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A Mixed-Methods Study Examining Effective Practices for Increasing Secondary Student Enrollment in Career and Technology Education Courses

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ABSTRACT

A Mixed-Methods Study Examining Effective Practices for Increasing Secondary Student Enrollment in Career and Technology Education Courses

by Richard Radcliffe

The purpose of this exploratory mixed-methods study was to discover and explore the factors that encouraged and discouraged enrollment in Career and Technical Education (CTE) pathways at California comprehensive high schools. In addition, this study examined the recruitment methods used by CTE pathways and sought to determine which ones were most beneficial. A sample of district CTE administrators from Riverside, San Bernardino, and San Diego counties were interviewed to develop the initial findings of this study, and then upon completion of the interviews, the same administrators were asked to complete a survey ranking the themes that emerged from the interviews. The results of this study could be used by CTE administrators throughout California to guide the recruitment practices used by the CTE pathways within their districts. The findings from this study identified factors that were most likely to discourage and encourage enrollment in the CTE programs of study as well as the CTE recruitment methods that were considered most beneficial. Further research is recommended regarding the negative stigma associated with CTE, the impact of the instructor on recruitment, CTE alignment with academics, the impact of CTSO participation, alignment with higher education, the value of CTE teaching experience for CTE administrators, and the appropriateness of career exploration versus career training for high school students at a comprehensive high school.

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CHAPTER I: INTRODUCTION

Although "the Constitution of the United States makes no provision for federal support or control of education," throughout the history of the United States, quality education was recognized as a significant contributing factor to the wealth and prosperity of the country (Gordon, 2008, p. 105). On February 12, 2013, President Barack Obama, in his State of the Union address to Congress, recognized that a key component of economic recovery and financial strength was a highly trained workforce. As he spoke on the topic of education, the majority of his remarks focused on the importance of providing students with career education that will prepare them for the highly technical jobs of the future (The White House; Office of the Press Secretary, 2013).

According to CNN Money (2014), in 2014, the United States had the largest economy in the world, with a Gross Domestic Product (GDP) of $17.5 trillion. The United States was followed by China with a GDP of $10 trillion, Japan with $4.8 trillion, and Germany with $3.9 trillion. Compulsory education was required in each of these countries, but in China, Japan and Germany, students were only required to attend school for nine years (10 in 5 of Germany's regions). In China, Japan, and Germany, upon completion of compulsory education, students may enter the workforce, attend a vocational school, or attend an academic high school, although the specific process varies by country (European Commission [EC], n.d.; Organisation for Economic Co-Operation and Development [OECD], 2010; Tokyo International Communication Committee [Tokyo ICC], 2006).

The German national educational system was the oldest of these systems, having roots in the middle ages. What made the German system unusual was the close

cooperation between business and public education (German Missions in the United States, n.d.). In the German dual system, students spent three to four days per week working as apprentices at companies that agreed to provide vocational training. The rest of the workweek was spent at a vocational school focused on the theoretical aspects of the career field. On average, apprentices were paid €650 per month (approximately $740 US based on current exchange rates) during the training period, which lasted two to three and a half years (Vocational Training in Germany, n.d.). Unfortunately, unlike in Germany, the vocational training path for American students was confusing and difficult to navigate (Marcus, 2014).

Although the American vocational education system had roots in the European apprenticeship system, it developed separately once immigrants arrived in the United States, and was now substantially different (Gordon, 2008). With the adoption of the Smith-Hughes Act in 1917, the American education system was divided into academic and vocational tracks (Perry & Wallace, 2012). The unfortunate result of this division was that affluent students who could afford higher education normally followed the academic path whereas special populations such as economically disadvantaged and minority students were usually placed in the vocational track to learn skills that would allow them to earn a living wage (Wonacott, 2003).

In 1983, *A Nation at Risk* indicated that America was declining in economic competitiveness in comparison to other industrialized nations as a result of a substandard educational system. The impact of this report was to increase the focus on academics and college education for all students throughout the country. Cashen (2014) stated the impact of "College for All" resulted in a 31% increase in the number of academic courses

taken by high school graduates between the years of 1982 and 2000. In 2001, President George W. Bush reauthorized the Elementary and Secondary Education Act (ESEA), renaming it No Child Left Behind (NCLB). NCLB instituted new accountability requirements for ensuring all students were proficient in reading and math by the end of the 11th grade (Chadd & Drage, 2006; U.S. Department of Education [DOE], n.d.). Chadd and Drage (2006) stated that NCLB forced schools to allocate more instructional time to academic courses, reducing the time available for students to participate in vocational education. Cashen (2014) took a slightly different perspective, saying the impact of NCLB was to force the majority of students to follow a predominantly academic program of study.

Although the focus was on academics, many American teens continued to take career and technical education (CTE) courses in high schools and community colleges (Cashen, 2014). Cashen (2014) indicated that even though NCLB focused on academics, some students and their parents still found value in CTE courses and not every child went on to complete a university education. Although NCLB reduced the number of CTE courses taken by students, the federal government did not eliminate funding for CTE and supported vocational education continuously from the 1917 adoption of the Smith-Hughes Act to the most recent reauthorization of the Carl D. Perkins Career and Technical Education Act in 2006, known as Perkins 4 (Gordon, 2008).

In California, a number of recent changes to curriculum standards and funding impacted CTE.

- In 2005, the original Model Curriculum Standards (MCS) for CTE were adopted by the California State Board of Education, creating guidelines for

instruction in 58 career pathways organized into 15 industry sectors (California Department of Education [CDE], 2015c).

- In March 2012, the California State Board of Education adopted the Common Core State Standards, which integrated CTE within the academic standards rather than treating CTE as a separate entity (CDE, 2013).
- With the adoption of the Local Control Funding Formula (LCFF) in July 2013, California substantially changed how education was funded, giving districts more flexibility than under the previous system by doing away with revenue limits and most categorical funding streams (EdSource, n.d.).
- The California Career Pathways Trust (CCPT) was created in July 2014. The trust awarded up to $250 million annually in the form of competitive grants to create and update CTE pathways aligned to high-need, high-growth, or emerging career fields (CDE, 2014a).
- Most recently, the California Legislature approved $400,000,000 in funding to be distributed through the California CTE Incentive Grant (CTEIG) during fiscal year 2015-2016 (CDE, 2015b). According to EdSynergy (n.d.), an additional $300,000,000 will be allocated in fiscal year 2016-2017 and $200,000,000 will be allocated in fiscal year 2017-2018.

With the funds available through Perkins 4, LCFF, and the CCPT and CTEIG grants, California local education agencies (LEAs) formulated plans to create cutting-edge CTE programs. “Build it and they will come” may have worked for Kevin Costner’s character in *Field of Dreams* (Chait, 2013) but, unfortunately, simply creating programs did not guarantee their success. Many factors influence enrollment in CTE programs such

as parent and student perceptions of CTE, counseling and scheduling challenges, lack of information related to CTE opportunities, and competition from other programs of study. Developing a clear understanding of the factors influencing student enrollment in elective CTE courses and the effective practices that encourage enrollment would enable teachers, counselors, and administrators to examine and alter existing practices. Without a clear understanding of the barriers to enrollment and effective practices to overcome those barriers, CTE funds targeted to improve existing programs and create new CTE programs may not be used to their maximum effectiveness if students do not choose to enroll in CTE programs in the numbers necessary to justify the funding allocated.

Background

Researchers generally agreed that the development of vocational education in the United States was strongly influenced by federal legislation, but opinions varied on many other critical areas related to this study. The first section of the background provides a brief history of CTE. The second section describes the current state of CTE in California. The final section explores current research on barriers to enrollment in CTE programs.

History of CTE in the United States

Prior to the industrial revolution, most workers learned their craft from family members or as apprentices. Organized CTE in the United States developed in response to the needs of industry for skilled workers trained to operate factory machinery. Unlike the system in the public schools that exists today, CTE in the United States originated with higher education and private organizations. The Massachusetts Institute of Technology (MIT) developed one of the first CTE programs after their president attended the centennial exposition in Philadelphia in 1876. Runkle developed university programs

focused on teaching general fabrication skills to ensure their newly minted engineers were employable. About the same time, secondary trade/technical schools surfaced with the purpose of teaching skills leading to employment through instruction and apprenticeship (Association for Career and Technical Education [ACTE], 1976).

The Smith-Hughes Act of 1917, the first federal legislation to directly fund vocational education, was designed to promote secondary instruction in agriculture, home economics, and industrial trades (ACTE, 1976; Perry & Wallace, 2012; Steffes, n.d.). Additional CTE legislation followed Smith-Hughes and eventually led to the Vocational Education Act of 1963, which strove to simply train people to meet the needs of the economy (Barlow, 1976; Gordon, 2008).

NCLB focused on core academic subjects, setting clear standards for learning and holding schools accountable for student academic progress (Chadd & Drage, 2006; DOE, n.d.). The impact of NCLB legislation on CTE was to force the majority of students to follow a predominantly academic program of study, reducing their opportunity to participate in CTE programs of study (Cashen, 2014).

In 2006, the Carl D. Perkins Vocational and Technical Education Act reauthorization (Perkins 4) featured updated goals to prepare youth for work through occupationally focused courses (Cashen, 2014; Perry & Wallace, 2012). "A centerpiece of both the 1998 and 2006 legislation is the directive that occupational courses incorporate skills and concepts taught in core academic courses (e.g., math, science, and English) so that CTE supports academic achievement" (Bozick & Dalton, 2013, p. 124).

Late 2015 saw the reauthorization of ESEA, also known as the Every Student Succeeds Act (ESSA). Although ESSA did not directly address CTE, there were some

provisions of ESSA that indicated a greater emphasis on CTE. The most significant impact of ESSA on CTE may prove to be the inclusion of CTE as part of a well-rounded education (Voytek, 2015).

History of CTE Legislation in California

In 1963, California passed Senate Bill (SB) 1379, the first statewide CTE legislation, establishing Regional Occupational Centers/Programs (ROCPs; Mitchell & Hecht, 1989). In 1983, at about the same time that *A Nation at Risk* was released, California legislators passed SB 813, also known as the Hughes-Hart Education Reform Act, which brought significant changes to the high school graduation requirements and sweeping school finance reform, in effect reducing or eliminating CTE in many California high schools (CDE, 1983).

On May 11, 2005, the California State Board of Education adopted the CTE Model Curriculum Standards for 58 career pathways (CDE, n.d.-a). Also in 2005, Governor Jerry Brown signed SB 70, allocating $20 million to strengthen and expand CTE at the secondary and community college levels (CDE, n.d.-b.). AB 1330, adopted in October 2011, allows local school boards to accept career technical education courses as an alternative to the requirement that all students complete a course in visual and performing arts or foreign language (Assembly Bill 1330, 2011).

In 2013, Governor Jerry Brown signed into law the LCFF, the most sweeping change to education funding in California in 40 years, and AB86, which established the CCPT, a $250 million CTE pathway development grant program (California Legislative Information, n.d.; EdSource, n.d.). One side effect of the LCFF legislation was that ROCP funding, which was traditionally separated from school district general funds, was

included in the Local Control Accountability Plan (LCAP) allocation, resulting in some districts choosing to fund CTE programs directly rather than contract with ROPs (CDE, 2016b). Changes to funding resulting from the LCFF legislation resulted in 22 ROCPs closing down, leaving 23 Joint Power Agencies (JPAs), four single districts, and 25 county-ran ROCPs in operation. Finally, in 2015, the CTEIG was funded in the amount of $900 million over three years (EdSynergy, n.d.).

Current State of CTE

In the past, "high school graduates who were good with their hands, worked well with people, had a strong work ethic, and a positive attitude could find good paying jobs in business and industry" (Horan, 1993, p. 3). The 1990 report *America's Choice: High Skills or Low Wages* confirmed this by reporting a significantly less need for unskilled labor (National Center on Education and the Economy, 1990). Legislators focused on CTE because of the gap between the needs of industry and the skills of entry-level workers. "Vocational education subject matter is concerned with developing the productivity of the nation and with providing competent persons who can command existing jobs and occupations emerging on the horizon" (Barlow, 1976, p. 6). Additionally, "the relationship between education and income has never been stronger than at present" (Castellano, Stringfield, & Stone, 2003, p. 239). Chadd and Drage (2006) stated that CTE, through increased student engagement, integrated academics, and meeting the needs of employers, would have a positive impact on America's future economy.

There was projected growth in the number of skilled occupations requiring technical training beyond a high school diploma, and lawmakers hoped to improve

graduation rates by helping students connect curriculum to career opportunities (Education Commission of the States [ECS], 2014).

> It is no longer economically sound to track and separate students into those with only (or primarily) a classical curriculum and those with only (or primarily) a vocational curriculum or with relatively narrow job-specific skills. Both the head and the hands and the theoretical and applied will be needed by most students in most workplaces at some point in their lives. (Wonacott, 2003, p. 15)

Science, technology, engineering, and math (STEM) occupations, which require more advanced academic skills, were a growing area of CTE. According to Bidwell (2014), the demand for STEM graduates was even greater than expected. Analysis of job postings showed 5.7 million openings in STEM fields, with 2.3 million of those being entry-level positions requiring less than two years experience (Bidwell, 2014). However, "just over one in 10 graduates taking the ACT test indicated interest in a STEM major or occupation" (ACT, 2013, p. 19).

Along with the demands of business and industry for a highly trained workforce, students also showed interest in CTE courses. Education reform movements pushed university education for all, but students still pursued CTE coursework in high school and community colleges (Cashen, 2014). In 2002, American high school students spent more than 1.5 billion hours in CTE courses, with 91% of the class of 2000 graduates taking at least one CTE course and 44% completing three or more courses (Cashen, 2014). This data, however, could be misleading as many high school electives were listed as CTE

courses, but students enrolled in these courses might not have participated with the intent to pursue a career in that area.

The research suggested that students who typically enrolled in CTE high school courses had different characteristics from their college going classmates. For example, Bozick and Dalton (2013) stated that students who enrolled in vocational courses, on average, had lower family incomes and education levels, in addition to lower levels of academic preparation. These students were more likely to be African American, have a disability, and live in rural areas.

Stern and Stearns (2006) indicated that students intending to enroll in a university would not take CTE courses in high school, as CTE courses were traditionally designed to prepare students for work rather than college. Castellano et al. (2003) stated that historically, counselors and other adults assumed that students in danger of failing to finish high school would not enroll in postsecondary programs, so they were enrolled in vocational training. Unfortunately, at the high school level, academic preparation and CTE tended to be mutually exclusive (Cashen, 2014).

In addition, according to Horan (1993), high schools offered students general education courses of study, a combination of general, remedial, and personal/hobby courses, which did not prepare students to secure entry-level employment or the flexibility to retrain. As a result, CTE managed to garner an unfortunate image, that of providing poor quality programs often targeted for those students who were challenged academically and socially within the educational system (Cohen & Besharov, 2002).

Current State of CTE in California

Although some California students had the opportunity to participate in CTE courses at the middle school level, most students experienced CTE courses for the first time in high school. California high school CTE programs may be traditional manual arts programs, ROCPs, integrated academic programs such as magnet schools or academies, or tech prep/2+2 models (CDE, n.d.-a).

At the postsecondary level, Fleming (2014) stated that in 1920, the American Association of Junior Colleges (AAJC) decided their focus should be on two-year technical training, and as a result, now the California Community Colleges (CCC) offer 142 CTE fields spread across 112 campuses (Moore & Shulock, 2012). In 2015, this focus changed slightly with approval from the CCC Chancellor's Office to pilot 15 bachelor degree programs in fields typically considered CTE (CCC Chancellor's Office, 2015). The development of bachelor degree programs in CTE areas may help establish the legitimacy of CTE programs as academically and technically challenging.

Statement of the Research Problem

According to the Association of California School Administrators' (ACSA, n.d.) analysis of the 2013-14 California Budget Act, LEAs were required to address their plans for increasing student completion of CTE sequences in their LCAPs. This was in contrast to prior years where many school districts significantly reduced or eliminated CTE offerings as they focused on the academic skills required by NCLB. In addition to NCLB requirements, the public focus on California's Academic Performance Index (API) and the federal Adequate Yearly Progress (AYP) student performance requirements also influenced some districts to divert funding from CTE programs (Chadd & Drage, 2006).

With the change to the LCFF and the addition of the competitive CCPT and CTEIG grants, school districts were in a financial position to either revitalize existing CTE programs or create new ones to better serve students' career exploration and technical skills training needs.

For the 2014-15 school year, the Carl Perkins Act provided over $1.7 billion dollars in grant funding to support CTE programs nationwide (DOE, 2014a). At the California state level, the CCPT and CTEIG grants were awarding in excess of $1.15 billion in CTE funding to LEAs with additional LCFF funds contributed by LEAs and private supporters (CDE, 2014a; EdSynergy, n.d.). Although this huge influx of funding reversed the normal fortune of economic scarcity, the challenge for educators was to spend the money wisely in a short period of time, a situation for which few districts were well prepared.

One of the goals of the CCPT grant was to "provide articulated pathways to postsecondary education aligned with regional economies" (CDE, 2014a, para. 1). The DOE (2012) reported that businesses struggled to find qualified workers in the fields of healthcare, technology, and advanced manufacturing, even with declining unemployment. CTE programs supporting these industries were critical to American prosperity and students' opportunities to pursue the American dream (DOE, 2012).

Although significant research was conducted on the impact of CTE on graduation rates and academic performance, little research existed to describe successful strategies school districts employed to encourage students to enroll in CTE programs at comprehensive high schools (Fritts, 2014; Strohschein, 2012). "If the sources or barriers that block students from enrolling in vocational education were identified, then

administrative personnel could utilize this information in evaluating and planning for their marketing and recruitment efforts" (Rossetti, Elliot, Price, & McClay, 1990, p. 4). This study provides school leaders with a resource to focus their efforts as they seek to increase enrollment in new and revitalized CTE programs.

Purpose Statement

The purpose of this exploratory mixed-methods study was to discover and describe the factors that impact student enrollment in southern California comprehensive high school CTE pathways. In addition, it was the purpose to explore effective strategies used by CTE programs with high enrollment to recruit and enroll students in their CTE programs of study. Finally, it was the purpose of this study to identify which effective strategies were perceived by CTE coordinators as most beneficial for implementing current CTE programs.

Research Questions

This study sought to address the following four research questions:

1. What factors do CTE administrators perceive that discourage student enrollment in secondary CTE programs?
2. What factors do CTE administrators perceive that encourage student enrollment in secondary CTE programs?
3. What strategies do secondary CTE programs with high enrollment employ to recruit and enroll students in CTE programs?
4. Which strategies for increasing student enrollment in secondary CTE programs are perceived by CTE administrators as most beneficial for implementation?

Significance of the Problem

Business and industry in California struggle to find qualified employees to fill high-demand, high-skill, and high-wage job openings. When unable to do so, they were forced to either import employees or relocate their businesses. To prevent the loss of business and industry, which would hurt the California economy and increase the importation of skilled workers from other states or countries, making an already tough job market even tougher, California schools must prepare students for the career opportunities of today and tomorrow, not the jobs of yesterday. To aid school districts in this endeavor, the state of California provided significant funding through grants to update existing CTE programs and create new ones that will prepare students for the jobs available now and in the foreseeable future.

According to federal and California funding programs, districts must develop courses based on the needs of the local economy and industry rather than student interest or desires. For instance, the CCPT grant required LEAs to fund programs that led to high-growth, high-need, and emerging economic sector jobs (CDE, 2014a). As a result, determining which CTE programs should be funded by the CCPT grant was largely a factor of economic data rather than student demand. "CTE reform efforts are seriously under-researched. School and district personnel are forced to make major programmatic decisions in the absence of replicating studies, or, often, any process or outcome studies to inform their thinking" (Castellano et al., 2003, p. 231). If districts were required to develop CTE programs that students did not necessarily want to take and, in addition, must fill those classes to justify the investment even though students were not required to take them, it would be useful to understand the factors that encouraged and discouraged

enrollment in CTE pathways as well as the strategies that successfully increased enrollment in CTE programs at California comprehensive high schools.

A gap in the research existed related to enrollment factors and recruitment strategies related to CTE programs in comprehensive high schools in California. Nationally, the prevailing themes in existing research most frequently included descriptions of the attitudes and perceptions related to CTE and the factors that influenced student enrollment decisions when considering attending CTE training at a centralized training facility, sometimes called a joint vocational school (JVS).

The researcher located a number of studies specific to CTE in California. Tsushima (2015) researched the barriers impacting the ability of ROCPs to build capacity at the secondary level. De Vore (2008) looked at the perceptions of CTE in California's central valley. Bachofer, Betts, and Zao (2014) created a case study of effective and ineffective programs within San Diego Unified School District. St. Gean (2010) studied perceptions of CTE and factors that influenced enrollment in ROCPs of the school day. Although all of the above studies were valuable, none provided clear guidance for CTE administrators seeking to efficiently apply limited resources to influence enrollment in CTE programs at comprehensive high schools. Understanding the factors that encourage and discourage enrollment in CTE while also developing a list of recruitment best practices would allow CTE programs to compete with the other elective opportunities available to California high school students.

Definitions

The following constructs were the operational and technical terms and definitions used in the study.

11 Elements of a High-Quality CTE Program. A self-study tool for CTE programs to evaluate the quality of their program and structures in place and to create a culture of constant improvement.

California Career Pathways Trust (CCPT). CCPT was a competitive $250 million grant program designed to revitalize California CTE (CDE, 2014a). In 2014, 39 fiscal agents were awarded a combined $248,021,794 and in 2015, 39 more fiscal agents were awarded an additional $244,423,365.

Career and Technical Education (CTE). The ACTE defined CTE as "preparing both youth and adults for a wide range of high-wage, high-skill, and high-demand careers" (ACTE, n.d.-b).

Career and Technical Education Incentive Grant (CTEIG). CTEIG was a grant program approved as part of the 2015 California budget providing $900 million in funding for CTE programs over three years.

Carl Perkins Vocational Education Act (Perkins 1/2/3/4). The Perkins Acts authorized federal funding programs that support academically rigorous CTE programs (ACTE, n.d.-a).

Common Core State Standards (CCSS). The CCSS were the English language arts and math standards adopted by a number of U.S. states designed to prepare students for success in college and the workplace (CDE, n.d.-c).

Comprehensive High School. Comprehensive high schools were publicized by the Commission on the Reorganization of Secondary Education in 1918 calling for curricular differentiation that would allow students to "follow programs and take courses suited to their interests, abilities, and needs" (Mirel, 2006, para. 9).

Compulsory Education. Compulsory education refers to laws that require children to attend school for a designated period (Findlaw, n.d.).

Integrated Academic Programs. Integrate academic programs are a type of CTE programs that attempts to relate academics to the CTE course of study, thus increasing relevance for students.

Joint Vocational Schools (JVS). JVSs are centralized CTE centers that serve more than one comprehensive high school or more than one school district.

Local Control Funding Formula (LCFF). LCFF replaced revenue limits and categorical funding with base and supplemental funding in California. The legislation allowed school districts greater flexibility in funding allocations based on community input (EdSource, n.d.).

Delimitations

This study was delimited to public school districts serving secondary CTE students in southern California. It was further delimited to school districts within Riverside, San Bernardino, and San Diego counties. In addition, only educators with direct responsibility for CTE enrollment were included in this study.

Organization of the Study

The study is organized into five chapters, a bibliography, and appendices. Chapter I was an introduction explaining the need for the study and providing a brief background

on the topic. Chapter II presents a detailed review of the relevant and recent literature. Chapter III explains the research design and methodology. This chapter details the population, sample, data collection process, validity and reliability of the developed survey instrument, potential limitations, and qualitative procedures for data evaluation and analysis. Chapter IV details and discusses the finding of the study. Finally, Chapter V summarizes the findings and conclusions of the study, addresses the identified limitations, and presents recommendation for future research.

CHAPTER II: REVIEW OF THE LITERATURE

Researchers generally agree career technical education (CTE), also known as industrial education, manual education, career education, or vocational education, was developed in response to the economic need for a skilled workforce (Benavot, 1983; Gordon, 2008). With the onset of the industrial revolution, people needed the skills to make them qualified for the available jobs and employers needed skilled workers. Over the past 100 years, the United States, through the actions of governmental agencies and private organizations, struggled with the challenge of meeting the needs of both individuals and businesses. The first section of the literature review summarizes the stages of development of CTE in the United States and specifically how CTE changed over time in California. The next section examines the current state of CTE in California. The final section of this chapter looks at researcher related to factors that encourage and discourage enrollment in CTE.

Historical Perspective

America Before 1917

Classes of education. "Education during the colonial period was not well organized, neither continuous nor uniform among the colonies, and was frequently in the hands of unskilled teachers" (ACTE, 1976, p. 24). Before centralized education systems existed in the United States, children followed one of three educational paths. Students from wealthier families enjoyed private tutors and were taught subjects such as language arts, math, and science (Perry & Wallace, 2012). The demand for education in traditional academic topics by wealthy early colonists was so great that they supported the founding

of Harvard University in 1636, more than 100 years before the colonies became the United States (Harvard University, n.d.).

Students from working class families were normally educated by their parents to take over the family farm or business (Wonacott, 2003). With the advent of the industrial revolution, parents left the farms to work in factories. As a result, many youth could no longer learn alongside their parents. These students went to high schools which were ill-equipped to teach anything other than academics to the privileged few (Hanford, 2014).

