real like skills

What is the practical value to the student taking the CTE courses in his or her future.

I am a counselor at a magnet school. All students at my school are expected to attend a college campus--community or four-year institution. We are planning to open a CTE class next school year in engineering. As a past vocational teacher, I am very excited about this addition! CTE should be included on every high school campus!

CTE classes are great classes for all students regardless of post high school plans. These classes can results in various certification and career credential readiness certificate upon graduation from high school.

I want more resources and programs at my local CTC to offer all career cluster areas through CTE.

Cumberland County Schools (CCS), located in Fayetteville North Carolina requires a certain GPA for students to participate in CTE community college courses. I would like to advise a preparation course for students that may not have the required GPA. A few of our students do not focus on their GPA until they realized their plans post-graduation. I feel bad for some of these students because they will not have the opportunity to participate in higher CTE courses because of the GPA Requirement (which is a 3.0 in CCS).

I highly consider the student's desires and strengths in regard to advising on CTE. I try and pair them with courses that will enrich and benefit their choices.

I think CTE courses are wonderful for all high school students to take. I think they assist students to become more well-rounded and to explore other options which they may not have considered by being enrolled in a traditional college preparatory track.

We have several CTE courses that require a student to go to college too such as a Teacher Cadet Program and a Health Services program. The nursing or physician would obviously need to attend college as well. The Health Services program allows high school students to engage in a real life experience to determine if that is their true interest.

Make sure ethics and standards are taught/enforced

After school sports, and course/class offering times impact my ability to keep them on track for graduation. Staying on track for graduation rules the world.

I think a lot of the CTE classes that are offered are important for students whether they are going to a four year or two year school. Something that I look at though are the particular classes and if they will benefit them in college. For example, Microsoft classes are probably going to be more beneficial for a college bound student and not horticulture if they plan on majoring in business.

With a background in Career and Technical Education, I have to deal with other's perception of CTE courses. Parents, students, and academic faculty sometimes do not recognize the importance of these courses.

I am probably the exception to the normal because I have a CTE background (for the last seven years). I was a counselor before I went into CTE and came back to be a counselor just this school year. I only chose to leave CTE and go back to counseling because my own children will be attending the school I am working at now and I wanted to be in place when they got there. I LOVE CTE and my time in that department has helped me TREMENDOUSLY! I was a counselor for five years prior to joining the CTE Department, but I believe I am much more prepared to advise students now that I have had my CTE experience. I still work closely with our county level CTE department as well as the CTE teachers at my school. I advise the overwhelming majority of my students to take CTE classes, whether they are college or career bound.

If a student expresses and interest in a college or career in a field we offer CTE courses in that is the direction I urge them to go. When I was in high school career tech was for students who did not plan to attend college. Now career tech can be for students entering the medical field, engineering, or a multitude of other careers.

I wish that I had the opportunity to take some CTE geared classes when I was in high school. Because I was not a public school teacher prior to working as a school counselor (taught career readiness at community college) I do not have first hand experience with the curriculum, only what our teachers and course descriptions provide. It would be nice if courses were offered first hand in some form of PD or CEU for counselors to immerse in the CTE varieties.

I really cannot answer the yearly percentage as it depends on what grade level I am working on. Due to class size and program standards, I cannot advise juniors or seniors to start CTE programs. Students are only allowed to start them their sophomore year and continue through the three year program.

Our local district offers a career dual enrollment with the local technical schools which offers the same "weight" as advanced placement courses, as well as credit being issued every 9 weeks.

CTE courses are important for everyone!

If the student is college bound but planning to major in a field that relates to a CTE course offered at our high school, I would encourage them to sign up.

I believe the CTE program is very benefical to our students. The program has developed into some great opportunities for our students who actually take advantage of the courses.

We offer dual enrollment, AP and AICE courses for our college bound students. Some career bound students do not have room for a CTE course in their schedule due to remedial coursework.

I do not discriminate between college-bound and career-bound in post-secondary advising. College bound has the goal of career at the end of it. I give all students information regarding multiple paths in post-secondary. CTE is an effective path for young adults, who want to enter the workforce directly, or to use the CTE career as a tool to reach higher career paths and training.

My school has limited placement options for CTE (buses will not go out to all the sites). I wish we could offer more options, such as on campus (like auto shop as in the old days.)

Advisors (not counselors) are who meet with the students regarding his/her choice of electives. It is primarily based, first, on high school credits (academic courses needed to graduate) and then on what electives the student is interested in enrolling in.

CTE is very important but I find it is not introduced correctly and students are clueless to the importance.

As I mentioned earlier, we have a program at our school in which students can attend here in our building 1/2 of the day and at a local career/technical center the other 1/2. This does, however, create problems for students who wish to BOTH attend career/technical in high school AND play an NCAA sport in college. It is almost impossible to fit in all the required NCAA courses (such as a 4th lab science) if they are gone 1/2 the day.

