THE IMPACT OF SECONDARY CAREER AND TECHNICAL EDUCATION ON STUDENT POST-SECONDARY PREPAREDNESS

by

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ABSTRACT

HOLLY E. PORE. The impact of secondary Career and Technical Education on student post-secondary preparedness. (Under the direction of DR. LISA R. MERRIWEATHER)

Beneath most efforts to reform education is the assumption that its current direction can be problematic, or, at minimum, not as effective for the economy, labor market, and workplace. The reform of the American high school must have Career and Technical Education (CTE) as an integral part of its efforts (Lynch, 2000). Advocating for the integration of CTE and classical academics for all students (Castellano, Stringfield, & Stone, 2003) helps to ensure an American workforce that would be skilled, adaptable, creative, and equipped for success in a global marketplace (U.S. Department of Education, 2012). The purpose of this qualitative study is to explore how secondary CTE programming influences CTE students' preparedness for post-secondary college and career pursuits. There is very little empirical research on the impact of secondary CTE on student post-secondary outcomes. Compared to other types of school reform, there is little research on CTE. Most CTE research is on the mechanics of CTE such as, but not limited to, course-taking, job outlook trends, CTE student characteristics, and comparisons of graduation rates and test scores between CTE and non-CTE students. There is an absence of research from the perspective of a CTE expert body to explore the topic under investigation. This research helps to fill a gap in the literature. A modified Delphi technique adapted for a qualitative approach was used for the purpose of this investigation. The goal of this research methodology was to build towards a consensus among an expert panel for the topic under investigation. The study had consensus and thematic findings. Some of the significant consensus findings were the discovery of the

uniqueness of secondary CTE curriculum factors, such as work-related activities and transferable artifacts, that do contribute to student post-secondary preparedness; that the collaboration between industry partners and CTE educators offers irreplaceable, real world opportunities about life and work for students; and, that structural and systematic racism in educational systems does have impact on CTE curriculum. There were four themes developed from the data: Preparation is Key, Pedagogy is Key, Positioning is Key, and Equity is Key. Equity is Key led to the constructing of three codes: Race Positive, Race Negative, and Race Neutral. Some implications for this local education agency should be the incorporation of some form of quality training for staff; the incorporation of business partners serving as mentors for students and leading professional development for teachers; and, the incorporation of an intentional effort to recruit and retain non-traditional students towards underrepresented career pathways.

DEDICATION

To my Heavenly Father, Lord, and Savior Jesus Christ, thank you for your grace and mercy that is anew every morning. For You deserve all the glory and honor. *I can do all things through Christ who strengthens me.* (Philippians 4:13)

To my loving husband who truly is the one God destined just for me. Thank you for all your unconditional love and encouragement during this process. Thank you for your sacrifice so that I may fulfill a life dream. I love you beyond the stars.

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CHAPTER 1: INTRODUCTION

To ensure successful citizen participation in the world of work, formal education is society's best course (Lynch, 2000). Friedman (1999) posited that in the new emerging world of information, there is a swelling demand for obtaining further formal education. The U.S. Department of Labor (2016) notes that nearly 72% of employment was in occupations that typically needed some level of formal education for entry. Between 2014 and 2024, occupations that typically require at least a post-secondary non-degree award, such as a certificate awarded by an educational institution for completing post-secondary schooling or an industry-recognized credential, are projected to grow more rapidly than the average for all other occupational categories that have lower educational requirements, which includes no formal education credential, a high school diploma or equivalent, and some college with no degree (U.S. Department of Labor, 2016). Occupations that typically require a high school diploma or the equivalent for entry are projected to grow at a below-average rate of 3.9 percent between 2014 and 2024 (U.S. Department of Labor, 2016). The message that is becoming clearer and clearer on each new horizon is that education beyond high school is essential to be employable, to sustain employment, and to earn a high-wage job.

The American Council on Education (2015) reports a decline in the percentage of high school graduates who immediately enroll in college, falling from 69 percent in 2008 to 66 percent in 2013. Other post-secondary options for high school graduates are to immediately enter the workforce and/or to pursue another form of post-secondary education/training such as the military or a technical school. In the fall of 2017, recent

high school graduates not enrolled in college were much more likely to be in the labor force than enrolled (67.4 percent, compared with 39.8 percent) (U.S. Department of Labor, 2018). Labor force refers to the number of persons actually working or willing to work; wherein, the workforce, also known as the employed labor force, is the individuals who are actually working (Ghai, n.d.). In 2017, the unemployment rate for recent high school graduates not attending college was 16.8 percent, higher than the 10.2 percent unemployment rate of recent graduates attending college (U.S. Department of Labor, 2018), suggesting that the unemployment risk is higher with lesser educational attainment.

Undoubtedly, there is added value in seeking formal post-secondary education and/or training which includes higher annual income, higher lifetime earnings, and lower unemployment risk (Baum & Payea, 2005). Certainly, high school should not be the end of non-college bound students' educational trajectory. Ideally, all students would continue their education beyond high school so that they may navigate and advance in their career fields. Preparation for formal post-secondary education and/or training while in high school is not only valuable, but necessary. This study recognizes the value of college preparatory coursework and experiences in high school; however, this study will focus on the often under recognized role of high schools in preparing students for other post-secondary educational and training opportunities.

Background

Vocational education was formed in the United States during the 19th century (Lynch, 2000). Vocational education is a holistic term in high schools to identify curriculum programs intended to prepare students to gain an education and job skills that

enable them to enter employment directly after graduating from high school (Lynch, 2000). For many generations, vocational education solely prepared students to meet the needs of the workplace. This pedagogical connection reflected the ideals of John Prosser and David Snedden who were early proponents of the essentialist approach (Gordon, 2014; Rojewski, 2009). From this essentialist standpoint, vocational education should be separate from classical schooling and exist solely to meet the needs of the labor market in order to ensure social and economic stability (Gordon, 2014; Rojewski, 2009). This approach focused attention on the need to identify strategic, sequential curriculum to acquire skills directly linked to the workplace, regardless of the needs of the learner (Rojewski, 2009). Another viewpoint that was contemporary to the essentialist approach is progressive pragmatism, which is the philosophy of John Dewey, wherein vocational education is constructed to produce knowledgeable citizens who are technically adaptable and self-sufficient, able to engage fully in a democratic society, and view learning and responding to change as a lifelong process (Wanocott, 2003). From the viewpoint of a progressive pragmatist, education's purpose is to serve the edification of people for social means over the societal needs of the economy (Dougherty & Lombardi, 2016).

The early era of vocational education had more of an essentialist approach and students could not pursue their own vocational interests no matter the transferability to the workforce (Dougherty & Lombardi, 2016). As a result, sorting students by likely outcomes became a practice in vocational education to ensure a more realistic education for students. This inevitably contributed to the marginalization of vocational education because classical education was reserved for students who had access to financial and human capital. Classical education, which prepared students for college, was deemed as

more prestigious than vocational education and was not available to the masses. Students not thought to be worthy of a classical education were pushed into vocational education. Classical education was reserved for the elite with few exceptions and led to occupations considered professional. Vocational education was for the masses and the areas of work for which it prepared students were predetermined for students based upon others' assumptions of their abilities (Kincheloe, 1995).

This study recognizes that many factors contribute to the erroneous practices of sorting, or tracking, students and the ill-advising of students regarding their educational trajectories based on discriminatory assumptions about student outcomes; however, a segment of this study will highlight the consideration of structural and systematic racism on the secondary educational experience of vocational students as it relates to their preparedness after high school for college and career pursuits. Undeniably, the element of race plays an important role in America's educational system (Darling-Hammond, 1998). The educational system, having a reciprocal relationship of significant influence towards other societal systems, was designed to maintain "racially qualified forms of political and economic subordination which led to the logical outgrowth of a system of second-class education for racial minority groups" (Anderson, 1988, p. 3). These subordinate educational happenings and ideologies were translated into institutional, systematic behavior that shaped the educational messaging, structure and content, and outcomes for minority students (Anderson, 1988). In order to holistically understand the impact of racism embedded in educational structures and systems, one must explore the system of slavery and how that centuries-old system still has implications on education for minority children today. In response to the ex-slave laboring class, the majority classes established

a system of coercive labor, wherein other societal systems reinforced its formation. This system was designed to reduce wages, restrict labor mobility, and force blacks to sign repressive labor contracts (Anderson, 1988). These responses impacted education by creating second-class curricula, which led to the formation of what became known as vocational education, that would only yield inferior levels of knowledge and skill attainment for inferior-classified students. Modern vocational education aimed to prepare students for work through the acquirement of qualifications so that students may enter professional activity (Mortaki, 2012). Although the accessibility to various vocational career pathways and courses in vocational education have gotten better, its students still disproportionately remain from low-income households and racial minority groups (Gewertz, 2018).

Vocational education has faced reform that runs wide and long. Policymakers, educators, and the general public claimed that vocational education in its earliest forms was not meeting the evolving needs of the new workplace (Lynch, 2000). In the 1970s and 1980s, enrollment in vocational education dropped due to the disappearance of traditional manufacturing jobs; there simply was not a great need for job-specific preparation (Castellano, Stringfield, & Stone, 2002). Employers sought workers who were technically able and academically competent (Rojewski, 2002). A new economy with new focuses laid the foundation for the Carl D. Perkins Acts and helped in transitioning the title of Vocational Education to Career and Technical Education (CTE). CTE then began to include more academics and to better prepare students for a variety of pursuits in post-secondary education and careers. Moreover, some stakeholders have advocated for the integration of CTE and classical academics for all students (Castellano,

Stringfield, & Stone, 2003) to ensure an American workforce that would be skilled, adaptable, creative, and equipped for success in a global marketplace (U.S. Department of Education, 2012). In the last three decades, CTE reform strategies have been driven by both federal legislation, including four legislative reforms, and six non-legislative initiatives (Castellano et al., 2002). The non-legislative initiatives are Tech Prep, curriculum integration, work-related experience, accountability, school-to-work, High Schools That Work (HSTW), career academies, Talent Development High Schools (TDHS), career magnets, and career pathways. These reform strategies aid Career and Technical Education with changing its old public perception into its new identity (Castellano et al., 2003).

Problem Statement

Beneath most efforts to reform education is the assumption that its current direction can be problematic, or, at minimum, not as effective for the economy, labor market, and workplace. Hartley, Mantle-Bromley, and Cobb (1996) posited that dismissal of the need to reform results in " a complex but direct path from ineffective schools to increased social problems, loss of international competitive advantage, and high unemployment of youth" (p. 24). The literature suggests that disengagement and boredom is occurring at very high levels for our nation's high schools (Symonds et al., 2001). The reform of the American high school must have Career and Technical Education as an integral part of its efforts (Lynch, 2000). The public is demanding educational improvement and students are needing relevant, current career information, knowledge, and skills (Lynch, 2000). CTE must be a central part of comprehensive school reform (CSR), not separate from it (Lynch, 2000).

Since the early 1900s, America's school systems have differentiated between vocational and academic tracks. Traditionally, vocational pathways were intended for non-college bound students who were planning to enter the job market after high school, while academic pathways were established for college bound students to prepare them for collegiate post-secondary studies (Donaldson, Hinton, & Nelson, 1999). This century old educational pathway divide has led many to believe that vocational education, now known as CTE, is for low-achieving students, while the academic-themed track is for high-achieving students, resulting in curriculum and skills gaps for students in both tracks (Donaldson et al., 1999). Reading and math skill-building were not a priority in the classroom for vocational track students, who were often at-risk youth or assumed to be, and occupational skills and career exploration were not a commonly in classrooms of college bound students (Castellano et al., 2003). These instructional and experiential gaps contributed to the lack of adequate preparedness of high school students in their post-secondary pursuits of college and career. Not having the benefit of an integrated academic and CTE educational experience negatively impacted both tracks of students. This affected vocational tracked students by the inability to sustain employment and earn a higher wage job because reading and math abilities were lacking (Lynch, 2000). The impact on academic pathway tracked students was prolonged college enrollment due to an unfamiliarity with the variety of career paths (Donaldson et al., 1999).

Levy and Murnane (1996) suggested that there are nine basic skills that contribute to the widening of the earnings gap between high school and college graduates, mostly due to the level of mastery of basic skills when both groups were high school seniors: 1) reliability, 2) positive attitude, 3) willingness to work hard, 4) ninth

grade or higher math abilities, 5) ninth grade or higher reading abilities, 6) the ability to solve semi-structured problems, 7) the ability to work in groups, 8) the ability to make effective oral and written presentations, and 9) the ability to use computers to carry out simple tasks such as word processing. Levy and Murnane claimed that the majority of these skills, which are valuable skills for post-secondary college and career preparation, were not being taught to high school students not thought to be college bound. Meanwhile, many talented and gifted CTE students learning valuable industry skills and earning industry-recognized credentials are overlooked and devalued in our current educational system (Gentry, Hu, Peters & Rizza, 2008). CTE programming, in particular at the secondary level, aims at integrating math and reading skills with occupational skills so that all skills are transferable from the classroom to the workplace, enabling successful societal contribution by all students regardless of their workforce entry point.

Failure to adequately and widely prepare students starting at the secondary level for post-secondary education/training has significant devastating societal implications. Major ramifications for inadequate preparation are vast, yet interconnected. The growing number of students leaving high school without basic literacy and math skills is partly due to the lack of student engagement which at its worse leads to dropout (Levy & Murnane, 1996). The high school dropout topic continues to invoke strong discussion among stakeholders in education. High school dropout has gained renewed conversation in three main areas: 1) at what rate are students dropping out, 2) what are the reasons for students dropping out, and 3) what can be done differently to prevent students from dropping out (Bridgeland, DiIulio, & Morison, 2006; Heckman & LaFontaine, 2007; Orfield, 2004). Students leaving high school without earning a diploma or its equivalent

are less likely to be an engaged, productive contributor to society due to their lack of formal education (Alexander, Entwisle, & Kabbani, 2001; Finn, 1989). Furthermore, research studies have shown that the consequences of dropout also include a higher likelihood of unemployment, a greater chance of living below the poverty line and relying on public assistance, more frequent and severe health problems, and increased criminal activity (Educational Testing Service 1995; Bernstein & Mishel, 1994; Rumberger 1987). Dropping out of school is costly both to the individual student and to society (Baum & Payea, 2005); so, addressing school reform efforts, like offering adequate CTE programs to engage students and keep them in school, is essential to the community at large (Castellano et al., 2003).

There are many factors that influence a student's withdrawal from school: sociological, psychological, economical, and institutional (Allensworth 2005; Fine 1991; Orfield 2004). Understanding why students leave high school requires significant attention to students' traits and to the culture and climate of the school environment. What types of classes are offered that foster engagement and motivation? What kinds of hands-on learning activities exist for students? Is there relevance between what is taught in the classroom and what is expected in the workplace? Rumberger (2004) draws on both individual and institutional perspectives to understand decisions to remain in or quit school. The individual perspective focuses on a student's values, attitudes, and behaviors and considers dropping out of school to be the final stage in a cumulative process of academic and social disengagement from school. The institutional perspective situates individual attitudes and behaviors within the broader settings or contexts in which students live, such as families, schools, and communities.

Dropping out of high school is not the only route to these negative outcomes, but inadequate secondary preparation can certainly lead to them. For example, unemployment and underemployment are two big issues. Below are statistics that were obtained from the Economic Policy Institute (2018) by senior economist Elise Gould and research assistants Julia Wolfe and Zane Mokhiber. Although the economic recovery has shown some positive trends, high levels of unemployment and underemployment still plague many, with African American workers being impacted the most. Additionally, a gender pay gap continues to persist for women. One in eight young high school graduates not enrolled in post-secondary schooling are unemployed. All racial and ethnic groups studied (African Americans, Hispanics, and Asian Americans and Pacific Islanders [AAPI]) currently have higher rates of unemployment than in 2000, except for AAPI graduates. The black unemployment rate remains far higher than any other group and is approximately double the rate of unemployed whites. The underemployment rate for young high school graduates is 25 percent, just barely above its 2007 mark. Black underemployment is 40.5 percent which is much higher than it was in 2000. Further, the average wage for young high school graduates grew only 9.7 percent between 1990 and 2018, with AAPI graduates having the highest wages at $12.53 an hour and blacks having the lowest at $10.46 an hour. Over the past 18 years, the gender pay gap for young high school graduates decreased only slightly due to a slight increase in women's pay and a decline in men's wages, putting the current pay gap at $1.31 an hour, or $2,700 for full-time work per year. Between 2000 and 2018, white high school graduates experienced a small drop in wages of 0.7 percent, while black graduates experienced a much larger loss in pay at 4.4 percent, increasing the white-black pay gap to 11.4 percent.

Incarceration is another possible outcome for youth who are ill-prepared in secondary schooling for post-secondary endeavors. Nearly 60,000 youth under the age of 18 are incarcerated in juvenile jails and prisons in the United States each year (American Civil Liberties Union, 2018). Of these youth who get incarcerated, 39 percent are less likely to complete high school compared to other youth in their neighborhoods (Aizer & Doyle, Jr., 2013). Black youth are five time more likely to be incarcerated than their white peers (The Annie E. Casey Foundation, 2013).

A publication called Healthy People 2020 (2014) reports that more poor health implications exist for students inadequately prepared for post-secondary living, in particular high school dropouts. These students more frequently report having at least one chronic disease such as diabetes, high blood pressure, stomach ulcers, and others (Healthy People 2020, 2014). Ultimately, finishing more years of high school, and especially earning a high school diploma, decreases the risk of premature death related to poor health (Healthy People 2020, 2014).

For all these reasons and more, it is up to educational policymakers and leaders to help make the American educational system of high preparatory quality for all students by integrating curriculum in theory and application and by ensuring educational equalities in its policies and practices. In this new economy, the new learner needs to be able to make sense of the ever-changing workplace and its context within that person's life. It is not about training for specific jobs, but being able to make decisions, solve problems, find answers, and draw on a variety of disciplines and cultural contexts to rationalize changes, challenges, and day-to-day operations in the workplace (Rojewski, 2002). The modern learner needs both theory and practice which supports the mission,

and other aspects of industry, as well as defines his or her role, responsibilities, and duties within the greater society (Lynch, 2000). All of this leads to the integration of vocational and academic education, which may be one of most important recommendations originating from the federal legislation and funding in the past two decades. Having adequate secondary CTE programs, inclusive of academic and occupational skills development and enhancement, seems to be the most appropriate educational reform strategy to best prepare students for the post-secondary pursuits of college and career.

Purpose

The purpose of this qualitative study is to explore how secondary CTE programming influences CTE students' preparedness for post-secondary college and career pursuits.

Research Questions

The research questions that guided this study are:

1. What CTE curriculum factors shape student post-secondary outcomes?
2. What role does collaboration of industry-based partners and CTE educators play in establishing curriculum for successful outcomes?
3. In what ways does CTE curriculum mediate or exacerbate the impact of racial inequities on student post-secondary outcomes?

Significance and Need for the Study

The perceptions about the schoolhouse experiences lived and knowledge and skills attained by students of faculty, educational leaders, and business partners of school systems greatly contribute to the curriculum mapping and course offerings within a

school district. This study informs practice and policy within the local educational agency (LEA) and hopefully contributes some generalizations for other LEAs. This research study has intended to use an expert body, CTE educators and CTE leaders, school administrators over CTE programs, and business partners, to explore the knowledge and skills of Career & Technical Education programming on student preparedness for post-secondary college and career pursuits to seek program improvements. By identifying the outcomes of students taking CTE classes, the intrinsic and extrinsic benefits, if any, of CTE participation, and ways to improve the lived experiences of CTE students while in high school will help inform the local education agency (LEA) of leaders and decision makers about the impacts, if any, of CTE.

In this ongoing wave of educational reform in an effort to present society with its best high school graduates, policymakers and educators are continuously looking for research-based pedagogical strategies to keep students engaged and college and career ready. This study informs those strategies and secondary school reform efforts whose goals are to prepare students for formal post-secondary education and/or training and to share the pursuit of lifelong learning with all students by reducing the number of high school dropouts, improving student achievement, and increasing work-related skills while in high school (Castellano et al., 2003).

Currently, there is a lack of empirical qualitative research that collects perceptions from an expert panel in the field of Career and Technical Education to explore CTE programmatic influence on student preparedness for post-secondary pursuits. This investigation adds to the literature about secondary CTE's impact on student endeavors beyond high school.

Conceptual Framework

The conceptual framework selected for this study is the Public Education Leadership Project (PELP). Shaping the public education sector to achieve higher performance is the ultimate goal of PELP. Launching in 2003 as a collaboration between Harvard Business School (HBS) and Harvard Graduate School of Education (HGSE), PELP's mission is to improve the management and leadership competencies of public school leaders in order to drive greater educational outcomes (Kim, 2013). PELP helped to uncover what its creators believed to be the biggest problem stalling sustainable school improvement and student achievement, the existence of incoherence (Elmore, 2009). The PELP Coherence Framework was created to get people thinking about building a single improvement strategy for a particular purpose across functions, across programs, and across schools in a district (Elmore, 2009). This framework is intended to help districts manage their way through a single-comprehensive improvement strategy. The PELP creators do realize the need for districts to have differentiated responses by different types of schools that serve different combinations of students (Elmore, 2009). However, with all those possible differences within districts, PELP still offers consistency and a collective effort to the overall strategic improvement plan: simply put, to problem-solve through instructional obstacles so that student learning is purposeful and maximized (Elmore, 2009).

Methods

To explore the research questions in this study, the research method selected was the Delphi Method (Dalkey & Helmer, 1963; Delbecq, Gustafson, & Van de Ven, 1975; Kennedy & Sekayi, 2017; Shamdasani & Stewart, 1990). The Delphi Method collects

and analyzes the opinions of experts to shape future applications. Building a consensus from the collection of opinions is this method's ultimate goal. This consensus will be the basis for answering the study's research questions. Although not a traditional qualitative research method, the Delphi Method is an appropriate inquiry approach for research that is exploratory while identifying the nature and fundamental elements of the phenomenon. A modified Delphi technique adapted for qualitative approach, created by Dr. Dia Sekayi, was used for the purpose of this investigation (Kennedy & Sekayi, 2017).

Assumptions

Assumptions are things within the study that are "somewhat out of the researcher's control, but if these things would disappear the study would become irrelevant" (Simon, 2011, p. 1). There are four assumptions within this study. One assumption of this research is that CTE does foundationally shape the workplace knowledge and skills for students. The sole purpose of CTE is to prepare the future workforce. A second assumption is the acknowledgement that the ultimate goal of secondary schooling is to prepare students for post-secondary pursuits to be both college and career ready. Having both academic and technical skills are mutually important to fully functioning in and successfully contributing to society. Third, this study offers the assumption that educators and industry personnel desire to adequately contribute to the preparedness of students, the future workforce, by providing meaningful and relevant curriculum activities and experiences that bridges the classroom to the world of work. The integration of academics and CTE curriculum create well-rounded students. The last assumption presented in this study is that all curriculum programming, CTE and non-CTE, can improve to offer better learning outcomes for students. Arguably, the most core

responsibility of our society is to educate every child to ensure that each leaves the U.S. K-12 educational system with the skills needed to prosper and succeed in an ever-changing technological society (Ferguson, Schwartz, & Symonds, 2011).

Limitations

The limitations of a study are those characteristics considered to be "potential weaknesses of the study that the researcher cannot control" (Simon, 2011, p. 2). There are a few limitations in this study. One is the teaching preparatory programs or teaching field entry pathways of the expert CTE teacher participants. The second limitation is the teaching and/or working experience of the expert body participating in this study. Both limitations may influence the level of expertise and the perspective lens on CTE student preparedness of the participants. In general, education has high turnover. This realistic potential outcome presents a challenge in duplicating this research. The methodology for this study seeks to gain perceptions from a body of CTE experts, which may present an issue with meeting data collection deadlines.

Delimitations

Delimitations in research are those characteristics, "within the researcher's control, that limit the scope and define the boundaries of the study" (Simon, 2011, p. 2). There are a few delimitations in this study. The first delimitation is the methodology chosen for this study in which a body of experts evaluated secondary CTE programming, from their perspectives, on student preparedness for college and career pursuits. Due to this methodology, the CTE learners' perspectives were not included, only those of the

expert panel. The study is delimited to the professionals working with the learners and affiliated business partners who are deemed experts. Additionally, students are important role players who should be questioned about their experiences in CTE and if they feel CTE has had any academic and social influence on their high school careers and post-secondary plans; however, students will not be utilized in this study for the purpose for determining CTE impact, only a CTE expert body. The majority of previous studies on the effectiveness of CTE have been presented based on the insight from one or two stakeholder group(s). This study presents the expert opinion, to build a consensus, from CTE high school teachers and CTE collegiate instructors, school administrators, CTE leadership at the school, district, and post-secondary levels, and business/industry partners. Another delimitation of this study is the selection of consensus guidelines, expert criteria, sample size, and techniques. Ultimately, the researcher determined the panel criteria and sample size. An added delimitation is due to this study being conducted centered on one site; from here, there are three closely connected limitations: research findings cannot be generalized to the wider population, although assumptions for other sites can be made; research is difficult to replicate; and, the issue of time. Although all CTE program areas at this site are included in the research methods design, the individuals studied may be atypical of the larger CTE expert community.