Those children lacking private tutors or the opportunity to obtain instruction from their parents normally learned through either formalized apprenticeships or from an informal relationship observing skilled tradesmen (ACTE, 1976; Benavot, 1983; Gordon, 2008). "Apprenticeship is an old form of education, used generously by the ancient nations, the Greeks and Romans, the Middle Ages, and the Renaissance" (ACTE, 1976, p. 25). The apprenticeship system in the New England colonies was modeled after the system in place in England, a formal institution with roots in the English Statute of Artificers of 1562 (Apprenticeship in England, 2014; Gordon, 2014). Apprentices were instructed in the techniques of the trade, given room and board, and given basic instruction in liberal studies in return for their work (Gordon, 2014, Wonacott, 2003). Orphans or children of poor families (both boys and girls) were normally apprenticed to local business people, usually beginning at the age of eight or nine and lasting for five to more years (Gordon, 2014, Wonacott, 2003).

The Industrial Revolution. In 1807, the Embargo Act was passed, making any and all exports from the United States illegal (Gordon, 2014). The Embargo Act was followed by the Non-Intercourse Act, which attempted to relax trade restrictions with

either England or France. Both the Embargo Act and the Non-Intercourse Act contributed to the War of 1812. These laws and the War of 1812 were credited with bringing the Industrial Revolution to the United States as manufactured goods from Europe were no longer available. Demand for manufactured goods meant that American businessmen could justify the investment in manufacturing facilities without competition from European sources (Gordon, 2014). The impact of the Industrial Revolution in the United States was that skilled craftsmen were no longer in high demand. Instead, manufacturers were looking for machine operators and laborers (ACTE, 1976). "Demands for skilled workers generated by industrialization in turn promoted the growth of education that could provide training and skills for a technically proficient labor force" (Benavot, 1983, p. 66). An extended apprenticeship period was not necessary to train machine operators and laborers, leading to the decline of apprenticeships as an educational institution (Gordon, 2014).

The early 1820s saw the rise of the American Lyceum Movement. The Lyceum Movement was an informal attempt at adult education created by societies of mechanics and charitable groups to replace educational opportunities lost with the decline of the apprenticeship system (ACTE, 1976). There were over 1,000 lyceums in existence by 1833, but funding issues and lack of trust by farmers and mechanics caused many to be short lived (Gordon, 2014).

The next development in American vocational education was the manual labor academy. In manual labor academies, students worked in a local factory or shop and the shop owner paid the tuition for the student (ACTE, 1976). Manual training was meant to combine theoretical instruction with production experience, allowing graduates to

directly enter the workforce without the need for a lengthy apprenticeship. “Manual training was not, however, meant to teach a specific skill. Instead, it was intended to be an enhancement of, rather than a replacement to, the traditional curriculum” (Westerink, as cited by Gordon, 2014, p. 1). Manual training changed the perception of the purpose of high school. It was no longer thought of as devoted solely to college preparation, but brought about the idea that high schools should prepare students for a variety of career options rather than just for college entrance (Gordon, 2014). The Rennsalaer Institute, a manual labor academy that became the first school of engineering in the United States, opened in 1824 (ACTE, 1976).

The trade school movement got its start in the late 1860s with the Hampton Institute, started by General Samuel Chapman Armstrong, who developed the school based on his own experiences growing up in Hawaii (Gordon, 2014). The trade school movement began as a means to educate freed southern slaves after the Civil War (ACTE, 1976). Booker T. Washington was a famous graduate of the Hampton Institute who returned to teach there and then became the principal at the Tuskegee Institute (ACTE, 1976).

In 1862, Congress passed the Morrill Act, the first federal legislation to provide funding for vocational education (Gordon, 2014). The Constitution did not include provisions for education, making it the responsibility of the states, which was why the federal government did not fund vocational education directly (ACTE, 1976). The Morrill Act allocated 30,000 acres to each senator and representative to be sold to fund the construction and support of universities in each state dedicated to teaching agriculture and mechanical arts, then considered the practical arts (Gordon, 2014). These land grant

universities, as they became known, existed "to promote the liberal and practical education of the industrial classes" (Gordon, 2014, p. 57). In addition to opening university education to the masses, the Morrill Act identified the concept of integrated academics. "The vocational and academic curricula were to be integrated without any superior rating, ranking, or qualitative judgement" (Gordon, 2014, p.58). One unintended consequence of the Morrill Act was that it nearly eliminated vocational education at the secondary level because people assumed that colleges would provide agriculture education in the future (ACTE, 1976).

The next phase of CTE in the United States was the manual training movement. Prior to 1877, many Massachusetts Institute of Technology (MIT) engineering students needed to complete an apprenticeship after graduation because employers needed engineers who also possessed tool and machinery skills (Gordon, 2014). However, the manual training movement gained momentum when John Runkle, president of MIT, visited the Centennial Exposition in Philadelphia in 1876. He saw a Russian system of tool instruction where students produced physical models of designs developed by the students themselves (ACTE, 1976; Gordon, 2014). Runkle saw this method of instruction as a solution to the problem of graduating students requiring additional training before they were employable (Gordon, 2014). Runkle was able to open manual training laboratories at MIT in 1877, and a secondary school based on these instructional practices in 1878 (ACTE, 1976; Gordon, 2014). The first practical implementation of manual training for high school students was the Pioneer Manual Training School that opened to 50 boys in St. Louis in 1880 (ACTE, 1976).

Near the end of the 19th century, a number of organizations released documents supporting additional development of vocational training in public schools. The National Association of Manufacturers (NAM) organized in 1895, in response to a period of depression, to secure an adequate supply of trained workers and reduce the power of organized labor (Gordon, 2014). Their 1905 report advocated for a separate system of trade schools to replace the failed apprenticeship system and to increase the abysmal 8% high school graduation rate (Gordon, 2014). Wonacott (2003) reported a high school graduation rate of less than 10% because, even with little or no preparation for work, earning money was more attractive.

The Douglas Commission of 1905 may have originated modern CTE programs. "The productive value of the child entering employment at the age of 14 or 15 was small compared to what might be expected if the child had the benefit of industrial training" (ACTE, 1976, p. 52). David Snedden, Commissioner of Education for Massachusetts, indicated the need for three types of education: physical education for bodily efficiency, vocational education for the capacity to do one's share of the productive work of the world, and liberal education to contribute to the improvement of social life and the development of personal culture (Wonacott, 2003). It was concluded that industrial foundation skills needed to be an integral part of general education (ACTE, 1976; Gordon, 2014). These recommendations were made law in Massachusetts in 1906, giving rise to national groups such as the National Society for the Promotion of Industrial Education (NSPIE; Gordon, 2014).

In 1912, NAM released an additional report that recommended German-style continuation schools, courses centered on the needs of local industry, school

administration by local business and industry, and federal funds to support education (Gordon, 2014). The recommendations put forward became recurring themes in vocational education.

America 1917 to 1963

A report developed by the Commission on National Aid to Vocational Education (NAVE) compared American vocational education to German vocational education. "As proof of vocational education's potential effects, European and American officials looked to the role industrial schools had played in Germany's rising position in the world economy in the latter half of the 19th century" (Benavot, 1983, p. 64).

> By the turn of the century, three forms of secondary schooling had taken root in Europe; first, a "traditional" form of highly selective institutions geared toward children of upper class background; second, a growing number of "modern" schools with generalized secondary programs enabling middle class children some access to higher education and civil service positions; and third, a multiplicity of technical-vocational courses and industrial schools providing training for lower class youths in skilled trades and manual labor. (Benavot, 1983, p. 65)

The NAVE also indicated that the majority of American children were unable to take advantage of free public education because it did not meet their needs. "The commission held that the schools were planned for only the few who were preparing for college rather than the large number who would go into industry" (Wonacott, 2003, p. 4). The NAVE report influenced the passage of the Smith-Hughes Act.

The Smith-Hughes Act of 1917, the first federal legislation to directly fund vocational education, was passed in response to social, economic, and political forces (Wonacott, 2003). Although the legislation was not necessarily passed to support the war effort, "congressional leaders saw a close relationship between the vocational education bill and national preparedness" (Gordon, 2014, p. 79). World War I significantly reduced the number of highly skilled artisan immigrants from Europe (Gordon, 2008). The newly created Federal Board for Vocational Education was tasked with finding a solution to the shortage of military and industrial workers as it became obvious during World War I that Germany had a superior system of vocational education (Gordon, 2014). ACTE (1976) indicated that during World War I, there were more trade schools in the tiny German kingdom of Bavaria, which had a population slightly more than New York City, than in the entire United States.

Whereas the Morrill Act provided funding for the establishment of universities charged with delivering instruction in agriculture and mechanics, the Smith-Hughes Act focused on secondary education and established separate state boards for vocational education. As an unintentional consequence, the separate boards for vocational education created by Smith-Hughes may be responsible for the separation of liberal education and vocational education because they allowed the public to see vocational and liberal education as two separate institutions (Cashen, 2014; Gordon, 2008; Wonacott, 2003). Perry and Wallace (2012) indicated this was when education was formally divided into a vocational track and a college preparation track, reinforcing class boundaries. "The Smith-Hughes Act tended to promote a segregated curriculum, with agriculture, homemaking, and trade and industrial education segments separated not only from

academic programs but from all other vocational programs as well" (Gordon, 2014, p. 105). The Smith-Hughes Act, responsible for preparing workers to meet the demands of industry, also established a cooperative plan between the Federal government and the states to train vocational teachers and pay their salaries (ACTE, 1976; Perry & Wallace, 2012). The Smith-Hughes Act stipulated the 50-25-25 rule: 50% of student time spent in shop work, 25% spent in subjects closely related to the shop work, and 25% spent in academic courses (Wonacott, 2003). "The intent was, of course, to separate vocational students from those in the classical curriculum and prepare them well for the factories, farms, and homes of the era" (Wonacott, 2003, p. 9).

Senator Walter F. George sponsored every major piece of vocational education legislation passed during his tenure (Gordon, 2014). Senator George had a different perspective on vocational education than the one established by Smith-Hughes. "Senator George suggested that he never thought vocational training should interfere with a well-rounded academic course of study, but that the two could well be brought together, beginning at the secondary level" (Gordon, 2014, p. 104). The George-Reed Act of 1929, the George-Ellzey Act of 1934, and the George-Deen Act of 1936 continued to appropriate funds for vocational education to stimulate economic recovery from the Great Depression, but with war looming in Europe, attention turned to training workers for the production of goods necessary to support the war effort (Gordon, 2008).

The George-Reed Act of 1929 authorized $1 million each year from 1930-1934 to expand agriculture and home economics education (Gordon, 2014). The George-Ellzey Act of 1934 replaced the George-Reed Act and increased the authorization to $3 million annually to be distributed equally to agriculture, home economics, trade, and industrial

education. The George-Deen Act of 1936 significantly increased the authorization for agriculture, home economics, trade, and industrial education to $14 million a year. In George-Deen, marketing occupations were included for the first time and money was available for teacher training programs (Gordon, 2014).

In 1939, the president directed the US Office of Education to develop and improve vocational education for the purpose of training people to work in the aircraft industry (ACTE; 1976). Vocational Training for War Production Workers and Vocational Education for National Defense trained workers for World War II (Gordon, 2014). These early preparations for improving vocational training resulted in training nearly 7.5 million people, providing the trained labor necessary for the war effort (ACTE, 1976).

With a large percentage of the male workforce enlisted in the military and overseas, the United States government was forced to recruit women to work in the industries supporting the war effort. Rosie the Riveter was the star of this recruitment campaign, with women making up nearly 37% of the workforce by the end of the war (History Channel, n.d.-b).

With the conclusion of World War II, the Servicemen's Readjustment Act of 1944, also known as the GI Bill, provided educational and training opportunities for returning veterans. Although this legislation provided funding for returning soldiers rather than high school students, the impact of this legislation was that a significant number of veterans majored in vocational teacher education and taught in vocational programs (Gordon, 2014). The George-Barden Act of 1946 increased vocational education funding from $14 million to $29 million "to provide a means for thousands of

returning World War II veterans to acquire employable skills in a rapidly expanding economy" (Gordon, 2014, p. 108).

The National Defense Education Act of 1958 (NDEA) was passed as a direct response to the successful orbiting of a Russian satellite, Sputnik 1, in 1957. "The focus of this act was on providing vocational training for youths, adults, and older persons, including related instruction for apprentices, designed to fit them for employment as technicians or skilled workers in scientific or technical fields" (Gordon, 2008, p. 91). NDEA also included funding for guidance counseling and higher education, media development, and vocational education for technical occupations that would support national defense (Gordon, 2014).

The Manpower Development Training Act of 1962 authorized $370 million to be spent over three years to train and retrain unemployed and underemployed adults (Gordon, 2014). One unique aspect of this act was that it provided wages for workers during the training period (Gordon, 2014).

America 1963 to 1983

"The year 1963 was the most significant in the legislative history of vocational education since passage of the 1917 Smith-Hughes Act" (Gordon, 2014, p. 110). In 1963, congress passed the Vocational Education Act (VEA), a cause championed by Carl D. Perkins, a representative from Kentucky. The VEA, a result of the 1963 study *Education for a Changing World of Work*, focused on people rather than occupations (Gordon, 2014). Rather than specify programs as was done by previous legislation, the VEA strove to train the people to meet the needs of the economy (Barlow, 1976; Gordon, 2008). "For the first time, vocational education was mandated to meet the needs of individual students

and not just the needs of industry" (Gordon, 2008, p. 92). The major goals of the VEA were to maintain, extend, and improve existing vocational education programs and provide part-time employment for students to support their continuing, full-time education. The Act also required funds be used to support individuals with disabilities who were not able to be successful in regular vocational education programs. In addition, the VEA provided funding by age group rather than occupational area. Fifty percent of the funding was to be used for students aged 15-19, 20% for students aged 20-25, 15% for students aged 25-65, with the remaining 5% available for students of any age (Gordon, 2014).

The VEA was amended a number of times in response to social and economic conditions in the United States. The VEA Amendments of 1968 emphasized vocational education in postsecondary schools and broadened the definition of vocational education (ACTE, 1976). This was in response to the social and economic problems that plagued the United States in the late 1960s (Gordon, 2014). The key feature of the VEA Amendments of 1976 was a focus on overcoming sex discrimination and sex bias in vocational education and was a response to the women's movement of the 1970s (Gordon, 2014).

America 1983 to 2002

Poor performance on national and international educational achievement tests and complaints from business leaders related to the lack of skills high school graduates brought to entry-level positions drove secondary education reform in the early 1980s (Gordon, 2014). In 1983, the National Commission on Excellence in Education published *A Nation at Risk*. This report stated that decreased competitiveness in comparison to other

countries was a direct result of low standards and poor performance by the American educational system. Wonacott (2003) indicated the authors of *A Nation at Risk* felt that increased academic performance would restore the United States to dominance in productivity and economic competitiveness. This report and others like it sparked an education reform movement in the United States, which focused on increasing academic skills while ignoring student vocational needs (Cashen, 2014; Gordon, 2008; Perry & Wallace, 2012). In addition to *A Nation at Risk*, other reports such as *America's Choice: High Skills or Low Wages, Workforce 2000,* and reports from the Secretary's Commission on Achieving Necessary Skills (SCANS), resulted in changes such as longer school days and school years and an increase in the number of credits in English, math, science, and social studies necessary for high school graduation (Gordon, 2014).

Perry and Wallace (2012) opined that *The Forgotten Half* was the turning point in the reform movement, bringing focus back to vocational education. It pointed out that over half of American high school graduates did not attend college, meaning that schools were failing a large portion of the population.

The Job Training Partnership Act of 1982 (JTPA) provided job training for youth and unskilled adults while also helping to reduce the barriers preventing economically disadvantaged people from obtaining job training (Gordon, 2014). The JTPA was a replacement for the Comprehensive Employment and Training Act (CETA), which was a replacement for the Manpower Development Training Act (MDTA; Guttman, 1983). JTPA gave more power to states to build partnerships with private industry, increasing private employment and reducing welfare dependence (Blake, n.d.).

In 1984, the Vocational Education Act was amended again and renamed the Carl D. Perkins Vocational Education Act, becoming known as Perkins 1. The two goals of the new act were to provide equal opportunities for adults in vocational education while updating the skills of the labor force to take advantage of new employment opportunities (Gordon, 2014). Wonacott (2003) stated that one impact of this legislation was a reduction in enrollment in vocational education by general education students, who chose to take additional academic courses instead, as funding favored inclusion of special populations. Another part of Perkins 1, which was influenced by *A Nation at Risk,* was the requirement that LEAs determine how CTE courses impacted students' academic achievement (Aliaga, Kotamraju, & Stone, 2014).

The Carl D. Perkins Vocational and Applied Technology Education Act of 1990 (Perkins 2) brought major changes by requiring the integration of academic and vocational education; cooperation between secondary, postsecondary, and other vocational education providers; and increased linkages between school and work (Gordon, 2014). In addition to bringing vocational education closer to mainstream academic education, Perkins 2 also provided funding more directly to LEAs, reducing the ability of state officials to redirect funds. Perkins 2 also required states to develop standards and performance measures for vocational education (Gordon, 2014). This was the first time in federal vocational education legislation that academics were emphasized and funds could be directed to all students, not specific segments of the population (Wonacott, 2003).

The School-to-Work Opportunities Act of 1994 (STWOA) strove to develop a workforce that met the needs of employers by developing partnerships between schools

and businesses (Gordon, 2014). Wonacott (2003) indicated the purpose of STWOA was to prepare students for high-skill, high-wage careers; provide instruction in academics; and develop foundational skills for postsecondary education and lifelong learning. STWOA was intended to strengthen the connection between school and work to encourage unmotivated youth to move out of low-wage jobs by making education relevant to students' future careers, delivering instruction in ways students would respond to, and teaching skills valuable to employers (Cashen, 2014; DOE, n.d.). STWOA was based on collaborative partnerships between education and business, curriculum that integrated technical and academic skills, career guidance, and work-based learning (Gordon, 2014). STWOA proscribed three components for school-to-work systems: "school-based learning, work-based learning, and connecting activities designed to strengthen linkages between school and work" (Perry & Wallace, 2012, p. 37).

The Personal Responsibility and Work Opportunity Reconciliation Act of 1996 (PRWORA), mostly a welfare reform law, impacted CTE by allowing welfare recipients to count one year of vocational training toward the requirement they worked within two years of receiving federal assistance (Gordon, 2014). Under PRWORA, a maximum of 20% of eligible participants could participate in vocational training (National Association of Social Workers, 1996).

The Workforce Investment Act of 1998 replaced the JTPA and established state and local workforce investment boards (Gordon, 2014). One important aspect of this law was that it required states to be accountable for results by reporting the number of workers entering unsubsidized employment, retention in unsubsidized employment after six months, wages after six months of employment, and attainment of industry-

recognized certification (Gordon, 2014). In addition, administrative funds could be used to drug test participants and allowed a six month ban from training for the first offense and a two year ban for the subsequent failed tests (Gordon, 2014).

The Carl D. Perkins Vocational and Technical Act of 1998 (Perkins 3) authorized Congress to appropriate "such sums as necessary," with 50% of the funds going to programs for 15-19 year olds, 20% for 20-24 year olds, 15% for 25-65 year olds, and the balance used as needed. In addition, Perkins 3 required 85% of the funds to be used directly by LEAs (Gordon, 2014). The state was also required to document the effectiveness of programs by reporting student achievement on academic and technical measures, attainment of a high school diploma or postsecondary degree/credential, progress in postsecondary training/military service/employment, participation in vocational programs that led to nontraditional training, and employment (Gordon, 2014; Wonacott, 2003). LEAs were required to use funds to strengthen academic and technical skills of students, provide students with an understanding of all aspects of an industry; develop and improve the use of technology; provide professional development for instructors, counselors, and administrators; evaluate programs; create/expand/modernize programs; provide programs of sufficient size, scope, and quality to be effective; and link secondary and postsecondary programs (Gordon, 2014).

2001 to Present Day

The reauthorization of the Elementary and Secondary Education Act (ESEA) in 2001 became known as No Child Left Behind (NCLB). NCLB focused on core academic subjects, setting clear standards for learning, and holding schools accountable for student progress (Chadd & Drage, 2006). NCLB required states to implement statewide

assessments based on challenging standards in reading and mathematics to ensure all students reached proficiency (Gordon, 2014). Chadd and Drage (2006) indicated that because no area of CTE was specifically mentioned in NCLB, schools allocated more instructional time to core academic programs and diverted funding normally set aside for CTE programs to improve student academic performance. The impact of NCLB legislation on CTE was to force the majority of students to follow a predominantly academic program of study (Cashen, 2014). Aliaga et al. (2014) indicated that under NCLB, CTE *concentrators* (students completing a sequence of three or more CTE courses in the same discipline) were nearly non-existent.

The Workforce Investment Act Amendments of 2005 increased flexibility to meet state and local needs, provided workers with training to obtain new or better jobs and employers with a highly trained workforce to be more globally competitive, removed barriers preventing businesses from participating, encouraged job training and employment services to be driven by the demands of employers, and improved access to services (Gordon, 2014).

In 2006, Perkins 4, the most recent reauthorization of the Vocational Education Act of 1963, renamed vocational education to CTE and updated goals to prepare youth for work through occupationally focused courses (Cashen, 2014; Perry & Wallace, 2012). Perkins 4 focused on improving programs and accountability, developing secondary and postsecondary connections, linking technical education to rigorous academics, and a focusing on business and industry (Gordon, 2014). "A centerpiece of both the 1998 and 2006 legislation is the directive that occupational courses to incorporate skills and concepts taught in core academic courses (e.g., math, science, and English) so that CTE

supports academic achievement" (Bozick & Dalton, 2013, p. 124). Although Perkins 4 was initially only authorized through 2013, congress continued to annually reauthorize Perkins 4 without making significant changes to the structure of the legislation (ACTE, n.d.-b).

The America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science Act of 2007 (America COMPETES) impacted CTE by increasing the number of science, technology, engineering, and math (STEM) teachers, exposing a larger number of students to STEM education, and increasing spending on STEM education for women, minorities, and high-need schools (Gordon, 2014). This Act was passed in response to a National Academy of Sciences report titled *Rising Above the Gathering Storm*, which stated that the United States was falling behind international competitors in research, innovation, and education, historically the catalysts for economic growth and prosperity in this country (University Corporation for Atmospheric Research, 2014).

The Workforce Investment Improvement Act of 2012 (WIIA) amended the WIA by making the following changes: streamlining federal workforce development programs; strengthening the flexible, employer-driven job training system; increasing local decision-making; and improving accountability and transparency (Gordon, 2014).

The 2015 rewrite of ESEA, now known as the Every Student Succeeds Act (ESSA), included a number of items that directly impacted CTE. These items included tighter alignment between academic and CTE standards, additional college and career guidance, and increased focus on student achievement data as they related to CTE

(Voytek, 2015). Voytek (2015) went on to note that another item of significance in ESSA was the inclusion of CTE as part of the definition of a well-rounded education.

Table 1

Timeline of Federal CTE Initiatives

Year	Legislation	Major Impact
1562	Statute of Artificers	Required seven year apprenticeship for anyone wanting to enter a trade.
1807	Embargo Act	Closed all U.S. ports to export shipping and restricted imports from Great Britain.
1807	American Industrial Revolution	Brought on by the Embargo Act, Non-Intercourse Act, and the War of 1812.
1862	First Morrill Act	Created a national system of colleges focused on agriculture and mechanics known as Land Grant Colleges.
1887	Hatch Act	Established agricultural experimentation stations associated with the Land Grant Colleges.
1890	Second Morrill Act	Ensured freed slaves had access to Land Grant Colleges by ensuring race was not a criterion for admission or by establishing separate comparable institutions.
1917	Smith-Hughes Act	Mandated first federal funding for secondary agriculture and vocational training.
1929	George-Reed Act	Increased funding above what was provided for by Smith-Hughes.
1934	George-Ellzey Act	Provided an increase of $3 million for agriculture, home economics, trade, and industrial education.
1936	George-Deen Act	Authorized $14 million to expand vocational and career exploration programs.
1944	Servicemen's Readjustment Act (G.I. Bill)	Helped veterans return to civilian life by providing for education and subsistence while attending school.
1949	George-Barden Act	Expanded CTE programs to better meet the needs of returning veterans.
1956	George-Barden Act Amendments	Provided $5 million annually for four years to expand practical nursing instruction.
1958	National Defense Education Act	Prepared students for careers in scientific and technical professions.

1962	Manpower Development Training Act	Trained workers displaced by advances in technology and automation.
1963	Vocational Education Act	Mandated that all persons, regardless of background or financial status, had access to high quality vocational education.
1968	Vocational Education Act Reauthorization	Replaced all previous vocational legislation except Smith-Hughes.
1973	Comprehensive Employment and Training Act	Transferred power to the states and funded on-the-job training, classroom instruction, and career counseling.
1976	Vocational Education Act Reauthorization	Mandated states do a better job of planning vocational education. Also required equal access for women.
1982	Job Training Partnership Act	Created programs to help youth and unemployed adults enter the workforce.
1983	*A Nation at Risk*	Stated the American education system was not adequately preparing students for the competitive workforce.
1984	Carl D. Perkins Vocational Education Act (Perkins 1)	Improved access to vocational education for underserved populations and students with special needs.
1987	*Workforce 2000: Work and Workers for the 21st Century*	Identified four trends that influenced workforce development in the last part of the 20th century.
1988	*The Forgotten Half: Pathways to Success for America's Youth and Young Families*	Elaborated on the challenges faced by American youth.
1988	Perkins 2	Provided funds for the integration of academic, vocational, and tech prep programs. Continued to focus on increasing opportunities for disadvantaged populations.
1990	*America's Choice: High Skills or Low Wages*	Suggested increasing the skills of American workers was the way to stay competitive in the world economy.
1994	Goals 2000	Established standards-based education.
1994	Personal Responsibility and Work Opportunity Partnership Act	Allowed recipients of assistance to count vocational training toward their employment requirement.
1998	Perkins 3	Allowed greater flexibility in developing CTE programs, but made states and LEAs more accountable for student outcomes.