I typically advise all students, whether college-bound or otherwise, to take CTE courses when applicable. Even when a student plans to attend college, we often have CTE courses that would be beneficial for them to be exposed to. The Health Science track is a perfect example. If a student plans to attend college to pursue a career in the medical field, I suggest they expose themselves to that material in High School. I believe that High School is the perfect opportunity for students to explore different fields that might interest them, and CTE coursework accomplishes that.

I highly recommend for all of the students in my high school to take CTE courses.

NC needs more flexibility for students who choose to be career bound - the graduation requirements should include more CTE and less core classes in order to better prepare them.

Whether college bound or career bound, CTE teaches skills that will enable students to get better paying jobs than buggy pushing at Wal-Mart or asking "would you like fries with that". Not that those jobs are not important, but 18 and 19 year old students need

a skill to take into the world that could get them a job that would support them if need be.

CTE is a great way to introduce students to careers.

I think that is very important for students to take course that are related to their career choice early. This way they know that are going in the right direction, or if they made need to look into something else.

There are some students that I advise to attend rehabilitation classes for their CTE

I advise students to attend the CTE center depending on their career goals. If what they want to do after high school is being taught on the ground level at the CTE center, I advise them to attend whether they want to be a welder or doctor. It all depends on the students future plans.

Encouraging college bound students to take CTE classes occurs when there is a CTE course or strand that relates to their planned college major. For example, a student interested in architecture or engineering, I would encourage to take a Drafting course. Students who are interested in any medical field are encouraged to take the lower level nursing classes (enrollment in upper level is limited, so those are for students who definitely want their CNA). Students who have no desire to go to college are heavily encouraged to enroll in a CTE strand that will give them direct training (or a certificate) upon graduation for a specific career.

Looking at the student's ability and goals is important. Every college bound student will have to work some type of part-time job. Why not get the most of the hourly wage by having CTE and Credentials. Translates into more money hourly for the student. Those students who are not college bound but need hands on CTE is crucial.

CTE is for all students. CTE can cause students to connect & engage in core subjects. Exploring careers in CTE helps all students - career & college bound.

My district requires students to take at least one credit of CTE courses as a graduation requirement. We offer opportunities for students to participate in CTE programs from a regional Secondary Career Center. These include programs such as welding, HVAC, Diesel Technology, CNA/PCA+, Dental Assisting and Criminal Justice. Our school also has a fabulous initiative called IGNITE Professional Studies. Both of these options provide students with dual credits. IGNITE focuses on Internships with business and industry. These programs are in Construction Management, Global Business, Education, Information Technology, Health Sciences, and Graphic Communication with focuses in Photography or Graphics. As an example of the value of the Internships, our students in Information Technology work with some of the most cutting-edge programmers in the world through partnerships with Wal-Mart, Sam’s Club and their supporting companies. These are great opportunities for both career and college bound students.

CTE helps the student!

We are a small rural school with limited human resources. I advise all of my students to participate in CTE courses. For the career students these course count towards their graduation pathway and for the college students these courses count as electives. Also, if a college bound student receives a certain type of IBC, the school is awarded points on SPS.

I think it is important to remember that the ultimate goal of a "college-bound" student is exactly that of a "career-bound" student. Is not the purpose of going to college to train for a career?I think that fact is often forgotten.

I believe it is vital for students in middle/early high school to begin thinking about their career and/or college options. In doing so, CTE allows students the opportunity to 1) confirm their decisions on whether or not to attend college, and 2) determine their career path, in the event they decide not to pursue a 4-year degree program at a university. Through CTE, students gain useful information [i.e., life skills] and also have the potential to earn IBCs for future jobs. I truly believe that high school students are not exposed ENOUGH to Career & Technical options, and I feel that more students [even starting as early as middle school] would take advantage of the opportunity to participate.

In our part of Louisiana there are many opportunities for CTE students to have very successful careers after high school; mainly due to the petro-chemical and oil/natural gas industries. Our state's career diploma track also requires students to obtain industry based credentials in high school. These factors have led to a bigger push for students to take CTE classes. I try to get all students to take at least one CTE course, but we are somewhat limited in the CTE classes we offer so not all college-bound students are able to take one.

I think it is important for students to get a well rounded education and to take advantage of all opportunities presented in high school to assist them in choosing the correct career for themselves.

We offer very limited CTE options. Our students are 100% college bound to four-year institutions.

Most of my college bound CTE students take courses in the health science or medical related fields. Another popular CTE area for college bound students is computer programming and/or networking. Several male students are interested in the Welding CTE program. Many of them don't plan to attend college.