Definition of Key Terms

The following terms were used during this study:

Career and Technical Education

CTE is a term applied to schools, institutions, and educational programs that specialize in the skilled trades, applied sciences, modern technologies, and career preparation. It was formerly (and is still commonly) called vocational education; however, the term has fallen out of favor with most educators ("Career and Technical Education," 2014).

Career Clusters and Pathways

North Carolina Department of Public Instruction (NCDPI) defines career clusters as a way to identify career pathways from secondary school to two-and four-year colleges, graduate school, and the workplace, so students can link what they learn in school to what they can do in the future. Career clusters allow students to access a nationwide framework to help them better analyze their long-and short-term career goals, plan what to take in high school to begin to move towards those goals, and implement strategies for further education and work experience that will prepare them for high-skill, high-wage, and high-demand careers in the 21st century (North Carolina Department of Public Instruction, n.d.).

CTE Concentrator

A concentrator, sometimes called a completer, is a student who has earned four or more technical credits in a career cluster, at least one of which must be a completer course, a second or third level course in a series that builds upon skills acquired in the

previous course; it also has a prerequisite (North Carolina Department of Public Instruction, n.d.).

Conclusion

One domain of the formal high school curriculum is Career and Technical Education (CTE). Today, the perception of Career and Technical Education has improved. The new purpose of CTE encompasses not only preparing students to work but increasing their educational attainment. The collective educational goal is to integrate both work-based skills and academic skills to better help students be both college and career ready by widening the pathways to both post-secondary education and employment. The combination of classroom learning and workplace learning, in cooperative spaces, has proven to lead to better preparedness for students during their high school careers and beyond. This chapter provides a foundation that uncovers a need to study how the learned experience of high school CTE students regarding CTE course offerings, CTE curriculum materials and sequence, and CTE work-related activities and credentials impact student preparedness for future post-secondary endeavors. This research investigated the perceptions of a body of CTE experts on CTE student preparedness towards post-secondary college and career pursuits necessary to be effective in post-secondary educational settings and the workplace. Using a modified Delphi Method, consensus building is planned to achieve clarity and focus for CTE programming, sustainability, and improvement.

CHAPTER 2: REVIEW OF LITERATURE

Introduction

Federal legislation and philosophies are two of the most influential contributors that have shaped vocational education, both at its inception and today. Appreciation for vocational education can be fostered from gaining a sense of understanding its field of origin, which contributes to understanding how and why program purposes and missions have changed over time in response to political, economic, and social issues. Without historical perspective, program insights about the school-work relationship are left incomplete. Conversely, historical consciousness can help stakeholders recognize the inherent problems present in the field in order to facilitate the development of pragmatic reform. The purpose of this qualitative study is to explore how secondary CTE programming influences CTE students' preparedness for post-secondary college and career pursuits and to identify the areas in greatest need of program sustainability or improvements. In this chapter, the researcher will connect the theoretical framework relevant to this study, provide an overview of vocational education, discuss the Carl D. Perkins legislation, highlight CTE in North Carolina, showcase student success in CTE, uncover the dilemma associated with CTE, and provide the role CTE plays in preparing the future workforce.

PELP Conceptual Framework

The conceptual framework for this study is the Public Education Leadership Project Coherence Framework (PELP). The idea of PELP stemmed from an attempt to take what is known about business strategy and intertwine it with the authentic

happenings in schools and educational reform systems (Mapp, 2013). At the inception of PELP, its framework was geared towards large, urban school districts, when at the time there were no examples of high performing urban school districts (Elmore, 2009). Since then, the PELP framework has been successfully implemented across a wide variety of school districts. PELP recognizes that all school systems, regardless of size and geographic location, aim to educate all children to reach their optimum potential; it is just most school districts struggle with effectively achieving this mission (Higgins, 2013). The PELP Coherence Framework is designed to help district leaders identify the key elements that support a district-wide improvement strategy, bring those elements into a coherent relationship with the strategy and each other, and guide the actions of people throughout the district in the pursuit of high levels of achievement for all students (Leverett, 2009). The idea of incoherence means that school districts take on far too many strategies at once with too many people working across purposes with each other at the school and classroom levels. Central offices send confusing and inconsistent messages and staffers with different roles are given different types of advice which sometimes is conflicting; all of this contributes to many districts experiencing, at best, stagnate performance (Elmore, 2009).

Organizational change through the identification of effective leadership and management practices is the foundation of the PELP Coherence Framework to achieve equity for students to access all educational opportunities. At the center of PELP is what is referred to by its creators as the instructional core (Childress, Elmore, Grossman, & Johnson, 2007). The instructional core represents the critical work of teaching and learning that goes on in classrooms. Teachers' knowledge and skill, students'

engagement in their own learning, and academically challenging content are the three interdependent components of the core (Childress et al., 2007). Surrounding the instructional core is the theory of change. The theory of change is the organization's collective belief about the relationships between certain actions and desired outcomes (Childress, Elmore, Grossman, & Johnson, 2011). Often times in the PELP framework, the theory of change is represented as an "if…then" statement or series of statements providing a link between the mission to improve performance for all students and the organizational improvement strategy to use in fulfilling the mission's goal (Childress et al., 2011).

Extending from the theory of change is a strategy: the set of actions a district deliberately undertakes to strengthen the core with the objective of increasing student learning and performance districtwide (Childress et al., 2011). Through integrated activities that support the instructional core, districts are better able to articulate how they will strengthen their improvement strategy by increasing teachers' knowledge and skill, changing the students' role in the teaching and learning process, and ensuring that curriculum is aligned with performance benchmarks (Childress et al., 2007).

The PELP Coherence Framework acknowledges the reality of differentiation between school districts and even within them. With that said, PELP creators understand how each district strengthens and supports its instructional core may vary and does not prescribe any particular strategy, but rather asserts the importance of organizational coherence at all levels (district, school, and classroom). This makes the chosen overall approach more effective and sustainable (Childress et al., 2007). To help the instructional core become more powerful and effective, organizational decisions, resources, and

activities should be directed towards supporting the district's strategy (Childress et al., 2007). This framework invites other aspects of the organization to be brought into a coherent existence with the overall improvement strategy and its components (Johnson, 2013). Managing school districts for high performance through effective leadership ensures equal opportunity for all students to access quality education.

There are five key components of the PELP Coherence Framework to help realize this notion of equity for all students: culture, structures, systems, resources, and stakeholders. Culture consists of the organizational norms and behaviors, summarized by *how things work around here* (Childress et al., 2011). Public education has had this hovering culture of valuing effort over results (Childress et al., 2007). This misguided perspective lends itself to the idea of as long as people appeared to be hard at work, they could go about their daily routines without being asked to work collaboratively or to have accountability for their students' performance (Childress et al., 2007). This type of culture, at its worst, can birth defeatism among teachers and administrators, yielding commentary like, *I taught it, but they didn't learn it* (Childress et al., 2007). Culture is shaped gradually by making changes in many individual practices and beliefs (Childress et al., 2007). To upend an unproductive organizational culture, creators of PELP recommend district leaders to take specific actions such as redefining roles and relationships, altering performance expectations, or using job assignments in creative ways to send signals about which behaviors they value and desire throughout the organization (Childress et al., 2007). Structures and systems are different components of the PELP Coherence Framework; however, because of their strong codependence, PELP creators through their extensive work in various school districts find it best to group these

components together. Collectively, they include these various topics: roles and responsibility, relationships and teams, accountability mechanisms, compensation arrangements, resource allocation methods, organizational learning processes, and training programs. The structure of an organization determines how work in the district gets done (Childress et al., 2011), while the systems of an organization are able to support the work needed to be done through its processes and procedures (Childress et al., 2011). Structure refers to how people are organized, the distribution of responsibility and accountability for outcomes, and who makes or influences decisions (Childress et al., 2007).

PELP has found that districts need a lot of help in moving away from developing organizational structures haphazardly and keeping ill-formed structures in place far too long resulting in constraining rather than enabling high performance (Childress et al., 2007). Organizational structures must be revamped in order to better support the implementation of a district's improvement strategy (Childress et al., 2007). Systems provide a means for the workflow of an organization to have mobility (Elmore, 2009). Districts formally design some systems, while others arise informally through practice (Childress et al., 2007). Increasing the district's efficiency and effectiveness by implementing strategy is the primary purpose of any system (Childress et al., 2011). PELP creators posit that systems are created around important functions such as career development and promotion, compensation, student assignment, resource allocation, organizational learning, and measurement and accountability (Childress et al., 2007). One of the goals embedded in the PELP Coherence Framework is for school districts to have

effective systems that eliminate the need to reinvent the wheel or know the right people to get important things done (Childress et al., 2007).

Leaders tend to first think of money when hearing the term resources. PELP reminds leaders that resources include other assets like people, technology, data, and much more (Childress et al., 2007). Leaders must allocate a wide range of resources in coherent ways if the improvement strategy is to be implemented effectively (Childress et al., 2007). PELP teaches leaders that utilizing resources to the fullest in an effort to maintain coherence usually means cutting off the flow to some initiatives so that resources are free to be optimally invested into the most vital initiatives (Childress et al., 2007).

Stakeholder relationships affect the success of the district's strategy (Childress et al., 2007). Stakeholders are people internal and external to the organization who have legitimate interest in the schools and district (Elmore, 2009). The outermost layer of the PELP Coherence Framework is the environment. The environment is important to a district's success because it includes all the external factors that can have influence on strategy, operations, and performance (Childress et al., 2011). It is complex and dynamic. Based on the PELP Coherence Framework, there are four categories of the environment: regulations and statues, contracts, funding, and politics, which is inclusive of the characteristics of the particular community (Childress et al., 2007, 2011). District leaders, although they have minimum direct control, must spend an exceptional amount of time managing the environmental effects in order to consistently implement a district-wide improvement strategy (Childress et al., 2007).

The PELP Coherence Framework model can be used across any number of equitable issues, including but not limited to, adolescent literacy, access for language minorities, access to honors and advanced placement courses for racial minorities, access to nontraditional career pathways for students as it relates to gender and racial attributes, and inclusive educational opportunities for all students (Elmore & Leverett, 2009). The creators of PELP posit that the systematic problem that affects equity, across school districts of all varieties, is equal access to academic content (Elmore & Leverett, 2009). This disproportionate academic content access is rooted, established, and lived in the schoolhouse experience for many students, which affects educational attainment, contributes to income gaps, and leads to other societal ramifications (Elmore, 2009). Elmore (2009) posits that integration is the key to resolving this problem and this integrated effort must occur across content areas, departments, grade levels, and school-to-school. From teachers' perspectives, it is impossible to effectively address this problem if they do not have some basic awareness and understanding of the access inequities in the educational system, followed by action to impact change (Elmore, 2009).

The PELP Coherence Framework provides instructional insights to educators of some basic common practices, a set of diagnostics that teachers can share across grade levels and subject matter, and guidance for how to think systematically about students' experiences in school regarding current grade placement and previous points in the grade structure (Elmore & Leverett, 2009). Reflections about these lived school experiences of students, particularly at the secondary education level, reveal to teachers that many students who were passed on from grade level to grade level have had academic struggles

with academic content earlier in their educational careers. This highlights the failure of a system (Elmore, 2009).

PELP's creators determined from their extensive work with various school districts across the country that most educational mishaps are treated as a remedial problem instead of a systematic issue (Elmore & Leverett, 2009). Most schools attempt to solve these educational access problems by having some form of remedial program on the side, often as a pull-out technique, so that "regular" teachers do not have to be bothered by students' struggles with academic content (Elmore, 2009). This technique does not remedy the problem at its core. All educators have to be invested and bring about a spirit of coherence in order to sustain improvement and increase student achievement (Elmore & Leverett, 2009). PELP specifies solution efforts by investing in professional development with follow-up and a measurement component with conversation, coaching, and curriculum design fluid throughout the schoolhouse (Elmore, 2009). Elmore (2009) posits that adequate resources must be presented in a timely manner and be focused on supporting the implementation of the improvement strategy. Time given to teachers to learn and apply, level of teacher expertise, and vertical and horizontal alignment must all be part of the resource toolkit (Elmore, 2009). Efforts to get this systematic problem resolved involves having cross-content teams work together to impact cross-content learning, all stemming from the instructional core of the PELP Coherence Framework model (Elmore & Leverett, 2009). Figure 1 depicts the PELP Coherence Framework and its components, all working together to impact organizational change purposed to improve instruction and learning.

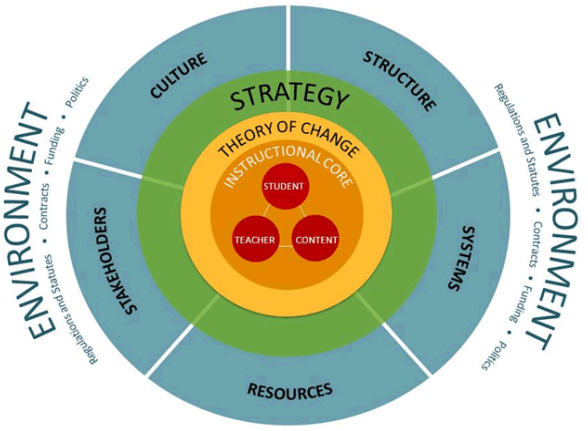

Figure 1. The PELP Coherence Framework. Elmore & Leverett (2009).

Having an "agreement" on framework, helps multiple levels of an organization stay committed to the strategy and increases comfortability with expectations among district leaders, principals, teachers, and instructional coaches leading to improvement at the classroom, school, and district levels (Leverett, 2009). Leverett (2009) declares that the question at the forefront of educational conversations is how are instructional improvements made and how are they sustained. A big part of the answer is teacher retention and leader stability. An even deeper and bigger question about the instructional core centers on equity. The PELP Coherence Framework provides these guiding principles for ensuring equity for every student, in every classroom, at every school: 1) develop a set of beliefs and values across the district, embedded throughout central office, of a shared understanding and responsibility that every child receives a high level education; 2) shape the collective culture and messaging to all stakeholders that reflects what is believed about teaching and learning by paying close attention to initiatives and how they are implemented to ensure that culture evolves around "all students can learn and achieve"; and 3) have access to a rigorous academic program; understand the educational call of duty to impact student learning and, with this realization, understand

that priorities must exist and everything cannot be “fixed” at once (Leverett, 2009). The PELP Coherence Framework helps to shape educators’ thinking in ways that create deeper change that is sustainable and anchored in touching and influencing the instructional core by narrowing in on the relationship between the student, the teacher, and the rigorous content. PELP posits that these structures help to strengthen the instructional core: culture, engagement of stakeholders, coherent allocation of resources in a needs-based way, alignment systems of professional development, Human Resources development and acquisition, and review of accountability data so that instructional adjustments are made and more purposeful dialogue and follow-up, with the intention to support, can happen (Leverett, 2009). PELP allows for time to adjust instructional thinking and practice, modify the improvement strategy, and align the overall educational commitment, all in the pursuit of better student performance outcomes if all remain focused and provide the systems of resources and support necessary to achieve deep change at the classroom level (Leverett, 2009).

Overview of Vocational Education

Vocational education became a part of the U.S. public school system in the 19th century. Before the 19th century only a small percentage of students completed elementary and secondary schooling. This system was designed to educate a select privileged group. Primarily upper-class, white male citizens were permitted to participate (Threeton, 2006). The curriculum was classical in nature, which included topics such as reading, spelling, history, arithmetic, geography, and penmanship (Murray, 2014). The expectation for the masses of other children was to formally learn a trade in the traditional apprenticeship manner or, in an informal manner, alongside a family member,

farmer, or craftsman or to acquire a skill or trade through self-learning, all of which was the introduction of vocational education in public schools (Wonacott, 2003).

In the 19th century, compulsory schooling was common and all children were expected to participate in formal education. The public school system provided the avenue for this to occur. The curriculum that a student was funneled through depended on external judgments of likely outcomes. Beginning in the pre-teenage years, students began to be sorted by likely outcomes, what was thought of them to become and achieve. Sorting students by likely outcomes ensured a more realistic education for the majority of students. Meaning those few students who were thought to have a high level of competence and ability were tracked towards an academic, college pathway while all other students thought to be less competent and able were tracked towards a general, vocational pathway. This tracking inevitably ensured the marginalization of vocational education (Kincheloe, 1995). During this educational era, only about ten percent of the American population was prepared for college, the other 90 percent was directed towards preparation for work which provided qualified workers to meet the demands of the Industrial Revolution from the early to mid-1800s, when the emphasis was on the textile industry, to the late 19th century when manufacturing processes became the emphasis (Wonacott, 2003).

Vocational education was a growing topic of discussion among many, especially American educators, in the early 20th century. This dialogue was so prominent because schools had a difficult time meeting labor force needs and adjusting to the shift from an agrarian to an industrial economy (Wirth, 1972). In 1907, President Roosevelt addressed congress and urged them to support school reform, providing industrial education in

urban areas and agricultural education in rural areas (Tanner, D. & Tanner, L., 1980). Reform was a necessity in order to be competitive in expanding global markets. During this era, vocational education was also aimed at controlling workers and stabilizing the industrial society by creating "a school system that socialized youth for their new economic roles and sorted them into their appropriate niches in the expanding capitalist division of labour" (Kantor, 1986, p. 402). The growth and strength of talking points around student preparedness as it related to the labor market led President Wilson, in 1914, to appoint a commission to study whether federal aid to vocational education was warranted (Hyslop-Margison, 1999).

As a result of the Industrial Revolution, the Smith-Hughes Act was passed in 1917, primarily due to economic influence and a growing need to prepare young people for jobs (Rojewski, 2002). With the passing of the Smith-Hughes Act of 1917, public funding was granted through federal legislation for vocational education (Threeton, 2006). A secondary purpose of the Smith-Hughes Act of 1917 was to provide students with an alternate route to the classical education design of an academic-based high school curriculum (Rojewski, 2002). The Smith-Hughes Act promoted separatism from the classics-themed curriculum and called for a new curriculum that would more closely meet the needs of the students of the working class who were attending high school, but were not heading towards professional careers (Lynch, 2000).

Under the establishment of the Smith-Hughes Act, vocational education became a separate and distinct system with separate state boards, teacher prep programs and certifications, funding, professional and student organizations, and programs of study (Orozco, 2010). This legislation contributed to the isolation of vocational education from

other parts of the high school curriculum and established division between practical, or vocational, and theoretical, or college-oriented, instruction in the U.S. public school system (Benson & Hayward, 1993). Notably, immigrants or poor children from rural areas were often assigned to vocational education programs (Brush, 2016). Due to this vocational curriculum assignment, these marginalized groups did not have a chance to pursue a liberal arts curriculum, which was required of students to go to college (Brush, 2016). Space in the high school liberal arts classrooms continued to be reserved for middle- and upper-class white students (Brush, 2016). In order to secure and sustain a job, underprivileged students were encouraged to acquire employable skills that would enable them to enter the workforce as soon as possible (Brush, 2016). If students tried to change career paths later, they discovered that they had little or no training in core academics, which prevented them from attending college or switching careers (Brush, 2016).

In the literature then and now, this tracking rigidness or narrowed advisement supports the observations of many, that CTE is a dumping ground (Kelly & Price, 2009). This separate and distinct system has caused vocational education to have an odd existence, questioning its place in U.S. schools, serving students at the margins with a curriculum thought to be of lesser importance (Lewis, 1998). These marginalized students were considered to have unusual needs, may be at-risk, learning disabled, low-achieving, and who challenged teachers to the limits of their commitments, insights, and skills. In the provision of vocational education to high school youth, the federal government has been involved in its design and protection since the passing of the Smith-Hughes Act of 1917. The Smith-Hughes Act is important to the history of vocational

education because it provided a new, value-added narrative that job preparedness was indeed an essential component of education.

Implementation of Vocational Education

Vocational education, through the Smith-Hughes Act of 1917, focused on promoting job specific skills to the exclusion of the classical academic curriculum. According to Beyer (2010), Johann Pestalozzi, an early educational philosopher, was dedicated to educating the whole child with a foundational learning through work. Pestalozzi believed that both the personal development of students and helping with the country's economic growth were equally important and beneficial outcomes of having a work component in schools and incorporating work into learning (Beyer, 2010).

After the passing of the Smith-Hughes Act of 1917, vocational education went through a series of additional legislative bills that tweaked its purpose and mission to be more responsive to current, multifaceted societal needs, solidifying its position and importance in American education. After the 1960s Civil Rights Movement, with a fresher focus on social justice and equity, the Smith-Hughes Act of 1917 transitioned to the Vocational Education Act of 1963 signifying a major change in federal policy and direction for U.S. vocational education, from a sole purpose of job preparation to a shared purpose of meeting economic needs that also includes a social component (Lewis, Stipanovic, & Stringfield, 2012). Legislation was reauthorized to the Vocational Education Act of 1968 and 1976 granting an allotment of federal monies to serve a growing number of students with special needs including low income students, academically at-risk, teen parents, students in career pathways considered nontraditional for their gender, and displaced homemakers (Vocational Education Act, 1968 & 1976).

Social justice, equity, and occupational skill-based training laid the foundation for the Carl D. Perkins Acts and helped in transitioning its name from vocational education to Career and Technical Education (CTE).

Overview of Contemporary Vocational Education

Addressing the economic demands of the labor market for a well-trained workforce with transferable knowledge and skills and responding to social concerns were both rooted in the Carl D. Perkins Vocational Education Act of 1984. This legislation still guides vocational education which is known as Career and Technical Education (CTE) today. Themes embedded in this law were the assurance that CTE was accessible to all students, including special student populations, and for the continuous improvement towards the quality of its programs designed to prepare the workforce for current and future employment needs (Rojewski, 2002). The Carl D. Perkins legislation provides the only document to inform CTE leaders with specifics on what features CTE should exemplify and how CTE should be carried out and executed within schools ("Carl D. Perkins Career and Technical Education Act," n.d.). Since 1984, there have been five reauthorizations of Perkins legislation with the most recent being the Carl D. Perkins V Act of 2018 signed into law by President Donald Trump on July 26, 2018, passing almost unanimously by Congress in summer 2018 (Kreighbaum, 2018).

Through the various reauthorizations of this law, a newer theme, academics, has surfaced. In reaction to several occurrences of educational reform between the 1980s and 1990s, increasing academic standards is now a focus in all educational programs. Some educators believe this shift in policy and practice is one of the most significant program shifts in the history of federal involvement in vocational-technical education (Rojewski,

2002). Emphasis was now being placed on improving both academic and occupational skills. Reauthorizing legislation allows for continuous modification to program purpose and mission to meet current and future needs of the individual, business and industry, and society overall. This reauthorization effort is hoped to occur every five to six years; although, there have been Carl D. Perkins reauthorization lapses that fall far beyond this timeframe (Lewis et al., 2012).

Throughout the existence of the Perkins legislation, certain language (i.e. accountability, work-based learning, standards, and programs of study) became characteristic of each reauthorization, thus bringing about four legislation-driven Career and Technical Educational reforms. The introduction of tech prep programs, similar to Programs of study (POS), became the first of this type of reform, connecting the last two years of high school with two years of community college through an articulation agreement intended to decrease the transitional disconnectedness between high school and college.

A second reform integrated academic and vocational curricula, defined very limitedly as a set of courses outlining clear sequences through which students could achieve both academic and vocational competencies (Perkins Act, 1990 & Perkins Act, 1998). Promoting work-related experiences became an educational reform approach that used the workplace to structure learning experiences that contributed to the intellectual, social, academic, and career development of students (Lynch, 2000). The last CTE legislative-driven reform was the implementation of an accountability system through the development of performance measures and the determination of standards for those

measures, which were authorized by Perkins II and remains a Perkins Act funding requirement (Perkins Act, 1990; Castellano, Stringfield, & Stone, 2003).

There were other CTE reforms that were non-legislative driven. The first non-legislative driven CTE reform was a program called High Schools That Work (HSTW) which was established in 1987 and designed to increase the academic achievement of career-bound high school students by integrating classical academics with vocational education (Lynch, 2000). A second reform was the explosion of career academies in the 1980s. Career academies, typically a standalone building or a distinct part of a comprehensive high school, were framed to be a dropout prevention strategy that has an occupational focus (Lynch, 2000). Third, Talent Development High Schools (TDHS), were introduced and positioned to improve achievement, attendance, dropout rates, and other student outcomes by having a personalized environment that supports students' interests within academic core classes (Aladjem, Herman, Masem, McMahon, Mulligan, O'Malley, et al., 1999). Career magnets coupled with college and career preparation in its design, were the fourth reform. Career magnets differ from career academies mostly due to size, magnets are larger, and origin, magnets were created as desegregation efforts for schools that otherwise would have been racially segregated (Stone, 2000). The last CTE non-legislative driven reform was the creation of career pathways, an initiative from Perkins III. With career pathways, some high schools have chosen to organize their curriculum around clusters of occupations in CTE and the grouping of these clusters, or career pathways, is based on common knowledge and skills within occupations (Pucel, 2001).

These reform efforts focused on a recommitment to academic basics, strengthening areas of English, mathematics, science, and technology, while also developing better personal skills such as communication and computational skills, employability skills, and building a stronger foundation of career planning and lifelong learning for students (Rojewski, 2002). This renewed focus centered on creating positive mentorships between students and adults, expanding organized community-based and work-based service and learning activities, and improving the educational opportunities and employment outlook for all students to acquire knowledge and skills needed for both work and active citizenship (Rojewski, 2002).