2002	NCLB	Established standards-based outcomes with significant sanctions for schools that failed to meet academic goals.
2006	Perkins 4	Focused on strengthening the academic outcomes of CTE students and developing linkages between secondary and postsecondary institutions.
2015	Elementary and Secondary Education Act Reauthorization (ESSA)	Added CTE to the list of subjects that comprised a well-rounded education, increased college and career counseling, required state academic standards be aligned with CTE standards, and increased CTE data reporting requirements.

Over the course of the history of education in the United States, vocational education attempted to react to the needs of business, society, and individuals. Historically, vocational education was reserved for students of limited means whereas children of wealthy families pursued more liberal/academic education. This division between economic classes resulted in a negative impression of vocational education that the system tried to escape since its inception. Runkle recognized the value of vocational skills for MIT engineering students in the late 1800s and the pendulum swung back and forth between academics and vocational skills ever since.

Events Influencing the Development of CTE in California

For the most part, vocational education in California followed the ups and downs of CTE nationwide with a few notable exceptions. Although the majority of CTE legislation was enacted at the federal level, a few California laws had considerable impact on CTE within the state.

In 1963, California passed Senate Bill (SB) 1379, establishing Countywide Vocational High Schools and Joint Powers Districts, which became Regional Occupational Centers/Programs (ROC/Ps) in 1965 (Mitchell & Hecht, 1989). According to Mitchell and Hecht (1989), the ROC/Ps were established "to prepare students for an

increasingly technological society in which generalized training and skills are insufficient to prepare high school graduates for the many employment opportunities which require special or technical training or skills" (p. 7).

The Public Policy Institute of California (PPIC) asserted that Proposition 13 was intended by its authors to be a simple property tax reform brought on by increasing home values in California and the Legislature's failure to act. The adoption of Proposition 13 placed limited on increasing property taxes, making school districts even more dependent on state funding (Chapman, n.d.). Franz (1979) reported decreases of 9% in vocational education budgets from fiscal year 1977-78 to 1978-79 with enrollment decreases of 6%, and 25% of the institutions surveyed reported they eliminated selected vocational programs as a result.

In 1983, California legislators passed SB 813, also known as the Hughes-Hart Education Reform Act. Some of the key components of the act impacting CTE were significant changes to the high school graduation requirements and sweeping school finance reform (CDE, 1983). According to Guthrie, Odden, Cagampang, and Picus (1988), SB 813 required secondary schools to offer the courses necessary to meet the University of California (UC) and California State University (CSU) entrance requirements to students, and at approximately the same time, the UCs and CSUs increased entrance requirements. "The new graduation requirements mandated by SB 813 reduced the number and variety of elective courses available to high school students, with the effect of completely eliminating or drastically reducing the high school vocational offerings" (Mitchell & Hecht, 1989, p. 19). Note that Hughes-Hart was passed at approximately the same time as *A Nation at Risk* was released.

On May 11, 2005, the California State Board of Education adopted the CTE Model Curriculum Standards. The standards were written for grades 7-12 and described 58 career pathways organized into 15 industry sectors (CDE, n.d.-a). Also in 2005, Governor Arnold Schwarzenegger signed SB 70, allocating $20 million to strengthen and expand CTE at the secondary and community college levels. The purpose of SB 70 was to increase high school CTE and ROC/P participation, develop middle school CTE programs, develop pipelines to recruit CTE teachers from business and industry, and to standardize articulation between high schools and community colleges (CDE, n.d.-a).

Assembly Bill (AB) 1330, adopted in October 2011, allowed local school boards to accept CTE courses as an alternative to the requirement that all students completes a course in the fine arts or foreign language (AB 1330, 2011). Although school districts could chose to accept CTE courses in place of foreign language or fine art classes, there was no requirement that they must accept them. In addition, the UC and CSU systems did not alter their entrance criteria in response to AB 1330.

On July 1, 2013, Governor Jerry Brown signed the law establishing the Local Control Funding Formula (LCFF), the most sweeping change to education funding in California in 40 years (EdSource, n.d.). LCFF eliminated the previous revenue limits system and did away with most categorical funds, allowing LEAs increased flexibility in funding allocation (CDE, 2015). Included in LCFF was the requirement that school districts created a Local Control Accountability Plan (LCAP), a three-year plan that needed to be updated annually with input from local stakeholders (EdSource, n.d.). The LCAP had to address the implementation of adopted curriculum standards, including CTE standards (CDE, 2016). According to the California Manufacturers and Technology

Association (CMTA), LCFF retained funding for CTE programs already in place for the near future, but "a majority of the current CTE dollars still remain vulnerable and unpredictable" ("CTE in Budget Compromise," 2013, para. 4).

In July 2013, AB 86 established the California Career Pathways Trust (CCPT; California Legislative Information [CA Leg. Info], n.d.). This legislation established $250 million in annual funding to support the development of "standards-based academics with career-relevant, sequenced curriculum following industry-themed pathways that are aligned to high-need, high-growth, or emerging regional economic sectors" (CDE, 2014a, para. 2).

The California CTE Incentive Grant (CTEIG) was passed as part of the California State Budget Act of 2015. It intended to encourage the development of new CTE programs and maintain existing programs during the LCFF transition (CDE, 2015). Although the CCPT grant provided $250 million in funding, the CTEIG provided for $400 million the first year, $300 million the second year, and $200 million the final year. CTEIG required LEAs to provide a coherent sequence of courses (pathways) aligned to the California Model Curriculum Standards, reflected of the needs of local business and industry, and led to an industry recognized certificate, continuing education, or employment. LEAs needed to provide students with career exploration and guidance, student leadership development, program articulation with postsecondary institutions, and work-based learning opportunities. Instructors needed to be appropriately credentialed and provided with professional development opportunities. Finally, LEAs needed to report data to allow for an evaluation of program effectiveness (CDE, 2015). This grant

required matching funds to be provided by each LEA and failure to do so would result in the LEA being invoiced the full amount of any grant funds received.

Table 2

Timeline of California CTE Initiatives

1963	SB 1379	Funded countywide ROC/Ps
1978	Proposition 13	Reduced overall education funding, which resulted in many reductions in CTE funding and closed programs.
1983	Hughes-Hart Education Reform Act (SB 813)	Increased the California high school graduation requirements. Resulted in less opportunity for high school students to participate in CTE programs.
2005	CTE Model Curriculum Standards	Organized California CTE into 15 industry sectors with 58 separate career pathways and established academic as well as vocational standards for each pathway.
2005	SB 70	Increased fund for articulation between secondary and postsecondary institutions.
2011	AB 1330	Allowed LEAs to accept CTE courses to meet the fine arts graduation requirement.
2013	LCFF	Nearly eliminated categorical funds from the state level and allowed LEAs more flexibility in determining how best to allocate funding.
2013	CCPT	Provided a $250 million grant program to expand and update CTE programs in California.
2015	CTEIG	Provided a $900 million grant program to expand and update CTE programs in California. Modeled after the Agriculture Incentive Grant program.

Prior to 1848, California was a Mexican territory, which, according to the History Channel (n.d.-a), had only 7,300 residents at the time the treaty was signed making California part of the United States. This meant that California did not go through many of the struggles experienced by the rest of the states with regard to CTE. Although the original California state constitution established a Department of Public Instruction, prior to 1921, no such department actually existed (CDE, 2009). By the time California actually had a Department of Education, the federal government already passed Smith-

Hughes, which meant CTE in California followed what happened at the federal level. Although the majority of CTE funding in California came from federal sources like the Carl D. Perkins grant, in recent years, the state provided significant funding directly from the state budget.

Current California CTE Models

CDE (n.d.) defined CTE as a "multiyear sequence of courses that integrates core academic knowledge with technical and occupational knowledge to provide students with a pathway to postsecondary education and careers," (para. 1). Given the broad definition, California CTE programs took a number of distinctly different forms.

CTE in Middle School

For most California students, their first exposure to CTE courses was at the middle school level.

> Many California middle schools offer a variety of CTE courses ranging from sampler classes lasting 8 to12 weeks to full first-year courses in a particular field. By beginning their CTE exploration as early adolescents, students can experience CTE's hands on educational opportunities while trying out various industry sectors they may choose to pursue in high school. (CDE, 2007, p. 7)

Unfortunately, data related to the actual quantity and subject matter of courses offered at the middle school level was extremely limited. According to Shainman (personal communication, January 24, 2016), middle schools enjoyed incredible flexibility in determining the content of elective or exploratory courses offered to students. As such, the decision to offer CTE courses at the middle school could be

determined by the needs of the students, the availability of a qualified and interested instructor, or learning materials and facility availability. With no specific requirement that CTE courses be offered at the middle school level, the decision to offer CTE courses was often left to the site principal or district administrator (A. Shainman, personal communication, January 24, 2016).

CTE in High School

According to CDE (2007), high school CTE programs could be traditional manual arts programs, ROC/Ps, or integrated academic programs such as magnet schools or charter schools.

Traditional manual arts programs. Many high schools still maintained CTE programs reminiscent of the manual arts or vocational programs that started with the Smith-Hughes Act of 1917. These vocational programs included such courses as wood shop, metal shop, auto shop, and graphic arts. With the adoption of the California Model Curriculum Standards, many traditional programs were updated to reflect the additional academic standards, interpersonal skills, and modern technology in use by business and industry.

ROC/Ps. ROC/Ps were designed to serve students 16 years of age or older (including adult students) with the intent to provide training to enter the workforce and be successful, develop skills to matriculate to postsecondary institution, or upgrade existing skills (CDE, 2008). ROC/Ps could provide services at local high schools, regional centers, or at local businesses through work-based learning (CDE, 2008). The ROC/P Operations Handbook called for ROC/Ps to provide school-to-career transition services, local business and industry partnerships, training programs, courses offered based on

local labor market demands, industry experienced instructors, a wide variety of courses for a diverse labor market, apprenticeship programs, transition into postsecondary education programs, and essential academic skills (CDE, 2008).

Integrated academic programs. Integrated academic programs integrated core academic instruction into CTE pathways (CDE, 2007). The Linked Learning Model, a program available through ConnectEd and fiscally supported by the James Irvine Foundation and CDE, was an example of an integrated academic program gaining in popularity across California (ConnectEd, n.d.). Another integrated academic program, High Schools That Work (HSTW), developed and administered by the Southern Regional Education Board (SREB) and most prevalent in the southeast United States, was adopted by consortiums across California that were usually led by community college districts (CDE, 2007). Although these programs differed in minor ways from the other programs in this classification, the common goal was to combine academic instruction with a CTE course of study to allow students to find more relevance in academic topics by showing the relationship between academic skills and future career goals.

Tech Prep and 2+2. Another model in use was the Tech Prep or 2+2 model. This program was developed to ensure seamless articulation with postsecondary programs. The goal of Tech Prep was to guide high school students through completion of an associate degree or technical certificate in the areas of engineering technology; applied science; mechanical, industrial, or practical art or trade; or agriculture, health, or business (DOE, 2014b). Completion of the certificate or degree program was designed to lead directly to employment for the student.

CTE in Community College

According to Fleming (2014), in 1920 the American Association of Junior Colleges (AAJC) decided their focus should be on two-year technical training; however, in 1921 the California Legislature passed the Junior College Act, requiring junior colleges add liberal studies to the curriculum, causing confusion in relationship to the true purpose of junior colleges. According to the California Education Code (Section 66010.4, 2012), community colleges exist to offer lower division academic and vocational instruction. However, since 2007, California Community Colleges (CCCs) expanded their focus to provide remedial instruction and basic skills (Fleming, 2014). In addition to divergent foci of remediation, vocational skills training, and preparation for transfer to baccalaureate programs, each college was free to choose which CTE programs would be offered. With 142 CTE fields spread across 112 CCCs, there were 8,000 certificate programs and 4,500 associate degree programs (Moore & Shulock, 2012). Interestingly, according to Moore and Shulock (2012), just 6% of these fields accounted for over half of the degrees and certificates awarded. Fleming (2014) stated that only one in four community college students attained a certificate, associate's degree, or transferred to a four-year institution. He listed several factors that influenced low completion rates, but suggested the factors were all related to low emphasis on CTE by the community colleges.

Summary

California public schools supported a wide range of CTE opportunities designed to meet the vast variety of needs of students as well as business and industry. Many students had the opportunity to begin career exploration as middle school students with

the majority of comprehensive high schools offering some form of CTE. In addition to CTE programs at comprehensive high schools, the ROC/P system in California offered career training to students developed to specifically prepare them for employment in high demand areas. Finally, the community college system in California offered a wide variety of certificates and associate degree programs in CTE areas, with some select community colleges offering bachelor degree programs in technical disciplines.

CTE Student Profile

The previous sections presented a history of United States and California CTE. In addition, CTE opportunities available to California students were explained. The next topics uncover the definition of a CTE student and who studies CTE.

CTE Student Definition

Under Smith-Hughes, a CTE student was defined as one who spent at least 50% of his or her time immersed in CTE courses, 25% in courses related to the CTE program, and the remaining time in academic courses, giving rise to the 50-25-25 rule (Aliaga et al., 2014). The existing legislation was less concerned with the amount of time per day spent in CTE courses and focused instead on students progressing through at least three courses in the same pathway, producing *completers* ready for entry-level employment. The goals under both Smith-Hughes and Perkins were to develop highly skilled workers who would allow businesses to remain competitive in the face of increasing international competition. The definitions under Smith-Hughes and Perkins made sense when students had to choose between a vocational or academic track. Students either left high school to work or go to college, but not both. With education reforms initiated by *A Nation at Risk*, "all high school students take an increased number of academic courses, regardless of

those students' classification as academic, CTE, general, or dual" (Aliaga et al., 2014, p. 137). It was no longer necessary to determine if a student was academic or CTE as all students completed a minimum number of academic courses to qualify for graduation; so in essence, all students were on an academic track. This also muddied the waters when attempting to describe a typical CTE student.

Aliaga et al. (2014) studied the current method of classifying students as either CTE or non-CTE and found the system lacking in its ability to present a complete picture of students taking CTE courses. Figure 1 shows the difference between classifications under Smith-Hughes and the modern reality developing out of the *A Nation at Risk* academic standard increases.

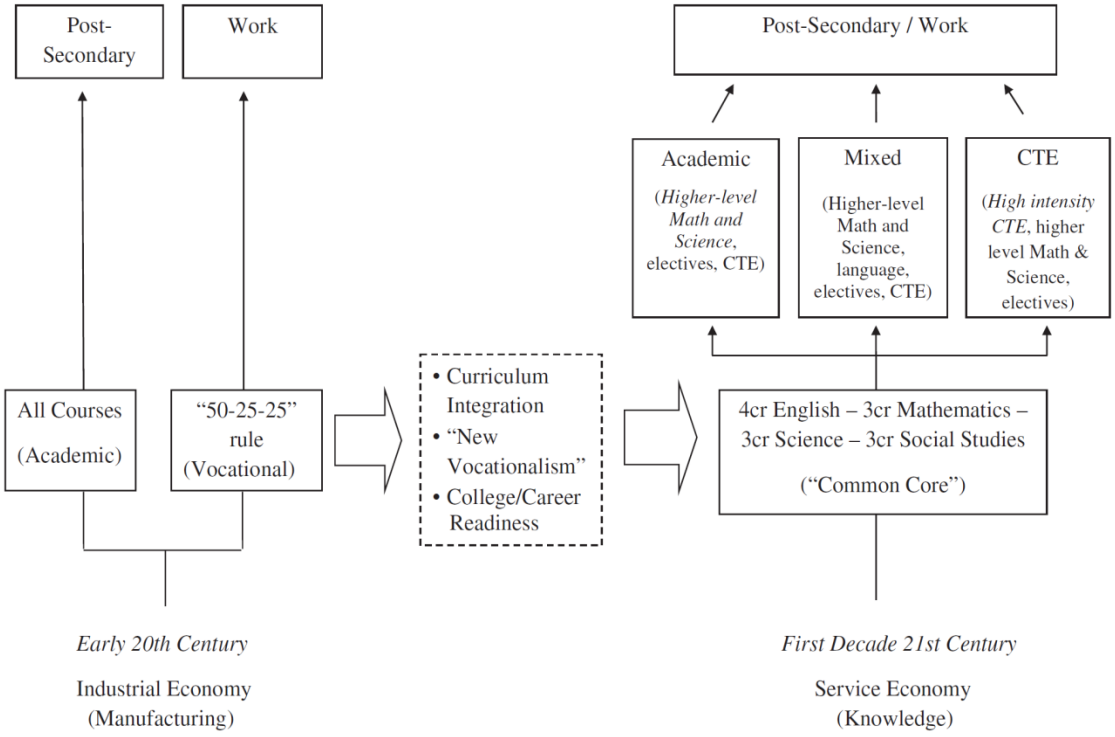

Figure 1. CTE classifications under Smith-Hughes and the early part of the 21st century. Source: Aliaga et al., 2014, p. 140.

Based on their research, Aliaga et al. (2014) suggested a more nuanced system breaking students into the following eight categories: (1) no CTE credits, (2) more than zero but less than one CTE credit, (3) one CTE credit, (4) more than one but less than three CTE credits, (5) three CTE credits without fulfilling the requirements of an occupational or Specific Labor Market Preparation (SLMP) area, (6) more than three CTE credits without fulfilling the requirements of an occupational or SLMP area, (7) three credits and fulfilling the requirements of an occupational or SLMP area, and (8) more than three credits and fulfilling the requirements of one or more occupational or SLMP areas.

The current system of only counting those students who were considered CTE completers failed to capture many students who gained valuable experiences from participating in CTE, even though their particular curricular path did not result in the completion of a CTE program of study (Aliaga et al., 2014). This research suggested that the data presented a much different picture of a typical CTE student when considering all students who took at least one CTE course during their high school career rather than just those who met the requirements to be considered CTE program completers. "Although more students across the board appear to be participating in CTE classes in high school, this increase has not translated into an increase in students *focusing* on CTE" (Aliaga et al., 2014, p. 139). Instead, students appeared to prefer building skills in more than one occupational area. "The significant number of CTE non-concentrators suggests that many students are seeking to build a diverse set of skills in a variety of occupational areas" (Aliaga et al., 2014, p. 143).

Under California SB70, high schools and community colleges developed articulation agreements to encourage students to continue CTE training at the postsecondary level. The legislation could accomplish its goal and turn students who were only CTE participants at the high school level into CTE completers at the postsecondary level, but secondary schools were not given credit for giving students the initial exposure to the CTE pathway completed at the postsecondary level. Had the student not participated in CTE at the high school, it would be likely he or she would not have continued with that pathway in college.

Many districts were grappling with the challenge of establishing the criteria used to determine which students were considered CTE students (Boster, personal communication, April 5, 2016). Current graduation and college entrance requirements limited student opportunities to participate in CTE in California and failed to give districts credit for students who participated but did not complete a program of study.

The Typical CTE Student

Even prior to the adoption of the Smith-Hughes Act, researchers attempted to develop a profile of a typical CTE student. This research was difficult to conduct because data were segmented and not readily available. Perkins 4 legislation specified accountability requirements, but no nationwide database existed at this time. Although most states maintained databases for their own purposes, even most statewide secondary and postsecondary databases were not linked within the state (Aliaga et al., 2014).

Common understanding stated that a typical CTE student was a low academic achiever, a minority, a member of a special population, from a low-socioeconomic family, a female, more likely to choose a career in the military, or all of the above.

"Historically, CTE has targeted mainly low-income and disadvantaged students" (Aliaga et al., 2014, p. 145). According to Gaunt (2005), the typical CTE student performed somewhat lower academically, lived less often with both parents, and was more economically disadvantaged. Gaunt (2005) stated that CTE students were slightly more disadvantaged than non-CTE students and Bozick and Dalton (2013) stated that students who enrolled in CTE courses, on average, had lower family incomes and education levels, and lower levels of academic preparation. These students were more likely to be African American, have a disability, and live in rural areas. Guant (2005), at the conclusion of his study, raised the question of whether CTE programs should continue to market to the traditional CTE student or seek out students who would not normally participate in CTE.

Ainsworth and Roscigno (2005) indicated that students participating in vocational programs did not do as well in math, science, and reading as those enrolled in general education courses, but could not determine if this a cause or effect. "Since the traditional purpose of vocational education was to prepare students for work and not for college, students aspiring to achieve a bachelor's or advanced degree would logically avoid CTE in high school" (Stern & Stearns, 2006, p. 3). Levesque and Hudson (2003) confirmed this by reporting that students in high academic achievement groups were less likely to enroll in CTE courses.

> Most of the achievement differences between students who take a large number of occupational courses and students who take few or no occupational courses are largely due to preexisting differences between students before they enter high school, not the courses taken…those who

> are high achievers gravitate to and/or are placed in academic courses, while low achievers gravitate to and/or are placed in CTE courses. (Bozick & Dalton, 2013, p. 135)

Parent education level was long been used as a predictor of academic achievement in students. Aliaga et al. (2014) found that students whose parents attended four year colleges (whether they graduated or not) were the predominant group taking more than zero but less than three CTE courses. Students whose parent education level was a two-year college degree or less were the largest group taking three or more CTE courses (Aliaga et al., 2014).

For those students who selected CTE courses, Aliaga et al. (2014) noticed an interesting detail in their data: "as CTE credit taking increased, GPA decreased along the categories with one isolated and important exception: those students taking three CTE credits and fulfilling the requirements of an occupational area" (p. 148). It could be possible to infer that high achievers were more likely to persevere in their educational programs, academic or CTE. Aliaga et al. (2014) went on to report that students taking more than three units of study in CTE were less likely to drop out of high school than those taking less than three units of study. In addition, 12% of students taking three or more CTE units enrolled in two-year colleges immediately after high school and 17% of the same group went on to enroll in four-year colleges. The good news was that 16.8% of students completed three or more units and met the requirements for one or more occupational areas (Aliaga et al., 2014). The disappointment was that over 27% of high school students took three or more units without completing the requirements for a single occupational area (Aliaga et al., 2014).

Aliaga et al. (2014) considered gender and ethnic divides as well. The gender divide between male and female students was not great with a difference of less than 5% in each category. More females took between more than zero and less than three CTE courses whereas more males took three CTE courses or more (Aliaga et al., 2014). The breakdown along ethnic lines was also interesting. Based on the research conducted by Aliaga et al. (2014), Caucasian students were more likely to take three or more CTE courses. Latino students were more likely to take three or more CTE courses without focusing on an occupational area whereas African American students were more likely to take three or more CTE courses with an occupational focus. Asian students were least likely to take CTE courses (Aliaga et al., 2014).

A commonly held stereotype of CTE students was that students from wealthy families did not take CTE courses. According to the research conducted by Aliaga et al. (2014), this was not necessarily accurate when digging deeper into the data. Aliaga et al. (2014) found that at least 44% of students in each socioeconomic (SES) quartile took more than zero but less than three CTE courses. Nearly one-third of students in the highest SES group took three or more CTE courses. These data would seem to contradict commonly held beliefs that CTE courses were for economically disadvantaged students.

In the past, students lacking direction or motivation were able to choose military service. Unfortunately, Horan (1993) stated that the military was no longer an option for unskilled graduates. According to CNN Money (n.d.), the drawdown in Iraq and high youth unemployment allowed the military to be more selective, requiring a high school diploma, above-average scores on the Armed Services Vocational Aptitude Battery (ASVAB), and a clean criminal record.

> CTE should be seen as a vital component of all students' experiences in high school, in which students take a wide variety of courses in different amounts that suit their personal interests – whether the courses are mainly academic, primarily CTE, or a combination of the two. (Aliaga et al., 2014, p. 138)

The available data seemed to indicate that a large number of high school students participated in CTE programs, but were not willing to invest the time necessary to follow a single program to completion. Instead, they seemed to choose courses al a carte to self-select the program that met their individual needs. Unfortunately, Aliaga et al. (2014) suggested this al a carte method could be a result of limited choice in CTE course offerings rather than students actively choosing the best courses to fit their educational goals.

Factors Influencing Enrollment in CTE

The keystone research in the area of CTE enrollment was a series of studies conducted by Rossetti et al. (1990). As research for those studies, Rossetti et al. (1990) surveyed students who did not enroll in the Joint Vocational School (JVS) served by their comprehensive high school. Additional studies of CTE enrollment factors were carried out, but much of the data generated related to students who were asked to determine if attending a centralized technical school away from their comprehensive high school was appropriate for their personal educational plan. The data generated by the Rossetti et al. (1990) studies and others provided a starting point for examining the factors influencing student enrollment decisions at California comprehensive high schools.

Factors That Discouraged Enrollment in CTE

Perceptions. Baldwin (2011) was one of the few researchers to report what most people accepted as true, perception is reality. This statement was key. Regardless of how programs were changed and opened to all students, perceptions of programs significantly influenced student enrollment decisions.

Rossetti et al. (1990) collected data related to student perceptions of CTE and generated responses such as CTE programs were for troublemakers; had a bad reputation and poor image; was the easy way out and not challenging; was a waste of time; was for low-income, low-intelligence students; and vocational education classes were too difficult. When asked to rank their reasons for not attending, "the image of the JVS in my community" was the last of the top five reasons students cited for not attending (Rossetti et al., 1990). Cohen and Besharov (2002) found that CTE had an image of being poor quality programs for the worst students. Rossetti et al. (1990) concluded similarly that the image of CTE needed to be improved because student comments indicated a negative image.

College vs. vocational training. Beginning with Smith-Hughes in 1917, students were forced to choose a vocational or a college preparatory (academic) path. Unfortunately, many students did not arrive in tracks through self-selection, but rather as a result of educators making decisions based on what they thought was the student's probable path (Aliaga et al., 2014). Unfortunately, "this fitting or matching effort, however, tended to cut along racial, ethnic, and social lines" (Aliaga et al., 2014, p. 131). Ainsworth and Roscigno (2005) offered a similar finding by stating that "class, gender, and racial disparities in occupational status have a history of being reproduced through

vocational programs, sometimes implicitly and other times explicitly" (Ainsworth & Roscigno, 2005, p. 259). The result of this practice was that CTE, rather than becoming a means for social and economic mobility, became a dumping ground (Aliaga et al., 2014). Students with lower SES were the most impacted.

> If teachers and counselors disproportionately encourage certain students (e.g., minorities, the poor, those who have parents with less education) to enroll in vocational courses, these students come to believe that they are neither suited for nor capable of success in college preparatory courses. (Ainsworth & Roscigno, 2005, p. 261)

Ainsworth and Roscigno (2005) found that "higher socioeconomic status students avoid both taking vocational education classes and working in agricultural, blue collar, and low service jobs after high school" (Ainsworth & Roscigno, 2005, p. 276). Moreover, low-income and minority parents rarely challenged school-level decisions because they trusted the judgment of educators, were disengaged, or felt powerless to make a difference (Ainsworth & Roscigno, 2005).

"Participation in blue-collar vocational education courses is associated with a greater likelihood of dropping out of high school and diminished likelihood of attending college" (Ainsworth & Roscigno, 2005, p. 269). In the early part of the 20th century, the machine operators and factory workers trained in CTE programs did not need more than basic academics to be successful in their occupation. Students participating in CTE found their skills were in demand and they were able to obtain living-wage employment with the completion of their program. This divide between CTE and academic preparation

traditionally meant they were mutually exclusive and that students must choose one or the other (Cashen, 2014).

> The imbalance of opportunity inherent in this system is masked by a hollow achievement ideology that encourages students to pursue educational success as a precursor to getting a high paying job. This is despite the fact that such jobs are not sufficiently plentiful to accommodate most individuals. (Ainsworth & Roscigno, 2005, p. 258)

Although a negative stigma was associated with CTE based on historical events, Aliaga et al. (2014) suggested that classifying students as CTE or academic was no longer relevant, as the vast majority of students completed an academic course of study as required for graduation. This assertion was supported by Cashen (2014), who stated the impact of the college for all mindset resulted in a 31% increase in the number of academic courses taken by high school graduates between the years 1982 and 2000. With the educational reforms initiated by *A Nation at Risk*, most American students took a minimum level of academics, usually four Carnegie units in English, three units in math, three units in social studies, and three units in science (Aliaga et al., 2014).

According to California Education Code 51228(a), school districts were required to offer a program of study fulfilling the requirements to enter California public postsecondary institutions; in 51228(b), districts were required to prepare students for high school graduation and career entry ("Ed Code 51220-51228," n.d.). As a result, in California the majority of students were directed into an academic program of study that met the minimum entrance requirements for the UC and CSU systems. For freshmen entering the UC system in the fall of 2016, the requirement was two units of social

science, four units in English, three units in math, two units of lab science, two units of a foreign language, one unit of fine arts, and one unit elective credit (UC, 2014).

School district governing boards throughout California were free to add additional requirements for graduation such as a health course, physical education, or computer literacy. Although students were no longer forced to choose a vocational or academic track, the graduation and college entrance requirements, in many instances, caused students to be forced to choose between enrolling in CTE courses or pursuing a program of study that led to acceptance at the university of their choice.

Studies such as those by Rossetti et al. (1990) and Brown (2009) seemed to confirm that students felt forced to choose either academics or CTE. In the Rossetti et al. (1990) study, students reported the following reasons for not taking CTE courses: wanting to attend college, CTE not meeting college requirements, and counselors advising against CTE. When asked to rank their reasons, "this [comprehensive high] school will better prepare me for college" was at the top of the list (Rossetti et al., 1990). Brown (2009) confirmed the Rossetti et al. information with his findings that the top reason for not enrolling in CTE was a plan to attend a university.

The adoption of LCAP and LCFF could positively impact CTE enrollment. LCAP standard four required districts to improve student achievement in college and career preparation and standard seven required districts "ensure all students have access to classes that prepare them for college and careers" (California PTA, n.d., p. 1).

Scheduling and counseling. Aliaga et al. (2014) cited a study by Allfeld and Bhattacharya (2013) explaining that "high school counselors were often more focused on testing, scheduling, and college applications than helping students choose a POS

(program of study).” Wonacott (2000) stated high school counselors discouraged students from enrolling in CTE courses.

Until March 13, 2014, California schools were graded by how they scored on the Academic Performance Index (API; CDE, 2016a). The API was an average of student scores on statewide assessments across all students and all tests in multiple academic subject areas (CDE, 2016a). According to the document produced by the CDE, “API is used to rank schools. A school is compared to other schools statewide and to 100 other schools that have similar opportunities and challenges” (CDE 2016a, p.1). This ranking system became important to the school and community as realtors promoted API scores with prospective buyers and parent-teacher association (PTA) members discussed the scores at meetings (Colvin, 2012).

California was in the process of revising the API and asked for public comment through a survey conducted by CDE (2014b). CDE was exploring the inclusion of other factors beyond academic performance on standardized tests. Respondents indicated that measures such as advancement placement (AP) scores, ACT scores, SAT scores, and international baccalaureate (IB) scores were not appropriate because not all students took all tests and some students were not motivated to do well. Course grades were not appropriate because they were too subjective. Respondents, however, indicated that college and career indicators should have equal weight. “If the weight is not equal, high schools will be incentivized to lean toward college prep only” (CDE, 2014b, p. 31). Another survey respondent indicated that without making a positive impact on API, high schools would not promote CTE courses (CDE, 2014b). No guidance was provided by CDE indicating when new API requirements might be put into place.

Rossetti et al. (1990) concluded that the number one reason students were not enrolling in CTE was due to scheduling issues. Brown (2009) also found that students cited scheduling issues as a reason for not attending. Students in this study indicated that participation in extra-curricular activities kept them from attending the JVS. Extra-curricular events were hosted at the student's home school, not at the JVS, and traveling between schools caused students to miss the extra-curricular events.

Aliaga et al. (2014) found that having a better understanding of the career goals and CTE program of study for each student allowed counselors to more effectively guide students in selecting appropriate academic courses to support career goals. In addition, Aliaga et al. (2014) suggested that implementing a more detailed system for monitoring student CTE progress would allow administrators to more efficiently schedule courses and allocate funding.

Lack of available information. Sometimes CTE programs were the best kept secrets at a comprehensive high school. Rossetti et al. (1990) suggested increased efforts in marketing by highlighting student successes and the benefits of the programs at local feeder schools while making it clear that participation in CTE did not limit the opportunity to continue education at technical schools, community colleges, or universities.

Lack of interest in available programs. In the Rossetti et al. (1990) study, students reported they did not attend the JVS because it did not offer what programs that met their interests. *The JVS did not offer the programs I want to take* was number 3 of 5 on the ranked list (Rossetti et al., 1990). Students in Brown's study (2009) reported they did not think the salary was good for CTE trades. Dorn (2007) found that middle school

students reported that other courses were more desirable as a reason for choosing to not enroll in CTE.

Visit/tour. Students in Brown's study (2009) indicated they were not interested in enrolling in the JVS after participating in a tour. In a separated study, Gaunt (2005) also found that 18.8% of respondents indicated that a tour was a factor in deciding not to enroll in the JVS.

Influential people. "As high school students form goals and aspirations, they are easily influenced by the adults and peers in their lives" (Ainsworth & Roscigno, 2005, p. 261). The outside influence by parents and others, however, could be as a result of outdated or incomplete information. Rossetti et al. (1990) and Brown (2011) found that student enrollment was influenced by others, and Baldwin (2011) noted 16% of non-participants cited parental influence. Table 3 lists the people influencing enrollment decisions found by the Rossetti et al. (1990) study.

Table 3

Persons Influencing the Decision to Not Enroll in the JVS

Person	Percent of Students Influenced
1. Mother	46%
2. Friends	44%
3. Counselors	39%
4. Siblings	22%
5. Teacher	20%
6. Other Relative	18%
7. Significant Other	17%
8. Athletic Coach	5%

Gaunt (2005) conducted research in Michigan to explore reasons for enrollment in a central vocational center, which was similar to the JVS. Gaunt provided data related to persons and factors influencing student enrollment in CTE, as shown in Table 4.

Table 4

Persons Influencing CTE Enrollment Decisions

Encourage Enrollment	Percent	Discourage Enrollment	Percent
1. Friends	70.0%	1. Friends	29.2%
2. Mother	61.9%	2. Father	18.5%
3. Father	57.7%	3. Mother	18.3%
4. Vocational Center Staff	52.4%	4. Sibling	12.7%
5. High School Counselor	49.2%	5. High School Teacher	12.3%
6. Sibling	31.7%	6. High School Counselor	10.2%
7. High School Teacher	29.4%	7. Vocational Center Staff	9.8%
8. High School Principal	18.2%	8. High School Principal	5.2%

Factors That Encourage Enrollment in CTE

Career path. "Involvement in vocational education may also shape whether a young adult is able to find a job shortly after high school, and what type of job they may find" (Ainsworth & Roscigno, 2005, p. 271). For many students, high school CTE programs aligned with their career aspirations and provided the stepping stone necessary to enter the workforce or prepare them for postsecondary training at a community college, technical school, or union training/apprenticeship program. Rossetti et al. (1990) suggested "vocational education should not only be looked upon and evaluated based on immediate job placement data, but also be viewed as a rung on the ladder of education toward a career requiring postsecondary training" (p. 10). Many current California comprehensive high school CTE programs developed articulation agreements with postsecondary institutions to create the ladder of education as Rossetti et al. (1990) suggested. "No longer can we open the school door for those who knock – we are obligated to go out and seek the people who need and can profit from vocational education" (Barlow, 1976, p. 6).

Brown (2009) found that the second reason students chose to enroll in CTE was their plan to get a job in that career area. The sixth reason also related as students indicated that salary in the career was influential in their decision to enroll. Dorn (2007) found that middle school students cited interest in the CTE program as a potential career path was a factor that influenced enrollment. In addition, Shanklin (2014), in a study of educators at a comprehensive high school in Colorado, found that CTE educators thought students would choose to enroll because the program was something they loved and wanted to continue to do or it aligned with the their chosen career path.

College program prep. Baldwin (2011) stated the value of CTE to college bound students changed dramatically from 2003 to 2008. Students seeking careers in technical fields such as medicine or engineering could choose to participate in related CTE programs to gain experience in the field prior to attending a university. Brown (2009) surveyed students in Mississippi and found those enrolled in the JVS cited plans to attend college in an area related to their CTE program of study as the top reason they enrolled. Gaunt (2005) found that 64.8% of respondents chose to enroll because the courses earned college credit.

Visit/tour. Many students became interested in CTE after touring the JVS, which was ranked at the fourth most common reasons for enrolling (Brown, 2009). Gaunt (2005) found that 60.4% of respondents indicated that a tour influenced their decision to enroll in the JVS.

Influential people. Baldwin (2011) cited a study in 2007 that indicated 44% of students surveyed said friends influenced their decision to enroll and 58% said parents influenced their decision.

Conclusions

The history of CTE in the United States and California indicated that CTE courses were historically offered for students of lower SES backgrounds who were not expected to excel academically and therefore needed to earn a living with limited postsecondary education. Although the legislation that funds CTE altered its focus over the last hundred years, the goal of CTE in the United States was always to support economic growth by providing skilled workers to business and industry. With the increased focus on academic performance starting in 1983, continuing through NCLB and the adoption of the CCSS, CTE programs struggled to achieve parity with academics, even though the technical and soft skills taught in CTE courses were those most frequently mentioned by employers as foundationally necessary for their employees. This lack of parity with academics resulted in CTE programs needing to actively publicize their programs and recruit students.

Synthesis Matrix

A synthesis matrix identifying to research and topics the findings aligned to is presented in Appendix A.

CHAPTER III: METHODOLOGY

Overview

This study was designed to guide California CTE administrators in the development and implementation of effective recruitment activities used to increase enrollment in CTE programs within their districts. As the design of the study ultimately determined the validity and value of the results, adherence to established, research-based methodologies resulted in findings and conclusions with the greatest potential to positively impact CTE enrollment. In this chapter, the researcher reviewed the purpose statement and research questions prior to introducing the research design. The remainder of the chapter is divided into the following major sections: research design, population, sample, background of the researcher, instrumentation, protecting participants and Brandman University Institutional Review Board (IRB), data collection, data analysis, and the limitations of the study. The instrumentation section is divided into subsections related to validity and reliability in addition to a description of the field test procedures. Further, the data collection and data analysis sections are divided into qualitative and quantitative phases; qualitative data analysis includes subsections explaining coding, identification of themes, and coder reliability, and quantitative data analysis includes a subsection explaining the descriptive statistics used to evaluate the survey responses.

Purpose Statement

The purpose of this exploratory mixed-methods study was to discover and describe the factors that impact student enrollment in southern California comprehensive high school CTE pathways. In addition, it was the purpose to explore effective strategies used by CTE programs with high enrollment to recruit and enroll students in their CTE

programs of study. Finally, it was the purpose of this study to identify which effective strategies were perceived by CTE coordinators as most beneficial for implementing current CTE programs.

Research Questions

1. What factors do CTE administrators perceive that discourage student enrollment in secondary CTE programs?
2. What factors do CTE administrators perceive that encourage student enrollment in secondary CTE programs?
3. What strategies do secondary CTE programs with high enrollment employ to recruit and enroll students in CTE programs?
4. Which strategies for increasing student enrollment in secondary CTE programs are perceived by CTE administrators as most beneficial for implementation?

Research Design

Combining qualitative and quantitative methods in the same study is known as mixed-methods research (Creswell & Plano Clark, 2007). "Mixed-methods research provides strengths that offset the weaknesses of both quantitative and qualitative research" (Creswell & Plano Clark, 2007, p. 9). Creswell and Plano Clark (2007) explained that quantitative research was thought to be weak in understanding context and did not allow the voices of participants to be heard directly. Qualitative research, on the other hand, had weaknesses related to personal interpretations and bias from the researcher and difficulty generalizing to a large group. By utilizing mixed-methods, researchers gained the opportunity to use all research tools available, not just the ones

proscribed by the quantitative or qualitative methodologies, which made mixed-methodology studies more pragmatic because "individuals tend to solve problems using both numbers and words" (Creswell & Plano Clark, 2007, p. 10).

On the topic of pragmatism, Edmonds and Kennedy (2013) noted a philosophical connection between pragmatism and mixed-methods research. Teddlie and Tashakkori (2009) defined pragmatism as "a deconstructive paradigm that debunks concepts such as 'truth' and 'reality' and focuses instead on 'what works' as the truth regarding the research questions under investigation" (p. 8-9). This study's pragmatic research design was especially relevant as CTE administrators across California sought to apply funds to activities that would have the greatest impact. CTE administrators were concerned with understanding what worked and how to replicate the factors that led to high enrollment.

The exploratory mixed-methods design was chosen for this study because exploratory research can be used "to explore a phenomenon in depth and then measure its prevalence" (Creswell & Plano Clark, 2007, p. 75). "This design is particularly useful when a researcher needs to…identify important variables to study quantitatively when the variables are unknown" (Creswell & Plano Clark, 2007, p. 75). Existing CTE research focused on enrollment factors discovered through student responses to surveys about decisions related to attending a joint vocational school (JVS). This study sought to discover the opinions of CTE administrators as they related to CTE programs at comprehensive high schools. The existing studies were useful as a starting point, but the variables and instruments previously developed were not applicable to the problem statement and research questions in this study.

Expert Panel

One of the challenges with conducting exploratory research is the need to create interview questions and a follow-up quantitative instrument. To establish the validity (i.e., the instruments measure what they were intended to measure) and reliability (i.e., the instruments generated repeatable results) of the instruments, an expert panel was convened to serve as advisors to the study. The researcher developed a list of subject matter experts with the following qualifications: an earned doctorate degree from an accredited university in the United States, experience in the area of CTE, and the depth and breadth of knowledge necessary to craft a high-quality research study. An invitation letter was emailed to each subject matter expert requesting his or her participation in the study (Appendix F). The researcher then contacted each respondent who expressed interest in participating to discuss his or her role in the expert panel and the anticipated timeline of the study. Based on the conversations with the respondents, three subject matter experts were selected to serve as advisors to the study.

The first panel member was an expert in the field of K-12 education. She recently served as the Director of College and Career Readiness and was now an Assistant Superintendent for Educational Services. The second panel member was the Assistant Superintendent for Curriculum and Instruction and also served as a CTE teacher in the area of agriculture education. The final panel member was a professor for a southern California university and currently served as a consultant advising California school districts in the area of CTE.

Each panel member was provided with a copy of the interview protocol that included the interview questions and any background information that would be provided

to study participants to clarify the interview questions. The interview protocol also included potential follow-up questions that could be asked during the interview, the study participant bill of rights, and the informed consent form. After reviewing the interview protocol, each expert provided feedback independent of the other experts. Each aspect of the interview protocol was revised as necessary to obtain approval from each member of the expert panel. The interview protocol that was approved by all three members of the expert panel was the one used to conduct the interviews for this study.

Population

According to McMillan and Schumacher (2010), "a population is a group of elements or cases, whether individuals, objects, or events, that conform to specific criteria and to which we intend to generalize the results of the research" (p. 129). The California Department of Education (CDE) website listed 340 secondary or unified school districts as receiving funding through the Carl D. Perkins federal funding allocation for the 2015-16 fiscal year (CDE, 2015c). All districts receiving Perkins funding must assign an administrator responsible for managing the funds and submitting required documentation. The administrator overseeing Perkins funding also was most likely to be responsible for creating policy related to CTE within that district. As the specific group of individuals to which results of this research would apply was the school district administrators in California responsible for creating policy related to CTE enrollment practices within their districts; this population was selected by determining the district administrators responsible for managing Perkins funds.

The target population included CTE administrators for districts in Riverside, San Bernardino, and San Diego counties. These counties were chosen due to their

geographical proximity to the researcher. Although CTE administrators in other counties were likely to have rich information to contribute to this topic, increasing the distance required for the researcher to travel to conduct interviews would have increased the costs associated with this research and the time necessary to conduct the research. As districts were currently implementing their California Career Pathways Trust (CCPT) grants and CTE Incentive Grants (CTEIG), timely publication of this study necessitated the selection of a target population within reasonable driving distance to the researcher. In addition, although Los Angeles and Imperial counties were reasonably close geographically, the researcher chose to exclude those counties. Imperial County was excluded as it is predominantly rural and would not likely add to the body of knowledge. Los Angeles County was excluded from this study because the size and complexity of the county had the potential to delay data collection.

Administrators for Regional Occupation Centers/Programs (ROCPs), Joint Powers Agencies (JPAs), and CTE consortiums were special cases and not considered part of the population for the purposes of this study. In addition, it was possible, although not likely, there were districts with CTE programs that did not receive Perkins funds. Administrators working for districts operating CTE programs without receiving Perkins funding were not included in the calculation of the population size for this study.

Sample

Stratified purposive sampling was used to obtain the participants for this study. Creswell and Plano Clark (2007) and Patten (2012) described purposive sampling as selecting individuals likely to be good sources of necessary information. "Qualitative sampling is done to increase the utility of information obtained from small

samples...these samples are chosen because they are likely to be knowledgeable and informative about the phenomena the researcher is investigating" (McMillan & Schumacher, 2010, p. 326). In stratified purposive sampling, "the quantitative approach of stratifying the population is followed by purposive selection of a small number of cases from each stratum that are studied intensely" (McMillan & Schumacher, 2010, p. 399).

Sample selection criteria and demographic data were an important part of any study. Patten (2012) indicated that failure to explain the methodology for selecting participants and failing to include demographic information "should be regarded as a flaw in sampling" (p. 149). Hesse-Biber (2010) advised qualitative researchers to include population and sample sizes descriptions to increase the generalizability of the study; a study of mixed-methods research by Collins, Onwuegbuzie, and Jiao (2006) discovered that 40% of the researchers did not report their sample size. Although it was important to report sample size, there were no set rules for sample size when conducting qualitative research. McMillan and Schumacher (2010) indicated that sample size was dependent on the purpose of the research, the research problem, how data would be collected, and the sources of the data. Creswell and Plano-Clark (2007) stated that narrative studies could have as few as one or two study participants whereas grounded theory studies could have 50 to 60. They went on to state that studying 4 to 10 participants was typical when cases were reported. Based on this information, the researcher determined that 12 qualitative interviews would likely generate the depth and breadth of information necessary to discover the variables that were unknown.

Qualitative Phase (Phase 1)

The researcher began sample selection by identifying the 340 school districts in California receiving Carl D. Perkins funding. The researcher then identified southern California school districts from that list in Riverside, San Bernardino, and San Diego counties. Those districts were divided into rural, suburban, and urban groupings. The districts were then ordered by the number of students served. This stratification was based on the recommendation from McMillan and Schumacher (2010) that "the researcher selects cases that are representative of different levels of aggregation that comprise the overall population" (p. 400).

CTE coordinators at the offices of education for Riverside, San Bernardino, and San Diego counties were contacted by the researcher to identify districts or programs within their counties that, based on the county administrator's experience in the field of CTE, maintained high levels of CTE student enrollment. The researcher explained that exemplar programs maintained strong demand for available seats year after year. The county CTE administrators were also asked to also consider districts with innovative procedures used to recruit and retain students when making recommendations. Based on the recommendations from county office CTE coordinators, local districts were contacted with requests to conduct research and an explanation of the research outcomes desired. Twelve district CTE administrators were initially selected for interviews based on availability and to ensure a range of large, medium, and small school districts in urban, suburban, and rural communities that were geographically diverse. The researcher initially scheduled interviews with the understanding that if the final few interviews failed to generate any new codes, 12 interviews would be sufficient. If each successive

interview generated substantially different codes, the researcher could add additional interviews to ensure sufficient depth of information gathered. In the end, the research was able to conduct 15 interviews with 17 participants.

McMillan and Schumacher (2010) cautioned that sampling bias occurs when researchers set out to prove a point by only including participants that agree with the researcher rather than selecting a sample that would result in unbiased results. In this study, the participants in the qualitative phase were not chosen by the researcher, but asked to participate based on recommendations from the leaders at their respective county offices of education, thus reducing the potential of sampling bias. In addition to asking experts in the field to generate the list of potential participants likely to have rich information to contribute to the body of knowledge, the qualitative sample was further stratified based on aspects of urbanization and size, factors beyond the control of the researcher.

Although the sample selection process used stratified purposive sampling, the sample used in this study may also be considered a convenience sample. The researcher obtained recommendations from CTE administrators at the county level and then contacted the CTE administrators from those districts. If the district CTE administrators were unavailable or unwilling to participate, the researcher was forced to select alternate districts to complete the data collection process. A sample based on availability was also known as a convenience sample (Saunders, Lewis, & Thornhill, 2016). Table 5 presents the selection criteria and shows how the population was narrowed down to the sample selected for inclusion in the study.

Table 5

Description of Study Population and Sample

	Selection Criteria	Number of Districts
Population Selection	The researcher consulted the CDE website to determine which districts in California received funding from the Carl D. Perkins grant in 2015-2016.	340
Target Population Selection	The researcher then narrowed the focus from the state level to districts within Riverside, San Bernardino, and San Diego counties.	83
Sample Selection	District CTE administrators of programs identified by county CTE administrators were contacted with a request to participate. Those who agreed to participate and were available during the data collection window were included.	12

Quantitative Phase (Phase 2)

Patten (2012) explained "the purpose of surveys is to describe the attitudes, beliefs, and behaviors of a population" (p. 9). McMillan and Schumacher (2010) stated that it was common practice in a mixed-methods study to use a convenience or availability sample for the quantitative phase, but a convenience or availability sample could result in a small number of returned surveys. Patten (2012) cautioned that mailed surveys could be biased due to typically low response rates.

Phase 2 of this study consisted of a survey instrument (Appendix G) developed from the responses generated during the interviews conducted in Phase 1. As distributing a survey to a larger portion of the population was unlikely to generate sufficient responses to create statistically significant data, the initial participants were asked during

recruitment for the interview phase to participate in a follow-up survey to consider the data generated by all of the participants. The purpose of the survey was to rank the recruitment methods generated based on their perceived effectiveness.