CTE's Role in the Preparation of the Workforce

Facets of teacher preparation programs that focus on general workforce education assume that a generous portion of the knowledge and experiences that define CTE intersect specialty-area boundaries (Rojewski, 2002). There is a common expectation of the centralized knowledge about the world of work. Workplace core topics are: "the function of work and family life in society; economics and systems of production and distribution; cultural aspects of work, the family, and society; development and application of higher order thinking skills, employability skills, and job seeking skills" (Rojewski, 2002, p. 49). This general workplace knowledge expectation lends itself to an integrative approach to instruction, where students from all vocational specialty areas take classes together, exploring both academic and vocational curriculum (Rojewski, 2002). This assumption in approach should help both CTE educators plan for and deliver a diversified curriculum, broad in scope, and foster a sense of professional cohesion and shared purpose and mission to prepare the workforce of the future.

Since vocational education's beginning in the early 1900s, economic, social, and political influences have shaped the content and direction of curricula at the secondary and post-secondary levels. Within the past few decades, these developments have collectively created a "new economy", often referred to as globalization, in the U.S. and around the world (Rojewski, 2002). Friedman (1999) and Reich (2000) posited that in order to prepare youth for this emerging, ever-changing world economy, there are some core characteristics to consider in order to understand this "new economy":

- "Manufacturers, spurred by advances in technology, maintain an accelerated level of growth in productivity. To stay viable, businesses are in a continual production mode. However, the emerging system of production is shifting away from high-volume mass production to high-value production, and from standardization to customization. Other market standards are also emerging regarding productivity, quality, variety, customization, convenience, and timeliness.
- The globalization of business markets results in substantial increases in competition for labor goods. Competition is particularly keen for highly skilled workers, though not exclusively in computer and technology-related areas. The largest labor needs are for persons with innovative and creative methods for (a) producing new products and services, or (b) promoting and marketing these new goods and services to consumers.
- Information handling (e.g., storage, transfer, and production) continue to increase in importance in the new economy. Low overhead costs require workers to be able to manipulate data and provide customized, rather than mass produced, information and services.

- Business management practices are undergoing extensive restructuring and can be characterized by (a) continued downsizing, (b) a premium placed on personnel who can manage knowledge as opposed to people, and (c) an increasing reliance on outsourcing for most work. Managers will become brokers/facilitators; there will be more technical specialists, more lateral entry, and shorter, flatter career ladders. Instead of the old-style division of labor into discrete tasks, job functions will converge, and work teams will consist of individuals who alternate expert, brokering, and leadership roles. Rewards will be based more on the performance of teams and networks.
- Fierce competition will affect both for-profit and not-for-profit institutions, resulting in pressure to be innovative and to do it all better, faster, cheaper, and continuously. Restructuring will occur frequently in order to achieve the greatest efficiency and productivity." (Kerka, 1993, p. 4).

The very format of work has undergone a massive shift with the last few decades, and for Career and Technical Education, this makeover comes with key implications (Hawke, 2000). Hawke (2000) suggested to be able to compete and remain globally competitive, these new enterprises must "continuously cut costs, lease almost everything they need, find the lowest-cost suppliers, push down wages for routine workers, and flatten all hierarchies into fast-changing contractual networks" (p. 6). The new norm will be the decentralization of decision-making and reorganization of work structures with semi-autonomous, task-oriented teams (Rojewski, 2002). The new economy will demand that a wide set of abilities are had by workers including technical and interpersonal/communication skills. Higher order thinking skills such as decision making

and problem solving, as well as flexibility, creative thinking, conflict resolution, managing information and resources, and the capacity for reflection will all be expected from future workers (Carnevale, 1991; Secretary's Commission on Achieving Necessary Skills [SCANS], 1991).

CTE in North Carolina

The North Carolina State Board of Education's mission states that "every public school student will graduate from high school, globally competitive for work and post-secondary education, and prepared for life in the 21st century" ("North Carolina," n.d., 1). The state's secondary-level Career and Technical Education mission is "to empower all students to be successful citizens, workers, and leaders in a global economy" ("North Carolina," n.d., 3). In North Carolina, CTE is offered in comprehensive high schools and community colleges. Aligned with The National Career Clusters Framework, North Carolina's secondary CTE programs are organized around seven program areas, listed below, based on the state's workforce requirements:

- Agriculture
- Business, Finance, and IT
- Family and Consumer Sciences
- Health Science
- Marketing and Entrepreneurship
- Technology Engineering and Design
- Trade and Industrial

North Carolina uses the Career Clusters in its state plan. In collaboration with one another, secondary and post-secondary education offer pathways or POS in all 16 Career Clusters.

In 2009, North Carolina CTE, secondary and post-secondary, released a guide with state employment information aligned to the Career Clusters. The guide is available to NC CTE parents, students, and school staff ("North Carolina," n.d.). North Carolina Career and Technical Education supports the transition between secondary and post-secondary schooling. The state offers dual enrollment, concurrent/transcripted credit, statewide articulation, and state law to ease in the transition from high school to post-secondary ("North Carolina," n.d.). The High School to Community College Articulation Agreement is maintained by North Carolina's Department of Public Instruction and the Community College System ("North Carolina," n.d.). Currently consisting of 48 articulated courses, this agreement specifies the requirements needed for students to receive credit for high school courses at any North Carolina community college ("North Carolina," n.d.). This agreement includes criteria for students, institutions, and a course review system ("North Carolina," n.d.). Table 1 below shows the number of secondary and post-secondary schools in North Carolina that have CTE programs; shown are the number of students who take CTE courses (enrollment) and those who concentrate, earning at least four credits, in a CTE POS. Appendices A and B are copies of the articulation agreement between NC high schools and the NC Community College System for CTE courses and a list of the CTE secondary articulated courses, respectively. Appendix C is the articulation agreement between the NC Community College System and the NC four-year college/university system to aid students with the transferability

between the two post-secondary institutions. These appendices, 3-5, all show how North Carolina supports its students' preparedness from secondary schooling to beyond in order to help them successfully participate in society.

Table 1: Secondary and Post-secondary Schools in North Carolina

School Type Information	Amount
Public High Schools in NC	469
Public High Schools Offering Solely/Primarily CTE Courses	7
Public High School Enrollment	438, 163
High School CTE Enrollment	942, 940
High School CTE Concentrators	54, 683
Public Community College in NC	61
Public Community College Enrollment (full & part-time)	338, 452
Post-secondary CTE Enrollment	94, 370
Post-secondary CTE Concentrators	59,682

Note. Information for this table was gathered from Advance CTE: State Leaders Connecting Learning to Work as of December 2018.

("North Carolina," n.d.).

Through law and practice, North Carolina demonstrates that it is making progress towards connecting learning to work so that individual and societal needs are met at a high level of efficiency through impactful curriculum integration, hands-on activities, and

authentic experiences with the potential attainment of industry-recognized credentials and skill development.

Career and Technical Education and Its Dilemma

Reflective in history, the longevity and success of a program leans greatly on the implementation and execution of the Comprehensive School Reform (CSR) program. The Carl D. Perkins Act V, signed summer 2018, will become the new governing body for CTE that outlines successful characteristics of a CTE program of study. There are many guidelines that accompany this federal legislation that must be met to receive federal Perkins Act funding. Due to these restrictive guidelines, many school districts do not comply with the Perkins legislative requirements, which contributes to individual schools implementing low-quality CTE programs (Castellano et al., 2003). Within a school district's budget, only about five percent comes from Perkins funding, causing many schools to forego the funding to avoid the strict regulations to provide high-quality CTE programs (Lewis et al., 2008). Across the nation, this non-compliance option has created inconsistency in CTE-POS offerings.

When reviewing CTE holistically, there are examples of school district's having high-quality CTE programs that are engaging students in POS and are effectively preparing students for post-secondary pursuits (Ferguson et al., 2011). The dilemma is that these happenings are not found in all schools and in fact, schools with higher populations of English language learners (ELL), minority, and other special populations of students have less quality CTE-POS (Alfeld & Battacharya, 2012). Many schools have replaced their CTE programs with credit recovery courses in order to improve reading

and math scores. This hinders the work-based learning experiences for students and further disengages these subgroups of students in their respective schools (Lewis & Cheng, 2006).

Furthermore, the lack of a national accountability system for CTE-POS is problematic. This impedes the ability to provide data on the collective impact of CTE and student achievement (Kotamraju & Mettille, 2012). This lack of accountability causes inconsistencies in the quality of CTE programs which contributes to negative perceptions and stereotypes. As a result, principals formulate negative perceptions which promotes a bigger divide between academic and vocational education (Aliaga et al., 2012). In this divisive culture, students begin to identify with one track or another which can negatively influence student achievement and self-efficacy (Castellano et al., 2003). If CTE-POS have poor implementation and execution, many principals will not support the commitment to host a CTE-POS at their school nor commit funding for such programs.

Another challenge for CTE is the stereotypes and cultural stigmas that have been linked to it. For many years, CTE has been degraded and criticized especially by the nation's esteemed academia (Ferguson et al., 2011). One reason for this may be because of the lack of empirical evidence about the impact of CTE on student achievement and the stereotypical perception, and actual practice in some schools, that CTE is the dumping ground for ELL, minority, and students with special needs who have traditionally been positioned as non-college-bound students (Castellano et al., 2003). A national longitudinal study reports that more CTE classes were taken by students in the lowest two socio-economic status (SES) quartiles which gives support to the notion that these biases may still exist (Aliaga et al., 2012). More concretely, about 49 percent of

students in the lowest quartile and about 50 percent in the second-lowest quartile took at least three CTE courses. This is compared to the approximately 37 percent of students in the highest SES quartile taking at most one CTE course. This stigma is further backed in a longitudinal study of eight high schools in the South Carolina Personal Pathways to Success Initiative. The existence of negative stigma about CTE was confirmed by two of the high schools in the study, while three of the schools felt it was in decline (Drew et al., 2012). In fact, it was found that students themselves were less likely to take CTE courses in two of the high schools because there was a lesser quality point GPA weight for those CTE courses that could hurt students chances of earning scholarships and acceptance into four-year universities. In response to this trend, some states have adopted an Honors course option for their CTE pathways; however, generational stereotypes and stigmas are hard to dissolve.

These stereotypes and stigmas can have great impact on the quality and participation of CTE-POS in nationwide high schools. Many researchers, such as Lewis and Cheng (2006), consider this to be a form of de-facto tracking. Throughout their studies, they have found that many ELL, minority, and other special populations of students take CTE courses because they are deemed socially safer spaces than more rigorous academic courses that would isolate them demographically, adding to the stigma of CTE. This “educational practice” displays a much deeper problem. Due to these harmful perceptions of stakeholders, these subgroups of students are at a disadvantage from the “freedom” of course-taking decisions. These students are products of exclusion from both academic and vocational courses, depending on the “type of student” because of the perceptions that educators have regarding students being “better served” in certain

classes (Drew et al., 2012). It is because of these "manners of thinking" that keep de-facto tracking present today.

These "old creatives of habit" CTE stereotypes and stigmas have been researched and the concept of self-fulfilling prophecy has surfaced. Merton (as cited in Lewis & Cheng, 2006) indicated that where a false premise is advanced, actions can be taken in its service that can lead to its realization. Theoretically, students develop lower expectations and buy into the idea of non-college bound branding when taking CTE courses that have been historically deemed less rigorous, because they have actualized the negative perception that surrounds them. Adopting this framework, students would become disinterested in college, perform at lower rates and take on the "second-class" citizen image of traditional vocational education stereotypes (Lewis & Cheng, 2006).

Student's attitudes and career aspirations are directly affected by the perceptions of teachers and administrators of CTE programs and may encourage lower expectations and diminished goals (Finlayson, 2009). As CTE continues to be a program intended to bridge the achievement gap by offering students increased pathways to success by integrating career technical and academic rigor, the stereotypes and stigmas of CTE must be transformed if it is to be considered a sustainable comprehensive school reform (CSR) effort. In order to reverse these negative perceptions, it will take the workings of all educational stakeholders, including the general public.

The Impact of Race on Education

In the late 1800s and early 1900s, purposeful distortions and half-truths led to a standard interpretation of educational reform, particularly in the South (Anderson, 1988).

This misguided interpretation led to the creation of an educational system that classified learners, some considered to be worthy of a high quality education while others thought to be unworthy and deemed to be a lesser threat with lesser education. As a result of this misinterpretation, philanthropic northerners, who were bothered by the social and economic obstacles placed on southern blacks by white southerners, sought to support black people against the harsh reality of racism by keeping the public education system open in an effort to promote their advancement (Anderson, 1988). Similar in thought to the Reconstruction Era's radical Republicans who were not concerned with constitutional rights or social equality, these philanthropists were consumed with forming an alliance with the conservative, upper class southerners in a haphazard attempt to protect black southerners from the racially motivated acts of violence and terrorism (Anderson, 1988). Gravely underestimating the depth and force of southern white supremacy, the northerners found themselves overpowered by these systems of injustice (Anderson, 1988). As a result, the northern philanthropists abandoned their initial mission to challenge racism through good intent and diligence and found themselves compromising with the South's white supremacists to salvage what could be for the sake of former slaves (Anderson, 1988).

Philanthropists believed common schooling for black children was salvable (Anderson, 1988). This was considered a fatal misinterpretation because it is nearly impossible to make efforts to advance a class of people while navigating through racially oppressing systems that are designed, from inception, to maintain dominion for one class and subordination for another. Many white southerners opposed the idea of universal education for all children (Anderson, 1988).

Anderson (1988) posited that there were two main characteristics of their opposition. One was the fear of political instability (Anderson, 1988). Literate black children would not only be able to read and write about industrial arts, among other disciplines, but would also be able to read and sign their names on voting ballots (Anderson, 1988). The second oppositional characteristic was the resistance to heighten competition between black and white laborers (Anderson, 1988). The successful attainment of education breathes power. White southerners were concerned if blacks became educated there would be no one to take their places in the fields and in other low wage, low skill jobs (Anderson, 1988). Anderson (1988) indicated that many white employers insisted on the black work force remaining illiterate to ensure the maintenance of low socioeconomic aspirations. The lack, or altogether absence, of education made blacks more controllable and less likely to develop political interests and pursue political activity like forming labor unions (Anderson, 1988). White southerners despised this effort to provide common schooling for black children because they questioned the coexistence of literacy and subordination and they felt that greater force would be needed to maintain blacks' disfranchisement within the racially oppressing systems created to keep them as a second class people (Anderson, 1988). Anderson (1988) posited that the fear of losing white dominance due to the awakened demand of blacks for equal political rights consumed many white southerners. "Consequently, black education became the ideological medium of conflict between southern whites' wants to preserve the traditional, coercive methods of subordination and the educational reformers' demands for modern, subtle forms of social control" (Anderson, 1998, p. 99). Entrenched social values caused southern whites to inhumanely and destructively oppose universal

education in a “self-sustaining” act to maintain the supremacy of the white race (Anderson, 1988).

Unequal Opportunities

Black and Latino students are now more educationally segregated than they were two decades ago. Jonathan Kozol (2005) reports the following statistics about public school enrollment from the 2002-03 school year: in Chicago, 87 percent of public school students were Black or Hispanic, less than 10 percent were White. In Washington, D.C., 94 percent of students were Black or Hispanic with less than five percent being White. In St. Louis, Black and Hispanic students made up 82 percent of the student population, In Philadelphia and Cleveland, Black and Hispanic children comprised 79 percent. In Los Angeles, 84 percent. In Detroit, 96 percent, and in Baltimore, 89 percent. This disparity in the student enrollment in public schools across the United States led to unequal distribution of school resources (Johnson, 2003). High-quality curricula, high-quality teachers, and valuable social networks were not accessible to students in high-poverty, racially segregated schools because of the innate relationship between race and class to local school revenues. Whiter, wealthier students in like schools had much more exposure to these educational resources that directly connect to educational success (Johnson, 2003). Ten percent of the highest socioeconomic U.S. school districts spend approximately 10 times as much as the lowest socioeconomic U.S. school districts, and within states, the spending disparity ratios are 3 to 1 between these two types of school districts (Kozol, 2005).

Advanced placement classes are more likely to be offered at predominately white schools than at schools where Blacks and Hispanics are the majority (Applied Research Center, 2000). Despite earning the same test scores, Black and Latino students are more likely to be tracked into low-level academic pathways than White and Asian students (Oakes, 1995). Teachers who have higher test scores, who graduated from higher-quality colleges and universities, and who have more teaching experience teach mostly upper middle-class students, who usually are not Black or Latino (Lankford, Loeb, & Wyckoff, 2002). Beginning teachers are more frequent in schools with the highest percentage of minority, limited-English proficient, and low-income students (Darling-Hammond, 1999).

White students are more likely to receive lesser disciplinary consequences than students of color for a similar or more serious offense (Building Blocks for Youth, 2004). The Building Blocks for Youth (2004) reports the following suspension or expulsion statistics for subjectively determined offenses in seventh through twelfth grades: 14.6 percent of White students were suspended or expelled, while 38.2 percent of Native American students, 35.1 percent of Black students, and 19.6 percent of Latino students were suspended or expelled. For more objectively determined offenses (i.e. weapon and/or drug possession), racial disparities drop significantly (Aspen Roundtable on Community Change, 2004).

Race and Equity in CTE

Having all systems in the U.S. redesigned to ensure that all students have equity and are prepared for success is of the upmost importance in order for citizens to best

compete globally, to better meet the changes in demographics and labor markets, and to fully contribute to the economy at their maximum capacity (National Association of State Directors of Career Technical Education, 2010). Once criticized as a dumping ground for the less academically motivated and at-risk students, Career and Technical Education has branded a new identity to be a system that offers rigorous, relevant, and real-world curriculum and instruction with positive student outcomes (National Association of State Directors of Career Technical Education, 2010).

CTE programs across the U.S. have significantly influenced student learning and achievement (National Association of State Directors of Career Technical Education, 2010). Yet, work for equitable access for all students to all CTE programs still remains to be accomplished. The Career Equity Resource Center (CERC), part of the New Jersey Department of Education Office of Career Readiness, sets out to ensure all secondary students have equal access to high quality CTE programs to assist them to become successful global citizens and prepare them for career opportunities in the 21st century (Career Equity Resource Center, n.d.).

The National Science Foundation (2006) reports that Whites account for 73.2 percent of employed scientists and engineers from all degrees among minority scientists and engineers, 0.4 percent are American Indian/Alaskan Natives 3.9 percent are Black, 4.6 percent, Hispanic and 16.1 percent Asian. Minorities represent less than 12 percent of U.S. baccalaureate engineering graduates (National Science Foundation, Table 9-6-1, 2006). The bigger reality is only 4 percent of underrepresented minorities graduate from high school being “engineering qualified” (National Action Council for Minorities in

Engineering, 2008). The percentages of Associate Degrees in engineering earned in 2005 were: 4.6 percent Asian, 1.1 percent American Indian, 11.3 percent Black, 10.6 percent Hispanic, and 65.1 percent White (National Action Council for Minorities in Engineering, 2008). In 2009-10, the percentages of high school dropouts by race/ethnicity and gender were: 16.5 percent White Males, 12.1 percent White Females, 19.9 percent Black Males, 16.9 percent Black Females, 17.6 percent Hispanic Males, and 13.4 percent Hispanic Females (New Jersey Department of Education, 2010). Nationally, occupational CTE classes accounted for 68.7 percent of CTE credits earned as opposed to 31.3 percent of CTE credits earned in non-occupational CTE classes, such as Foods I and Career Management (National Center for Educational Statistics, Table H122).

CERC (n.d.) suggests recruitment and retention of highly qualified and culturally responsive educators are key components to achievement for all students. Creating awareness and providing opportunities for diverse students to explore a wide variety of careers, both traditional and non-traditional, is critical. Some examples of non-traditional careers for males are nurse, elementary teacher, dental hygienist, and social worker (CERC, n.d.). Some examples of non-traditional careers for females are engineer, police officer, construction worker, and computer systems analyst (CERC, n.d.). Some tips for recruitment and retention of diverse representations of students include using role models to promote programs amongst nontraditional students, issuing personal invitations to students to attend a class or activity, developing some promotional propaganda (including salary, job benefits, career pathways, racially-and-gender-diverse imagery, etc.) to market nontraditional careers to various student audiences, initiating discussions with students, creating peer support and mentoring groups for nontraditional students, connecting

students with Career and Technical Student Organizations, and exploring the real world of work around them through field trips and work-related activities (CERC, n.d.).

Student Success in Career & Technical Education

In this chapter, an overview of vocational education, the role of CTE in the workplace, CTE in North Carolina, and CTE's dilemma have been shared in order to highlight CTE student success connected to CTE participation. John Dewey, pragmatic educational reformer, believed vocational education should be included as part of a comprehensive curriculum to help students develop a greater range of personal capacities that expanded, rather than limited, their future occupational options (Hyslop-Margison, 1999).

Measuring CTE student success can be challenging since the implementation of CTE varies from school to school. For the purpose of this study, defining CTE student success in secondary schooling, in particular high school, will be centered on three components: engagement, performance, and transitional preparedness for post-secondary pursuits. Engagement is defined as "attending, focusing, and specializing in coursework and work-based learning within programmatic career pathways and programs of study" (Kotamraju, 2007, p. 49). Performance is defined as "academic achievement, skill development, and graduating from school" (Kotamraju, 2007, p. 49) Transitional preparedness is defined as "high school graduates moving on to formal post-secondary education/training without the need for remediation or as managing the learning swirl that is taking place between education and the workplace" (Kotamraju, 2007, p. 49).

Higher engagement safeguards against the probability of dropping out of school (Castellano et al., 2002). Better student performance or outcomes (higher GPAs, increased test scores, higher graduation rates, increased college enrollments, and job placement) occur when there is strong curriculum integration of academic and CTE pathways (Aliaga & Stone, 2003). Smaller learning communities with well-defined CTE themes and pathways yield better performance from CTE students (Castellano et al., 2004). The more current debate in research on transitional preparedness from secondary to post-secondary has centered on career and college readiness (Camara, W., Hanson, M, Mattern, K., & O'Connor, R., 2015; Byrd & MacDonald, 2005; Dounay, 2006). To help bridge this transitional phase, both academic and career pathways specialists must partner to collectively define career and college readiness and jointly reach a consensus that both pathways are equally important for all students to explore. Taking academic courses and CTE concentration are both mutually beneficial to students (Southern Regional Education Board [SREB], 2006).

The number of CTE concentrators taking academic courses has increased (Levesque et al., 2000). In the early 1980s, CTE concentrators averaged 1.72 science credits, with 37 percent being low-level status (Castellano et al., 2004). By the mid-1990s, CTE concentrators earned 2.39 science credits with only 29 percent being low-level courses (Castellano et al., 2004). In English (ELA), the gains were not as clear due to the CTE concentrators earning more ELA credits, from 3.79 in the early 1980s to 4.13 in the mid-1990s, but there was a slight increase in students taking low-level English courses, from 11 percent to 14 percent (Castellano et al., 2004). Compared to college preparatory pathway students and dual (concentrators both academic and CTE), CTE

concentrators earn a lesser percentage of credits (Aliaga & Stone, 2002). However, compared to general pathway students, not pursuing an academic pathway or a CTE pathway, CTE concentrators took significantly more science and higher levels of science (Aliaga & Stone, 2002). Aliaga and Stone (2002) posited that this comparison offers a more realistic view of the changes in science course-taking tendencies because general pathway students resemble CTE career pathway students on measures of ability and income.

Moreover, recent research reports that CTE contributes to keeping students in school. Plank (2002) found that when 40 percent of a student's schedule is made up of CTE courses, the chance for dropout was at its lowest. This finding supports that lower dropout rates increase the chances of higher achievement due to students remaining in school (Plank, 2002). Rivera-Batiz (2003) studied the influence of school-to-work (STW) activities (such as Tech prep programs and career pathways) and found that STW participants took more advanced courses in math and science than non-participants. Although not directly observed, this finding could suggest that CTE opportunities may positively influence school persistence and taking higher level courses (Rivera-Batiz, 2003). Other studies have shown that holistic school-building focuses around high academic expectation and CTE themes led to an increase in English and science course-taking (Castellano et al., 2003). In some cases, this spike in course-taking led to improvements in performance. High Schools That Work (HSTW) is a CTE initiative and a whole school reform design that was proposed specifically for CTE students to ensure all students get the high-level academics necessary to be adequately prepared for career and college (Bottoms & Presson, 1995; Castellano et al., 2003).

A study conducted by the University of Illinois at Urbana-Champaign's Office of Community College Research and Leadership (OCCRL) and the Academy for Educational Development, supported by the U.S. Department of Education, Office of Vocational and Adult Education examined the effects of CTE career pathways on student matriculation from secondary to post-secondary education. The study was divided into two parts: 1) A focus on secondary institutions' CTE career pathways and their effects on secondary student performance and college transition in addition to students' perceptions of the career pathways; and 2) A focus on the post-secondary effects of the selected CTE programs on student transition and post-secondary outcomes, taking a backwards approach by looking at students who matriculate from the specified high school CTE career pathways, and comparing them to non-career pathways students.