Ethical Considerations

Prior to making contact with any study participants, the researcher submitted the research proposal to the Brandman University IRB. Faculty from a variety of disciplines reviewed the research proposal to ensure the safety of study participants. IRB approval required all participants to be provided with the Research Participant Bill of Rights and sign an informed consent form.

Prior to the start of the interview, all participants were reminded that they could stop the interview at any time without penalty and have their comments excluded from the study. Immediately following the interview, the electronic recordings of the interviews were sent to a commercial transcription service. Upon receipt of the hard copy of the transcript, the transcript was compared to the electronic recording to ensure the accuracy of the transcript. The transcript was then anonymized to protect the participants by assigning a pseudonym (e.g., participant one, participant two) and specific names or other items that would make the participant recognizable were redacted. Once the transcript was determined to be accurate, the electronic recording was destroyed by overwriting the data storage device. To protect study participants, all electronic materials were stored securely on an encrypted hard drive and all hard copies were stored in a locked filing cabinet, both only accessible to the researcher.

Instrumentation

Exploratory research instrument development design typically used a two-phase process that started with exploring the data through a qualitative process and then using the data generated to develop an instrument used to gather quantitative data, tying the quantitative back to the qualitative research (Creswell & Plano Clark, 2007; Edmonds & Kennedy, 2013). Two instruments were necessary for this study. The first instrument was a series of interview questions developed to guide the in-person interviews with district CTE coordinators. As no instrument appeared to already exist, the instrument was developed by the researcher and validated by the expert panel. The questions developed for the interviews came from the research related to the factors that encouraged and discouraged enrollment in CTE courses and from the study research questions. The instrument used for Phase 2 of this study was developed from the themes generated by coding the interview responses from Phase 1.

Researcher as Instrument of the Study

Chenail (2011) explained that in qualitative research, many researchers created their own questions rather than using an established questionnaire or survey. As a result, the interviewer became the instrument that collects or generates the data. The researcher was responsible for transforming the data collected into meaningful information (Poggenpoel & Myburgh, 2003). Patton (2002) believed the factors surrounding the collection of data should be explained in the study for the reader to determine their significance. Patton (2002) suggested factors such as the background of the researcher; source of funding for the research; researcher prior knowledge; personal connection to

the topic, people, or program being studied; and how the researcher gained access to the study site should be discussed.

Background of the researcher. The researcher has a Bachelor of Science in Education with a field endorsement in Industrial Technology from the University of Nebraska at Kearney and a Master of Arts in Educational Administration and Leadership from San Jose State University. He taught a variety of industrial technology (CTE) courses such as wood shop, metal shop, introduction to engineering, computer repair, automotive technology, drafting, and middle school industrial technology. In addition, the researcher was the chair of the Industrial Technology department at his institution and currently served as a WASC Focus Group co-chair. The researcher also sat on the CTE curriculum committee and the high school curriculum committee at the district level, and in the past, worked with the district to evaluate the feasibility of establishing an online high school. The researcher was an Automotive Service Excellence (ASE) certified technician and a Microsoft Certified Educator. Most recently, the researcher collaborated with the administrators and instructors from western Riverside County to obtain funding through the CCPT grant program, which awarded $12.4 million to the consortium. In addition to his educational responsibilities, the researcher was also a testifying expert in automotive consumer protection cases (i.e., lemon law cases).

Data Collection

Qualitative Data Collection Procedures (Phase 1)

The researcher worked with county CTE administrators in the counties of Riverside, San Diego, and San Bernardino to create a list of potential interviewees. The CTE administrators suggested for participation in the study were then contacted through

email to request their participation. The respondents that agreed were placed into groups based on the demographics of the district where they worked. Participants were then selected to ensure a stratified cross-section reflecting small, medium, and large districts in rural, suburban, and urban locations spread across Riverside, San Bernardino, and San Diego counties. The researcher then contacted respondents by phone and email until 15 one-hour interviews were scheduled within the two-week period allocated for qualitative data collection. Each interviewee was asked to select a location that would be free from distractions and that was familiar to reduce the apprehension associated with being interviewed. After each interview was scheduled, the researcher sent a follow-up email to each interviewee to confirm the appointment; provide copies of the Research Participant Bill of Rights, a summary of the intended outcome of the research, and a copy of the interview questions; and request that the interviewee provide the researcher with any relevant documentation related to the study at the time of the interview.

Pilot test. Pilot testing was an important part of establishing the validity of the measurement device. Pilot testing was often used to evaluate the interviewer, interview questions, and interview procedures for potential bias (McMillan & Schumacher, 2010). The interview protocol was field tested by interviewing a CTE administrator who was excluded from this study due to potential bias. The CTE administrator was involved in the area of CTE for over 30 years and conducted doctoral level research in the area of CTE. As recommended by McMillan and Schumacher (2010), immediately following the pilot test interview, the CTE administrator and interviewer discussed the interview questions and the manner in which the interview was conducted. The CTE administrator provided feedback related to how questions were asked, researcher body language, tone

of voice, and overall interview style. Suggestions for improvement were noted and incorporated into the qualitative data gathering process to reduce the impact of researcher bias and improve the validity of data gathered.

Interviews. Prior to the start of the interview, the interviewer provided each participant with the Research Participant Bill of Rights (Appendix D). The interviewer reminded each participant that participation was voluntary, the interview could be stopped at any time without penalty to the participant, and that responses could be excluded from the study at his or her request. Participants were informed that their names would be replaced with pseudonyms to keep their identities confidential and any identifying details would be altered in the interview transcript to maintain anonymity. The researcher then obtained permission to record the interview electronically and asked the participant to sign the informed consent form (Appendix C).

The interviewer then asked the questions from the interview protocol one at a time (Appendix B). The participant was given as much time as necessary to answer with the interviewer engaged in active listening rather than making a discussion out of the interview. The interviewer took handwritten notes as necessary to maintain the flow of the interview, but extensive notes were not taken as the interview recordings would transcribed during the data analysis phase.

Artifacts. As part of the interview confirmation email, each interviewee was encouraged to supply the researcher with artifacts that provided additional information related to the recruitment methods discussed during the interview. Artifacts were also supplied by representatives of the participant or through a Public Records Act request. Examples of the artifacts requested included meeting agendas, public news releases,

program brochures, website links, recruitment calendars, community meeting reports, or other materials that might enable the researcher to gain a clearer understanding of the recruitment process for that program or district.

Upon receipt, each artifact was marked with a unique identifier and any personally identifying data redacted or changed to the unique identifier for that particular participant. Each artifact was stored in a locked filing cabinet only accessible to the researcher. Cross-reference documentation linking the participant to the artifact was stored electronically in a password protected file only accessible to the researcher.

Quantitative Data Collection Procedures (Phase 2)

The themes developed from coding the interview data were then used to create an electronic survey instrument. The most prevalent themes were used to create survey items that asked participants to rank them on a Likert scale from 1 to 5 from with 1 = *least effective* to 5 = *most effective*. The survey items were then uploaded into a commercial online survey platform for distribution to the study participants.

Pilot test. McMillan and Schumacher (2010) indicated the need to pilot test questionnaires to determine the length of time necessary for completion, ensure the directions and questions were clear, and allow the opportunity for revision prior to actual administration. McMillan and Schumacher (2010) suggested that the participants in the pilot study should have characteristics similar to the study participants. The electronic survey, developed from the data generated in Phase 1 of this study, was administered to a selection of CTE instructors in Riverside County as it was not possible to pilot test with CTE administrators. The participants in the pilot study were able to include comments

about each item on the questionnaire and were also able to speak to the researcher directly once the questionnaire was completed.

Survey administration. A link to complete the survey was emailed to each of the 17 participants from Phase One of this study. In addition to a survey link, the message included an explanation of the study purpose and the potential impact of participants' contributions. Upon selecting the link, the electronic survey webpage opened to a landing page where participants were asked to read the Research Participant Bill of Rights and agree to the study participation release as required by IRB. Participants who did not agree to the release were taken to a web page thanking them for their time and interest in the study, but were not able to access the electronic survey. Those who agreed were taken to the survey itself.

Data Analysis

Qualitative Data Analysis (Phase 1)

Upon completion of each of the in-person interviews, the audio recordings were sent to a transcription service. Upon receipt of the printed transcript, the researcher added comments and field notes taken during the interview to provide context and document other variables such as the tone, setting, and non-verbal cues. Adding information from the field notes to the transcripts provided greater detail, aided in recall of the interview experience, and served as the first opportunity to review the data and begin developing initial codes based on the data.

Artifacts gathered during the qualitative data collection phase were also included in the qualitative data analysis process. The redacted/anonymized documents were entered as separate documents and analyzed through the same process as the interview

transcripts. Upon completion of the data analysis process, all artifacts and transcripts were returned to secure storage, either electronically or in a locked filing cabinet only accessible to the researcher.

Coding. To begin the coding process, the researcher read each transcript and evaluated each artifact to generate a list of codes. Then the transcribed interviews, notes, and artifacts were uploaded into NVivo, a software program designed to aid in the coding and analysis of qualitative data. Once uploaded to NVivo, the transcripts, notes, and artifacts were evaluated again to generate additional codes.

Identification of themes. The researcher then grouped codes into common themes or families. Once the set of codes were appropriately grouped, the researcher evaluated the transcripts, notes, and artifacts a third time, assigning codes directly to the data. The NVivo software was then used to analyze the codes.

Intercoder reliability. The researcher coded all the data to limit the potential bias from having multiple coders. Once coded, one of the panel members with expertise in coding was asked to independently code 10% of the data to confirm the codes assigned by the researcher and to check for possible researcher bias. The goal for inter-coder reliability was at least 80% agreement to be considered acceptable and 90% or greater to be ideal (Lombard, Snyder-Duch, & Bracken, 2004). After independently coding 10% of the interviews, notes, and artifacts, the researcher and expert panel member met to compare codes and discuss any differences that existed in the coding.

Quantitative Data Analysis (Phase 2)

The survey instrument developed for use in Phase 2 was based on the responses generated through the qualitative interviews with the sample of CTE coordinators. The

items allowed respondents to rate the level of importance of each item as it related to the recruitment of students. Descriptive statistics such as the mean and standard deviation were used to find the central tendency of each item.

Validity

Patten (2012) described validity as the ability of a measure to perform the function for which it was designed, but since no measure was perfect, researchers should be concerned with how valid a measure was rather than if it was valid. The degree of validity concept was especially important when the constructs being researched were "inherently difficult to measure" (Patten, 2012, p. 61). "In qualitative research, there is more of a focus on validity to determine whether the account provided by the researcher and participants is accurate, can be trusted, and is credible" (Creswell & Plano-Clark, 2007, p.134). McMillan and Schumacher (2010) and Creswell (2014) explained validity as the accuracy between the researcher's account of a phenomena and reality from the point of view of the participant or the reader.

Creswell (2014) recommended researchers incorporate multiple validity strategies. Strategies used in this study to increase validity included triangulation, member checking, and rich description. Rich description was simply providing as many relevant details as possible that allow the reader to understand the context from which the researcher's conclusions were drawn (Creswell, 2014).

Creswell and Plano-Clark (2007) explained triangulation as obtaining information from multiple sources. Qualitative research typically uses interviews, observations, and artifacts as multiple sources. This study used of a variety of data sources that included interviews, artifacts provided by study participants, and the use of a follow-up survey.

Another popular method of establishing validity was the process of member checking. The most common approach to member checking was to ask study participants to review the themes and major concepts identified by the researcher to ensure the findings were reported as the participant intended (Creswell & Plano-Clark, 2007; McMillan & Schumacher, 2010). "Member checking can also be done within an interview as topics are rephrased and probed to obtain more complete and subtle meanings" (McMillan & Schumacher, 2010, p. 331). After each interview was transcribed and coded, the researcher emailed a summary of the codes and findings to study participants for comment and corrections prior to generating the survey used in Phase 2 of the study.

The final method used to establish validity was the use of an expert panel. Experts in the area of CTE and research examined the qualitative interview protocol to ensure it was aligned to the research questions and the purpose of the study. In addition, one member of the expert panel independently coded 10% of the interviews. Independently coding a portion of the interviews allowed the expert panelist to verify the codes and themes developed were in agreement with those of the researcher. An expert panel also validated the quantitative survey instrument before it was sent to interviewees to ensure alignment with the purpose of the study and the research questions.

Reliability

"A test is said to be reliable if it yields consistent results" (Patten, 2012, p. 73). "When evaluating measures, validity is more important than reliability" and "a test with high reliability may have low validity" (Patten, 2012, p. 73). "To be useful, a measure must be both reasonably valid and reasonably reliable" (Patten, 2012, p. 74). Creswell

(2014) offered the following suggestions for increasing study reliability: check transcripts for obvious mistakes and ensure the definitions of codes do not change during the coding process.

> Reliability has little meaning in qualitative research, but it is popular in qualitative research when there is interest in comparing coding among several coders. Called intercoder agreement, the basic procedure involves having several individuals code a transcript and then compare their work to determine whether they arrived at the same codes and themes or different ones. (Creswell & Plano-Clark, 2007, p. 135)

"Tape recorders, photographs, and videotapes provide accurate and relatively complete records" (McMillan & Schumacher, 2010, p. 331).

Intercoder reliability. "Intercoder reliability is the widely used term for the extent to which independent coders evaluate a characteristic of a message or artifact and reach the same conclusion" (Lombard et al., 2004, section 2). Although intercoder reliability does not equate to validity, if a researcher does not establish intercoder reliability, the data and its interpretations cannot be considered valid (Lombard et al., 2004). A research study by Kolbe and Burnett (1991, as cited by Lombard et al., 2004) stated reliability between coders was often considered a standard of research quality. NVivo can be used to determine intercoder reliability (Meehan, 2013). Agreement of 80% was acceptable in most situations and 90% or better was nearly always acceptable (Lombard et al., 2004).

Pilot test. A pilot test was conducted to establish the reliability of both the interview protocol instrument and the survey instrument. Prior to administering either

instrument, an expert panel reviewed each document. The interview instrument was administered to an experienced researcher to ensure the questions asked would generate responses containing information that would be useful in answering the research questions.

Limitations

Roberts (2010) defined limitations as "particular features of your study that you know may negatively affect the results or your ability to generalize" (p. 162). In contrast to delimitations, which were decisions made by the researcher to reduce the scope of the research or make it more manageable, "limitations are usually areas over which you have no control" (Roberts, 2010, p.162). The limitations listed below were meant to guide the reader in critically evaluating this study, but it was possible there were additional limitations not listed.

Researcher as an Instrument of Study

"The researcher as instrument in educational research can also be the Achilles heel in an educational research project" (Poggenpoel & Myburgh, 2003, p. 418). Patton (2002) indicated that interviewee responses could be distorted due to researcher bias or the researcher may unknowingly impact the situation being observing. In an effort to limit the impact of the researcher as an instrument, the interview protocol was reviewed by an expert panel and then pilot tested with an expert observer prior to conducting the interviews used in this study.

Sample Size

The sample size in this study was limited to 17 participants. Patton (2002) stated "there are no rules for sample size in qualitative inquiry" (p. 244). As a limitation, it was

difficult to state that the results generated from this study were generalizable across the population due to the relatively small sample size (n = 17) compared to the size of the population (n > 340).

Geography

All of the participants interviewed for this study were employed in school districts within Riverside, San Bernardino, and San Diego counties. It was entirely possible that CTE administrators in other counties in central and northern California had different perspectives than those reported in this study.

Self-Reported Data

Patton (2002) cautioned that interview data could be distorted by a number of factors, including personal bias and simple lack of awareness. In this study, CTE administrators at the district level were asked to provide information about CTE pathways within their districts. Although it was assumed that the administrator was fully informed about the program(s) discussed, information shared by the administrator could have been biased or misinterpreted.

Artifacts

Although document analysis can provide another perspective about program components not directly observable, documents and records can be inaccurate or incomplete (Patton, 2002). "Client files maintained by programs are notoriously variable in quality and completeness" (Patton, 2002, p. 306-307). Although the artifacts collected for this study were intended to increase the body of knowledge, incompleteness and inaccuracy of documents could actually limit their value.

Summary

The information in this chapter described and explained the methodology used to conduct this research study. The chapter began with an introduction, the purpose statement, and research questions. The following sections explained the creation of an expert panel to guide the development of the study, the population impacted by this study, and how specific participants were chosen to be included in the sample. The next section discussed the instrumentation used in the qualitative phase (interview protocol) and quantitative phase (survey). The background of the researcher was described and was followed by sections on data collection and data analysis. Ethical considerations, validity, reliability, and limitations of the study provided the conclusion to this chapter.

CHAPTER IV: RESEARCH, DATA COLLECTION, AND FINDINGS

Overview

This exploratory mixed-methods study allowed the researcher to discover and describe the factors that impact student enrollment in southern California (Riverside, San Bernardino, and San Diego counties) comprehensive high school career technical education (CTE) pathways. Chapter IV begins with a review of the purpose statement, research questions, research methods, and data collection procedures. The population and sample are also provided, followed by demographic data collected from interviewees and analysis of the data. Chapter IV concludes with a summary of the chapter.

Purpose Statement

The purpose of this exploratory mixed-methods study was to discover and describe the factors that impact student enrollment in southern California comprehensive high school CTE pathways. In addition, it was the purpose to explore effective strategies used by CTE programs with high enrollment to recruit and enroll students in their CTE programs of study. Finally, it was the purpose of this study to identify which effective strategies were perceived by CTE coordinators as most beneficial for implementing current CTE programs.

Research Questions

The study was guided by four research questions:

1. What factors do CTE administrators perceive that discourage student enrollment in secondary CTE programs?
2. What factors do CTE administrators perceive that encourage student enrollment in secondary CTE programs?

3. What strategies do secondary CTE programs with high enrollment employ to recruit and enroll students in CTE programs?
4. Which strategies for increasing student enrollment in secondary CTE programs are perceived by CTE administrators as most beneficial for implementation?

Research Methods and Data Collection Procedures

Qualitative and quantitative data were gathered in this mixed-methods study. The data collection process began by soliciting recommendations for interview participants from the directors of CTE for the counties of Riverside and San Bernardino. The Riverside director was able to recommend 10 district CTE administrators leading programs with consistently high enrollment and the San Bernardino director recommended 6 district administrators. The researcher attempted to make contact with the director of CTE for the county of San Diego, but that person was not available at the time of the study and unable to provide recommendations for interviewees. As an alternative, a district director of CTE with direct knowledge of the CTE programs within San Diego County was recommended as a potential source of interviewees for San Diego. That person was contacted and provided a list of six district CTE directors within San Diego County with programs known for having consistently high enrollment. All 22 potential interviewees were placed on a list that included demographic data about their district such as size, urbanization, and county/geographic region. Twelve potential interviewees were selected for inclusion in this study based on geographic region, district size, and proximity to other districts being contacted. Initial contact was made first via email and then those who did not respond to the email were contacted via telephone.

Directors who responded by email were scheduled for interviews first via email and then by telephone if there was no response to the email. As not all of the CTE administrators initially selected for inclusion in this study responded, the researcher selected other potential interviewees from the original list of 22 directors. Every effort was made to select replacement districts that were similar in size, urbanization, and geography to the ones initially selected that were unable to participate.

A total of 15 interview sessions were scheduled. In two instances, the CTE administrator who was scheduled for the interview included a colleague in the interview process. On these two occasions, the researcher interviewed two CTE administrators during one interview session. This process brought the total number of interviewees to 17. All interviews were conducted in person by the researcher.

After all 17 interviews were completed, the data were coded using NVivo software to determine the most prominent themes presented during the interviews. Based on these data, an online survey (Appendix G) was created and sent to interviewees. Interviewees were asked to rate the prominent themes by their potential to increase CTE enrollment. After three days, interviewees who had not completed the online survey were sent a reminder email. After five days, a second reminder email was sent to the remaining interviewees who had not completed the survey. Eleven of the 17 interviewees responded to the electronic survey.

Population

The California Department of Education (CDE) website listed 340 secondary or unified school districts that received funding through the Carl D. Perkins federal funding allocation for the 2015-16 fiscal year (CDE, 2015d). The population for this study

consisted of the California school district administrators responsible for managing Perkins funds, who were also likely to be responsible for establishing district policy related to CTE.

The target population included CTE administrators for districts in Riverside, San Bernardino, and San Diego counties. These counties were chosen due to their geographic proximity to the researcher. Timely publication of this study necessitated the selection of a target population within reasonable driving distance of the researcher as districts were implementing their California Career Pathways Trust (CCPT) and California CTE Incentive Grant (CTEIG) grants at the time of data collection.

Sample

The researcher contacted the director of CTE for Riverside, San Bernardino, and San Diego counties to establish a list of district CTE directors who led programs with consistently high enrollment. The researcher then selected districts that were diverse in geography, population size, and urbanization. Fifteen interviews were conducted with a total of 17 interviewees.

Demographic Data

Interviewee demographic data were collected during the interview sessions. Individual data related to gender, age range, years in current position, years in current organization, and experience as an educator were collected. In addition, district-level data such as size, county, and urbanization, were also gathered. As shown in Figure 2, 65% of the interviewees were male and 35% female.

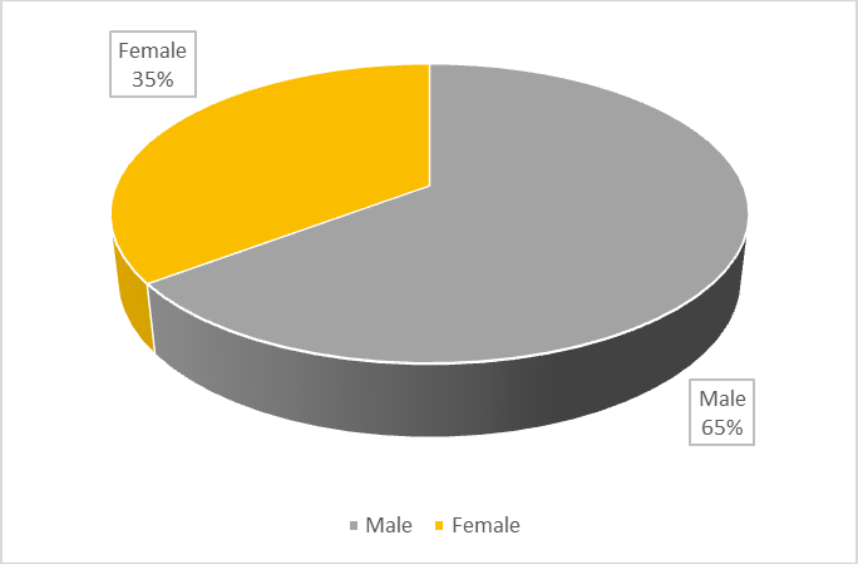

Figure 2. Gender distribution of study participants.

Interviewees were asked to select the range that included their age. All those interviewed were over 30, and nearly half were between the ages of 51 and 60 (Figure 3).

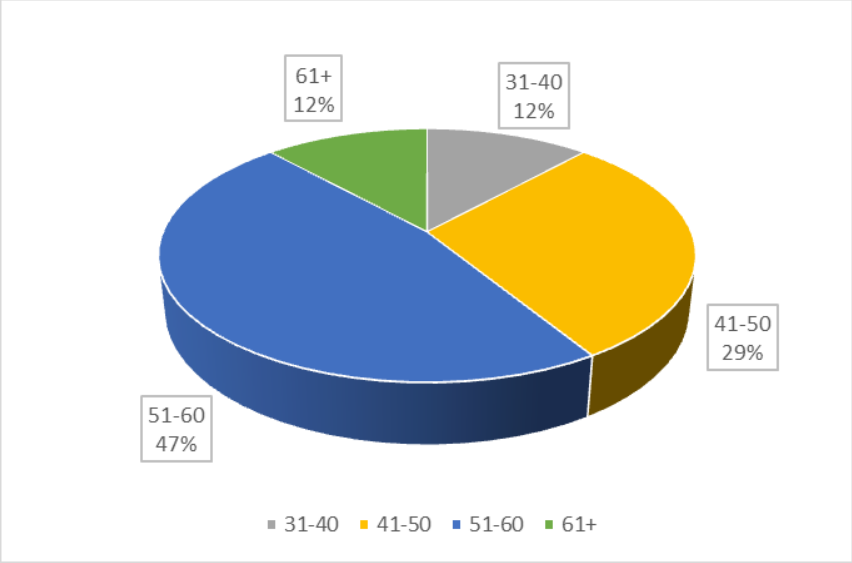

Figure 3. Age distribution of study participants.

All but one interviewee in this study held advanced degrees, with three participants holding doctorates (Figure 4).

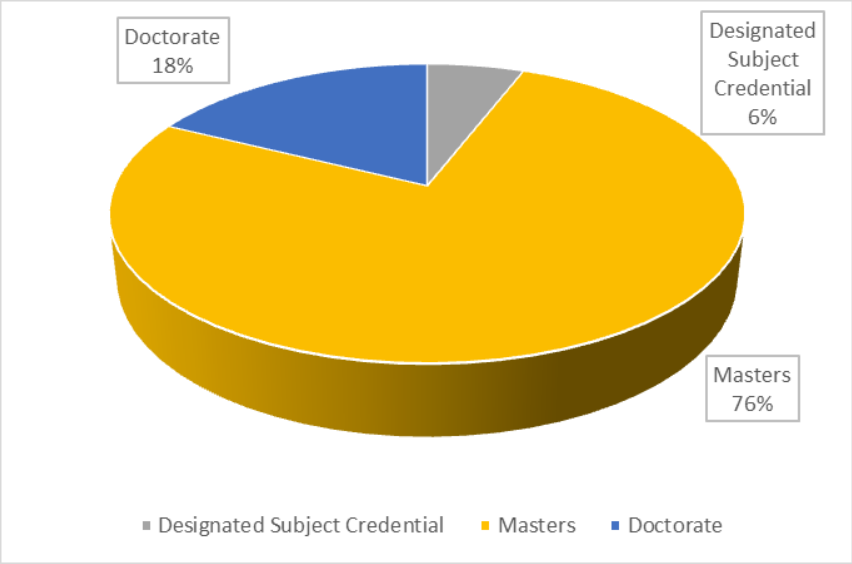

Figure 4. Education level of study participants.

Just over half (53%) of the interviewees self-reported that they had at least some experience teaching CTE courses prior to becoming a CTE administrator (Figure 5).

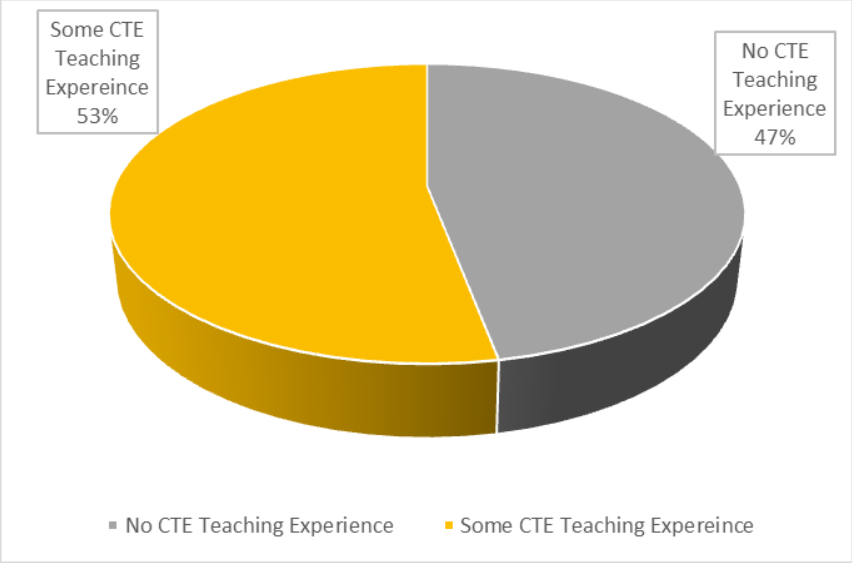

Figure 5. Prior CTE teaching experience among study participants.

Interviewees were selected from districts within three counties: Riverside, San Bernardino, and San Diego. Eight of the interviewees were from Riverside County, four were from San Bernardino County, and five were from San Diego County (Figure 6).

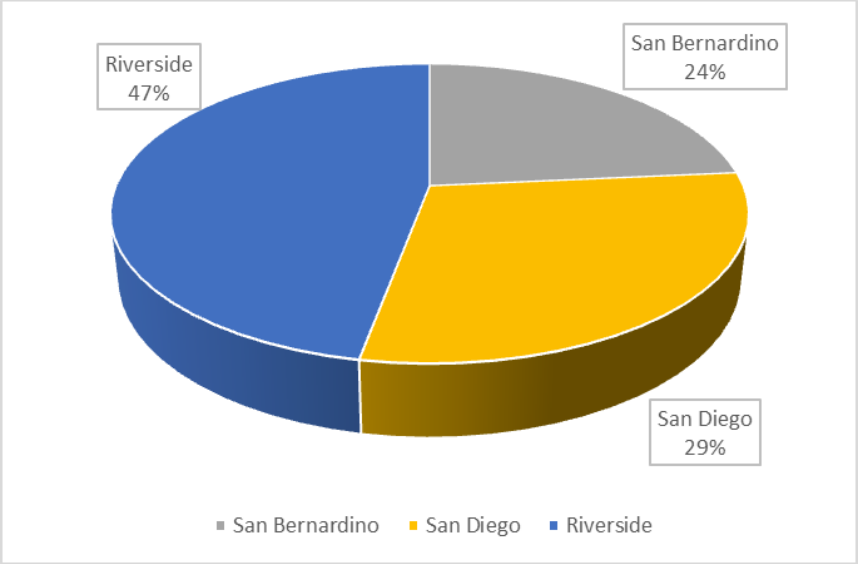

Figure 6. Counties represented by the study participants.

For the purposes of this study, small districts were defined as having 1-5000 students, medium districts 5001-25,000 students, and large districts as more than 25,000 students. According to data from the National Center for Education Statistics (NCES, n.d.), 5 of the interviewees were employed by large districts, 11 were employed by medium districts, and 1 was employed by a small district (Figure 7).

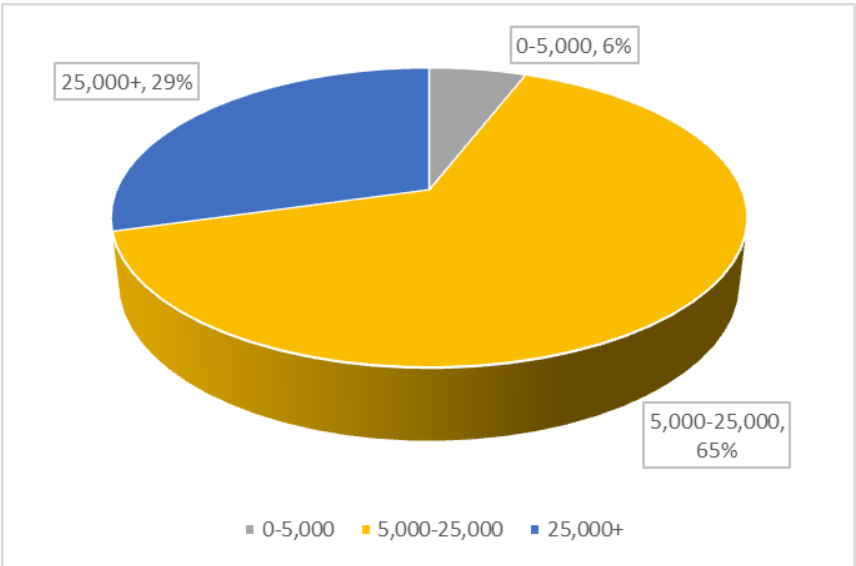

Figure 7. Size of school districts that employed the study participants.

According to the NCES (n.d.) data, nine of the interviewees were employed by districts classified as suburban, six were employed by districts classified as city, and two were employed by districts classified as rural (Figure 8).

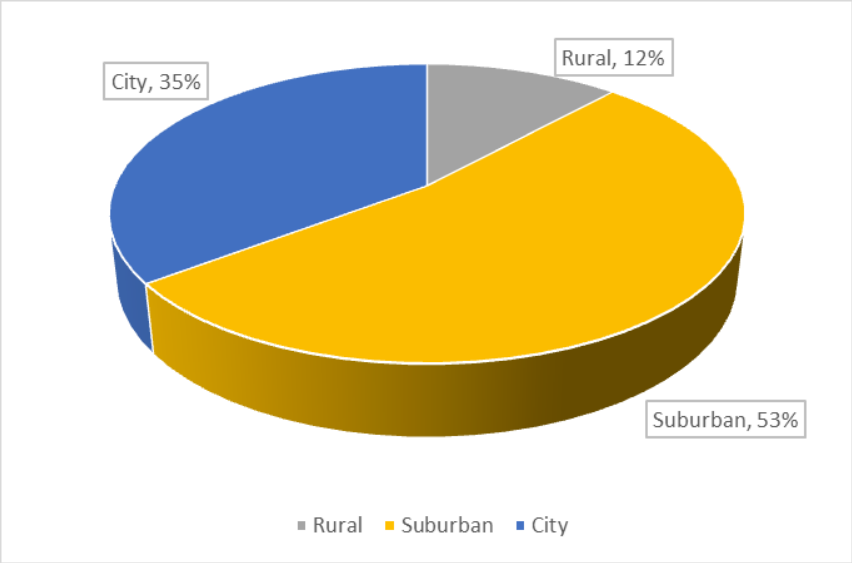

Figure 8. Urbanization classification of the districts that employed the study participants.

At the time the interviews were conducted, 5 of the 17 interviewees had been in their positions for less than one year and only one interviewee was in the position for more than five years. The other 11 study participants were in their current positions from one to four years (Figure 9).

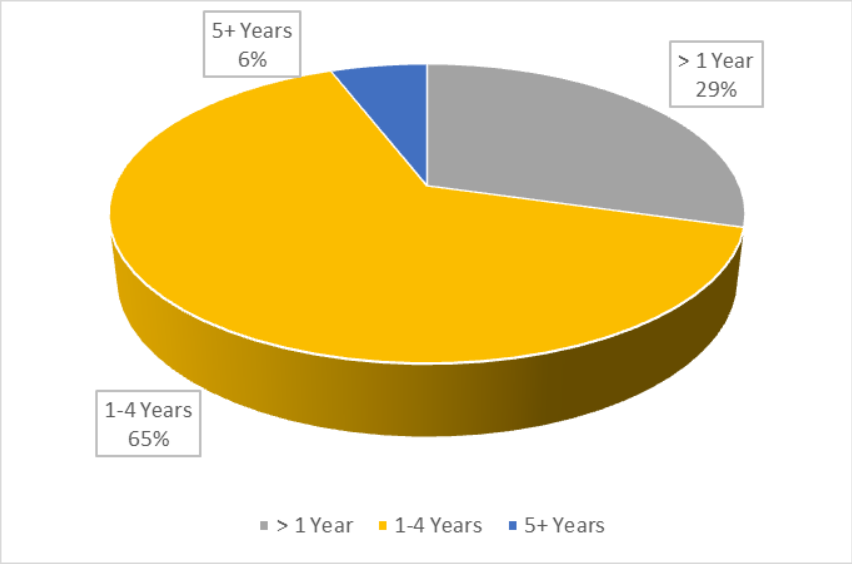

Figure 9. Number of years study participants were in their current position.

Six of the 17 study participants had changed school districts within the past three years, whereas the remaining 11 were employed by their current school district for 11 or more years (Figure 10).

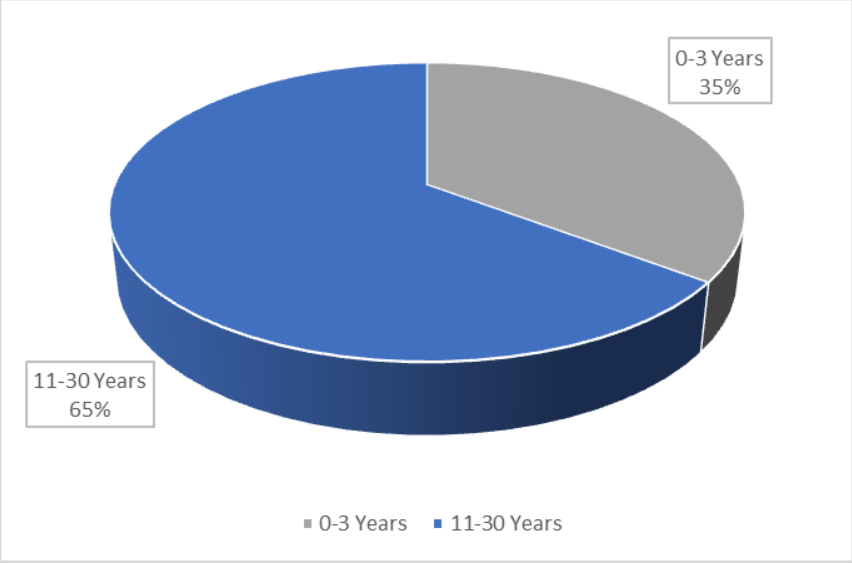

Figure 10. Number of years study participants were employed in their current district.

Presentation and Analysis of Data

The mixed-methods research design methodology used in this study generated both qualitative and quantitative data. Selecting a mixed-methods research design yielded a depth of information that would have been unavailable through single-methodology research. The study was divided into two phases. The first phase consisted of qualitative data collection through a series of 17 interviews. The second phase consisted of quantitative data collection through an electronic survey instrument that asked interviewees to rate the perceived potential impact of the recruitment methods discovered through the qualitative data collection process.

Research Question One

What factors do CTE administrators perceive that discourage student enrollment in secondary CTE programs? The intent of Research Question One was to generate a list of factors that discouraged student enrollment in secondary CTE programs as perceived by district CTE administrators. Through the process of qualitative data coding, Table 6 presents the major factors identified by the participants that discouraged student enrollment in secondary CTE programs.

Table 6

Factors that Discouraged CTE Enrollment

	Number of CTE administrators mentioning this factor	Number of times factor was mentioned
Negative Stigma	13	39
Counselors	10	22
College for All	10	17
Lack of Perceived Value	9	19
Family Members	7	9
Tracking	6	12
Pathway Availability	5	16
CTE Instructor	5	7

Negative stigma. This theme was mentioned most often, being referenced 39 times by 13 different CTE administrators. As reported in Chapter II, vocational or career education was associated with a negative stigma for since its inception. The basis for this stigma related to the students who typically enrolled in CTE courses and the perception that CTE limited students to blue collar careers. "Historically, CTE has targeted mainly low-income and disadvantaged students" (Aliaga et al., 2014, p. 145). This factor was supported by one CTE administrator who said, "I think students choosing to enroll [in CTE courses], some people and some of the kids view it as these students are non-college kids, hey, these are the dumb kids." According to another CTE administrator, the negative stigma was not necessarily related to the students in the CTE class, but the employment opportunities associated with the class. This participant noted, "We've got to bring the respect for skilled trades back in the population. [A CTE student] is almost a second class citizen now-a-days."

Counselors. This theme was referenced 22 times by 10 different CTE administrators. Wonacott (2000) reinforced this, stating that high school counselors often discouraged students from enrolling in CTE courses. One CTE administrator referred to counselors as "the gatekeepers." Another said, "Counselors are our biggest enemy. Counselors say, 'Oh, that's just an elective class. You really need to take something that's going to get you to the university.'" With the release of *A Nation at Risk* and then the adoption of No Child Left Behind (NCLB), counselors were directed to push students with the potential to succeed in higher education to achieve at that level. According to Chadd and Drage (2006),

> CTE will continue to lose student enrollment unless CTE leaders can clearly show these programs: a) contribute to academic success of students as measured by state academic tests and b) serve as a motivation for students to stay in school and help students perform better in academic courses. (p. 80)

The text of Senate Bill 383 (2003) authored by Alarcon stated "The A-G coursework is used as the de facto college preparatory coursework by high schools" (Background section, para. 2) and also "the A-G coursework pattern, however, for all practical purposes does not include a vocational education/career technical component" (Background section, para. 3). As a result, California comprehensive high school counselors must consider the college entrance requirements established by the University of California (UC) system, also known as A-G.

College for all. This theme was referenced 17 times by 10 different CTE administrators. With the education reforms initiated by *A Nation at Risk*, "All high school students take an increased number of academic courses, regardless of those students' classification as academic, CTE, general, or dual" (Aliaga et al., 2014, p. 137). One CTE administrator indicated, "Colleges have done a great job of indoctrinating society in the only way to win is get a college degree." Another was even more direct saying, "We believe that every student, to be a success, must go on and get a four-year university degree or Master's degree." Although it was desirable for students to achieve at the highest levels, a university education may not be the most appropriate path for all students (Badke, 2012). This idea was confirmed in the following statement from a study participant:

> We've been living through this *college for all* mantra for 10 years, 15 years now, gosh, maybe 20. As we, as educational leaders, continue to create more rigorous requirements for kids to go to college, CTE programs are often times put on the backburner, to the wayside, for kids that it really truly could benefit.

Lack of perceived value. This theme was referenced 19 times by 9 different CTE administrators. One CTE administrator stated there was "just a lack of knowledge about how valuable career technical education can be." Another CTE administrator expanded on that idea, noting:

> A part of that is the mentality with the counselors and parents, who had certain perceptions of what career tech ed was. I personally don't think those who were responsible for placing students saw the value or the strategy in it.

Lack of perceived value was different from a negative stigma because negative stigma referred to programs that existed for students not capable of achieving at the highest levels, whereas lack of perceived value was better explained through the example of a student interested in the medical field who chose not to take a medical terminology or first aid class because they were part of a CTE program.

Family members. This theme was referenced nine times by seven different CTE administrators. According to the CTE administrators interviewed for this study, families were influential in the decision to enroll their children in CTE courses. Parents wanted the best for their children and were taught that the definition of success was a college degree, so parents were reluctant to enroll their children in CTE courses. According to

one CTE administrator, "A lot of parents say, 'That's not for my child. My kid is college bound. They don't need that.'" An opinion from another CTE administrator indicated that families with higher education backgrounds tended to steer students away from CTE courses, commenting, "Families where everybody's gone to college and they're doctors and lawyers and stuff, [those] are the kids that aren't in your programs."

Tracking. This theme was referenced 12 times by 6 different CTE administrators. Although tracking as an institution is not allowed in California, it may still be unintentionally happening. As a CTE administrator opined during the interview, "I think it's also mindset and reputation; those aren't the smart kids. Those are kids that can't go to college." A similar opinion was offered by another CTE administrator, who said, "When I was in high school, the kids who were going to college had the college prep route. The kids that weren't going took shop." Students with limited success in academic courses may be directed to take CTE courses as electives whereas a student performing well in academic courses may be encouraged to take additional academic courses as electives.

Pathway availability. This theme was referenced 16 times by 5 different CTE administrators. With 15 industry sectors and 58 unique career pathways, California comprehensive high schools cannot offer every pathway at every school. Although many schools structured their bell schedules and created policy to allow students to move between schools, either for the entire school year or just a portion of the school day, other factors such as transportation and social involvement may decrease the impact of these efforts. As one CTE administrator reported,

> The reality of kids, if my buddy is going to this high school, I'm going to go to this high school. The fact that I want to be in sports medicine at High School A if I'm living out in Town B, and my buddy's going to the High School in Town B, I'm going to go with my buddy.

Pathway availability also referred to availability within the master schedule of the school. Students participating in California Partnership Academies (CPAs) were required to be cohorted, which meant they traveled from class to class together. One administrator explained the challenges associated with cohorting students, saying,

> The other challenge we have is if a kid wants to get AP classes or be in the AVID program, it disrupts their elective offerings so they can't really be cohorted anymore. That kind of knocks them out of contention for some of these pathways.

CTE instructor. This theme was referenced seven times by five different CTE administrators. One CTE administrator stated, "If you don't have a dynamic, exciting, engaging instructor, you aren't going to get kids [to enroll]." Another CTE administrator added, "If you have a teacher who's just going through the motions, punching the clock, and racing the kids to the parking lot, you're not going to keep your enrollment up. You're not going to attract a lot of kids."

Research Question Two

What factors do CTE administrators perceive that encourage student enrollment in secondary CTE programs? The aim of Research Question Two was to generate a list of factors that would encourage student enrollment in secondary CTE programs as

perceived by district CTE administrators. Through the process of qualitative data coding, the researcher determined the major factors mentioned by the interviewees (Table 7).

Table 7

Factors that Encourage Enrollment in CTE Programs

	Number of CTE administrators mentioning this factor	Number of times factor was mentioned
Quality or Relevant Program	6	20
Employment or Additional Education	4	17
Graduation Requirement	4	17
Positive Perception of CTE	4	17
Counselors	4	16
The Teacher	4	14
Publicity	4	13
Personal Interest	4	9

Quality or relevant program. This theme received the highest number of references with 20 and was mentioned by 6 different CTE administrators. As one CTE administrator stated, "Making sure that the things that you're offering are relevant to the times. We certainly don't want to be offering, you know, the old thing is we wouldn't offer home economics right now. It's not relevant to the time." Another CTE administrator who was also the parent of a CTE student stated,

> I chose, as a parent now, the school that my daughter went to based on the CTE elective that they had. She wanted a Medical Academy, and as a parent, I chose to self-transport her to another school within the district that had a Medical Academy, versus one that wasn't quite there yet. I was in the zone for the other high school in the district, but as the parent, wanted her to have the four course sequence, the Academy experience.

According to the *11 Elements of a High-Quality CTE Program Self Review Tool* published by the CDE (2015a), career technical student organizations (CTSOs) were one of the key factors of a quality CTE program. One CTE administrator offered an opinion about the role CTSOs played in a quality CTE program, noting,

> I would say an additional factor is the CTSOs. Kids get excited when they go to these things. Whether they win or they lose, they see the reality of what it is. They see the application of their math, their English, and all the stuff that they've done. They see the application of their leadership skills. Most importantly, they meet people from the outside that are outside their school. That really gets programs going.

Employment or additional education. This theme was referenced 17 times by 4 different CTE administrators. They indicated that for many students, the opportunity for employment was a strong motivating factor. One CTE administrator expressed the importance of this theme by saying, "They see that if they understand and see a tangible connection to a career where they can make good money, somewhat locally, that helps." In addition to employment opportunities, students also valued relationships such as articulation and guaranteed enrollment between secondary and postsecondary institutions. One example of this type of relationship was explained by a CTE administrator who said,

> We have relationships with San Diego, Cal Poly, UCR, I'm just thinking locally. Cal Poly has given us an opportunity where if your student takes three pathway courses in Project Lead the Way, students can automatically be enrolled in the Cal Poly Pomona engineering programs. There's a two-year waiting list on that.

Graduation requirement. This theme was referenced 17 times by 4 different CTE administrators. One CTE administrator mentioned that the district adopted the UC A-G entrance requirements as part of its graduation requirements. Then this district worked to have all of its CTE courses A-G approved. The CTE administrator commented,

> So now students are finding out [about CTE] because we have them in our construction class A through G, or Culinary Arts I. We have [A-G] in our baking class. We have [A-G] in our medical classes. That's where we're getting a lot of our feeders and students that want to take the courses, but they have to meet this requirement. Now we're fulfilling the needs of what the students have to have in more and more of our classes.

Another CTE administrator commented about a policy adopted by the district, saying,

> There is an Education Code that allows for CTE to meet the fine art [graduation] requirement. We've moved forward with that in terms of the public awareness of what kind of options there are. It's an alternative way for students to meet graduation requirements.

By making CTE an option for meeting fine art graduation requirements, students had more freedom to choose courses that aligned with their interests.

Positive perception of CTE. This theme was referenced 17 times by 4 different CTE administrators. One CTE administrator explained this concept as,

> Word of mouth. Kids talk. They know what programs are good and what programs are not. They know what programs are challenging. They know what programs are not. I think if you offer a high quality program that is

> not only engaging, but interesting, rigorous, and filled with new challenges where students can genuinely learn something authentic, that's your best recruitment tool.

Another CTE administrator commented about the changing perception of CTE, stating,

> The perception of CTE is now all of our academic teachers always believed that [CTE teachers] were something to the side. Now with Common Core, and that was spread as a federal thing, many states are involved. That being said, now you have teachers working together academically and skills-based, seeing the relationship. Now they see how they can work together. If I'm teaching Pythagorean's Theorem in my math class, and he's teaching how to build trusses in his construction class, it's a perfect scenario. They're now seeing we have value to the academics.

Counselors. This theme was referenced 16 times by 4 different CTE administrators. This was one of two factors that appeared as both a factor that could discourage enrollment and a factor that could encourage enrollment. One CTE administrator expressed how counselors could positively impact enrollment, saying, "It's really important for outreach to make sure the counselors of each site know what's offered. They can market it." Another CTE administrator added, "Now that we have the A-G's, we are starting to see the counselors plug into that. We are getting a friendship there."

One aspect of counseling that came up was that some districts employed a CTE coordinator. One CTE administrator expanded the value and responsibilities of certificated CTE coordinators, commenting,

> We invested in that, and it's a big commitment because of all the requirements to be a CTE teacher. Everything from you've got to keep current, you've got to get out in industry and do a job shadow, you've got to take your class on an industry tour, get professional development, and get all these recruitment efforts. We decided that this position can really help the whole site move forward. That person serves as a liaison between the pathways and administration and a liaison between the site and our office. They take a lot of the burden off the teacher.

The teacher. This theme was referenced 14 times by 4 different CTE administrators. This also appeared as a factor with the potential to both discourage and encourage enrollment. According to one CTE administrator,

> It's the teacher. Programs don't make a teacher, teachers make programs. If you don't have the teacher that wants to commit to a CTE program, you're not going to have a program. You're going to have a bunch of kids dumped into the program. You get involved in the leadership aspects. You get the kids hands-on and not stuck in a book. If you give them that well-rounded education, then they're going to stay. They've got to have a reason for being there.

Another CTE administrator commented on the qualifications that result in a CTE instructor who could develop a quality program. This person notes, "The way we do that

is by ensuring that we hire teachers with industry experience, not just academia and academic experience."

Publicity. This theme was referenced 13 times by 4 different CTE administrators. For the purposes of this study, publicity included school websites, social media, student appearances at public events, student awards ceremonies, and displays of student work. Social media was referenced by CTE administrators as one effective method of generating publicity. One CTE administrator shared:

> The way people are connected now-a-days, it's just unbelievable. In this district, we're on Twitter, we're on Facebook, we have our web page. Every school has their Facebook and Twitter page. We even developed an app. There's an app you can download. That app shoots out all of the updates and different things that we're doing. From the Department of College and Career, we're always blasting out, hey we're doing this symposium. Hey, our kids are in on this internship opportunity.