Both focuses of the study examined the relationship between student outcomes and institutional engagement in CTE career pathways, a measure of institutional commitment as evidenced by the amount of articulation agreements and staff involvement in delivering CTE courses as they relate to the career pathways, on post-secondary education results (Bragg & Ruud, 2007). The results from this referenced study, pertaining to academic achievement from results on the ACT WorkKeys exam, showed that secondary CTE career pathway students scored significantly higher on the Reading for Information section than their non-CTE counterparts (Bragg & Ruud, 2007). Regarding secondary course-taking, results showed CTE career pathway students took significantly more CTE courses and course credits, in particular dual credit courses (Bragg & Ruud, 2007). With respect to college transition, the study conducted a follow-up survey that revealed that CTE career pathway students felt more prepared transitioning

to college and careers after high school (Bragg & Ruud, 2007). CTE career pathway students were significantly more likely to report that their high schools provided them with post-secondary information when compared to the control group (Bragg & Ruud, 2007). CTE career pathways students were also significantly more likely to report having a clear career goal and a plan to accomplish their academic goals (Bragg & Ruud, 2007). When questioned about a series of skills, CTE career pathway students, more than their non-CTE counterparts, were significantly more likely to report that they had developed problem-solving, project completion, research, math, college application, work-related, communication, time management, and critical thinking skills during high school (Bragg & Ruud, 2007).

A study by Kreisman and Stange (as cited in Jacob, 2017) found that participating in CTE is linked to higher wages, with the higher wage being a result of taking upper level CTE courses. Each year of upper level CTE coursework equates to an approximate two percent wage increase (Jacob, 2017). This finding supports the completion of a CTE POS (Jacob, 2017).

Conclusion

Over the last three decades, the U.S. has experienced vast changes which have caused massive shifts in the way Americans view education (Castellano et al., 2003). Today, education and career development are closely intertwined and dependent upon each other. As technology continues to advance, workplaces continue to evolve, and as more and more students are entering the workplace it is essential and now more apparent that CTE-POS must become more robust in the educational mainstream if it is to meet the mission and priorities of the collective whole, adequately preparing youth for a global workplace.

Educators are being heavily tasked with preparing students for “College and Career Readiness”, per Common Core State Standards (CCSS), which has become a nationwide initiative. The result prompts a major shift in ideology that places increased accountability on CTE teachers and leaders to achieve the “Career Readiness” component of CCSS while integrating more of the academics.

> “It seems increasingly clear that we have almost come full circle with federal direction of vocational education. The post-turn-of-the-century legislation was enacted to prepare more students with the type of education it was thought they would need to run farms and factories in the 20th century. Today, Perkins legislation challenges us to prepare more students with the contemporary education they will need to work successfully in ever-changing, technologically sophisticated, and internationally competitive workplaces. In essence, today’s workplaces call for an increasingly educated workforce. (Lynch, 2000, p. 10)

CHAPTER 3: METHODOLOGY

This chapter explains the selected methodology for this study. Using a modified Delphi Technique (Dalkey & Helmer, 1963; Delbecq, Gustafson, & Van de Ven, 1975; Kennedy & Sekayi, 2017; Shamdasani & Stewart, 1990), the researcher provided empirical data that may inform a school system about its CTE programming on student preparedness for post-secondary pursuits through the process of building a consensus among a body of CTE experts. By building a consensus, from panel perspective, the researcher explored how CTE programming is influencing CTE students' preparedness for post-secondary endeavors to identify programmatic areas of sustainability and areas for improvement. Within this chapter, the research purpose and questions, research design and rationale, and research context are conveyed. A description of the chosen modified Delphi Technique includes an explanation of the research method and data collection and analysis. This chapter concludes with a section on trustworthiness and a summary.

Research Purpose

The purpose of this qualitative study was to explore how secondary CTE programming influences CTE students' preparedness for post-secondary college and career pursuits.

Research Questions

The guiding questions of this research are as follows:

1. What CTE curriculum factors shape student post-secondary outcomes?

2. What role does collaboration of industry-based partners and CTE educators play in establishing curriculum for successful outcomes?
3. In what ways does CTE curriculum mediate or exacerbate the impact of racial inequities on student post-secondary outcomes?

Research Design

The qualitative research design was selected for this study because the researcher desired to gain a deeper, collective understanding about the varied learning experiences of CTE students through the perspectives of a body of CTE experts who were contributing to these lived experiences for students. Appendix D displays the permission letter from the researcher to the superintendent of the research site to conduct research. The ability to study a phenomenon in depth and detail without being restricted by preset categories of analysis is a unique feature of qualitative research ("What is Qualitative Research," n.d.). A qualitative approach emphasizes the "why" rather than the "what" of the social happenings and depends on the direct experiences of human subjects as a way to make meaning of the inquiry being studied ("What is Qualitative Research," n.d.). Qualitative methods invite openness and flexibility. In qualitative inquiries, the researcher is thought to be the primary instrument in data collection and analysis ("What is Qualitative Research," n.d.). The qualitative methodology chosen for this study was a modified Delphi Technique. The following sections provide an overview of the Delphi Technique and in the latter section, its subsequent use as a qualitative data collection and analysis method.

Delphi Introduction

Initially designed as a mechanism for group communication processing in the mid-20th century to facilitate forecasting the impact of technology during the Cold War and gathering opinions about what to expect from enemies during wartime, the Delphi Technique aims at conducting detailed examinations and discussions of a specific topic for the purpose of goal setting, policy investigation, or predicting the occurrence of future events (Ludwig, 1997; Turoff & Hiltz, 1996; Ulschak, 1983). Due to the inadequacy of common processes such as surveys and studying trends, at the time, the Delphi Technique was created by Project Rand (Helmer-Hirschberg, 1967). Typical surveys intend to identify "what is," whereas the Delphi Technique aims to address "what could/should be" (Miller, 2006). Reviewing the literature, Delphi has been used in areas like program planning, needs assessment, policy determination, and resource utilization (Hsu & Sandford, 2007) and is increasingly being used as an empirical research design. Delbecq et al. (1975) specifically state that the Delphi Technique can be used for accomplishing the following objectives:

1. To determine or develop a range of possible program alternatives;
2. To explore or expose underlying assumptions or information leading to different judgements;
3. To seek out information which may generate a consensus on the part of the respondent group;
4. To correlate informed judgements on a topic spanning a wide range of disciplines, and;

5. To educate the respondent group as to the diverse and interrelated aspects of the topic (p. 11).

Classical Delphi Method Characteristics

Dalkey and Helmer (1963), suggest that the Delphi Technique has five primary characteristics:

1. Focusing on research topics where little is known or forecasting has limited predictability;
2. Relying on the opinions of experts;
3. Using remote groups to process a study;
4. Adopting an iterative process to research topics;
5. Creating consensus through expert opinions.

First, to conceptualize, invent, and predict futures, Shamdasani and Stewart (1990) suggest that the Delphi Technique can be used. By using narrative feedback, deeper insight becomes available to forecast probable events. When a study needs to be invented or discovered, Gibson and Miller (1990) suggest this technique. Beech (1999) argues this methodology, as a method of analysis, when the production of data is seemingly difficult to obtain.

Second, relying on experts' insight and opinions is at the core of this method. Using a group format, knowledgeable experts become the source of data collection (Denzin & Lincoln, 2000; Shamdasani & Stewart, 1990). Clayton (1997) characterizes experts as those that have knowledge and experience pertaining to the research topic being investigated. A strength of Delphi is the ability to collect data electronically

allowing for more appropriate participants to be involved rather than just those available for face to face interactions (Kennedy & Sekayi, 2017). Panel membership may be local, regional, national, or international.

Third, using remote groups as participants is a communication feature of Delphi (Bennum, Ley, & McLaren, 2000). Usually, communication is not face-to-face. This becomes useful in avoiding a common research limitation of bringing participants physically together (Delbecq et al., 1975). It preserves anonymity of participants which avoids self-censorship and gives flexibility to reassess and potentially modify views while learning more from others without social pressure that exists in focus group studies. In this digital era, Dede, Ostrowski, and Saint-Germain (2000) posit that distributing questionnaires and facilitating communication to individual panel members electronically is an improvement to the traditional method due to it providing quicker response times and reductions in participant dropout rates. This permitting of remote processing helps to avoid negative group influences.

Fourth, Delphi is characterized as an iterative process comprised of a series of questionnaires to which the panel experts respond. Due to its iterative feature, a repetition of information is collected, summarized, and presented back to the panel as well as the experts' feedback on the opinion(s) of the other experts through email to each respondent. After this initial feedback exchange, participants have an opportunity to revise their feedback statement. These responses intend to stimulate critical thinking and reasoning while the objective seeks to reach a group consensus. As participants contribute to complex problem solving, bringing in their diverse backgrounds with respect to professional experience and outlook, the characteristics of Delphi help to create

collaborative spaces that invite fuller and more inclusive communication, analysis, and reflection than traditional methods of gathering group thought (Dalkey, 1972).

The last characteristic of the Delphi Technique is the building of a consensus (Graham, Regelar, & Wright, 2003). Consensus is usually determined by t the convergence of variances or the decrease of standard deviations (Linstone & Turoff, 2002). This method helps to assure validity of results by the avoidance of domination or bandwagon effect.

As with all methodologies, the Delphi Technique has weaknesses. Processing is time consuming as coordinating and managing the iterative process is required. Hsu and Sandford (2007) find that up to three or more rounds of questionnaires average between 30 to 50 hours of a facilitator's time. Two, maintaining active participants throughout the iterative process is difficult. Dropouts are more likely than with the "once and done" common survey approach. Three, processing is considered to be less transparent than one-on-one or focus group interviews. Also, the participants have a higher tendency to be influenced by the facilitator through this technique. Hartman, Krahn, and Skulmoski (2007) argue this contributes to less trust in the outcome(s) by the participants.

Generally, there are five stages in the Delphi Technique ("The Delphi Method," n.d.):

1. A panel of experts is assembled.
2. Forecasting tasks/challenges are set and distributed to the experts. Participants generate ideas silently and individually producing more ideas (Delbecq et al., 1975).

3. Experts return initial forecasts and justifications. Participants write responses on their own time schedule which is more likely to produce critical thinking contributing to more thought given towards a response, making it more valuable (Delbecq et al., 1975). These are compiled and summarized by the researcher in order to provide feedback.
4. Feedback is provided to the experts, who now review their forecasts in light of the feedback and may revise their initial statement. This step may be iterated until a satisfactory level of consensus is reached. This encourages more free responses by suggestions aggregating equally (Delbecq et al., 1975).
5. Final forecasts are constructed by aggregating the experts' forecasts. This typically brings about professional satisfaction by having a sense of closure and accomplishment in the decisions to be made (Delbecq et al., 1975).

The ability to provide anonymity to participants, a controlled feedback process, and the variety of analysis techniques to interpret the data are all noteworthy characteristics of the Delphi Technique (Dalkey, 1972; Douglas, 1983; Ludlow, 1975). These characteristics are designed to offset the limitations of the traditional means of pooling opinions obtained from group interaction (i.e., influences of dominant individuals, noise, and group pressure for conformity) (Dalkey, 1972). Having these characteristics can be time consuming (Habibi, Izadyar, & Sarafrazi, 2014). A minimum of 45 days is recommended for the administration of the Delphi Technique (Delbecq et al., 1975; Ludwig, 1997, Ulschak, 1983). However, the flexibility to use electronic technologies (i.e. email, Google documents, teleconferencing, etc.) helps with the time issues of conducting a Delphi study.

Delphi as a Qualitative Approach

Denzin and Lincoln (2005) positions qualitative research as a means to understand complex phenomena and processes. Delphi is not a common qualitative approach, but it too seeks to understand complex phenomena and processes through group consensus and its ability to relate to and inform real-world practice and decision making is undeniable. Unfortunately, in the literature, there is little guidance of how to use the Delphi methodology qualitatively (Childon & Fletcher 2014). The Delphi Technique is a useful and appropriate methodology as it relates to policy, practice, or organizational decision making (Birdsall, 2004; Dalkey & Helmer, 1963).

Considered to be a pragmatic approach, the Delphi Technique is concerned with applications of real-world ideas rather than with abstract notions ("Pragmatic," n.d.). It is consistent with John Dewey's pragmatism which is a bridge between theories and methods centered on generalizability and objectivity (Fay, 1996; Kirk & Reid, 2002). In the qualitative approach of the Delphi Technique, pragmatism is apparent in the following ways:

1. flexible; can be used with both quantitative and qualitative tools;
2. affordable; an inexpensive means to get questionnaires to participants going from an open-ended to a more structured format that can easily be disperse to participants, utilizing traditional communications or electronic;
3. seeks purposive sampling not a generalizable sample; and
4. lacks a complex research design; requires no complicated technology, knowledge, or specialized education. (Hartman et al., 2007).

Many adaptations have been made to use the Delphi Technique in a qualitative approach and in varied disciplines. As is the case with most research approaches, researchers Linstone and Turoff (as cited in Jones, 1975) posited that there are variations in the application of Delphi as a qualitative methods; however, certain qualitative Delphi criteria consistently exists: purposive sampling, emergent design, anonymous and structured communication between panel members, and thematic analysis (Jones, 1975). "The qualitative Delphi provides a pragmatic and more inclusive way for building theory as a result of the anonymous dialogical process that is hallmark of the qualitative Delphi" (Brady, 2015, p. 5).

Modified Delphi Qualitative Approach

There is no "typical" Delphi Technique, but rather a variety of Delphi possibilities modified to suit the circumstances and research question(s) of the study (Hartman et al., 2007). Commonly, the Delphi Technique is used as a quantitative technique (Rowe & Wright, 1999); however, a researcher can apply qualitative approaches with the Delphi Technique. Research interested in how the social world is interpreted, understood, and experienced lends itself to the research being qualitative because of its interpretivist nature (Mason, 1996). This researcher used a modification of the Classical Delphi Technique. The modified technique selected for this study was designed by Dr. Dia Sekayi (Kennedy & Sekayi, 2017). The modification of the Delphi put forth for this study is categorically qualitative in its approach. Kennedy and Sekayi (2017) posit that a good study candidate for this Delphi modification is any research question that is of qualitative nature and can be answered with data from a panel. "Though Delphi had traditionally

been used in decision-making and forecasting, the fully qualitative version can be used to gather expert perspective for a broader purpose" (Kennedy & Sekayi, 2017, p. 2757).

The role of the researcher is contingent on the question(s) being investigated, the study's context, and its theoretical perspective (Glesne, 2011). The Delphi has been applied in research to develop, identify, forecast, and/or validate in a wide assortment of research areas (Hartman et al., 2007). Different types of questions (closed/open) and analysis (qualitative/quantitative) can be used in each round of the Delphi Technique (Hartman et al., 2007). Researchers must be flexible and sensitive to the social context wherein the data is being collected in order to present a holistic understanding of the rich, contextual, and detailed data and to make sense of or interpret the phenomena with respects to the terms of the meaning the participants place on them (Creswell, 1998).

This study's selected qualitative modification of the Delphi Technique provides the opportunity to have a bigger range of perspectives about the research topic. In this qualitative Delphi approach the researcher analyzes panel feedback using axial coding to develop narrative statement stems in an effort to maintain the narrative tone of panel responses from the initial brainstorming data collection. A characteristic of the Classical Delphi Technique is that in Rounds 1 and 2 of controlled feedback, quantitatively worded results are presented on qualitative data; however, using the modified Delphi Technique presented in this study, narrative feedback is solicited on narrative statements (Kennedy & Sekayi, 2017). Often times in Classical Delphi Techniques, participants are asked to give feedback on quantitative results (Kennedy & Sekayi, 2017). This jeopardizes the initial narrative tone and may prove to be difficult to generate new ideas which is one on the intentions of the Delphi methodology (Iqbal & Pipon-Young, 2009).

This modified Delphi qualitative approach gleans from a process referred to as Thurstone Scaling which outlines a description for each ranking to improve the consistency in meaning of participants' responses (Chave & Thurstone, 1929). Thurstone Scaling uses three descriptive categories: not endorsed, moderately endorsed, and strongly endorsed. For example, the "not endorsed" description rating could be complete disagreement and/or no experience with the topic. The description of the "moderately endorsed" rating could be that there is agreement with minor, but important modifications. Further, the "strongly endorsed" rating description suggests full agreement with the statement as it is written with no modifications necessary. The Thurstone Scaling process, developed by Louis Leon Thurstone in 1928, measured attitude towards a particular topic and was the first formal technique to do so (Salkind, 2010). Salkind (2010) posits that the attitudes, behaviors, or knowledge of a group of people being assessed by some kind of survey tool may be better determined by an attitude scale. For the researcher, this kind of data collection is conducted through a reflective process on a psychological construct of interest and/or experience and culminates into a grouping of statements that describes the beliefs and opinions of a group of people (Salkind, 2010).

By employing the Thurstone Scaling process and generating concepts and categories from the responses, this study's researcher was better equipped to more broadly explore the perceptions, attitudes, behaviors, opinions, and knowledge of the expert panel as it relates to the influence of CTE programming on CTE students' preparedness for post-secondary college and career pursuits. In addition, with these Thurstone Scaling categories of feedback, and with the possibility to develop more categories through thematic analysis, a greater range of perspectives can be shared as

thematic findings in this modified qualitative Delphi approach (Bazeley, 2009; Corbin & Strauss, 1998). This inclusive sharing is a benefit of qualitative research. Admittedly, not much is written pertaining to the use of thematic analysis in the data analysis of qualitative Delphi, although thematic analysis is recommended in the literature of qualitative Delphi (Brady & O'Connor, 2014). However, this researcher executed careful consideration and thought, depending greatly on what does exists in the literature, to most effectively apply thematic analysis in the data analysis of this qualitative modification of the Delphi Technique.

Research Site

This study investigated the CTE programming at a high school located in the southwestern part of North Carolina. The school system in this city has a total of nine schools, with only one middle school and one high school. This comprehensive high school offers ninth through 12^{th} grades, with a student enrollment of 1, 457 (Public School Review, 2018). The high school's race/ethnic demographic student population is 32.2 percent White, 28.4 percent Black, 32.4 percent Hispanic, and 5.3 percent Multiracial. With its minority enrollment over 60 percent, it is higher than the North Carolina state average of about 50 percent (Public School Review, 2018). Ranked as a low performing high school with a D grading, it did not met academic growth status during the 2017-18 school year, with only 32.1 percent of its students at or above grade level as determined by the state end-of-course testing (Public School Review, 2018).

This site was chosen for a couple of reasons. First, because this research site only has one high school, it would seem very beneficial to the school system's leadership, teachers, and business/community partners to have some form of descriptive research

completed about its CTE programming regarding student preparedness for post-secondary endeavors to identify areas of, and perhaps inform some decisions about, program sustainability and improvement. Second, with this one high school system, the CTE program offerings are wide and deep. Of the eight CTE program areas, this high school offers seven and of the 16 career clusters, 12 are offered, making this site ideal for exploring the influences of secondary CTE programming on student preparedness for post-secondary college and career pursuits.

Panel Selection of Experts

In the literature, no uniformed criterion for panel selection is provided. Research on the Delphi Technique does support the claim that the outcome of this type of research design is only as strong as the panel of experts (Somerville, 2008). Choosing appropriate expert body members is generally based on the judgement and discretion of the lead investigators (Oh, 1974). It is common that the Delphi selection process includes positional leaders (Kaplan, 1971; Ludwig, 1997) who are aware of the literature and/or who make contacts with those who have direct relationships with the particular topic (Anderson & Schneider, 1993; Jones, 1975). The latter is made up of primary stakeholders with various interests related to the studied issue or research efforts. Selecting eligible panel members is one of the most important phases of the Delphi Technique because the validity of results depends on the participants' level of competence and knowledge (Habibi et al., 2014). The selection criteria used to invite panel members is guided by participants having similar backgrounds and experiences concerning the target issue, being capable of contributing helpful commentary, and willing to revise their initial or previous statements in order to build a consensus (Oh,

1974; Pill, 1971). Delbecq et al. (1975) posit that there are three categories of people who are well qualified to be participants of a Delphi study:

1. "The top management decision makers who will utilize the outcomes of the Delphi study;
2. The Professional staff members together with their support team; and
3. The respondents to the Delphi questionnaire who judgements are being sought" (p. 85).

Additionally, there is no routine process for determining the number of participants or the number of panels to include in a Delphi study. It has been suggested that the size of the panel depends on the covered topics, the scope of the various viewpoints involved, and the availability of time and money; and, it is also recommended to include a mixture of individuals with multiple specialties and to use heterogeneous groups rather than homogenous groups (Habibi et al., 2014). Hogarth (1978) suggested six to twelve panel members are suited best for the Delphi Technique. Based on Clayton (1997) between five and ten panel members are ideal if using a combination of experts with different specialties. Delphi studies have a wide range of the number of panel members used, some fewer than 10 members while others have upwards of 100 members (Habibi et al., 2014). Using purposive sampling, the researcher for this study invited 17 participants, 14 consented, via email with an attached invitation letter and research study flyer including an embedded link with a consent form, to participate in this study. Figure 2 below represents the demographic makeup of the expert panel.

Figure 2. Demographics of the CTE Expert Panel.

Ultimately, panel selection and panel size are characteristics determined by the researcher. To increase accessibility, authenticity, and validity, the researcher of this study used a purposive sample and was guided by the following panel selection parameters:

Teacher Participants must:

1. Be certified;
2. Have more than three years teaching experience, with at least one year of teaching experience in CTE;
3. Have both teaching and industry experience (lateral entry);
4. Be a teacher at the selected site.

Business/Industry Partner Participants must:

1. Have worked with their company for at least three years;
2. Be a business partner of the selected site, offering some form of work-related activity.

Educational Leadership must:

1. Have supervised the CTE department for at least one year;
2. Have taught for at least three years before moving into a leadership role;
3. Be a leader connected to the selected site.

Research participants included: five educational leadership participants (one secondary district-level CTE Director, one high school administrator, one secondary school-based Career Development Coordinator, and two post-secondary CTE Directors), seven CTE teachers (five secondary teachers and two post-secondary instructors), and two business/industry partners. Figure 3 displays descriptive information about the participants. Further, each teacher invited to participate in this study represented a different CTE program area; all CTE program areas offered at this high school research

site was extended an invitation. To encourage participation, participants were compensated for their time with a $15 gift card. Appendices E, F, and G outline the participant flyer that provided detail information about the study to the participant prospects, an invitational letter requesting their participation, and a consent form to participate in the study, respectively. For this study, the estimated time frame for participants to engage in this research was approximately a month and a half. Within this month and a half time frame, the total time for participation was no more than two hours, spread over four iterative rounds of questionnaires. The actual research for this slightly extended beyond the projected time frames; it took approximately two months to collect data.

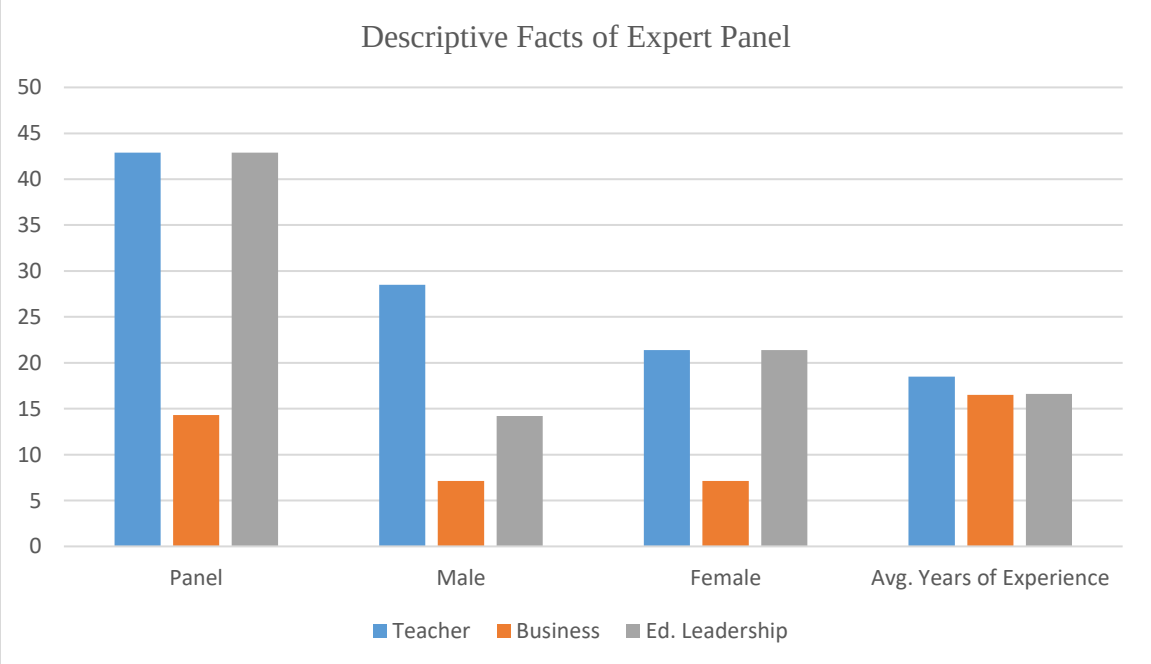

Figure 3. This figure provides description of the panel.

Data Collection and Analysis

The modification of the Classical Delphi Technique, used in this study, consisted of a four-step (rounds) qualitative approach (Kennedy & Sekayi, 2017), which led to consensus findings. Additionally data was analyzed for themes through a thematic analysis process. Data collection and analysis occurred in an iterative process. Rounds 1 and 2 produced a series of questions and responses posed and/or given to an expert panel about a common topic under investigation for the purpose of exploring the social phenomena from the perspectives of the expert body to inform future direction and decisions. The panelists were given opportunities after each round to review the statements of the other experts within the study and had the option to revise their initial statement in an attempt to build a consensus. At that point, if a consensus was reached, rounds 3 and 4 were employed; both of these rounds focus on preparing and presenting the study's summative consensus findings.

To reflect a qualitative approach, in the literature it often states, Delphi studies should use thematic analysis (Dalkey & Helmer, 1963; Ludlow, 1975). Analysis occurs after Round 2, introducing Round 3. Even though the utilization of thematic analysis is recommended in qualitative Delphi, not much is available about how to implement thematic analysis in Delphi studies (Brady & O'Connor, 2014). Bazeley (2009) and Corbin and Strauss (1998) view the employment of concept and category identification in qualitative data analysis as necessary in order to shift from specific ideas, found in panelist responses, to less specific but more explanatory ideas discovered in themes. This view is complementary to the modified Delphi qualitative approach selected for this study. Concepts are identified by examining and coding panelist responses side by side

for commonality and evidence of consensus building; this leads to the development of questions or statements for the next round (Brady, 2015). Concepts reflect most closely the original raw data; however, categories, being more abstract, provide a greater level of explanation than the sole use of concepts (Brady, 2015). Brady (2015) posits the dependence of prior knowledge of the literature for category formation by the researcher. Brady (2015) goes on to suggest that expert checks about the data helps to identify relationships and links within the data in an effort to organize concepts.

Below are the steps the researcher used from Dr. Sekayi's modification in each qualitative Delphi round to produce consensus findings.

In round 1, each individual participant received an open ended questionnaire in the initial phase to generate brainstorming on the topic via electronic means. The panel was given 5-7 days to respond to and return the questionnaire which introduced the second round. Appendix H details the questions posed to the participants in round 1.

In round 2, the researcher used open coding to label statements (Strauss, 1987). "This step consists of initial sorting of the data by assigning descriptive labels for small segments of text" (Kennedy & Sekayi, 2017, p. 2757). The researcher completed the sorting and labeling tasks within 8-12 days. The researcher presented the list of created composite group response statements to the panel of expert participants for the second phase of brainstorming. This round invited the experts to review their personal responses as well as the responses of their fellow panelists. In this round, panelists could revise their initial responses if new thought was uncovered through personal reflection and discovery of other commentary. Using electronic communication, the researcher sent the collection of statements to each participant. It is important to note that all statements are

shared with all participants even though every participant may not have originally contributed information on every topic. Participants were asked to either leave the statement as is (in cases where they have no experience with or nothing to add to the statement) or to make minor modifications to the statement in a way that makes it applicable for them.

It was important to establish deadlines for this process and to be prepared to remind participants to respond by the deadline. (Kennedy & Seyaki, 2017, p. 2758). This researcher gave the panel 5-7 days to complete this task. After which, the researcher compiled revisions/modifications on the statements. “The researcher will work with the statements and any modifications for the purpose of generating a clear and inclusive statement that maintains the original meaning or the original meaning with slight modifications” (Kennedy & Seyaki, 2017, p. 2758). “If the participants suggest modifications that alter the meaning of the original statement, the researcher will create a new additional statement to reflect the new idea while maintaining the old statement” (Kennedy & Seyaki, 2017, p. 2758). A member check of the statement compilation was extended to the panel for endorsement, panelists had 2-3 days to render their feedback. The researcher generated a final list of statements in 3-5 days.

For round 3, the researcher then used axial coding to analyze and group statements (Strauss, 1987). “This step becomes more analytical as judgments are made by the researcher about how the descriptive codes fit together to make meaning” (Kennedy & Sekayi, 2017, p. 2757). The researcher used 8-12 days to compile and analyze the statements. The researcher generated a list of statements using the categories that derived from the axial coding process. “This step requires some rewording of individual

statements to create a composite group response. Researchers must be careful here not to force statements into categories for the sake of data reductions. The uniqueness of individual statements should not be sacrificed" (Kennedy & Sekayi, 2017, p. 2757-2758). A member check of the statement compilation was extended to the panel, panelists had 2-3 days to render their feedback. After the member check, the researcher electronically presented constructed narrative statements, through axial coding, to the experts to identify their areas of agreement and to determine consensus through panel endorsement guided by Thurstone's Scaling. The researcher was sure to communicate deadlines clearly and offer reminders. The researcher recorded the endorsement of statements by panelists. "Panelists will designate statements as strongly, moderately, or minimally endorsed – these designations will each have narrative description to promote consistency in the meaning of the rankings" (Kennedy & Sekayi, 2017, p. 2758). For this study, the researcher added two more statement designations: disagree and neither agree or disagree. The researcher used 2-3 days to record endorsed statements.

In round 4, the researcher presented the consensus findings. As stated in the literature, the researcher established the standards for the consensus findings. This step has two options. The first option is for the researcher to select a minimum percentage for the endorsement of statements to be included in round 4. For example, if a statement is moderately or strongly endorsed by 75 percent of participants, it shall be considered a consensus finding of the study. The second option for the researcher to consider is to use only the statements that are strongly endorsed by all participants to present in round 4. This researcher elected to use the first option. The researcher used 2-3 days to present all consensus findings of the study to the experts.

For the purpose of this study, this researcher utilized Webb's and Williams' (1994) definition of consensus which is an agreement by majority or the opinions of all concerned. Consensus is defined in advance as a percentage of panelist agreement on statements that derive from questions or statements in each round (Kennedy & Seyaki, 2017). If a consensus is unable to be reached, this is referred to as the point of stability which is the point where panelists no longer revise their statements (Kennedy & Seyaki, 2017). In the literature, there are times when a consensus is not reached (Kennedy & Seyaki, 2017). After rounds of questionnaires, feedback, and revision possibility, agreement on statements may not happen or may occur at a low level, never exceeding agreement on at least half the questions within a round. If a consensus is not reached, additional rounds of data collection may follow until consensus is reached (Brady, 2015). This researcher attempted to build a consensus in the first three rounds of the Delphi Technique, using Round 4 to present all consensus findings produced by this research study, including the point(s) of stability.

Validity

To warrant this study's trustworthiness, this researcher used Guba's (1981) four criteria to address the concepts of validity and reliability. The four constructs are:

1. credibility;
2. transferability;
3. dependability;
4. confirmability.

Credibility equates to the level of confidence that an accurate recording of the research topic under investigation is being depicted (Shenton, 2004). This researcher promoted credibility by having clear procedures and expectations for data collection and analysis and performing member checks with the study's participants to ensure accuracy of findings. The researcher also maintained a position of neutrality while engaged in the research process. Follow-up emails, after each round, were sent individually thanking participants for their time and effort in completing that particular inquiry round. By research design, the iterative questioning also contributed to this study's credibility.

Transferability was addressed by providing detail and transparency regarding the research context so that the readers of the study are able to decide if these findings can be applied to other sites (Shenton, 2004). In qualitative work, dependability is challenging to achieve (Shenton, 2004). Researchers Lincoln and Guba (as cited in Shenton, 2004) closely connect credibility and dependability, suggesting that characteristics of having one supports the existence of the other (Shenton, 2004). The researcher of this study offered full disclosure of the research methodology. Confirmability is the researcher's ability to remain objective (Shenton, 2004). In an effort to have confirmability, this researcher gave panel members an opportunity to review the panel responses and the researcher's narrative statements after the respective rounds before the next questionnaire was sent out to eliminate assumption, misleading interpretation, and to ensure clarity of the analysis of data. Anonymity and confidentiality were upheld.

Conclusion

The Delphi Technique is a flexible and adaptable tool to gather and analyze data involving evaluation, fact-finding, issue exploration, or discovery about a specific topic.

Miller, Nelson, Olds, and Streveler (2003) posit that the Delphi Technique recognizes human judgment as a legitimate and useful input. Pollard, C. and Pollard, R. (2008) concur that this technique is useful for group communication permitting for deliberate, thoughtful, and thorough responses. By using a modification of the Classical Delphi Technique, this researcher collected and analyzed opinions of CTE experts for the identification of CTE knowledge and skills beneficial for CTE students to acquire at the secondary level to better equip them for post-secondary education and career pursuits. Through this iterative process, an expert body identified appropriate CTE competencies and skill sets for student post-secondary preparedness to explore areas for continuous improvement on secondary CTE programming.

CHAPTER 4: PRESENTATION AND ANALYSIS OF DATA

The purpose of this qualitative study was to explore how secondary CTE programming influences CTE students' preparedness for post-secondary college and career pursuits. This study used a modified qualitative approach of the classical Delphi Technique designed by Dr. Dia Sekayi (Kennedy & Sekayi, 2017). The research questions for this study were:

1. What CTE curriculum factors shape student post-secondary outcomes?
2. What role does collaboration of industry-based partners and CTE educators play in establishing curriculum for successful outcomes?
3. In what ways does CTE curriculum mediate or exacerbate the impact of race on post-secondary outcomes?

This chapter will describe the results of the four rounds of the modified Delphi Technique used in this study and will highlight the consensus findings and thematic findings resulting from the process.

The Delphi Rounds

The Delphi process was conducted in four rounds through the use of electronic tools delivered via SurveyMonkey and email. During an iterative process, questions and narrative statements were presented to the expert panel and feedback was analyzed through an established protocol by the researcher. Round 1 produced 975 responses from the 46 question stems and 1 narrative stem which requested from the panel their overall, general comments about the round. Round 1 questions were developed by the researcher based on career experience and the extant literature. Round 1 had a 100 percent

completion rate with all 14 participants responding to it by constructing their own responses. For Round 2, the researcher analyzed the 975 responses using open coding and then chunked the responses according to the question topical areas: quality indicators, curriculum and work-related activities, career awareness and exploration, and marketing of CTE programs which were then sent to the experts to review the responses of the panel and revise, if opted and as necessary. Still upholding confidentiality and anonymity, Round 2 was intended to give panelists an opportunity to review their personal responses and those of their fellow panelists to potentially bring about new thinking that was not apparent initially. Round 2 produced two new responses.

The 977 responses from Round 1 and 2 were analyzed using axial coding resulting in the identification of recurring patterns. The resulting patterns identified by the researcher were formatted as statements that were compiled and sent to the panel of experts for Round 3 review. A total of 25 statements were presented to the panel. In this round, the panel had to indicate their level of agreement with each statement: Strongly Agree, Moderately Agree, Minimally Agree, Disagree, or Neither Agree nor Disagree. Statements that had a collective endorsement of at least 75 percent for Strongly Agree and/or Moderately Agree were considered a consensus of the group and a consensus finding of the study. The researcher assumed that the panel would spend a significantly shorter amount of time completing responses than in Round 1 due to not having to construct responses but rather having more of a Likert scale to convey their expertise. Round 4 presented the consensus findings from Round 3 to the experts. Of the 25 statements submitted to the panel, they endorsed 18 statements through consensus.

At the center of analyzing the data is this organic discovery of themes. Themes emerged from the literature and what is identify through analysis during the data collection process. They come from the characteristics of the phenomena being studied (Bazeley, 2009). The researcher of this study used theoretical connections, as well as personal experience with the topic under investigation and the commonalities found within the data.

Presentation of Findings

The study's results are divided into two main sections: Consensus Findings and Thematic Findings. In the first section, the researcher provides a summary of the responses from Rounds 1 and 2 and presents the findings based on the consensus reached in Round 3. The intent of this section is to capture the essence of the panel's perceptions about the topic under investigation. This first section gives insight as to how experts in and/or linked to the field of Career and Technical Education perceive the influence of secondary CTE programming on CTE students' preparedness for post-secondary pursuits of college and career. The second section of the study's results presents the thematic findings that emerged from the interpretive analysis of the responses from Rounds 1 and 2. The researcher presented questionnaire excerpts quoting some panel members in order to lend context to aid in the understanding of the study's purpose. In addition, a descriptive analysis of the expert narratives is provided by connecting the responses to the study's research questions. Themes with their corresponding categories and codes are introduced and detailed.

Consensus Findings: Summary of Rounds 1 and 2

The questionnaire presented a series of questions representing four broad topical areas: Quality Indicators, Curriculum and Work-Related Activities, Career Awareness and Exploration, and Marketing of CTE programs. The responses within each area are described in this section. The responses were analyzed as a group based on the question's topical area. This classification procedure of responses aided the researcher to more easily identify commonalities and patterns in the data.

In the 'Quality Indicators' topical area, five questions centered on defining what is a CTE course and/or CTE Program of Study (POS): 1) identifying what makes a CTE course and/or CTE-POS effective, 2) determining what are the benefits of CTE course participation and/or CTE-POS completion, 3) suggesting ways to evaluate quality within CTE. Twelve of the 14 panelists responded that hands-on approaches to learning, preparation of students for the world of work and/or college, and highly qualified instructors who not only have content knowledge, but also have skills and career experience in that particular industry all greatly contribute to the quality of CTE courses and/or CTE-POS. Some interesting patterns for the 'Quality Indicators' topical area question group were that business/industry participants all included job placement as one of their indicators for quality in CTE, educational leadership participants all focused on highly qualified instruction inferring that if instruction is presented at a high level, student engagement will follow, and teacher participants. Both secondary and post-secondary, all strongly agreed that student proficiency cannot be the only measurement of quality in CTE and reported that criteria like soft skills development is equally important to learning outcomes.

In the ‘Curriculum and Work-Related Activities’ topical area, ten questions centered on the impact of secondary CTE curriculum and the work-based learning experiences the curriculum offers. Questions highlighted post-secondary endeavors to enroll, enlist, and/or find employment. The professional development (PD) opportunities and needs for CTE teachers were also covered. All panelists expressed that learning beyond the classroom needs to be an important, irreplaceable part of the curriculum framework of CTE. The concept of choice was another common response of the panelists. Twelve of the 14 panelists reported that students should have the option to elect CTE courses and pathways that support their interests and career aspirations. In addition, eleven of the 14 panelists reported that teachers should be able to elect the kinds of PD they feel are most needed to best impact their instruction to better influence students’ learning. Some interesting patterns for the ‘Curriculum and Work-Related Activities’ topical area were that business/industry participants all consented that employability skills need to be included in all CTE courses and CTE-POS so that students may connect and transfer what is being learned in the classroom to career. Educational leadership participants all mentioned funding as a consideration for the types of curriculum materials and work-related activities that could be available to teachers and students. Teacher participants, both secondary and post-secondary, all suggested that they appreciate the professional development (PD) currently offered to them, but believe that PD given to CTE teachers should be more content-specific so that instructional strategies are shared more appropriately for the uniqueness of their content areas.

In the ‘Career Awareness and Exploration’ topical area, six questions centered on identifying the purpose, use, and benefit of career inventories at the secondary level, both

middle and high school. Most panelists responded that career inventories are great tools to start using early in schooling (high elementary and middle grades) and continue to use throughout high school in an effort to keep inventories current for career guidance purposes and meaningful to the student. These panelists communicated that career inventories help students to uncover interests and career goals and provide them with helpful information about how to reach those goals. One panelist commented that through the use of career inventories coupled with collaboration between CTE and industry, "students would be exposed to careers beyond the surface-level of popular career choices within an industry and could possibly have entrepreneurial interests sparked…there is more to the healthcare industry than doctors, nurses, and dentists and instead of working for a company, students can own the companies." A common criticism panelists had about career inventories was that schools do not use them routinely enough to help guide students towards their unique life goals. Some interesting patterns for the 'Career Awareness and Exploration' topical area were that secondary schooling participants all agreed there is value in the use of career inventories with their students and expressed interest to actively engage students in this task. Yet, all admitted that either they had no knowledge of career inventories being used at all with students or at a very minimal level. Post-secondary and business/industry participants, on the other hand, all admitted that in their current sectors' career inventories were not used or referenced, but did agree that there seems to be some value in students completing them at the secondary education level to aid in career awareness and exploration.

In the 'Marketing of CTE Programs' topical area, twelve questions centered on identifying if high school students are aware of and understand how their secondary CTE

coursework aligns with a particular career pathway and how that course sequence is best mapped out to achieve the greatest outcomes for students. Among the topics discussed were: 1) assessing the messaging and branding of CTE as a program of study at the school and district levels, 2) determining students' awareness of post-secondary opportunities to further support their career interests and aspirations, and 3) considering the impact of secondary CTE curriculum on race, gender, and ability. All panelists, except for two outliers, reported that students' understanding about secondary CTE programs and post-secondary opportunities connected with their CTE-POS is lacking. Interestingly, the two outliers were post-secondary educational partners who expressed "students understand the opportunities available to them at the high school and college levels," but that "high school students really do not take advantage of these opportunities until their senior year when the 'what is next' question becomes most meaningful and relevant in their lives." All panelists noted that there is room for improvement in this 'marketing of secondary CTE programs and post-secondary college and career opportunities' endeavor. Here are a few suggestions collected from the data for events to increase awareness and understanding of CTE programming and opportunities, both at the secondary and post-secondary levels: Q&A briefings/information sessions for current CTE students, CTE student prospects, and families, Career and College Promise (CCP) Open Houses, Taste of Industry events which are platforms for students and families to meet and speak directly with business/industry partners, site visits to college campuses and places of work, Career Planning and Guidance trainings for teachers and school counselors/advisors, and, the maintenance of social media and other communications to provide current and frequent information about CTE-POS to the public.

Some interesting patterns for the ‘Marketing of CTE Programs’ topical area were that post-secondary educational participants all consented that they would like for their secondary educational constituents to invite them to have more conversations together and to have more opportunities to collaborate with one another to help with the vertical alignment of CTE programs at the secondary and post-secondary levels. Coincidently, secondary educational partners also noted the need to converse more with post-secondary educational partners so that communication is fluid, aligned, and conducive for collaborative projects and initiatives in an effort to help students better transition from high school to college. Similar expressions by secondary educational partners were reported with regards to their business/industry partners, so that transition from high school to work could occur more smoothly. Another pattern revealed in the ‘Marketing of CTE Programs’ topical area was that all panelists thought it most important for messaging and branding to originate from top leadership down, both at the school and district levels, in order to have the most impact on developing and sustaining a positive culture and climate towards CTE programming. One panelist commented, “Equity conversations must be had top down. If administrators are not having ‘the talk’ with staff, why would there be an expectation for staff to be mindful of equity practices of self and each other.” It was perceived by the school constituents on the expert panel that peer-to-peer promotion of CTE programming and CTE opportunities for college and career is probably more impactful than any other means of marketing, reporting “Teenage students tend to follow trends set by peers,” and “Who takes the course is a large determining factor for many students.”

The ‘Marketing of CTE Programs’ topical area also explored demographic and cognitive characteristics that may impact student navigation through CTE-POS, both at the secondary and post-secondary levels. In particular, this study made a deliberate attempt to narrow its gaze on the ways in which CTE curriculum intertwines race with post-secondary student outcomes. Interestingly, most panelists reported that the issue of ability, more than race and gender, helped to encourage or discourage students from taking classes, in particular CTE courses. Further, female participants were more sensitive in reporting to the idea of gender biases as it relates to women occupants, or the lack thereof, in certain career pathways. Participants of color were more willing to name race as an influence in course-taking and career occupancy. Business/industry and post-secondary educational participants tended to focus on ability as an influencer for courses taken and jobs performed.

Consensus Findings: Summary of Round Three

1. *What CTE curriculum factors shape student post-secondary outcomes?*

The main purpose of this first research question was to gain insight through a CTE expert panel’s lens about what components in secondary CTE curriculum help to prepare students for post-secondary pursuits of college and career. Developed through the axial coding process, 15 of the 25 narrative statements constructed were related to this research question and will be summarized below. Experts were considered to have reached consensus if at least 75 percent endorsed the presented narrative statement with at least Moderately Agree.

All panelists agreed on the top three quality factors of an effective CTE program: 1) using a curriculum that meets industry needs, 2) providing students with post-secondary artifacts and experiences like industry-recognized credentials, articulated credit, internships, and hard/soft skills development, and, 3) having highly qualified teachers. With an endorsement of at least Moderately Agree, all panelists reported that the availability and condition of CTE equipment and/or facilities impacts instruction and learning. All panelists, with the exception of two outliers, noted that secondary CTE programs should have college-like requirements such as, but not limited to, accreditation in order to help ensure CTE programmatic quality. Most of the panel perceived that accreditation measures of secondary CTE programs would help in the assurance that students would receive instruction that would best prepare them for post-secondary pursuits and would hold those responsible for the delivery and/or creation of CTE instruction and programs to a national, creditable consistent standard.

All but one panelist believed that the messaging, advisement, and guidance high school students receive about CTE course selection and/or work-related activities significantly influences their preparedness for post-secondary pursuits. The expert panel consented on the top three quality measures needed for instructional delivery to improve student learning: having rigorous instruction and evidence of rigor (i.e. critical thinking, real world problem-solving, job-like simulations, etc.) in the learning plan activities, using multiple teaching strategies, and having a qualified teacher who constantly seeks out professional development and keeps learning outcomes focused through course alignment and appropriate pacing.

All panelists, except one, reported that the two biggest benefits of participating in CTE for high school students were increased network capacity/heightened connection with industry and more hands-on learning experiences which can lead to higher engagement, motivation, and meaning/relevance for the learners. Over 75 percent of the expert panel suggested that completion of a CTE-POS, earning at least four credits in one career pathway, positively aids in the successful pursuit and attainment of post-secondary college and career endeavors. Al, but one panelists noted that the integration of academic and CTE pathways yield better student outcomes. Embedding career inventories in CTE curriculum is believed by 100 percent of the expert panel to help discover career interests and aspirations, and, through this discovery and exploration, students are better aware and more capable of achievement in undertakings after high school. Lastly, all of the panel, with the exception of two outliers, consented that Career Development Plans should be done for all secondary CTE students to assist with secondary course selection and career mapping of post-secondary options.

2. *What role does collaboration of CTE educators and industry-based partners play in establishing curriculum for successful outcomes?*

The main purpose of this second research question was to gain perspective from a CTE expert panel about how the collaboration between CTE educators and decision makers and business/industry partners influences CTE curriculum. Developed through the axial coding process, eight of the 25 narrative statements were related to this research question and will be summarized below.

For this research study, the CTE expert panel defines a CTE program of study as a series of related courses that prepare young minds for a rewarding, high-demand technical career with the capacity to earn a high wage and high skill, leading towards a credential, certificate, and/or diploma. One of the top three factors of an effective, quality secondary CTE program is having a curriculum that meets current industry needs, 100 percent of the panel members identified this factor as evidence of a CTE program's effectiveness.

Another consensus of the panel was that increasing students' capacity to network and connect with employers is one of two biggest benefits of participating in CTE in high school. All panelists, with the exception of two outliers, noted that secondary CTE student preparedness for post-secondary pursuits needs to extend beyond the classroom. All, but three, experts reported that learning which only occurs within the four walls of classrooms is not sufficient.

Consensus findings indicated that one of the two most important considerations for CTE professional development for secondary teachers is to stay abreast of current industry needs and changes so that instruction is relevant to modern work. Consented at 100 percent, experts believe career inventories embedded in CTE curriculum for secondary students helps in the discovery of non-traditional careers. Endorsed at 100 percent, panelists reported that there was no replacement of the work-based learning built into the CTE curriculum that is experienced at the secondary level to provide CTE students with a more realistic view of real-world tasks purposed to prepare students for post-secondary pursuits of college and career. Reaching consensus, panelists suggested

the top three benefits of collaboration between school district staff and business partners were tailoring the curriculum to be more responsive to industry needs, building a pipeline of potential employees, and providing students with more exposure to the real, modern world of work.

3. *In what ways does CTE curriculum mediate or exacerbate the impact of race on post-secondary outcomes?*

The main purpose of this third research question was to explore a CTE expert panel's perspective about the connection between CTE curriculum and race and its impact on student outcomes. Five of the 25 narrative statements were related to this research question and will be summarized below.

Race is usually a difficult topic for most people. Conversing about race enables individuals to uncover their own biases and prejudices and reflect on the impact such thinking, behavior, and practice has on others. Interestingly, the panel did not reach a consensus in this study when asked if all instructors should attend a Racial and Equity Training to identify personal biases, address disproportionalities in education and other systems, work towards neutrality in teaching and student-advocating practice, and to engage in discussion about race and its implications as an educational community.

The consensus findings of this study are detailed in Appendix I. The results of the study not considered a consensus, also referred to as a point of stability, discussed in Chapter 3, can be found in Appendix J.

Thematic Findings

During the axial coding process, four themes emerged. These themes were discovered by identifying common threads and patterns in the 977 responses of the expert panel. Figure 4 depicts the four broad question topical areas and the four themes that stemmed from each area. A descriptive analysis for each theme is provided in this section to provide further understanding of the nuances of this study.