One CTE administrator talked about another effective means of generating publicity: "We have a little Chopped competition similar to the *Chopped* TV show on the Food Network. Those kids are going back and talking to other kids. They had the time of their life. My opinion is a lot of it is word of mouth with kids."

Personal interest. This theme was referenced nine times by four different CTE administrators. Although the interests of the students were not necessarily the primary factor in determining which CTE programs would be offered, student interest in that career path was a determining factor in the number of students enrolled. One CTE administrator reflected on student interest in CTE programs, sharing,

> Ideally, it's a program that really piques their interest. One of the first things, as we're looking for recruitment, you want it based on student interest. We're asking for the students to commit to two, three, and sometimes four years to a pathway. You want it based on interest, otherwise the poor students will say, "Why am I in here?"

Another administrator explained that for some students, CTE participation grew out of a personal interest or hobby, adding,

> A lot of it is the passion that students have, like finding an interest that they would like to do. For some of our kids it starts out as a hobby, but it's bigger than that. It's finding where the passion about what skills they want to learn is, and getting that connection and keeping them in school.

Research Question Three

What strategies do secondary CTE programs with high enrollment employ to recruit and enroll students in CTE programs? The aim of Research Question Three was to generate a comprehensive list of all recruitment methods used by secondary CTE programs serving comprehensive high schools. The strategies with the highest frequency of occurrence were used to generate the recruitment methods discussed in Research Question Four. Table 8 presents the strategies were mentioned by CTE administrators as recruitment methods used by CTE programs serving comprehensive high schools in California.

Table 8

Recruitment Methods Mentioned by CTE Administrators

	Number of CTE administrators mentioning this method	Total number of times mentioned
Feeder School Promotion	11	22
Visits to CTE Classrooms	7	22
Recruitment Fair	7	19
Social Media	7	10
Students Visible in Community	6	13
Business and Community Partnerships	5	12
Recruit at home site	5	9
Counselors	5	8
Posters and Brochures	5	7
Targeted Recruitment	4	10
Student and Product Showcase	3	6
Recruitment Specialist	2	5
Summer Experience	2	5
Sense of Community	2	2

Feeder school promotion. This recruitment method was referenced 22 times by 11 different CTE administrators. Participants indicated that traveling to feeder schools, especially with current students and/or activities related to the CTE pathway, was a valuable recruitment tool. One CTE administrator stated, "We use a lot of our [high school] kids going to middle schools to sell our program to our middle school kids to get them interested right up front." Another CTE administrator discussed how the district was able to increase the impact of this recruitment method by getting students from the feeder school involved in a project on their own campus that provided the opportunity for experiential learning and also left a permanent reminder of the benefit of that CTE program on the middle school campus. This administrator shared,

> One of the middle schools wanted to resurrect their community garden and farmer's market. They needed all new work benches, a cart, and planters.

> So, our [CTE] students actually built all that for them. I actually paid for the supplies and we donated it to the elementary district. We're doing more and more of those types of things, but we included the students on that middle school side as well.

Visits to CTE classrooms. This recruitment method was referenced 22 times by 7 different CTE administrators. Interviewees indicated that bringing students, parents, and other community members to visit the CTE classroom where current and former students were demonstrating typical class activities and talking about their successes as a result of participating in the CTE pathway was an effective recruitment tool. One CTE administrator stressed the importance of this method by explaining,

> Convince other teachers on your campus to walk their students through your class. Let them see what you're doing. That does not take money. It just takes some organization and the site coordinator could help with that. You could have the under classmen walk through and see what the juniors and seniors are doing because they have a two-year pathway.

The same CTE administrator also commented on visits to the CTE classroom for parents and the community, adding, "Your school is already having the open house. Make sure your CTE classroom is open. If you can get some students for projects, have them there too." Although one CTE administrator discussed working with the resources available on site, another described a more focused activity designed to bring incoming students to the high school so they could experience the CTE classroom first hand, saying,

> For two days we bring 2,000 eighth graders to our campuses to have them go through all our CTE programs. We do it over two days, and it's about 2,000 students. Some parents will come during that, but what's really interesting is, because they bring in their own chaperones and counselors, and some site administrators from the elementary district, they get a chance to see what we're offering here in the district.

Recruitment fairs. This recruitment method was referenced 19 times by 7 different CTE administrators. Interviewees indicated that bringing CTE programs together in one location so that students could easily see all options available and compare those options was an effective recruitment tool. One CTE administrator explained the value of recruitment fairs where students of all levels were invited and had the opportunity to interact with postsecondary education opportunities and local businesses, explaining,

> The elementary school kids are seeing what's offered in the middle school and high schools. The middle school kids are seeing what's offered in high school. The high school kids are seeing what's offered in postsecondary and out in the community.

Another CTE administrator offered an example of a recruitment fair that was successful, describing,

> The last one we did was pretty cool where we had our local community college come. Their medical teacher had a booth next to our high school medical teacher booth. Those teachers knew each other so they're sharing

about, “Hey, you can start here and then jump right into my program. Skip the intro class and get rolling faster to a career.”

This CTE administrator explained how a career fair involving business and industry could be beneficial to high school CTE programs, adding,

> We’ll have a lot of industry available there to show students what it’s about. If they don’t know what a plumber is because dad has never called one out, they get to see stuff and talk to the people [in that industry]. We will have all of our teachers there to discuss what’s going on in their districts.

Students visible in community. This recruitment method was referenced 13 times by 6 different CTE administrators. Interviewees indicated that students visible in the community as representatives of the CTE pathway, especially as CTSO members but also as interns or employees, was an effective recruitment tool. The CTE administrators interviewed for this study elaborated on the value of students being visible in the community. One CTE administrator had this to say about student visibility as a recruitment method,

> The instructor and the kids are out in the community all of the time. When they’re out and they’re doing catered events, like the Chamber of Commerce breakfast, the Rotary Club luncheon, those sorts of things, the community starts to see what these kids are doing. The community’s perception is, what a great program, we want to get behind this. We want kids to be in these programs, and then that really starts to grow in the community, in people’s households.

Another CTE administrator made a similar comment, noting,

> I'm going to put my time into getting out to events, and I know that takes teacher time, but you present at community service clubs. You take your kids, like ROTC. They have an opportunity to do Color Guard, a variety of activities. Once you've been seen once or twice, then people are impressed with what you do, they're coming back to you. They want their kids in the program. The teacher with the floral program, and how much she does with that, everything with word of mouth by her. Build a few projects. Sell them out there into the community. People come back and they want their kids involved.

In addition to having students present at community events or selling projects in the community to raise money, one CTE administrator discussed the value of students participating in community service projects, saying,

> Another effective recruitment strategy is getting our students out in the community and doing community projects. The community can be within the school, for example designing a theatre program from the digital arts class. It can be outside, like our engineering students; they helped mark all the sidewalks in the city for some big project they were doing. They needed some real intensive manual labor, and the students had the skills to actually do that, help them mark up the sidewalks first.

Posters and brochures. This recruitment method was referenced 12 times by 7 different CTE administrators. Interviewees indicated that displaying posters and banners around the school site to generate interest in the CTE pathways offered at that site, as

well as developing brochures that could be distributed to potential pathway participants, was an effective recruitment tool. CTE administrators indicated their willingness to provide recruitment materials for their CTE programs. One CTE administrator remarked, "We will help them do that recruitment in terms of developing the collateral materials" and another said, "We're already working on pamphlets for each CTE pathway."

Business and community partnerships. This recruitment method was referenced 12 times by 5 different CTE administrators. Interviewees indicated that developing partnerships with local businesses and community organizations was an effective recruitment tool. One CTE administrator explained how the CTE program developed business and community partnerships, sharing,

> We're really enlisting our local community. We've partnered with our local Chamber of Commerce. It's amazing when you go into a Chamber of Commerce and you meet with a few people, and the list of businesses that they have and the contacts that they have.

Another CTE administrator explained the impact of business and community partnerships to their CTE programs, saying, "The networking is a big one. I know that takes a lot of time. I don't think we'd be moving some of our programs forward right now without some of that networking going on." Examples of business and community partnerships were provided by another CTE administrator who said,

> Community partnerships where the kids are taken to some form of career exploratory day that ties back to CTE at a business or community are good for recruitment. One of my favorites is putting every middle and high

school principal onto a bus, and taking them actually to places in the world of work and having them conduct several summer externships.

Targeted recruitment. This recruitment method was referenced 10 times by 4 different CTE administrators. Interviewees indicated that targeting recruitment efforts at non-traditional populations such as female engineering students or male nursing students was an effective recruitment tool. One topic discussed by CTE administrators was the concept of targeted recruitment that focused specifically on students not enrolled in CTE programs and usually on enrolling non-traditional students in CTE programs. One administrator commented,

> We can have current students as guest speakers, and even the teacher, where the student can say, "Ah, that person is kind of like me. I can see myself in that field." That really helps open their eyes. Females in engineering, all those challenges where maybe the student didn't see themselves in that pathway and need to be given an example of how they could be successful in that pathway.

Another CTE administrator explained how the district conducted targeted recruitment:

> In February, because that's CTE month, we have done basically a mini-workshop seminar after school to attract the non-traditional student. We only invite; we look at our data where we have underrepresented populations. Actually, it's really the females who are underrepresented in some of the pathways. We've done a really good job getting the males in some of those pathways. We invite 8th grade and 9th grade females. Then

> we invite guest speakers who are working in those pathways. It's essentially just kind of an open forum; they can walk around.

One CTE administrator explained that the superintendents in his area were creating a recruitment fair specifically for students not enrolled in any CTE programs, saying, "It's not going to be open to just any student. This is going to be our superintendents doing extensive research in finding those kids that don't have a plan."

Recruit at home site. This recruitment method was referenced nine times by five different CTE administrators. Interviewees indicated that recruiting students at the home site of the CTE program through activities such as setting up a table at lunch to discuss the pathway with current students or asking teachers to bring their classes to tour the CTE classroom were effective recruitment tools. One CTE administrator discussed the importance of conducting recruitment at the site where the CTE program was located and the impact recruiting captive students, sharing,

> We just started our teacher pathway, and the counselors and the teachers that started the pathway; they went to every single freshmen class last year. They asked "Who wants to be a teacher when you grow up?" Of all the kids that raised their hands, they pulled them all in and they got a good, solid group of kids to start the teacher pathway for this year.

Another CTE administrator expanded the recruiting at the home site to include schools within the district, noting,

> I need it to be everybody in the district knows about it. High School A has a construction program. It's the only one we have [in the district]. I was over at High School B for 10 years. I never knew they had a construction

> program, never knew. Why is that? Everyone needs to know about their construction program.

Social media. This recruitment method was referenced 10 times by 7 different CTE administrators. Interviewees indicated that generating publicity through the use of social media sites such as Twitter, Facebook, and others, as well as the school website, was an effective recruitment tool. One CTE administrator explained how social media was valuable as a recruitment tool, highlighting,

> Videos and photographs, ways that are interesting for the kids too, whether on their cell phones or whatever, they can go see a bit of the class and be interested in that. That's an easy way to reach the parents as well. It would be more of a conversation between the parent and the student instead of people just signing up for what their friends are taking.

Another CTE administrator offered a reminder about ensuring information was available in a location where interested people could find it, saying, "Having an effective, interactive website so people can go and get information on your pathways." The value of a program website was also indicated by another CTE administrator who said, "I think a good web presence for your CTE program is effective in terms of recruiting and promoting your programs, and making that awareness of what CTE is and what it isn't."

Counselors. This recruitment method was referenced eight times by five different CTE administrators. Interviewees indicated that counselors were an essential part of the recruitment process. When properly trained, counselors could effectively market programs to students and parents. One CTE administrator explained how to make counselors part of the overall recruitment effort, saying, "We're going to have an in-

depth meeting with the counselors so that they're aware of what the program is, and that they can start recruiting kids from their end." Another CTE administrator discussed how counselors encouraged students to enroll in CTE pathways by educating them about the program, describing, "Spend your time in the counseling office and let them know that your classes are a great place for students. Know that you are A-G. Make sure they know the details of the class."

Student and product showcase. This recruitment method was referenced six times by three different CTE administrators. Interviewees indicated that displaying student projects and allowing students to present the knowledge and skills they learned through participation in the pathway, either at the school or at community events such as school board meetings or displays in public locations such as shopping malls, were effective recruitment tools. One CTE administrator discussed how CTE programs within his district showcased students and their products, noting, "For all of our advisory meetings, even our awards events for career technical education, we have a student showcase…We have students showcasing their current projects and talking about the program." Another CTE administrator spoke of a formal event to give the public an opportunity to see students and their work, describing, "At the end of the year, I have what's called a CCTE showcase…It's kind of like a county fair…About 60 programs show up and we have it all laid out with booths and everything." Another take on the public display of student work was explained as taking place in the "[local] mall…So usually about every 15 to 18 months we do a CTE showcase there. They donate the space. It's pretty much an all-day event."

Recruitment specialist. This recruitment method was referenced five times by two different CTE administrators. Interviewees indicated that recruitment specialists who were able to make presentations to students currently enrolled at the CTE program site, other high schools in the district, feeder schools, school board meetings, service organization meetings, and others events, were valuable assets in the recruitment process. One CTE administrator explained the role of a recruitment specialist, commenting,

> Our district has funded a Recruitment Placement Specialist who serves only CTE ROP. She's out recruiting students, promoting programs, she's in classrooms, she's in events, she's at the college fairs, the career fairs…Getting that person out there and getting them involved, and that's her full-time job. Her job is all about the recruitment and the placement of students into the industries.

Another CTE administrator discussed the value placed on recruitment specialists in his district, saying,

> We had a Recruitment Placement Specialist for a district who assisted in recruiting for our programs. She also assisted with the industry partners and jobs that are available and so on and so forth. After ROP went away, our district saw the value in the Recruitment Placement Specialist, and they actually created the position and we hired the Recruitment Placement Specialist who lost their job from [ROP]. That's one of our biggest ones. She gets out, she recruits.

Summer experience. This recruitment method was referenced five times by two different CTE administrators. Interviewees indicated that providing students the

opportunity for an immersive summer experience within the CTE pathway was an effective recruitment tool. One of the CTE administrators interviewed explained how intensive summer experiences were valuable as recruitment methods, saying,

> We run a program called a youth enrichment program, which are basically summer camps focused around CTE themes. We run those camps for elementary through middle school students. It gives them a taste of computer graphic arts or automotive or culinary. Just gives them a taste, a feel, for the types of programs that they can experience, either on middle school campuses or the high school campuses.

Another CTE administrator explained a program used in the district, noting, "We ran a program this summer that was [for] incoming ninth graders, and it was called Investigating Careers…It was a ninth grade transition class, but it got them thinking about developing a 10-year plan."

Sense of community. This recruitment method was referenced two times by two different CTE administrators. Interviewees indicated that students participating in a California Career Pathway Academy (CPA) felt a sense of community or belonging and that other students would also want to feel that sense of community, making it an effective recruitment tool. One CTE administrator explained the impact of developing a sense of community within the CTE pathway, sharing,

> We have a Partnership Academy, and they're particularly good about doing little demos for the students. They'll host and go visit the English classes during enrolment time and say, "Hey, look. You can be part of a community." Any time there's a sense of community, a lot of times

> students will invest themselves more in it, so that's seemed to help in terms of the longevity and helping students stay in the program over time.

Another CTE administrator echoed those thoughts, adding,

> Recruitment works really well in Academy programs because they're such a family atmosphere. We know how to build in mentorship programs in an Academy when you have 12th graders talking to incoming 9th graders. I think that's an effective recruitment tool.

Research Question Four

Which strategies for increasing student enrollment in secondary CTE programs are perceived by CTE administrators as most beneficial for implementation? The aim of Research Question Four was to take the list of recruitment methods generated in Research Question Three and have interviewees rank the relative potential of each recruitment method to increase enrollment in secondary CTE programs at comprehensive high schools in California. A follow-up survey with items generated from the recruitment methods mentioned during interviews was provided to the study participant to allow them to rate each recruitment method from least beneficial to most beneficial (Appendix G).

Table 9 presents how the recruitment methods were rated by CTE administrators. The figure displays the results of the follow-up survey where interviewees rated each item on a Likert scale from 1 = *Least Beneficial* to 5 = *Most Beneficial*. The middle two columns were provided for easy comparison of the data discussed in Research Question Three. The first column presents the recruitment methods generated from the interviews. The next two columns provide the number of administrators who mentioned the recruitment method and the number of references to that recruitment method during the

interviews. The final two columns present the mean rating and standard deviation derived from the survey.

Table 9

Ratings of Recruitment Methods

Recruitment Method	Number of CTE administrators who mentioned	Number of times recruitment method was mentioned	Average rating by interviewees on scale of 1-5	Standard Deviation
Visits to CTE Classrooms	7	22	4.64	.48
Feeder School Promotion	11	22	4.27	.45
Students Visible in Community	6	13	4.27	.62
Student and Product Showcase	3	6	4.27	.62
Recruitment Specialist	2	5	4.27	.86
Counselors	5	8	4.18	1.03
Sense of Community	2	2	4.18	.83
Recruitment Fair	7	19	4.09	.67
Summer Experience	2	5	4.09	.67
Social Media	7	10	4.00	.60
Targeted Recruitment	4	10	4.00	.43
Business and Community Partnerships	5	12	3.82	.57
Posters and Brochures	5	7	3.73	.75
Recruit at home site	5	9	3.45	.78

Note. Ratings were on a 5-point scale.

As can be seen, visits to CTE classrooms were considered the most beneficial recruitment method, with a rating of 4.64. This was followed by four methods that all received a rating of 4.27, feeder school promotion, students visible in the community, student and product showcase, and recruitment specialist. The least beneficial methods identified were business and community partnerships, posters and brochures, and recruit at home site, which all had an average rating below 4.00.

Major Findings

Major Finding 1: Discouraging Factors

Two primary factors emerged that CTE administrators thought discouraged enrollment in CTE programs: the negative stigma regarding CTE programs and the school counselors.

Major Finding 2: Encouraging Factors

Four primary factors were identified by CTE directors that encouraged enrollment in CTE programs:

- Quality or Relevant Program
- Employment or Additional Education
- Graduation Requirement
- Positive Perception of CTE

Major Finding 3: CTE Recruitment Methods

CTE administrators identified a variety of recruitment methods used by CTE programs at comprehensive high schools in California. However, only one individual recruitment method was mentioned by more than 7 of the 17 CTE administrators interviewed, so no methods stood out as being used more often.

Major Finding 4: Rating Recruitment Methods

Based on the CTE director ratings, the most beneficial methods for increasing enrollment in CTE programs were:

- Visits to CTE Classrooms
- Feeder School Promotion
- Recruitment Specialist

- Student and Product Showcase
- Students Visible in Community

Summary

The purpose of this exploratory mixed-methods study was to discover and describe the factors that impacted student enrollment in southern California comprehensive high school CTE pathways. This chapter presented the themes developed from the research and was organized by research question. The data were derived from 15 interviews with 17 interviewees and one follow-up electronic survey with 11 of the 17 interviewees responding. The qualitative data were coded and analyzed to determine the factors that positively and negatively impact student enrollment in CTE programs at comprehensive high schools in southern California. In addition, the qualitative data were coded to determine the recruitment methods used by CTE programs to increase enrollment. Finally, the quantitative data were reported to indicate the recruitment methods with the potential to be most beneficial for increasing enrollment in CTE programs at comprehensive high schools in southern California.

Chapter V presents a summary of the study including major findings, unexpected findings, and conclusions. Chapter V also includes implications for action, recommendations for further research, and the concluding remarks and reflections of the researcher.

CHAPTER V: FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

Overview

The purpose of this exploratory mixed-methods study was to discover and describe the factors that impact student enrollment in southern California comprehensive high school career technical education (CTE) pathways. In addition, it was the purpose to explore effective strategies used by CTE programs with high enrollment to recruit and enroll students in their CTE programs of study. Finally, it was the purpose of this study to identify which effective strategies were perceived by CTE coordinators as most beneficial for implementing current CTE programs. Four research questions guided this study:

1. What factors do CTE administrators perceive that discourage student enrollment in secondary CTE programs?
2. What factors do CTE administrators perceive that encourage student enrollment in secondary CTE programs?
3. What strategies do secondary CTE programs with high enrollment employ to recruit and enroll students in CTE programs?
4. Which strategies for increasing student enrollment in secondary CTE programs are perceived by CTE administrators as most beneficial for implementation?

A mixed-methods approach was used in this study, which included personal interviews followed by an electronic survey. The interview data were transcribed, entered into NVivo, and analyzed for emerging themes. Data from Research Question Three were

included in the electronic survey and distributed to the interviewees. These data were used to answer Research Question Four.

The population consisted of California school district administrators responsible for managing Perkins funds, who were also likely to be responsible for establishing district policy related to career and technical education. The sample included 17 CTE administrators who participated in the 15 interviews conducted by the researcher.

Major Findings

The central purposes of this study were to determine the factors that influenced enrollment in CTE programs at California comprehensive high schools and to determine the most beneficial recruitment methods for increasing enrollment in these CTE programs. The following section is a summary of the major findings presented in Chapter IV.

Major Finding 1: Discouraging Factors

Two factors emerged that CTE administrators though discouraged enrollment in CTE programs: the negative stigma regarding CTE programs and the school counselors.

Major Finding 2: Encouraging Factors

Four factors were identified by CTE directors that encouraged enrollment in CTE programs:

- Quality or Relevant Program
- Employment or Additional Education
- Graduation Requirement
- Positive Perception of CTE

Major Finding 3: CTE Recruitment Methods

CTE administrators identified a variety of recruitment methods used by CTE programs at comprehensive high schools in California. However, only one individual recruitment method was mentioned by more than 7 of the 17 CTE administrators interviewed, promotion at the feeder schools, which was mentioned by 11 of the administrators. Although this was the predominate recruitment method used, the sentiment from the CTE administrators was that multiple recruitment methods were necessary.

Major Finding 4: Rating Recruitment Methods

Based on the CTE director ratings, the most beneficial methods for increasing enrollment in CTE programs were:

- Visits to CTE Classrooms
- Feeder School Promotion
- Recruitment Specialist
- Student and Product Showcase
- Students Visible in Community

Unexpected Findings

Two unexpected findings emerged from this study. First, there was no central source of detailed information about CTE programs of study at the county level. Although some data were available about programs that were considered ROP, little data about non-ROP programs existed outside of the individual districts themselves. The second unexpected finding from this study revealed that there was little agreement between interviewees on the topic of best recruitment methods. Interviewees listed many

different methods used to recruit students in their districts. There was a higher level of agreement on the topic of factors that discouraged enrollment. For example, negative stigma was mentioned by 13 CTE administrators as a factor that discouraged enrollment.

Conclusions

Based on the findings of this study, conclusions were drawn that related to how specific factors could positively or negatively impact student enrollment and the recruitment methods considered most beneficial for increasing student enrollment in CTE.

Conclusion One: The negative stigma associated with CTE programs and lack of support from counseling staff decreased student enrollment in CTE courses.

Data from this study that supported this conclusion included:

1. Thirteen of the 17 CTE administrators interviewed for this study mentioned 39 times that a negative stigma was a factor that discouraged students from enrolling in CTE programs.
2. Ten of the 17 CTE administrators mentioned counselors 22 times as a factor that discouraged students from enrolling in CTE programs.

Conclusion Two: Quality and relevant CTE programs that promote a positive perception of CTE led to increased enrollment.

Data from this study that supported this conclusion included:

1. Six CTE administrators mentioned a quality or relevant program 20 times as a factor that encouraged students to enroll in CTE programs.
2. Four CTE administrators mentioned a positive perception of CTE 17 times as a factor that encouraged enrollment in CTE programs.

Conclusion Three: The adoption of CTE as a graduation requirement, the development of postsecondary educational opportunities, and the development of linkages with local business and industry to create employment opportunities for graduates were all factors that led to increased enrollment in CTE.

Data from this study that supported this conclusion included:

1. Four CTE administrators mentioned 17 times that adding a CTE course as a graduation requirement would encourage enrollment in CTE programs.
2. Four CTE administrators mentioned 17 times that postsecondary or employment linkages would encourage enrollment in CTE programs.

Conclusion Four: CTE administrators throughout southern California were divided about the factors that would encourage enrollment in CTE.

Data from this study that supported this conclusion included:

1. Only 6 of the 17 CTE administrators mentioned a quality or relevant program as a factor that would encourage enrollment in CTE programs. The other factors that would encourage enrollment were not mentioned by as many CTE administrators.

Conclusion Five: Recruitment methods with the greatest potential for increasing enrollment in CTE programs required building awareness of the program either by bringing constituents to the CTE classroom or taking the program to the community.

Data from this study that supported this conclusion included:

1. When presented with a list of CTE recruitment methods, CTE administrators rated *Visits to CTE Classrooms* as the top choice with a score of 4.64 out of 5.