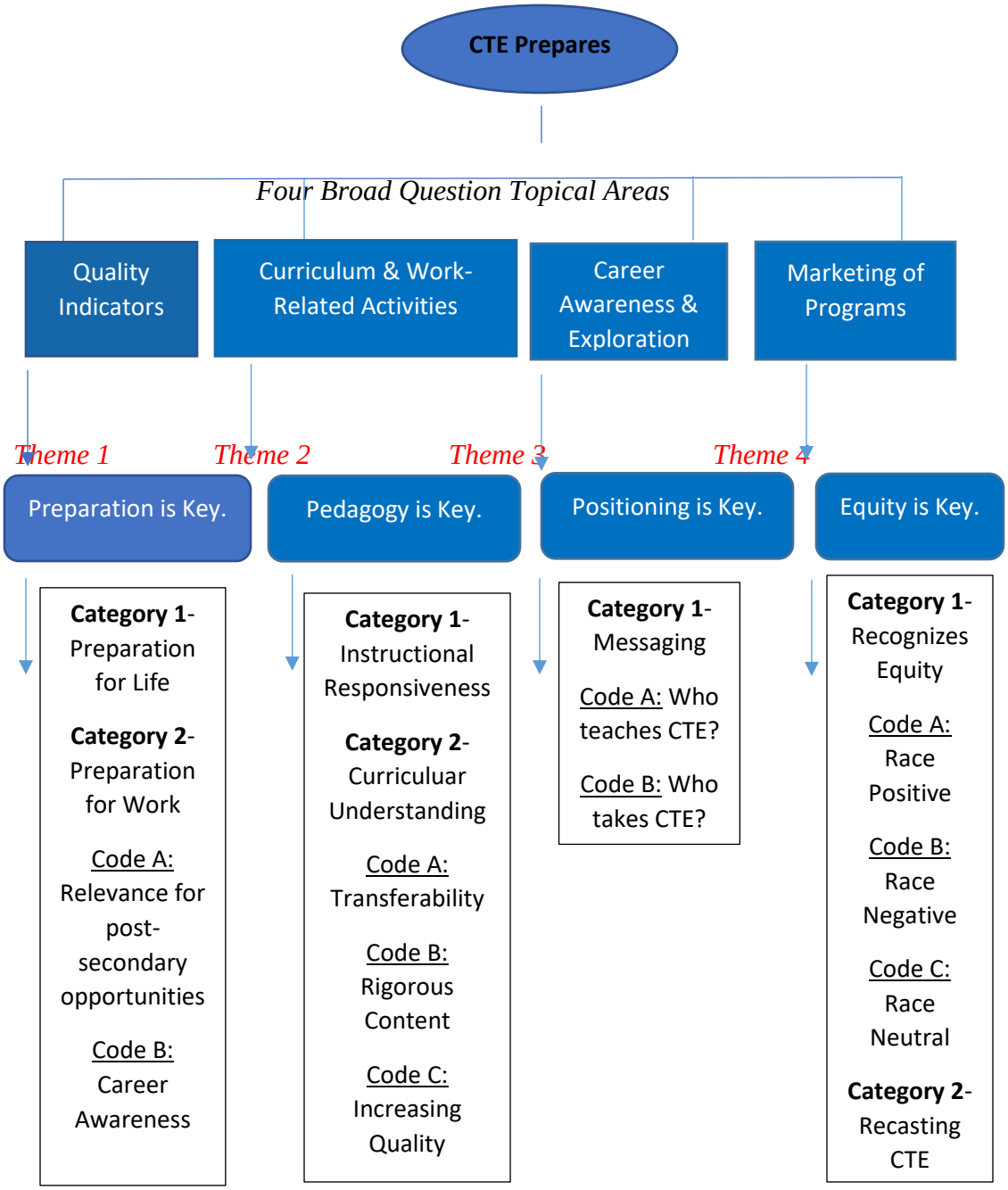

Figure 4. The topical areas, themes, categories, and codes developed from this study.

Theme 1: Preparation is Key

The first theme developed from the data is 'Preparation is Key'. The 'Preparation is Key' theme refers to the importance of life applications, not just applications for work.

Having the ability to adjust and be flexible are attributes of ‘Preparation is Key’. Preparation is for both life and work.

‘Preparation for Life’ describes the importance of integrating academic and occupational skills in order to fully participate in a democratic society as an active citizen, whereas ‘Preparation for Work’ describes the importance of acquiring knowledge and skills needed to be a productive employee. Getting and maintaining a job requires the development of hard and soft skills. Hard skills are the technical skills that students may attain in the classroom, through books or other training materials, or on the job. Hard skills represent the teachable abilities or skill sets that are easy to quantify. Soft skills are the interpersonal skills that students may develop through their interactions with others. Soft skills, also known as people skills, are often subjective and harder to quantify. The development of these skills is critical to preparing for the world of work. Hard skills typically help in getting the job, soft skills usually help in keeping the job.

Formal education is society’s best course to ensure successful citizen participation in the world of work (Lynch, 2000). Higher annual income, higher lifetime earnings, and lower unemployment risk are outcomes of formal post-secondary education and/or training (Baum & Payea, 2005). However, education does not have to be attained through traditional four-year degree programs. Technical training, industry certificate programs, vocational schools, and two-year degrees can lead to high wage careers for many students. Secondary CTE is beneficial in that it offers technical content and skills to students as preparatory training and development at no cost or very minimal cost to transfer to post-secondary endeavors. One teacher expert reported, “Lived experiences or

life experiences for CTE students with CTE curriculum can improve the in and out of classroom experiences greatly. While textbook knowledge is good, there is no substitute for actual, life lessons and applications that can be incorporated in students' daily life and daily interactions." Another teacher expert declared, "CTE courses teach the soft skills that many core courses are missing. They also place a student closer to the professional realm than core classes. CTE courses are the 'why we need to learn this' for many courses."

Additionally, this preparation includes coursework and activities that are relevant for post-secondary opportunities. One panelist commented, "CTE courses bring everything together. Most courses are isolated within their subject area. CTE courses inherently have integrated standards from many core courses and places students in a position to apply what they are learning." Curriculum involving college and career readiness targets and plans for short- and long-term career goals and prepares students for life and modern work. These two areas of readiness are a necessary precondition of preparation, as is career awareness. Career awareness is classified by three areas: 1) career guidance, where students discover their strengths and interests that relate to life and career; 2) career planning, where students set career goals, engage in career mapping, and conference with faculty about course selections that may best align with career aspirations; and, 3) career decision-making, where career exploration helps students make decisions and gives them time on task with career development activities. An educational leadership expert said, "CTE classes are definitely a good start to helping kids figure out career options, but we could do so much more to support the effort of CTE."

Theme 2: Pedagogy is Key

The second theme developed from the data is 'Pedagogy is Key'. The 'Pedagogy is Key' theme refers to the importance of crafting instruction to the uniqueness of each learner. Getting to know every learner and customizing instruction yields a proactive, instead of reactive, approach to teaching. 'Instructional Responsiveness' and 'Curricular Understanding' help instructors to meet the unique needs of their learners. 'Instructional Responsiveness' describes the importance of being responsive to learners through tailoring the learning plan to multiple intelligences, multiple learning styles, and multiple methods of teaching (i.e. hands-on activities, project-based learning, etc.). 'Curricular Understanding' describes the alignment of the content standards/objectives, assessment, and the learning plan activities that must be streamlined from the classroom to the workplace.

'Curricular Understanding' entails transferability, rigorous content, and increasing quality. Transferability pertains to students being able to earn artifacts (i.e. industry-recognized credentials, articulated credit, etc.) that can be used beyond high school graduation to be able to enroll, enlist, and/or find employment. Transferability describes the big concepts of the curriculum that are applicable in and out of the classroom. Rigorous content consists of subject matter knowledge considered as fundamental knowledge for the field. One expert said, "Quality instruction is not a one-and-done occurrence, quality takes into consideration the usefulness of content, the application of content, and the rigor of content...CTE does a great job with all three." This knowledge is considered universal and is the foundation for the work-related learning activities within

the curriculum. To be most impactful, the work-related learning activities should model real work practices, and connect industry to school so that meaningful experiences are had. An industry partner expert reported, “High quality instruction that is informed by industry practices, norms, and trends presents unparalleled opportunities to grow students, attain proficiency, and improve performance.” Another educational leader expert reported, “Industry should really inform our practice in the CTE classroom. What better way is there to prepare students than through partnerships with those whose boots are on the ground and in the field?” Integrating academics and industry with secondary CTE curriculum enables students to receive a well-rounded education prepped for global participation in post-secondary pursuits of college and career.

Increasing quality applies to attributes of the curriculum that add value such as accreditation (i.e. accountability) and funding (i.e. program maintenance, equipment/facility upkeep). One expert suggested, “Having accreditation would help high school CTE programs be more credible and reliable as it pertains to quality.” Another expert commented, “Money determines a lot about what is offered and what can happen for students related to work-related activities, and curriculum. It should never be a deterrent from not trying, there are creative ways to work around the issue of money.”

Theme 3: Positioning is Key

The third theme developed from the data is ‘Positioning is Key’. The ‘Positioning is Key’ theme refers to the importance of organizational culture and climate. The way curriculum is presented is the way it will be perceived; the way it is perceived is the way it will be treated; the way it is treated is the way it will be remembered; and the way it is

remembered contributes to the way the organizational culture and climate are understood. As a result, the messaging of CTE holds significant value. Messaging is influenced by who and what are represented in the organization. Reflecting on 'Who is teaching CTE' and 'What is included in CTE' speaks to the messaging.

'Who is teaching CTE' describes the consideration for CTE teachers to be highly qualified so that an instructional standard is set about the caliber of instruction being delivered. 'What is included in CTE' describes the biases general education students have about the courses taken by their CTE fellow classmates. For example, are the Honors/Advanced Placement (AP) designations placed on CTE courses, positioning CTE-POS among the elite courses to take? According to one panelist, "CTE having the ability to offer Honors and AP courses will cause some to think higher of its course offerings." While this may be true, CTE must be understood as a relevant and meaningful curriculum in its own right. As such it is not replaceable by a more college-oriented curriculum nor is such a curriculum preferable to a CTE curriculum. Experts suggested that it is a matter of channeling the focus toward the purpose of CTE and highlighting the important role that it serves in the preparation of students for post-secondary opportunities. One expert said, "A lot of attention is given to college-bound students, but the majority of our students do not go to college so why are so many decisions made around this lesser pursued pathway and this smaller group of college-bound students...but every kid will one day have a career so why aren't more efforts made to offer career guidance to all students." School leadership was implicated and complicit in the deficit-oriented messaging broadcasted. As one educational leadership expert noted "If school administrators and district leaders do not see the value of students taking CTE classes, it

will impact the branding and messaging of CTE-POS." CTE courses cannot be thought of as the fall back plan for students who cannot make it in the college bound academic track. Its messaging must resoundingly endorse its value and speak to its role as vital in preparing students for the future. It must be marketed as a deliberate choice, not the default option for those who elect it. As one panelist put it "If the program is marketed appropriately, students will be excited and gain knowledge about various opportunities. Students would feel more liberated to make choices and feel more connected to the local community and the community, at large." CTE once purposed for low-performing, non-college bound students, now is tailored for all types of learners.

Theme 4: Equity is Key

The fourth theme developed from the data is 'Equity is Key'. The 'Equity is Key' theme refers to the importance of accessibility for all students to CTE curriculum, experiences, and opportunities. Equity considerations begin with the concept of diversity and the awareness of differences. The theme, Equity is Key, is comprised of two sub categories: 'Recognizing Inequity' and 'Recasting CTE'.

'Recognizing Inequity' describes the reality of stereotypes relating to CTE and its students. Consequently, CTE programming and its students were thought to be of lesser importance. This stereotyping did not occur just at the global level, but also at the local level within CTE wherein it was not uncommon for certain types of CTE students to be tracked into certain types of CTE classes. For example, common to this research site, STEM pathways primarily consist of white males, while pathways for the Trades Industry (i.e. carpentry, welding, etc.) primarily consists of minority males. Nursing

Fundamentals primarily consists of white females, while courses in the Family and Consumer Sciences pathway, specifically Parenting and Child Development and Foods, have more female students of color. One teacher panelist reported, "While the CTE pathways do not suggest a typical student profile, I do believe certain pathways are created either intentionally or unintentionally for certain students. Demographics and other factors could determine if a student is considered, recommended, or advised to choose certain pathways." Recognizing inequity requires that CTE opportunities are communicated to all students regardless of their demographic characteristics. Teachers, administrators, and counselors cannot continue to use such characteristics as a prism for filtering students into or out of particular CTE pathways. Communication channels must be open and exposure must be inclusive to all students. 'Recognizing Inequity' led to the construction of three codes: Race Positive, Race Negative, and Race Neutral.

Race positive. The Race Positive code was constructed by highlighting non-traditional careers. The CTE expert panel commented that CTE curriculum can help to mediate race's impact on student outcomes through non-traditional careers. The researcher gathered this will help students see images of people in careers that resemble themselves, giving non-traditional students hope that the pursuit of particular careers is possible and their career aspirations are attainable. Eleven panelists suggested there needs to be intentional and frequent marketing of non-traditional careers and personal invitations to non-traditional students for certain career pathways to share information about all careers, traditional and non-traditional. The researcher concluded this type of purposeful marketing of CTE programs would help to ensure that all secondary students receive the same information to help inform their post-secondary decisions. It was

consented by the study's CTE expert panel that the top three ways to best diversify CTE-POS were to promote non-traditional participants and completers, engage all students by sharing information with all populations of students in a welcoming manner, and create an equitable organizational culture from top leadership down. The researcher drew from these consensus findings that all of these efforts to bring about diversity and equity start with awareness through meaningful conversation that progressively leads towards thoughtful action to invoke sustaining change in systems, or components of systems, of injustice.

Race negative. Strangely, based on what was just noted in the Race Positive Code, it was not the consensus of the panel that there is a typical student profile in certain CTE pathways versus others mainly due to the "marketed" profiles on social media outlets and other advertisements commonly found of those who occupy certain careers perpetuating the constructed narratives in society for the "norm." What is society's typical image of a medical doctor, teacher, engineer, banker, nurse, construction worker, carpenter, garbage collector, or fast food worker? How can CTE help counter these narratives prevailing in society to communicate to students that they can follow their career interests and career aspirations even if it is non-traditional, despite this CTE expert panel not finding a consensus that there is a typical student profile for certain career pathways solely because of race? Interestingly, CTE expert panelists who thought that this research site's organizational temperament contributes to the historic marginalization of CTE and its students was twice that of those who thought it discontinued.

Race neutral. Race Neutral is defined as the panel's avoidance to name structural and systematic racism in education, specifically CTE. The absence of having such race and equity conversations is sustained due to an intentional act to avoid or failure to admit to the existence of inequity and injustice, probably because of the discomfort this kind of talk carries and the responsibility, usually unsolicited, this kind of talk demands. If there is no collective attention and discussion about the impact of racial inequities, even when directly asked, then there is little-to-no opportunity to expose these historical occurrences of inequitable behaviors and practices that remain today. Disjointed conversations about structures and systems of racism lead to minimal change, if any, towards the factors that contribute to secondary CTE curriculum exacerbating the impact of racial inequities on student post-secondary outcomes.

All, but three panelists, commented that earlier conversations about the educational trajectory of students need to happen to educate students about the various career pathways. Most panel members agreed that exposure and hands-on opportunities are key influencers to inspire, motivate, and engage students. Interestingly, when talking about inequities as they pertain to student outcomes through curriculum, race was only directly mentioned or implied by panelists of color, other panelists only noted gender and/or ability as measures of inequity.

The results of this study, those considered consensus findings and those not, led the researcher to conclude that people of color are more comfortable with race talk because people of color have to consider the impact of race in every system of society, including education. Whereas, whites do not have to consider their whiteness and its

implications in various systems in society. If whiteness, or the lack thereof, does not have to be considered by the group in power, then the perpetuation to maintain the status quo, systems of inequity and injustice, is achievable. The absence of having such race and equity conversations is sustained due to an intentional act to avoid or failure to admit to the existence of inequity and injustice, probably because of the discomfort this kind of talk carries and the responsibility, usually unsolicited, this kind of talk demands. If there is no collective attention and discussion about the impact of race, even when directly asked, then there is little-to-no opportunity to expose the historical occurrences of inequitable behaviors and practices that remain today. Disjointed conversations about race leads to minimal change, if any, towards the factors that contribute to secondary CTE curriculum exacerbating the impact of race on student post-secondary outcomes. Profoundly, no panelist said that CTE curriculum mediates the impact of race on student post-secondary outcomes. There was only commentary of a hope that CTE curriculum could help mediate the impact of race on student post-secondary outcomes. Hope cannot be the only component of a plan. However, some panelists suggested that CTE curriculum exacerbates the impact of race on student post-secondary outcomes. In education, at all levels, there has to be ongoing conversations about race and the vast implications thereof.

'Recasting CTE' describes the reality of stigmas. Stigmas represent what is considered disgraceful about CTE and as these stigmas are uncovered, there must be a cohesive effort to situate that narrative very differently. The data suggests that CTE be recast so that it is seen more positively. Forming partnerships is one way to do this. These partnerships are both internal and external to the organization and would help to set

curriculum priorities. Internally, partnerships can be developed through the use of cross-disciplinary academic teams through professional learning communities that have prescribed times for teachers to meet and discuss instructional strategies and practices, plan lessons, and assess the data together. Externally, partnerships with industry and community partners are needed. Recruiting diversified staff, developing new and different partnerships, and having intentional, equitable conversations (i.e. discussions centered on certain CTE pathways being offered at certain schools, the lack of diversity in certain classes, CTE is for all students, etc.) would help in the recasting of CTE from its historical marginalization narrative. One educational leadership expert commented, "Information should be shared in all classes, not just Honors and AP classes. Students can help to champion this effort by promoting their experience in CTE to other students."

Conclusion

Chapter 4 reported the perceptions of 14 diverse experts who are directly in, or closely connected to, the field of Career and Technical Education regarding how secondary CTE programming influences CTE students' preparedness for post-secondary college and career pursuits. Many factors related to secondary CTE curriculum are perceived by CTE experts to influence student preparedness for post-secondary college and career pursuits. Many ask, "Is CTE Working?" Is secondary Career and Technical Education making a positive difference in the lives of students towards the attainment of their college endeavors and career goals? To help offer answers to these questions, the study discovered four overarching themes: Preparation is Key, Pedagogy is Key, Positioning is Key, and Equity is Key. The collective reporting of this study's CTE expert panel suggested that secondary CTE is in fact working to positively influence secondary

CTE students' preparedness for post-secondary college and career pursuits. Apparent in the data are areas for improvement, but overall, secondary CTE programming is helping students beyond high school.

CHAPTER 5: DISCUSSION AND RECOMMENDATIONS

The purpose of this qualitative study was to explore how secondary CTE programming influences CTE students' preparedness for post-secondary college and career pursuits. The goal of this study was to build towards a consensus from a CTE expert body to be able to inform practice and policy within this local educational agency (LEA) that may also be transferrable to other LEAs. Using a modified Delphi Method, consensus building was used to achieve clarity and focus for CTE programming, sustainability, and improvement.

Discussion

There are major ramifications of inadequate preparation of high school graduates for active participation in society. Inadequate secondary school preparation can have very similar student outcomes as dropping out of school (Levy & Murnane, 1996). Preparation for formal post-secondary education and/or training while in high school is not only valuable, but of necessity. Broadening pathways for all students in preparation for them to fully function as positive societal contributors is critical to the overall U.S. economy. To compete in the highly technical job markets of the 21st century, educational leaders must ensure there is adequate, accurate, and consistent career and college guidance in U.S. schools. The realization of college not being the only pathway to prosperity must be a message communicated by educational leaders and policymakers and they must inspire other stakeholders to a similar understanding.

The theme, Preparation is Key, informs this notion that the integration of academic and occupational skills helps students with preparation for life and work. This

is consistent with what other scholars (Castellano et al., 2003; Elmore, 2009) who reported that an American workforce would need to be skilled, adaptive, creative, and equipped for success in a global marketplace. This study found that curricular integration is essential to resolving the student disengagement problem. Moreover, this integrated effort must occur across content areas, departments, grade levels, and school-to-school (Elmore, 2009).Ongoing reform efforts focus on a recommitment to academic basics, strengthening the areas of English, mathematics, science, and technology, while also developing better personal skills, also referred to as soft skills, such as communication and computational skills, employability skills, and building a stronger foundation of career planning and lifelong learning for students (Rojewski, 2002).

The theme, Pedagogy is Key, reinforces the constructs of instructional responsiveness and curricular understanding which contributes to the outcome of student preparedness. This study found that the recognition of the uniqueness of learners' needs is what sets CTE apart from other curricular areas. Being able to tailor instruction towards the multiple intelligences and learning styles centered on passions and career interests/aspirations, undergirded with rich content and work-related experiences, gives CTE the ability to transfer knowledge and skills more readily.

The study found that having an understanding of student needs, industry needs, and quality indicators of effective programming are all essential to demonstrating responsiveness towards the learners and to providing readiness towards college and employment. Castellano et al., 2004, also suggested that smaller learning communities with well-defined CTE themes and pathways yield better performance from CTE

students. The more current debate in research on transitional preparedness from secondary to post-secondary has centered on career and college readiness (Camara et al., 2015; Byrd & MacDonald, 2005; Dounay, 2006). To help bridge this transitional phase, both academic and career pathways must partner to collectively define career and college readiness and jointly reach a consensus that both pathways are equally important for all students to explore. Academic course-taking and CTE concentration are both mutually beneficial to students (Southern Regional Education Board [SREB], 2006).

Today, the modern governance of secondary CTE programs confirms its role in the preparation of students beyond high school for life and work by having strong pedagogical instructional strategies that support rigor, fundamental knowledge and skills, and transferability.

The theme, Positioning is Key, highlights the critical role that branding and messaging plays in the perception of CTE. This study found that CTE programs were hampered structurally due to the lack of honors course options. Students were reluctant to take CTE courses because of the stigma associated with them. Therefore, those few students who were thought to have a high level of competence and ability were tracked towards an academic, college pathway while all other students thought to be less competent and able were tracked towards a general, vocational pathway. This tracking inevitably ensured the marginalization of vocational education, now Career and Technical Education (Kincheloe, 1995). Administrators noted the negative impact on opportunities caused by the lack of visibility of CTE programs as desirable options which

caused a lack in support of CTE programs at the building level. Other scholars have reported (Castellano et al., 2003; Kotamraju & Mettille, 2012) similarly.

Additionally, Aliaga et al., 2012 suggests that the lack of a national accountability system for CTE -POS is problematic. The experts who participated in this study concurred. Lack of accountability resulted in deficit positioning of CTE programs. This impedes on the ability to provide data on the collective impact of CTE and student achievement (Kotamraju & Mettille, 2012). This lack of accountability causes inconsistencies in the quality of CTE programs which contributes to negative perceptions and stereotypes. As a result, this contributes to the perpetuation of stigmas from principals towards CTE which promotes a bigger divide between academic and vocational education (Aliaga et al., 2012). In this divisive culture, students begin to identify with one track or another which can negatively influence student achievement and self-efficacy (Castellano et al., 2003). If CTE-POS have poor implementation and execution, many principals will not support the commitment to host a CTE-POS at their school nor commit funding for such programs. As a means to document these accountability measures, these quality attributes should be written into some type of CTE Local Planning System for every school district. These attributes are illustrated below in Figure 5, which illustrates the components necessary for a high quality CTE program. Each component in the circle supports the overall outcome of high school students being college and career ready. Each component intersects and has influence on what is required to support a quality experience for students**.**

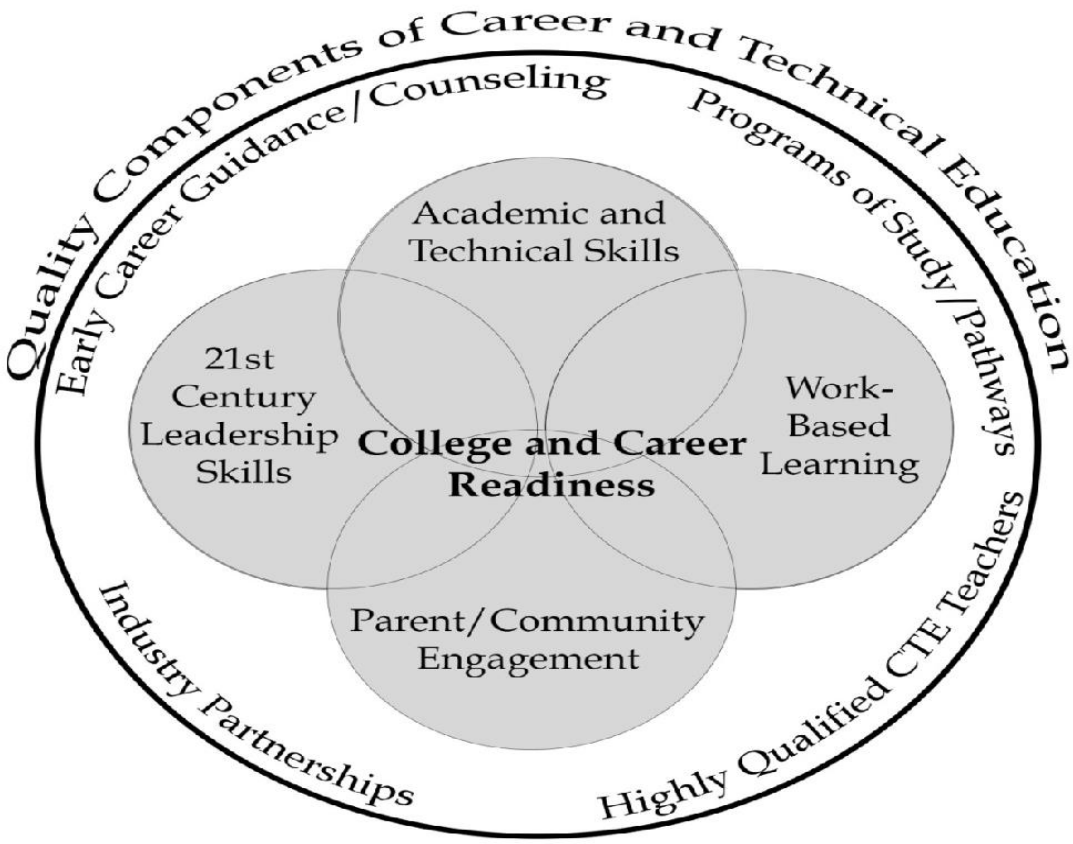

Figure 5. High Quality CTE Programs of Study. Brown (2015).

The four major components, Academic and Technical Skills, Work-Based Learning, Parent/Community Engagement, and 21st Century Leadership Skills, surrounding College and Career Readiness are important for the assurance of high quality CTE programs. The effective implementation of the inner components greatly depend on the outer components. Representative of the data collected in this study, it was agreed that having highly qualified teachers is a major component of quality CTE programming. As demonstrated in this study, being a highly qualified CTE teacher consists of possessing adequate industry experience, having a sound understanding of pedagogical methodologies, being student-centered, and having the ability to establish local business partnerships. Panelists indicated that having

teachers who care about their students and are passionate about their curriculum are essential characteristics for high quality CTE programs. Educational leaders must ensure and business partners should support the necessity for secondary CTE teachers to embody the characteristics outlined above in order to provide secondary CTE students with a high-level of post-secondary preparedness for college and career pursuits.

One significant recommendation of the researcher as it relates to effective CTE programming comes from the conceptual framework that undergirds this study: it is important for an organization to have an "agreement" on an organizational framework centered on improvement. This cohesiveness would help multiple levels of the organization stay committed to the improvement strategy while increasing comfortability with expectations among district leaders, principals, teachers, and instructional coaches that lead to improvement at the classroom, school, and district levels (Leverett, 2009). The need for a coherent organizational improvement framework speaks directly to one of the study's thematic findings, 'Positioning is Key' and one of the study's consensus findings, 'messaging and branding of programming from top leadership down is critical'; it impacts how programming is received and implemented in an organization.

The theme' Equity is Key' addresses the mission to recast CTE in an effort to escape the historical marginalization of its programming and students. This is consistent with what other scholars reported (Kelly & Price, 2009; Lewis, 1998) about CTE being criticized as a dumping ground for students at the margins: the less academically-motivated, at-risk students, ELL, minorities, and students with special needs who have traditionally been positioned as non-college-bound students (Castellano et al., 2003). This

separate and distinct system has caused vocational education to have an odd existence, questioning its place in U.S. schools.

This study had a slight contradiction and revealed that many panelists thought that this site's organizational temperament continued the historical marginalization of CTE and its students. However, many of the same panelists felt hopeful for this organization's ability to firmly discontinue the negative historical perspective of CTE through intentional, coherent positioning. All experts consented there is value in secondary CTE for post-secondary preparedness for all students. CTE programs across the U.S. have significantly influenced student learning and achievement (National Association of State Directors of Career Technical Education, 2010). The Career Equity Resource Center (CERC), accredits recruitment and retention of highly qualified and culturally responsive educators as important components to achievement for all students.

Implications for CTE Curriculum Designers and Instructional Facilitators

In order for secondary CTE students to experience positive post-secondary outcomes, there must be an assurance of quality for secondary CTE programs. One implication of this study is that quality training is required for the development of quality programs that recognize and support the unique needs of CTE students. Quality training is multifaceted and comprehensive. Administrators and district leaders need to appropriate both time and funding to developing CTE instructors' pedagogical skills, modern work awareness, and networking capacity. Further, industry and community partners could also be encouraged to help develop and lead training. This would

strengthen much needed collaborative ties and ensure that the curriculum has relevant and meaningful content and activities.

Another implication to help ensure quality is the need for and implementation of accountability measures that will monitor the development and maintenance of high quality CTE programs. Perkins IV of 2006 is currently the only guiding framework of policy and governance for CTE. Recently reauthorized, Perkins V of 2018 will officially go into effect in the summer of 2019 (Kreighbaum, 2018). As evident in this study, the experts concurred that having college-like requirements (i.e. accreditation, routine program/instructor evaluation completed by students, etc.) will help CTE program quality at the secondary level. Having SMART goals documented in some form of CTE Local Planning System (LPS) to align accountability with evaluation would prove to be very instrumental in achieving positive student outcomes.

Implications for CTE's Business/Industry Partners

Modern work is ever-changing. Today's economy demands an even wider set of abilities for workers including technical and interpersonal/communication skills. For many high school students, career guidance is lacking and many students find themselves in CTE-POS due to influences of peers, families, and/or their own self-efficacy. This is troublesome from an academic perspective because this lack of connection and/or buy-in to the CTE-POS may cause students to feel that their CTE experiences are not as valuable as academic coursework. The need for more appropriate career guidance and exploration is desperately needed.

An implication of the study is for businesses and industry partners to serve as mentors to students. This will connect the classroom to the world of work and it could create a targeted pipeline of potential employees for partnering employers. Business/industry partners could offer teachers a more current industry outlook through providing opportunities for summer work, teacher job shadow opportunities, etc. This recommendation gives teachers a chance to learn more about a particular career field so that instruction can be better aligned to the reality of work. In addition, business/industry and post-secondary educational partners can help facilitate some professional development and/or serve on some kind of advisory board for classroom-place of work-college alignment.

Implications for Racial Equity Considerations for CTE

Yet, equitable access to all CTE programs for all students still creating awareness and providing opportunities for diverse students to explore a wide range of careers, both traditional and non-traditional, is critical to ensure equity.

Some implications of this study for recruitment and retention of diverse students include, but are not limited to, using non-traditional role models to promote programs amongst non-traditional students, issuing personal initiations for students to attend a class or activity, developing promotional advertising (including salary, job benefits, career pathways, racially-and-gender-diverse imagery, etc.) to market non-traditional careers to various student audiences, initiating discussions with students, creating peer support and mentoring groups for non-traditional students, connecting students with the Career and

Technical Student Organizations (CTSO), and exploring the real world of work around them through field trips and other work-related activities (CERC, n.d.).

Additionally, it is recommended that in an effort to raise the racial equity senses of key stakeholders, more persons of color and more women must become included in intentional conversations about personal biases and prejudices that impact the learning and socialization of students. The researcher is not suggesting that efforts toward greater equity become the sole responsibility of marginalized groups (i.e. non-traditional students recruiting other non-traditional students), but rather that multiple means be used to retain a greater focus on the injustice structures and systems so that long, sustaining change can be achieved. These racial equity "banner carriers", also referred to as non-traditional role models, must not be the only option pursued to remedy injustice. These non-traditional role models need to be empowered, and connected with others influencers and way makers, to help identify and challenge structural and systematic racism so that movement towards racial and ethnic equity produces positive student outcomes. Staff members at the school and district levels must demonstrate racial and gender diversity through hiring practices and leadership positions, and others. Furthermore, equity and access for all must be a part of the school district's strategic plan, must be discussed by the school's improvement team, and must be acted on by leadership, top-down. Constant assessment and visitation of equity and access issues must remain in focus and purposefully placed as agenda items in planning meetings, and these planning meeting must result in action. As indicated in this study, teachers, and others, may not realize that professional development (PD) is needed to uncover biases and prejudices so perhaps PD sessions and

conversations could be deliberately geared towards awareness and reflection which would hopefully lead to a change in mindset that provokes a change in practice.

Seeking external racial and equity consultation services from individuals that have an equitable mindset is an implication derived from this study. Professional consulting centered on eliminating racial and ethnic disparities and producing equitable outcomes would help attendees to understand how structural and systematic injustices are produced. Consultants would need to be intentional with this type of training in order to move the new thinking into impactful practice. Presenting historical race data and having coherence in the understanding of racism, and its structures and systems, can offer escape from personal feelings and popular opinion so that structural and systematic transformation and racial justice is achieved.

Future Research

Reform initiatives like CTE have been created to better connect students to school by increasing engagement through hands-on, highly technical, and experiential learning that is relevant and meaningful. A specialized design curriculum such as CTE could be extremely helpful in convincing or dissuading students from honing in on a career. Supporting students in their decisions about future career paths is a win for the students, educators, and employers. CTE can contribute to students having a strong sense of what they want or do not want to do and give direction of the various pathways to get them to their desired career goals. This is an important attribute of CTE that can also shed light on future research areas that pertain to this topic under investigation. The following questions highlight limitations of the current study while also suggesting areas for future

research. 1) Do high school students not participating in CTE have the same career sense regarding their future careers; 2) Is there a difference in career aspirations of CTE concentrators versus non-CTE concentrators; and 3) Do CTE participants who take one or two CTE courses in a non-related CTE-POS have the same level of career aspirations as CTE concentrators or CTE participants who are following a sequenced CTE-POS? 4) What are the CTE expert panel's perspectives about post-secondary outcomes of non-CTE high school students?

Considerations for future research are intended to recommend ways to conduct a deeper analysis of the factors: curriculum, collaboration, structural and systematic racism in education, etc. that influence CTE instruction and learning in order to better assess what is working for CTE programmatic planning and implementation to reveal areas of improvement and sustainability. Another study may return similar results or shed light towards new implications; either way, further research would help to inform school districts towards decisions for a more coherent strategic plan for improvement as it relates to CTE Programs of Study (POS).

Additional research is needed around the issue of intersectionality and how the interconnectedness of certain classifiers influence secondary CTE student outcomes. Intersectionality is defined as the simultaneous experience of categorical and hierarchical classifications including but not limited to race, class, gender, sexuality, and nationality (Cole, 2019). The concept of intersectionality explains that different forms of oppression, such as racism, classism, sexism, and xenophobia, often perceived as unrelated forms of oppression, are actually mutually dependent and intersecting in nature and collectively

comprise a unified system of oppression, moving conversations away from binary exchanges. That is conversations are not just about class, race, or gender but must occur at the intersections between them. For example, would a typical career path for a black, homosexual male be cosmetology? Why? The way CTE-POS are positioned, branded, and generate messaging is critical to the efficacy of students regarding their career decisions and achievement. It determines who has the privilege of choice and who is inhibited by discrimination based on perception of career fit.

Limitations

While the findings are notable, there are two significant newly conceived limitations of this study. The first limitation pertains to the questionnaire used in Round 1 of the data collection process. In reflection, the questionnaire was not as attentive to the issues of culture. It could have posed questions more directly towards the phenomena of racism. Often times, questions involving race also included other components like gender and cognitive ability, which may have presented the panel an opportunity to avoid one component and focus on another and still feel that the question was answered at a satisfactory level. The second limitation of the study points to the demographic makeup of the expert panel. Of the 14 participants, only four were non-White. Having greater intention to select a more diverse panel may have more pointedly explored the study's third research question: In what ways does CTE curriculum mediate or exacerbate the impact of racial inequities on student post-secondary outcomes?

Positionality

The researcher has worked in secondary Career and Technical Education for 15 years and continues to work in this career field as an administrator. The duration of such a career has given the researcher a vast wealth of experience and knowledge of CTE, its history, its programming, and its policy and legislation. This familiarity could potentially have influenced the information that participants provided during the Delphi rounds. The duration of such a career has given the researcher a vast wealth of experience and knowledge of CTE, its history, its programming, and its policy and legislation. This familiarity potentially could have influenced how the researcher designed the data collection instruments and conducted the analysis. Because the participants were also aware of the researcher's background and personal attachment to CTE, their responses may have sought to mirror the presumed expectations of the researcher.

Conclusion

Frequently communicated in educational realms is this realization of a skills gap for those novice workers entering into the labor market. Many say what is learned in classrooms does not align well with what is done in the workplace (Career Technical Education, 2019). The skills gap refers to hard skills (i.e. computer and computation skills) and soft skills (i.e. time management, communication, and team work skills) needed on the job, but not appropriately acquired upon job entry. Proponents of Career and Technical Education understand that this specially designed curriculum needs to be an intricate part of a student's educational pathway at the secondary level, with even earlier exposure opportunities.

In order to continue to experience economic, societal, and political prosperity, all students must be adequately and timely prepared for the world of work far before graduating from high school. The CTE curriculum is vital to the United States' workforce and economy. CTE, known for its vast career pathways, focuses on transitioning students from secondary to post-secondary endeavors that leads to the attainment of competencies and skills, transferable artifacts, and careers that yield a family-sustaining wage. As one expert reflectively said, "CTE is hidden from view. Sometimes it seems like an off note, instead of being a part of the whole harmony."

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APPENDIX A: NC ARTICULATION AGREEMENT BETWEEN HIGH SCHOOLS AND COMMUNITY COLLEGE

High School to Community College Articulation Agreement

2012 Articulation Agreement

NOTE: This list of articulated courses is for high school courses that began on July 1, 2012 through June 30, 2017. Before then, the 2005 articulation agreement was in effect. After that time period, the 2017 articulation agreement was in effect

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The North Carolina High School to Community College Articulation Agreement is an agreement between the North Carolina Department of Public Instruction and the North Carolina Community College System.

The North Carolina High School to Community College Articulation Agreement provides a seamless process that joins secondary and post-secondary Career and Technical Education (CTE) programs of study.

This statewide articulation agreement comprises approximately 50 high school CTE courses that match the knowledge and skills taught in similar community college courses. The articulation agreement ensures that if a student is proficient in his/her high school course, the student can receive college credit for that course at any North Carolina community college. This streamlines the student's educational pathway by eliminating the need to take multiple courses with the same learning outcomes.

Process to Document and Award Credit

To receive articulated credit, students must enroll at the community college within two years of their high school graduation date and meet the following criteria:

- Final grade of **B** or higher in the course and
- A score of **93** or higher on the standardized CTE state post-assessment

High school students who enroll in a Career and College Promise pathway may earn articulated college credit as described in this agreement while enrolled in high school, if the CTE articulated college credit is part of their Career and College Promise pathway.

Community college officials verify eligibility and acceptance of articulated courses listed on the high school transcript. Students may be asked to submit supporting documentation and/or demonstrate proficiency to receive credit. Colleges must follow the criteria of the Southern Association of Colleges and Schools (SACS) Commission on Colleges in awarding credit (“CTE Learning that Works for North Carolina,” n.d.).

APPENDIX B: LIST OF NC HIGH SCHOOL ARTICULATION COURSES FOR COMMUNITY COLLEGE TRANSFER CREDIT

High School to Community College Articulation Agreement

Articulated Course List 2017 (current)

The North Carolina High School to Community College Articulation Agreement is an agreement between the North Carolina Department of Public Instruction and the North Carolina Community College System.

NOTE: This list of articulated courses is for high school courses that began July 1, 2017 or later. Before that date, the2012 articulation agreement was in effect.

Following are the course matches that are part of the statewide articulation agreement.

High School Program Area	High School Course Number & Title		Community College Course Number & Title	Notes
Agricultural Education	AS32 Agricultural Mechanics II	=	WLD-112 Basic Welding Processes OR AGR-111 Basic Farm Maintenance	
Agricultural Education	AA22 Animal Science II	=	ANS-110 Animal Science	
Agricultural Education	AP41 Horticulture I	=	HOR-150 Intro to Horticulture	
Agricultural Education	AP44 Horticulture II - Landscaping	=	HOR-114 Landscaping Construction OR LSG-111 Basic Landscaping Technique	
Business and Information Technology Education	BA10 Accounting I	=	ACC-115 College Accounting OR ACC-118 Accounting Fundamentals I	
Business and Information	BA20 Accounting II	=	ACC-115 College Accounting OR ACC-118 Accounting	

Technology Education			Fundamentals I OR ACC-119 Accounting Fundamentals II	
Business and Information Technology Education	BP12 Computer Programming II	=	CSC-153 C# Programming	
Business and Information Technology Education	BM10 Microsoft Word and Power Point	=	CIS-111 Basic PC Literacy OR CIS-124 DTP Graphics Software OR OST-136 Word Processing	
Business and Information Technology Education	BM10 Microsoft Word and Power Point AND BM20 Microsoft Excel and Access	=	OST-137 Office Software Applications	
Business and Information Technology Education	BM20 Microsoft Excel and Access	=	CTS-130 Spreadsheet	
Business and Information Technology Education	BD10 Multimedia and Webpage Design	=	WEB-110 Internet/Web Fundamentals OR WEB-120 Intro Internet Multimedia	
Business and Information Technology Education	BN20 Network Administration I	=	CTI-115 Computer Systems Foundation OR CTI-120 Network and Security Foundation OR NET-110 Networking Concepts OR NOS-110 Operating System Concepts OR	

			SEC-110 Security Concepts	
Business and Information Technology Education	BN22 Network Administration II	=	CTS-112 Windows OR (NET-110 Networking Concepts AND NOS-230 Windows Admin I)	
Business and Information Technology Education	BF05 Personal Finance	=	BUS-125 Personal Finance	
Family and Consumer Science Education	FE11 Early Childhood Education I AND FE12 Early Childhood Education II	=	EDU-119 Intro to Early Childhood Education	
Family and Consumer Science Education	FN41 Foods I AND FN42 Foods II - Enterprise	=	CUL-112 Nutrition for Food Service	
Family and Consumer Science Education	(FN42 Foods II EnterpriseOR FH20 Introduction to Culinary Arts & Hospitality) AND ServSafe certification	=	CUL-110 Sanitation & Safety AND CUL-110A Sanitation & Safety Lab	
Family and Consumer Science Education	FN43 Foods II - Technology	=	CUL-150 Food Science AND CUL-150A Food Science Lab	
Family and Consumer Science Education	FI53 Interior Applications	=	DES-235 Products	

Health Science Education	HU40 Health Science I	=	MED-121 Medical Terminology I AND MED-122 Medical Terminology II	
Health Science Education	HU42 Health Science II	=	HSC-110 Orientation to Health Careers AND (HSC-120 CPR OR MED-180 CPR Certification)	
Health Science Education	HN43 Nursing Fundamentals	=	NAS-101 Nursing Assistant I	
Health Science Education	HH32 Pharmacy Technician	=	PHM-110 Introduction to Pharmacy	
Marketing Education	ME11 Entrepreneurship I	=	ETR-210 Intro to Entrepreneurship	
Marketing Education	MM51 Marketing	=	ETR-230 Entrepreneur Marketing OR MKT-110 Principles of Fashion OR MKT-120 Principles of Marketing	
Technology Engineering and Design Education	TE21 Principles of Technology I	=	PHY-121 Applied Physics	
Technology Engineering and Design Education	TE22 Principles of Technology II	=	EGR-115 Intro to Technology OR PHY-131 Physics - Mechanics	
Technology Engineering and Design Education	TP11 PLTW Introduction to Engineering Design AND TP12 PLTW	=	ARC-111 Intro to Arch Technology OR DDF-211 Design Process I	

	Principles of Engineering AND TP23 PLTW Civil Engineering and Architecture			
Technology Engineering and Design Education	TE11 Technology Engineering and DesignAND TE12 Technology DesignAND TE13 Engineering Design	=	EGR-110 Intro to Engineering Technology AND (CEG-115 Intro to Technology and Sustainability OR EGR-115 Intro to Technology OR DDF-211 Design Process I)	
Trade and Industrial Education	IC00 Core and Sustainable Construction	=	WOL-110 Basic Construction Skills	
Trade and Industrial Education	IT16 Automotive Service IAND IT17 Automotive Service IIAND IT18 Automotive Service III	=	TRN-111 Chassis Maint/Light Repair AND TRN-112 Powertrain Maint/Light Repair AND AUT-113 Automotive Servicing I	Must complete MLR Task List
Trade and Industrial Education	IM21 Cabinetmaking I AND IM22 Cabinetmaking II	=	CAB-111 Cabinetmaking I	
Trade and Industrial Education	IC00 Core and Sustainable Construction AND IC21 Carpentry I	=	CAR-110 Intro to Carpentry OR WOL-110 Basic Construction Skills OR CST-110 Intro to Construction	

Trade and Industrial Education	IC22 Carpentry II	=	CST-111 Construction I	
Trade and Industrial Education	IC23 Carpentry III	=	CST-112 Construction II	Must receive credit for CST-111 before receiving credit for CST-112
Trade and Industrial Education	II21 Computer Engineering Technology I	=	CTS-120 Hardware/Software Support	
Trade and Industrial Education	II22 Computer Engineering Technology II	=	CTS-220 Adv Hard/Software Support	Must receive credit for CTS-120 before receiving credit for CTS-220
Trade and Industrial Education	IA31 Digital Media	=	DME-110 Intro to Digital Media	
Trade and Industrial Education	IA32 Advanced Digital Media	=	DME-115 Graphic Design Tools OR DME-120 Intro to Multimedia Appl.	
Trade and Industrial Education	IC61 Drafting I	=	DFT-111 Technical Drafting I AND DFT-111A Technical Drafting I Lab	
Trade and Industrial Education	IC61 Drafting I AND IC62 Drafting II - Architectural	=	DFT-115 Architectural Drafting OR DFT-119 Basic CAD OR	

			ARC-114 Architectural CAD	
Trade and Industrial Education	IC61 Drafting I AND IV22 Drafting II - Engineering	=	DFT-151 CAD I	
Trade and Industrial Education	IV23 Drafting III - Engineering	=	DFT-112 Technical Drafting II AND DFT-112A Technical Drafting II Lab	Must receive credit for DFT-111 before receiving credit for DFT-112
Trade and Industrial Education	IC00 Core and Sustainable Construction AND IC41 Electrical Trades IAND IC42 Electrical Trades II	=	ELC-113 Residential Wiring	
Trade and Industrial Education	IC43 Electrical Trades III	=	ELC-122 Advanced Residential Wiring	
Trade and Industrial Education	IM31 Electronics I AND IM32 Electronics II	=	ELC-112 DC/AC Electricity AND (ELC-126 Electrical Computations OR EGR-131 Intro to Electronics Tech)	
Trade and Industrial Education	IM34 Electronics IV	=	ELN-131 Analog Electronics I	
Trade and Industrial Education	IC00 Core and Sustainable Construction AND	=	MAS-110 Masonry I	

	IC11 Masonry I AND IC12 Masonry II			
Trade and Industrial Education	IC13 Masonry III	=	MAS-110 Masonry I	
Trade and Industrial Education	IM41 Metals Manufacturing Technology I AND IM42 Metals Manufacturing Technology II	=	BPR-111 Blueprint Reading AND MAC-111 Machining Technology I AND MAC-151 Machining Calculations	
Trade and Industrial Education	II11 Network Engineering Technology I	=	NET-125 Networking Basics OR NET-110 Networking Concepts	
Trade and Industrial Education	II12 Network Engineering Technology II	=	NET-125 Networking Basics OR NET-126 Routing Basics	
Trade and Industrial Education	IM61 Welding Technology I	=	WLD-110 Cutting Processes	
Trade and Industrial Education	IM61 Welding Technology IAND IM62 Welding Technology II	=	WLD-110 Cutting Processes AND WLD-115 SMAW (Stick) Plate	

NOTE: In some cases students must show proficiency in multiple courses in order to receive articulated credit. In some cases, there are options. Be sure to pay attention to the *AND* and *OR* statements ("CTE Learning that Works for North Carolina," n.d.).

APPENDIX C: NC ARTICULATION AGREEMENT BETWEEN COMMUNITY COLLEGE AND 4-YEAR UNIVERSITY

Comprehensive Articulation Agreement

The North Carolina Comprehensive Articulation Agreement (CAA) is a statewide agreement governing the transfer of credits between NC community colleges and NC public universities and has as its objective the smooth transfer of students. The CAA provides certain assurances to the transferring student; for example:

- Assures admission to one of the 16 UNC institutions (Transfer Assured Admissions Policy)
- Enables NC community college graduates of two-year Associate in Arts and Associate in Science degree programs who are admitted to constituent institutions of the University of NC to transfer with junior status.

Transfer Credit Appeal Procedure

If a transfer student perceives that the terms of the CAA have not been honored, he or she may follow the Transfer Credit Appeal Procedure.

Associate in Arts and Associate in Science

- The Associate in Arts (A10100) (AA) degree is designed for students who want to pursue a four-year degree in one of the liberal arts disciplines or training at a professional school that requires a strong liberal arts background.
- The Associate in Science (A10400) (AS) degree is designed for students who want to pursue a four-year degree in areas of study such as computer science, engineering, mathematics, the sciences or professional programs that require strong mathematics and science backgrounds.

Transfer Course List

- The Transfer Course List contains a list of courses accepted for transfer between the NC Community College System and the University of North Carolina. For current information on course offerings, please contact the individual community college.

Memos Related to the Comprehensive Articulation Agreement

- **CC14-006 2014 Comprehensive Articulation Agreement**
- **CC16-016 Transfer Advisory Committee Actions**

("NC Community Colleges Creating Success," 2014).

APPENDIX D: PERMISSION TO CONDUCT RESEARCH

Delphi Study Permission to Conduct Research Letter

Dear [Superintendent],

This correspondence is to seek your permission to conduct research in your school district. I am a doctoral student at the University of North Carolina at Charlotte, planning to conduct a research study with an expert panel in the field of Career and Technical Education. I seek to explore how secondary CTE programming influences CTE students' preparedness for post-secondary college and career pursuits. I would like to invite 10-20 adults identified and selected by the lead researcher, Holly Pore, as experts by meeting the expertise time requirement determined by the lead researcher and by their direct or indirect relation to the research topic. The panelists to be invited are:

1. CTE Directors (secondary & post-secondary);
2. CTE Career Coordinators (secondary & post-secondary);
3. CTE Teachers (secondary & post-secondary);
4. Community-School District Business Partners.

It is my hope to use this data to better understand the influence of CTE programming at the secondary level on the preparedness of CTE students for future endeavors beyond high school. The results of this study will be made available to you and the district as, what is hoped to be, valuable information about your district's CTE programming (i.e. curriculum, course offerings, work-related activities, credentialing, professional development, etc.). Additionally, this data may be helpful in exploring CTE program areas of sustainability and improvement. I would appreciate your assistance with helping me to gather data by allowing me to conduct research, for a time period of no more than 45 days, in your school district, beginning the data collection process in Jan.-Mar., 2019.

Considering the abovementioned potential benefits of this study, there are two minimal risks to the participants:

1. Time consuming; the methodology, Delphi Method, chosen for this study takes more time than the traditional "one and done" questionnaire/survey because its research design occurs over a series of rounds, 3-4, of questionnaires. It will occupy no more than a total of two hours of each participant's time over the research course of, at most, 45 days.
2. The Delphi Method requires efficient management of the iterative process so that each round may be deployed as effectively as possible so that the time frames mentioned above are maintained.

I will only deploy an electronic questionnaire to participants who have given consent. It will be communicated to the expert panel that their participation is solely volunteer and they may withdraw from the study at any time. I will also be available for questions

through the data collection process and thereafter. Participants will also be given the contact information for the responsible UNCC faculty member, Dr. Lisa Merriweather; and, the contact information for the university's Research of Compliance office will be shared.

Please indicate your decision about allowing your school district to participate in this research study with me at henglis1@uncc.edu or I am happy to schedule a meeting to discuss this project with you in more detail.

Thank you, in advance, for your consideration,

Holly Pore
Doctoral Candidate- University of North Carolina at Charlotte
Educational Leadership-Superintendency
Responsible Faculty Member-Dr. Lisa Merriweather-704-687-8867 or lmerriwe@uncc.edu
The Office of Research Compliance-UNCC-704-687-1871

APPENDIX E: PARTICIPANT FLYER

Research Study Participants Needed

TOPIC: Career & Technical Education (CTE) secondary programming influence on students' preparedness for post-secondary college and career pursuits

Duration of Participation

1. To be conducted during the months (Jan.-Mar., 2019);
2. Communication is remote and electronic using file sharing software;
3. Using 20-30 minutes of your time, per round (approximately 3-4 rounds in an attempt to build a consensus), allowing 5-7 days to complete each questionnaire from initial deployment;
4. In approximately 2-3 days, the researcher will analyze and share the comments with participants from the respective round;
5. The researcher will extend 2-3 days to the expert body to consider the group input to potentially modify responses and resubmit;
6. Repeat steps for each round.

Participation and Selection-*This research method will use the opinions from and perspectives of an expert body closely related to the research topic addressing three research questions. The expert panelists are:*

5. CTE Directors (secondary & post-secondary);
6. CTE Career Coordinators (secondary & post-secondary);
7. CTE Teachers (secondary & post-secondary);
8. Community-School District Business Partners.

Benefits

1. There is a $15 gift card given upon completion to each participant.
2. There is full disclosure of results to participants that can be used for future programming decisions.
3. Participation is voluntary and participants may end their participation at any time and may choose not to respond to any question.

Risks-*The risks to the participants are minimal.*

1. Time consuming; the Delphi Method takes more time than the traditional "one and done" questionnaire/survey.
2. This method requires efficient management of the iterative process so that each round may be deployed as effectively as possible so that the time frames mentioned above are maintained.

Would you consider participating in this study?

APPENDIX F: PARTICIPANT INVITATION LETTER

Delphi Study Participant Invitation Letter

Dear [Participant Name],

My name is Holly Pore, and I am a doctoral student at the University of North Carolina at Charlotte. I am conducting a research study on how Career and Technical Education (CTE), at the secondary level, influences students' preparedness for post-secondary college and career pursuits. This research aims to provide a school district in the southwestern region of North Carolina with pertinent information about its CTE programming (i.e. curriculum, work-based activities, Career and Technical student organizations, professional development, etc.) by identifying areas of sustainability and improvement. The broader hope is that other school districts will be able to use the findings of this study to strengthen their CTE programs to maximize student preparedness for future endeavors.

I would like to invite you to participate in my study as an expert in the field of Career and Technical Education regarding at least one of the areas of CTE programming. I realize that the expert professionals that I am inviting as research participates for this study are extremely busy; but, strongly feel that your input would be greatly helpful in contributing to the literature about Career and Technical Education. I would really appreciate your consent to participate in my study.

The research methodology selected for this study is called the Delphi Method; I will be using a modified qualitative Delphi technique. The Delphi technique will consist of three to four rounds (questionnaires) stemming from three research questions; hoping to reach an expert body consensus at the conclusion of the rounds. Experts will send their answers electronically (i.e. file sharing software) so that travel and/or resources do not hinder data collection. After each round, you will be given an opportunity to review the responses of the other experts participating in this study and can readjust your initial responses from the previous round, if you like, and resubmit. In practical terms, participation in this study would require no more than two hours of your time, spread out over three to four separate occasions over a period of no more than 45 days. There are no right or wrong answers.

All participants and responses will be granted anonymity and confidentiality to the fullest extent possible. I will not know how each expert specifically responds, I will only get a collection of responses; and, when data is presented in the study's data collection process and findings, your identity will not be released. If you desire to discuss this research study and/or your participation in more detail please feel free to contact this study's lead researcher, Holly Pore, at henglis1@uncc.edu and/or 704-305-4126. Embedded in this invitation to participate in this modified qualitative Delphi study is a link with the consent form, please fill-out and return to me. Attached is a research flyer, please review.

Participation in this study is solely voluntary and you have the freedom to withdraw from it at any time. You are welcome to ask questions at any time.

Thank you, in advance, for your consideration,

Holly Pore
Doctoral Candidate- University of North Carolina at Charlotte
Educational Leadership-Superintendency
Responsible Faculty Member-Dr. Lisa Merriweather-704-687-8867 or
lmerriwe@uncc.edu

APPENDIX G: INFORMED CONSENT FORM

Informed Consent Form

Research Topic: Career and Technical Education-CTE (secondary level)
* Required

Email address *

Your email

Mailing Address: Place of Employment *

Your answer

Project Title, Purpose, and Research Questions

Title: The Impact of Secondary Career and Technical Education on Student Post-secondary Preparedness

Purpose: The purpose of this qualitative study is to explore how secondary CTE programming influences CTE students' preparedness for post-secondary college and career pursuits from a CTE expert panel perspective.

Research Questions: The research questions that guided this study are:
1) What CTE curriculum factors shape student post-secondary outcomes?
2) What role does collaboration of industry-based partners and CTE educators play in establishing curricular for successful outcomes?
3) In what ways does CTE curriculum mediate or exacerbate the impact of racial inequities on student post-secondary outcomes

Informed Consent

Dear Professional Expert:

Thank you, in advance, for participating in my research study.

Lead Researcher:
This study is conducted by Holly Pore, in the Department of Educational Leadership-Superintendency at the University of North Carolina at Charlotte (UNCC) in partial fulfillment for a doctoral degree. The responsible faculty member is Dr. Lisa Merriweather, Associate Professor of Adult Education, UNCC.

Description of Participation and Eligibility:
For this study, the Delphi Method was selected and due to this type of research design, careful selection is upheld to identify an expert panel that may contribute insightful feedback on the adequacy of secondary CTE programming for students' preparedness for post-secondary endeavors. This study

is designed to generate rich description of secondary CTE programming regarding its influence to shape the knowledge and skills of CTE students to enable them to be college and career ready.

Listed below are the five general stages of the Delphi that describe this technique:
1. A panel of experts is assembled. Participants will be engaging in a series of questionnaires, giving their feedback as a CTE expert panel within the study's goal of building towards a consensus.
2. Questions/statements are set and distributed to the experts. Participants generate ideas silently and individually producing more salient amounts of ideas. Participants will have 5-7 days to complete from initial questionnaire deployment.
3. Experts return initial responses. Participants write responses on their own time schedule which is more likely to produce critical thinking contributing to more thought given towards a response, making it more valuable. These are compiled and summarized by the researcher, in approximately 2-3 days, in order to provide feedback.
4. Feedback is provided to the experts, who now review their responses in light of the feedback and may revise their initial statement(s); participants are given 2-3 days to complete the response modification, if applicable. This step is iterated with the goal of building towards a consensus among the expert panel. This encourages more free responses by suggestions aggregating equally.
5. Final results are constructed by aggregating the experts' responses.
6. There is a $15 Chick-fil-A gift card given upon completion to each participant; it will be distributed via teacher mailboxes for those participants who work at the research site or U.S. postal service.

The expert panel should consist of individuals who generally evaluate and/or contribute to CTE student outcomes at the secondary level. You may participate in this study by invitation only from the lead researcher. The lead researcher of this study is recommending the following panel selection parameters:
Teacher participants must:
1. Be certified;
2. Have at least three years of teaching experience; with at least one year of teaching experience in CTE
3. Have both teaching and industry experience (lateral entry);
4. Be a teacher at the selected site.
Business Partner Participants must:
1. Have worked with their company for at least three years;
2. Be a business partner of the selected site, offering some form of work-related activity.
CTE Educational Leadership must:
1. Have taught for at least three years;
2. Have supervised the CTE department for at least one year;
3. Be in a current educational leadership role.

Length of Participation:
In practical terms, participation in this study would require no more than two hours of your time, spread out over three to four separate occasions over a period of no more than 45 days. There are no right or wrong answers.
1. To be conducted during the months (Jan.-April., 2019)-4 months;
2. Communication is remote and electronic using file sharing software;

3. Using 20-30 minutes of your time, per round (approximately 3-4 rounds in an attempt to build a consensus), allowing 5-7 days to complete each questionnaire from initial deployment;
4. In approximately 2-3 days, the researcher will analyze and share the comments with participants from the respective round;
5. The researcher will extend 2-3 days to the expert body to consider the group input to potentially modify responses and resubmit;
6. Repeat steps for each round.

Benefits of Participation:
1. This study will provide research-based pedagogical strategies to keep students engaged and prepared for post-secondary educational and career pursuits.
2. The direct benefit to the individual participants is having the opportunity to reflect on how they can best improve their practice and learn other perspectives that can contribute to the improvement of CTE programming that they are directly teaching, supervising, and/or partnering with/through. There is full disclosure of results to participants that can be used for future programming decisions.
3. Participation is voluntary and participants may end their participation at any time and may choose not to respond to any question.

Risks of Participation:
1. Time consuming; the Delphi Method takes more time than the traditional "one and done" questionnaire/survey.
2. This method requires efficient management of the iterative process so that each round may be deployed as effectively as possible so that the time frames mentioned above are maintained.

Possible Injury Statement:
Although the risk to participants in this study is minimal through the rounds of questionnaires via electronic means, if you are hurt during this study, we encourage you to seek medical treatment if needed. The university will not pay for the medical treatment or repay you for those expenses.

Volunteer Statement:
You are a volunteer. The decision to participate in this study is solely your decision and you may choose to end your participation at any time. You will not be treated differently if you choose to not participate in the study or if you stop once the study has started. You are welcome to ask the lead researcher questions about the study at any time.

Confidentiality:
The lead researcher and her research committee will be the only ones to have access to the raw data. All gathered raw data will be stored in a locked space and/or an electronic file with password protection.

Fair Treatment and Respect:
UNC Charlotte wants to ensure that you are treated in a fair and respectful way. Contact the University's Research Compliance Office at 704-687-1871 if you have any questions about how you are treated as a study participant. If you have any questions about this study, please email or call/text

the lead researcher, Holly Pore, at henglis1@uncc.edu or 704-305-4126 and/or the responsible faculty member, Dr. Lisa Merriweather, at lmerriwe@uncc.edu or 704-687-8867.

Participant Consent:
I have read the information in this consent form. I am a professional with direct or indirect relation to this research topic and, understand that because I have been invited to participate, I have met the years, and other qualifiers, for expertise requirement. I agree to participate in this research study. I understand that I will receive a copy of this form after it has been electronically signed by me and the lead researcher.

If you want to participate in this study, and I hope that you will, please choose the "Yes, I Agree..." option below to begin the consent process and complete the remainder of the questions below and electronically sign your name.

Do you agree to participate? *
Yes
No
Other:

What is/was your professional title and place of employment as it relates to this research topic? *
Your answer

What is your highest degree earned? *
Baccalaureate
Master
Master + Add-on
Doctorate
Associate/Other

Participant Signature (typed name implies signed consent) *
Your answer

Lead Researcher (selecting name implies signed consent on behalf of the lead researcher) *
Choose
A copy of your responses will be emailed to the address you provided.

SUBMIT
Never submit passwords through Google Forms.

APPENDIX H: QUESTIONNAIRE PROTOCOL

Questions to include in the modified qualitative Delphi Technique Rounds:

Hello again! Thank you for agreeing to participate in my study on exploring how secondary CTE programming influences CTE students' preparedness for post-secondary college and career pursuits! Your help is essential in this study and I appreciate you taking the time to provide controlled feedback, and potentially revise your statements after the initial round of questioning, in an effort to build a consensus of this CTE expert body for the topic under investigation. Your participation is confidential and communication is remote. As a reminder, there will be three rounds of questioning over an approximate timeframe of 45 days, with only occupying a total of 20-30 minutes of your time each round. From deployment of each round, you will have 5-7 days to complete each questionnaire per round. A period of 2-3 days will be given after each round's questions to offer you're an opportunity to review the other participants' responses and to revise your initial response if you choose to do so; you will not know the author of the responses you view. Remember, there are no right or wrong answers. Please feel free to contact anytime with any questions/comments. You will be lightly compensated with a $15 gift card for your time throughout this study. Thanks again!

Quality Indicators

1. What are some quality indicators for an effective secondary CTE program?
2. How do you define a CTE course and/or program?
3. How do you define quality as it relates to the delivery of instruction and student learning?
4. What are the added benefits for participating in CTE as oppose to non-CTE participation?
5. How should quality be assessed/evaluated/measured within CTE?

Curriculum & Work-Related Activities

6. To what extent, do you perceive, high school students are prepared for postsecondary education/training and/or work through CTE participation?
7. In what ways can the overall "lived experience" for secondary CTE students with CTE curriculum improve, both in and out of the classroom?
8. How is it determined what CTE courses are available for students to take at this high school? Are there any suggestions to improve this process? Explain.

9. In what ways can student-earned industry-recognized credentials increase? How is this credentialing opportunity promoted in the school and community? Are there any suggestions to better "brand" student credentialing to all stakeholders?
10. In what ways can work-related experiences become more inclusive and sustainable?
11. To what extent and in what ways, can interdisciplinary (across departments/content areas) collaboration between the academics (core) and vocational (CTE) education occur to more adequately prepare students for postsecondary learning and/or work at whatever periods in their lives?
12. To what extent and in what ways, can the collaboration between industry business and CTE educators influence programmatic and student outcomes?
13. To what extent and in what ways does the kinds of CTE professional development influence instructional practices and student outcomes? What are some ways to ensure that meaningful and relevant (current, instructionally sound) CTE PD is offered and available to CTE educators?
14. To what extent and in what ways, does CTSOs contribute to successful secondary and postsecondary educational/work-related experiences? How can CTSO chapter affiliation and membership increase?
15. In what ways can membership affiliation with a professional educational organization (i.e. NACTE (National Council for Technical Education); NEA (National Education Association); ASCD (Association for Supervision and Curriculum Development); etc. help to improve instruction and learning?

Career Awareness & Exploration

16. How are career interest inventories created and reviewed throughout secondary schooling (middle and high school) for career introductory awareness & exploration for future career development and advancement?
17. In what ways can career inventories be helpful to middle schoolers?
18. In what ways can career inventories drive CTE high school course selection?
19. In what ways can career inventories be useful in discovering entrepreneurial opportunities?
20. In what ways can career inventories connect to student interest(s)? What suggestions do you have to help keep inventories meaningful and relevant for students?

21. In what ways can career inventories be used for career guidance for work-related experiences for students?

Communication About & Marketing of CTE Programs

22. To what extent, do you perceive, high school students to understand postsecondary coursework opportunities available to, and in some cases required of, them while in high school (such as articulation; Career & College Promise {CCP} courses, both CCP CTE and CCP College Transfer pathways; and course selection & alignment)?
23. In what ways can information about getting these postsecondary opportunities, while still in high school, be more widely shared with students and families?
24. In what ways can secondary schools partner better with postsecondary constituents?
25. In what ways can more equitably distributed learning opportunities like these, but not limit to, be shared among all racial and social classes of students?
26. How can CTE Programs of Study be more diversified at this high school? How can equity conversations happen more purposefully and routinely among all stakeholders to help ensure equitable access to all courses for all students? How can CTE assist in this equitable endeavor?
27. How does the organizational messaging and branding of CTE shape student participation in its programming?
28. Is there a typical student profile for certain CTE pathways vs. other CTE pathways? Explain your response. What suggestions do you have to invite non-traditional students, as it relates to various demographics such as race, gender, socioeconomic status, etc. to participate in CTE Programs of Study that considers their particular demographic(s) to be non-traditional for that career pathway?
29. Are certain CTE courses and/or opportunities encouraged/discouraged by school staff to students as a means to sort students towards what is assumed to be “better serving” options? Explain your response. If answered "yes", what do you suggest to remedy this occurrence?
30. In what ways does race, gender, and ability influence CTE student outcomes? What role do stakeholders (district/school leaders, school board members, teachers, parents, community partners, etc.) play in this

equitable equation? Focusing on equity, how can student and schoolhouse interactions become better?

31. What considerations are made when identifying the greatest opportunities for improvement and sustainability for CTE programs of study offered at this high school?

32. How does the organization's culture and climate, at the high school and district levels, influence the effectiveness to implement successful CTE Programs of Study?

33. Does this high school's organizational temperament regarding CTE help to contribute to or discontinue the historic marginalization of CTE and its students? Explain your response. If you lean towards "contribute" to the historic marginalization, how can this be changed to lean towards "discontinue"...?

34. **Comments:** Overall general comments. Please provide anything that was not asked that you perceive important to ask, etc.

    _____
    _____
    _____
    _____
    _____
    _____
    _____
    _____.

APPENDIX I: ROUND 4 CONSENSUS FINDINGS

Q1 The top three quality factors of an effective secondary Career & Technical Education (CTE) program are: 1) having a curriculum that meets current industry needs; 2) equipping students for success in post-secondary pursuits (i.e. attainment of industry-recognized credentials/proficiency on state assessments, soft and hard skills development, work-based learning opportunities, participation in Career & Technical Student Organizations (CTSO), increasing student interest/engagement); and 3) having certified/highly qualified instructors.

"Strongly Agree"-100%

Q2 The availability & condition of equipment and/or facilities in secondary CTE classrooms directly influence the quality of instruction.

Total Endorsement-92.86%

Q3 Having college-like requirements (i.e. accreditation, etc.) will help the CTE programmatic quality at the secondary level.

Total Endorsement-85.72%

Q4 On-going evaluation of CTE programs to determine needs is essential to its quality.

Total Endorsement-100%

Q5 The messaging, advisement, and guidance CTE students receive in high school about course selection and/or work-related opportunities significantly influences their preparedness for post-secondary pursuits.

Total Endorsement-92.86%

Q6 A CTE program of study is a series of related courses that prepare young minds for a rewarding, high-demand technical career with the capacity to earn high wage and high skill, leading towards a credential, certificate, and/or diploma.

Total Endorsement-100%

Q7 The top quality measures for instructional delivery to improve student learning are: 1) having rigor (i.e. promotes critical thinking, creativity, experimentation, ownership of learning, work-based learning, high student engagement/motivation, academic conversations); 2) using multiple teaching techniques for all learning styles; and a tie for 3) having a qualified teacher who continuously seeks out professional development & keeping learning outcomes focused (aligned to standards & appropriate pacing of content).

Total Endorsement-100%

Q8 The two biggest benefits of participating in CTE for high school students are: 1) increasing network capacity/connection with employers; and 2) more hands-on learning experiences (i.e. work-based learning) which leads to higher meaning & relevance, engagement, & motivation.

Total Endorsement-92.85%

Q9 The top three measurements of quality for secondary CTE are: 1) Meeting or exceeding proficiency on state or industry-recognized credential assessments; 2) CTE career pathway completion; and 3) obtaining "positive" post-secondary placement, either higher education/training/work.

Total Endorsement-78.57%

Q10 Secondary CTE students are prepared for post-secondary pursuits of college and career by completing a CTE career pathway in high school.

"Strongly Agree"-78.57%

Q11 The integration of academics (core subjects) and CTE significantly improves the preparedness of all high school students for endeavors after graduation.

Total Endorsement-92.86%

Q12 The two most important considerations for CTE professional development for secondary teachers are: 1) staying abreast to the current industry needs and changes so that instruction is relevant to modern work; and 2) focusing on instructional strategies (i.e. assessment, standards alignment with learning outcomes, classroom management, use of technology, art of lesson planning, etc.).

Total Endorsement-100%

Q13 Career Development Plans should be done for all secondary CTE students in an effort to help them with course selection in high school and career mapping for post-secondary options.

Total Endorsement-85.71%

Q14 The greatest benefit to secondary students completing career inventories is discovering interests, strengths, and career aspirations never considered before taking the inventory; it helps to expand beyond traditional careers.

Total Endorsement-100%

Q15 It is perceived that CTE high school students poorly understand the post-secondary opportunities (i.e. Career and College Promise (CCP) classes, articulation-allows a student to earn college credit for work they completed in high school as long as they make a certain grade in the CTE class and a certain score on the CTE state assessment, etc.) available to them while still in high school, in which

the lack of this understanding negatively impacts their secondary pathway and post-secondary preparedness.

Total Endorsement-92.86%

Q16 The top three ways to best diversify CTE Programs of Study are to: 1) promote non-traditional completers; 2) engage all students by sharing information with all populations of students in a welcoming manner; and 3) create an equitable culture from top leadership down.

Total Endorsement-85.72%

Q17 Participation in Career & Technical Student Organizations, internships, apprenticeships, business site visits, job shadows, field trips, guest speakers, work-based learning, project-based learning, school-based enterprise, etc. are all work-relatives activities that develop employability skills, teamwork skills, communication skills, technical skills, problem-solving skills, critical thinking skills, business etiquette habits, professionalism, punctuality, time management, and much more as non-replaceable real-world learning tasks built into CTE curriculum for the extended purpose to provide preparation for post-secondary pursuits of college and career for all secondary students.

Total Endorsement-100%

Q18 The top three benefits from collaboration between business partners and school district staff are: 1) tailoring the curriculum to be more responsive to industry needs; 2) building a pipeline of potential employees; and 3) providing students with more exposure to the real world of work.

Total Endorsement-100%

APPENDIX J: POINTS OF STABILITY (STATEMENTS THAT DID NOT REACH CONSENSUS)

Q7 Engagement (student interest and excitement) is more important than alignment of instruction, lesson tasks, and assessment.

"Strongly Agree"-14.29%

“Moderately Agree”-50.00%

“Minimally Agree”-21.43%

“Disagree”-21.43%

“Neither Agree or Disagree”-7.14%

Q12 From Round 1, student requests during course registration "leads the pack" in the determination for which CTE courses to offer the following school year at this high school.

"Strongly Agree"-21.43%

“Moderately Agree”-21.43%

“Minimally Agree”-35.71%

“Disagree”-7.14%

“Neither Agree or Disagree”-21.43%

Q13 Secondary CTE student preparedness for post-secondary pursuits doesn't need to extend beyond the classroom...the learning within the four walls of the classroom is sufficient.

"Strongly Agree"-7.69%

“Moderately Agree”-0%

“Minimally Agree”-15.38%

“Disagree”-69.23%

“Neither Agree or Disagree”-7.69%

Q20 All instructors should go through a Racial Equity Workshop Training to uncover personal biases, address disproportionalities in education and other systems, and works towards neutrality in teaching and student-advocating practice.

"Strongly Agree"-28.57%

“Moderately Agree”-35.71%

“Minimally Agree”-28.57%

“Disagree”-14.29%

“Neither Agree or Disagree”-0%

Q21 Due to the stereotypes and biases attached to certain careers and the "marketed" commonality in appearance of those who occupy them along with the constructed narratives of society for typical _____ (fill-in the blank with a particular career, i.e. engineers, construction workers)...there is a typical student profile for certain CTE pathways vs. others.

"Strongly Agree"-28.57%

“Moderately Agree”-35.71%

“Minimally Agree”-14.29%

“Disagree”-21.43%

“Neither Agree or Disagree”-0%

Q22 At this high school, high performing-academic students, in general, are discouraged from taking CTE courses or participating in work-related activities due to being advised that other courses/opportunities may be "better fitted" for them...even though being 'career ready' is the ultimate goal for every educational trajectory pathway.

"Strongly Agree"-42.86%

“Moderately Agree”-14.29%

“Minimally Agree”-7.14%

“Disagree”-14.29%

“Neither Agree or Disagree”-28.57%

Q25 This high school's organizational temperament regarding CTE helps to discontinue the historic marginalization context of CTE being a 'dumping ground' for low-achieving, unmotivated, non-college bound, at-risk students.

"Strongly Agree"-21.43%

“Moderately Agree”-7.14%

“Minimally Agree”-28.57%

“Disagree”-21.43%

“Neither Agree nor Disagree”