2. When presented with a list of CTE recruitment methods, CTE administrators rated *Feeder School Promotion* a 4.27 out of 5. This recruitment method was also mentioned most often, with 11 CTE administrators mentioning it.
3. When presented with a list of CTE recruitment methods, CTE administrators rated *Students Visible in Community* a 4.27 out of 5.
4. When presented with a list of CTE recruitment methods, CTE administrators rated *Student and Product Showcase* a 4.27 out of 5.

Implications for Action

The implications developed from the data presented in this research have the potential to positively impact enrollment in CTE programs at comprehensive high schools in southern California. The data and conclusions drawn from the data could aid policymakers, counties, school boards, district CTE administrators, and CTE instructors.

Implication for Action One

Programs and districts must actively work to reduce the negative stigma associated with CTE. The negative stigma associated with CTE mainly fell into one of two areas, either the perception that CTE was for "the dumb kids" or that CTE courses led to career fields that parents and other families did not want for their children. CTE programs must actively promote opportunities at all levels for students participating in CTE pathways.

For example, in the automotive pathway, students learn entry level skills that would allow them to obtain employment at a dealership or independent repair facility performing tasks such as oil changes, tire service, or brake service. Those same students could continue their education at the community college or trade school level and become

certified technicians working for dealerships or independent repair facilities performing diagnostics and repairs of highly complex vehicles such as hybrids and luxury cars. Students with additional ambition could decide to open their own repair facility and transition to the role of business owner. Other students could attend a university and pursue a degree in mechanical, electrical, or aerospace engineering. The fundamental skills obtained through participation in a CTE pathway transferred to all of these career fields. CTE did not limit students, it only opened doors. Each of the 58 career pathways within the 15 industry sectors would have similar examples available.

1. CTE programs must actively market their success stories. Parents need to see that a student enrolled in a construction class in high school can become the owner of a successful construction company. CTE does not limit opportunity, but rather CTE provides a stepping stone to opportunity.
2. Districts must ensure that CTE program enrollments demographically match the overall makeup of the school. With the widespread approval of CTE courses by the university system, all students should be able to freely choose to enroll in CTE without jeopardizing university options. Perpetuating the perception that CTE courses are for students not successful in academic courses by allowing CTE courses to have a greater proportion of special needs students, minority students, or students with a low GPA prolongs the negative stigma associated with CTE.

Implication for Action Two

Programs and districts must ensure that counselors support each CTE program by assisting with marketing (through direct and indirect contact with students) and by

placing students in programs where they have an interest rather than placing them in a program to fill their schedule or earn elective credits.

First and foremost, counselors are responsible to ensure students meet the requirements for high school graduation. Secondarily, counselors are strongly encouraged to ensure that all students meet the UC A-G entrance requirements. These two foci can run counter to the needs of the CTE program if counselors are not well-informed about the CTE programs on their campus. Conversely, if counselors are well-informed, they will be more likely to place students in programs that fit the needs and interests of the student. Time spent educating counselors, either by meeting with them in their office or bringing them to the CTE classroom to experience students in the learning environment first hand is highly valuable and will positively impact the CTE program.

1. Districts must stop instructing counselors to place students in advanced placement, international baccalaureate, and other college bound courses unless the student identified goals that make those programs appropriate. Districts are failing students if counselors are advising students based on how student choices will impact the school's academic performance index (API) rating.
2. Going to college is not a career goal. Counselors must work with each student to develop a 10-year plan that leads to a career, not education. Education is the means, not the end. The plan must be a collaborative effort between the student, counselor, and parents. Once the plan has been established, the counselor may more effectively inform the student of the options available to help the student meet his or her career goals. These options may, if districts collaborate, allow students to attend other schools outside their home district

to participate in pathways not available at their home school. No comprehensive high school can be everything to all students. The assembly line model of education is broken.

3. CTE programs must market directly to counselors. Counselors control access to the raw materials necessary for a successful CTE program. Counselors want the best for their students, but cannot risk a student's future opportunity on a gamble. They need to know exactly how the student will benefit by participating in CTE to be able to place students in the program.

Implication for Action Three

The single most important factor that encourages students to enroll in CTE programs is the quality and relevance of the program. The development of a quality program leads to a positive perception of CTE. Districts must focus on ensuring that programs are relevant to student interests and that everything about the program, from the facility to the equipment and instruction, is of the highest quality.

The most effective way to ensure a quality CTE program is to meet the standards established by the *11 Elements of a High-Quality CTE Program Self Rating Tool* (CDE, 2015a). Criteria outlined in this document included the establishment of a state-recognized CTSO; refresher training/externships for instructors; industry standard tools, materials, and equipment; and an advisory board.

1. Districts must provide the resources necessary for programs to achieve the standards described by the *11 Elements of a High-Quality CTE Program Self Rating Tool* (CDE, 2015a).

2. CTE programs must have structures in place to regularly review the program against the *11 Elements of a High-Quality CTE Program Self Rating Tool* (CDE, 2015a) to ensure high-quality, relevant instruction.
3. Students must be given the opportunity to provide input into the decision-making process. The most appropriate way to do this is to appoint one or multiple students to the advisory board for each CTE program.

Implication for Action Four

Programs that meet a graduation requirement, lead directly to postsecondary opportunities, or lead to employment are more valuable to students and experience greater enrollment.

Sometimes students need external motivation to take a leap of faith on a CTE pathway. Districts can encourage students to try CTE by making CTE part of the district graduation requirement. For other students, postsecondary opportunities such as guaranteed enrollment in highly impacted university programs or articulated credit at community colleges could be the incentive needed to become part of a CTE program. Many students, regardless of future goals and aspirations, need to obtain at least part-time employment either while in high school or immediately following graduation. By developing relationships with local educational institutions and employers, CTE programs could create opportunities to attract students to the program.

1. Districts should, at a minimum, adopt the provisions of SB 70, which allows students to take a CTE course to meet the fine arts graduation requirement.
2. Districts should require students to complete at least one year of CTE as a graduation requirement. Ideally, districts should require students to complete a

pathway (sequence of three to four courses), but requiring any CTE courses for graduation would be the first step.

3. Districts serving secondary students must work with postsecondary institutions to streamline the articulation process.
4. Districts must provide the resources necessary to engage local businesses and industry in developing pathways to employment for students who complete a sequence of courses in a CTE pathway. Business owners and managers are usually busy running their businesses. They tend not to be predisposed to developing relationships with local high school CTE programs. The high school program is selling a product and needs to be provided with the resources to effectively market that product.
    a. Districts must provide the time necessary for CTE instructors to meet with local businesses and industry. This could include meetings with the Chamber of Commerce or with businesses directly. The initial investment in teacher release time would be great, but should decline as relationships are developed. The funding for release time would not go away completely as support from local businesses is not constant and new relationships should be continuously pursued.
    b. Districts must provide the time and transportation resources necessary for CTE instructors to transport students to the CTE classroom from feeder schools or to transport current CTE students, equipment, and materials to feeder schools to bring as much of the CTE experience to potential students as reasonably possible.

c. Districts must establish structures that encourage vertical collaboration between CTE teachers and their feeder schools. Structures such as common collaboration time and similar bell schedules are examples of these structures.

Implication for Action Five

CTE administrators throughout southern California must develop data related to the most effective recruitment methods and then collaborate to develop recruitment programs that take advantage of the most effective recruitment methods.

One geographic region in southern California created a partnership between all of the districts in the area, actively shared data, and worked together to benefit all students throughout the region. Although this partnership was new, the benefits of working together on a larger scale seemed to already be having an impact. Bringing each geographic region together on a regular basis to collectively solve problems and share best practices would be highly beneficial. It would take time and resources to develop this leadership structure, but as one region experienced, the benefit outweighed the expense.

1. Each geographic region should develop an organization to coordinate relationships between the various governmental agencies involved in CTE within that region. Some areas have called this organization a Joint Powers Agency (JPA). The purpose of this agency would be to promote vertical integration between districts serving secondary students and community college districts. The JPA should investigate the integration of private, for-profit technical schools and union training programs into the agency. The JPA

would also coordinate between districts to make information, resources, and student sharing between districts as seamless as possible.

2. The state of California should develop a CTE data reporting system that is effective and efficient. This system may, to meet the goals of effective and efficient, need to be separate from the data reporting system tied to Perkins funding. The data system should be able to store qualitative data in addition to quantitative data. The data system should have the capability to track students enrolled in any public institution as well as those in private institutions that choose to participate. This would make the analysis of longitudinal data more convenient than what is currently available.

Implication for Action Six

To best recruit students into CTE programs of study, bring potential students and the community into the CTE classroom, and when that is not possible, have students take the CTE classroom to the potential students and the community.

Marketing a CTE program is necessary. It is not possible to have a CTE program with consistently high enrollment without marketing. The findings of this study indicated that the most effective method of marketing was bringing potential students into the CTE classroom to experience it firsthand. Students visiting the classroom should have the opportunity to participate in sample activities and speak with current and former students. If bringing potential students to the classroom is not possible, CTE instructors should take components of the CTE program to potential students. Attempt to provide the same rich experience those students would have received if they were able to tour the CTE facility, including sample activities and conversations with current and former students.

In addition to marketing to potential students, a CTE program marketing plan needs to include reaching out to the community. This is where a strong CTSO would be beneficial. CTSO students should make presentations to the school board, community organizations, and service clubs such as the Chamber of Commerce, Rotary, or Optimist club. Likewise, CTSO students should be encouraged to perform community service projects. Community service projects bring recognition to the CTE program. Public displays of student work are also important. Opportunities such as county fairs and displays in shopping malls were mentioned by the CTE administrators in this study. CTE administrators also mentioned awards ceremonies specifically for CTE students and having students present their work during advisory meetings.

1. Districts must collaboratively develop marketing plans for each CTE pathway. First and foremost, the CTE programs are selling a product to local businesses and industry or postsecondary institutions. CTE programs must have the opportunity to meet with those potential customers to market their products. Also, unlike most companies, CTE programs cannot simply purchase the raw materials necessary to produce their product, so CTE programs must also undertake marketing to generate a reliable stream of raw materials.

Recommendations for Further Research

Based on the findings and limitations of this study, further research in the following areas related to CTE recruitment is recommended.

Recommendation One

Negative perceptions of CTE are the greatest detractor from CTE enrollment. Although research exists to explain the negative stigma associated with CTE, more

research should be done to determine how best to create a mindset that CTE is valuable for all students and does not limit student potential.

Recommendation Two

More than one CTE administrator mentioned the teacher as the factor with the greatest potential to increase enrollment in CTE programs. More research should be done to determine the characteristics of a highly effective CTE instructor, such as which characteristics are the most valuable and which characteristics have the least impact.

Recommendation Three

Additional research should be conducted to determine the impact of increased alignment between academics and CTE programs. With the additional rigor demanded for A-G approval, writing, mathematics, and science concepts are becoming a larger part of the CTE environment. Future research should examine if this increased emphasis within the CTE environment has an impact on student performance in academic courses, and what could be done to increase the skills transfer between CTE and academics.

Recommendation Four

Additional research should be conducted to determine if a correlation exists between student participation in CTE courses and success in higher education. A longitudinal study examining students who completed a CTE pathway should be conducted to determine if those students were more or less likely to persevere at the community college and university level. This should examine other factors such as participation in a CTSO and the technical skills learned in a high school CTE program. Further, a study should explore whether agreements between high school CTE programs

and community colleges, trade schools, union training programs, or universities, such as articulation agreements or guaranteed admission, impact CTE enrollment.

Recommendation Five

Additional research should be conducted into the benefits of participation in leadership activities through CTSOs. A longitudinal study tracking students who participate in CTSO leadership activities (e.g., state or local CTSO officers) would develop concrete data showing the impact of participation in CTSO leadership activities. Universities created the impression that the only way to be successful was to earn a bachelor's degree or higher, but it is unknown how students with CTSO leadership experiences compare to students who earn a bachelor's degree or higher.

Recommendation Six

Additional research should be conducted to determine how to effectively and efficiently share information about district CTE programs with other districts, the county, and the state. A study should be conducted to examine best practices for sharing qualitative and quantitative data about CTE programs. The availability of these data could have the potential to increase the quality of CTE programs throughout the state, so the efficient transfer of data between districts related to best practices is essential.

Recommendation Seven

Additional research should be conducted into the value of career training versus career exploration at the high school level. It is unknown how preparation for entry level employment compares to allowing students to experience various career fields to shape their future plans. CTE administrators interviewed for this study were divided on the purpose of CTE at the high school level. Some CTE administrators felt that CTE existed

to train students for entry-level positions that would support the needs of local business and industry whereas others felt that CTE at the high school level should be more general and allow students to explore areas of interest or develop fundamental skills with a wide range of applications. An example of this argument would be teaching basic shop classes (e.g., wood shop, metal shop, auto shop) versus teaching sheet metal working to support the heating and air conditioning area of the construction industry or welding to support the wine making industry's need for stainless steel vessels.

Recommendation Eight

Just over half (9/17) of the CTE administrators reported experience as a CTE teacher. Additional research should be done to determine if CTE administrators with experience as CTE teachers are more or less effective than CTE administrators without CTE teaching experience. This would address whether a person establishing policy related to CTE is more effective if they experienced teaching in the CTE classroom and dealing with the challenges unique to CTE.

Concluding Remarks and Reflections

As I reflect on the process of completing this dissertation, I cannot help but realize how my knowledge of CTE has grown. Through this research, I learned so much about the history of CTE and the path it took over the years.

I come from a family of well-educated parents, both of whom were educators. Although it was not a common topic of discussion, it was known that I would attend college. What was not clear was the career path I would follow. I, as encouraged by both of my parents, participated in music during high school. Taking these courses left me no time to take other electives. From a young age, I had a passion for working with cars.

When I expressed an interest in taking an automotive class, it was brought to my attention that students like me did not take courses like that. School came easy for me. I sailed through high school. After high school, I attended the local community college, floundering around with different courses, but not in any particular direction. When I transferred to a four-year college, I decided to follow the path of my parents and go into the field of education. While talking to one of my professors, he discovered that I lacked the motivation and passion for my major, math education. He walked me down to the Industrial Technology Lab and introduced me to CTE. For the first time, I felt strongly about what I wanted to do with my life and the direction I wanted to head. I wanted to make a difference in the lives of high school students who, like myself, lacked direction. I wanted students to know they could follow their passion in and after high school.

I enjoy my career as a CTE instructor. Working with these students has been rewarding. Seeking a higher education was never a passion of mine; however, I began the journey when a friend asked me to join her. Little did I know this endeavor would be life-changing. I grew both personally and professionally. I became a better teacher, a better leader, and a better person. I also noticed a difference in my students and those who work with me. I attribute some of those differences to the leadership changes I experienced. I learned how to approach and respond to situations differently. Through this program, I also learned about grit. As I stated earlier, school was always easy for me. However, working through this doctoral program was not. There were times when I thought I wanted to give up on this journey, but knew that was not really an option. I started this program on a whim and finished it with an appreciation of hard work and determination.

REFERENCES

ACT. (2013). *The condition on college & career readiness 2013.* Iowa City, IA: Author. Retrieved from www.act.org/readiness/2013

Ainsworth, J. W., & Roscigno, V. J. (2005). Stratification, school-work linkages, and vocational education. *Social Forces, 84*(1), 257-284. doi: 10.1353/soc.2005.0087

Aliaga, O. A., Kotamraju, P., & Stone III, J. R. (2014). *Understanding participation in secondary career and technical education in the 21st century: Implications for policy and practice.* The University of North Carolina Press.

Apprenticeship in England. (2014). Retrieved from https://familysearch.org/learn/wiki/en/Apprenticeship_in_England

Assembly Bill 1330. (2011). Retrieved from http://www.leginfo.ca.gov/pub/11-12/bill/asm/ab_1301-1350/ab_1330_bill_20111008_chaptered.html

Association for Career and Technical Education. (1976). The vocational age emerges, 1876-1926. Retrieved from https://www.acteonline.org/uploadedFiles/Assets_and_Documents/Global/files/CTE_Info/Research/Vocational-Age-Emerges_1876-1926.pdf

Association for Career and Technical Education. (n.d.-a). Carl D. Perkins act. Retrieved from https://www.acteonline.org/perkins/#.VcwZnBNViko

Association for Career and Technical Education. (n.d.-b). What is CTE? Retrieved from https://www.acteonline.org/cte/#.VZkxkRNVikp

Association of California School Administrators. (n.d.). Final budget analysis of the 2013-14 budget act. Retrieved from

http://www.acsa.org/MainMenuCategories/Advocacy/LCFF/2013-14FinalBudgetAnalysis.aspx

Badke, W. (2012, April 2). *Should everyone go to university?* Retrieved from https://evolllution.com/opinions/should-everyone-go-to-university/

Bachofer, K. V., Betts, J., & Zao, A. (2014). *An evaluation of the outcomes of career and technical education in San Diego Unified School District: A descriptive case study.* Washington, DC: U.S. Department of Education, Office of the Under Secretary.

Baldwin, D. L. (2011). *An analysis of perceptions of career technical education in Alabama's schools* [Doctoral dissertation]. Available from ProQuest Dissertations & Theses. (UMI No. 3464443)

Barlow, M. L. (1976). *Implications from the history of vocational education* [Transcription]. Columbus, OH: The Center for Vocational Education.

Benavot, A. (1983). The rise and decline of vocational education. *Sociology of Education, 56*(2), 63-76.

Bidwell, A. (2014, February 5). Report: STEM job market much larger than previously reported. *U.S. News and World Report*. Retrieved from http://www.usnews.com/news/stem-solutions/articles/2014/02/05/report-stem-job-market-much-larger-than-previously-reported

Blake, I. A. (n.d.). What is the job training partnership act? *Houston Chronical* [online]. Retrieved from http://smallbusiness.chron.com/job-training-partnership-act-43539.html

Bozick, R., & Dalton, B. (2013, June 2013). Balancing career and technical education with academic coursework: The consequences for mathematics achievement in high school. *Educational Evaluation and Policy Analysis*, *35*(2), 123-138. http://dx.doi.org/10.3102/0162373712453870

Brown, A. C. (2009). *Factors and perceptions that affect enrollment in career and technical education programs in rural east central Mississippi* [Doctoral dissertation]. Available from ProQuest Dissertations & Theses. (UMI No. 3386307)

California Community Colleges Chancellor's Office. (2015, January 20). *First California community college bachelor's degree programs receive initial approval from board of governors* [Press release]. Retrieved from http://californiacommunitycolleges.cccco.edu/Portals/0/DocDownloads/PressReleases/JAN2015/PR_4yrDegree-January-20-2015_final.pdf

California Department of Education. (1983). *Summary of SB 813 and related legislation. 2-27*. Sacramento, CA: Author. Retrieved from http://files.eric.ed.gov/fulltext/ED241155.pdf

California Department of Education. (2007). *Career technical education framework for California public schools.* Sacramento, CA: Author. Retrieved from http://www.cde.ca.gov/ci/ct/sf/documents/cteframework.pdf

California Department of Education. (2008). *Regional occupational centers and programs: Operations handbook.* Sacramento, CA: Author. Retrieved from http://cte-ects.info/She1000/Resources/ROCPOperationsHandbook.pdf)

California Department of Education. (2009). *History of the California State Department of Education, 1900-1967.* Sacramento, CA: Author. Retrieved from http://www.cde.ca.gov/nr/re/hd/documents/yr1968hd11b.pdf

California Department of Education. (2013). *California common core state standards.* Sacramento, CA: Author. Retrieved from http://www.cde.ca.gov/be/st/ss/documents/finalelaccssstandards.pdf

California Department of Education. (2014a). *California career pathways trust.* Sacramento, CA: Author. Retrieved from http://www.cde.ca.gov/ci/ct/pt/

California Department of Education. (2014b). *Report of survey results on the inclusion of new indicators on the high school academic performance index (API).* Sacramento, CA: Author. Retrieved from http://www.cde.ca.gov/ta/ac/ap/documents/newindicatorsapi.pdf

California Department of Education. (2015a). *11 elements of a high-quality CTE program self review tool*. Sacramento, CA: Author. Retrieved from http://www.cde.ca.gov/ci/ct/pk/forms.asp

California Department of Education. (2015b). *California career technical education incentive grant.* Sacramento, CA: Author. Retrieved from http://www.cde.ca.gov/fg/fo/profile.asp?id=3822

California Department of Education. (2015c). *Content standards*. Sacramento, CA: Author. Retrieved from http://www.cde.ca.gov/ci/ct/sf/ctemcstandards.asp

California Department of Education. (2015d). *Funding results: Carl D. Perkins career & technical education*. Sacramento, CA: Author. Retrieved from http://www.cde.ca.gov/fg/fo/r17/perkins15result.asp

California Department of Education. (2016a). *Academic performance index (API).* Sacramento, CA: Author. Retrieved from http://www.cde.ca.gov/ta/ac/ap/

California Department of Education. (2016b). *LCFF frequently asked questions.* Sacramento, CA: Author. Retrieved from http://www.cde.ca.gov/fg/aa/lc/lcfffaq.asp#CAT

California Department of Education. (n.d.-a). *CTE model curriculum standards.* Sacramento, CA: Author. Retrieved from http://www.cde.ca.gov/ci/ct/sf/ctemcstandards.asp

California Department of Education. (n.d.-b). *Senate bill 70 program summary.* Sacramento, CA: Author. Retrieved from http://www.cde.ca.gov/ci/ct/gi/sb7007summary.asp

California Department of Education. (n.d.-c). *What are the common core standards?* Sacramento, CA: Author. Retrieved from http://www.cde.ca.gov/re/cc/tl/whatareccss.asp

California Legislative Information. (n.d.). *AB-86 education finance: education omnibus trailer bill.* Sacramento, CA: Author. Retrieved from http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201320140AB86

California PTA. (n.d.). *Local control and accountability plan [LCAP]*. Sacramento, CA: Author. Retrieved from http://downloads.capta.org/edu/e-school-finance/LCAP.pdf

Cashen, M. E. (2014). *Career and technical education across three decades: 1982-2004* [Doctoral dissertation]. Available from ProQuest Dissertations & Theses.

Castellano, M., Stringfield, S., & Stone, III, J. R. (2003, Summer). Secondary career and technical education and comprehensive school reform: Implications for research and practice. *Review of Educational Research, 73*(2), 231-272. doi: http://dx.doi.org/10.3102/00346543073002231

Chadd, J. A., & Drage, K. (2006). No child left behind: Implications for career and technical education. *Career and Technical Education Research, 31*(2), 79-99. Retrieved from http://thekeep.eiu.edu/cgi/viewcontent.cgi?article=1002& context=tech_fac

Chait, D. D. (2013, August 15). Why the motto 'if you build it, they will come' is BS. *Entrepreneur.* Retrieved from https://www.entrepreneur.com/article/227850

Chapman, J. I. (n.d.). *Proposition 13: Some unintended consequences*. Sacramento, CA: Public Policy Institute of California. Retrieved from http://www.ppic.org/content/pubs/op/OP_998JCOP.pdf

Chenail, R. J. (2011). Interviewing the investigator: Strategies for addressing instrumentation and researcher bias concerns in qualitative research. *The Qualitative Report, 16*(1), 255-262.

CNN Money. (n.d.). *World's largest economies*. Retrieved from http://money.cnn.com/news/economy/world_economies_gdp/

Cohen, M., & Besharov, D. J. (2002). *The role of career and technical education: Implications for the federal government* (ED-99-CO-0160). Washington, DC: Government Printing Office.

Collins, K. M., Onwuegbuzie, A. J., & Jiao, Q. G. (2006). Prevalence of mixed-methods sampling design in social science research. *Evaluation & Research in Education, 19*(2), 83-101. doi: http://dx.doi.org/10.2167/eri421.0

Colvin, R. L. (2012). *Measures that matter: Why California should scrap the academic performance index.* Washington, DC: Education Sector. Retrieved from http://educationpolicy.air.org/sites/default/files/publications/measuresthatmatter-released.pdf

ConnectEd. (n.d.). ConnectEd website. Retrieved from http://connectedcalifornia.org/

Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed-methods approaches.* Thousand Oaks, CA: Sage Publications.

Creswell, J. W., & Plano Clark, V. L. (2007). *Designing and conducting mixed-methods research*. Thousand Oaks, CA: Sage Publications.

De Vore, B. M. (2008). *Attitudes and perceptions of high school career and technical education in California's central valley* [Doctoral dissertation]. Available from ProQuest Dissertations & Theses.

Edmonds, W. A., & Kennedy, T. D. (2013). *An applied reference guide to research designs; Quantitative, qualitative, and mixed-methods*. Thousand Oaks, CA: Sage Publications.

EdSource. (n.d.). *Local control funding formula guide*. Retrieved from http://edsource.org/publications/local-control-funding-formula-guide

EdSynergy. (n.d.). *$900 million in CTE incentive grants available.* Retrieved from http://www.edsynergy.org/900-million-in-cte-incentive-grants-available.htm

Education Commission of the States. (2014). Career and technical education: States aligning programs to meet workforce needs. *Progress of Education Reform, 15*(2), 1-7.

European Commission. (n.d.). *Compulsory education in Europe 2014/15*. Retrieved from http://eacea.ec.europa.eu/education/eurydice/documents/facts_and_figures/compulsory_education_EN.pdf

Findlaw. (n.d.). *Compulsory education*. Retrieved from http://education.findlaw.com/education-options/compulsory-education.html

Fleming, K. J. (2014). *Maintaining strategic relevance: Career & technical education discontinuance in California community colleges* [Doctoral dissertation]. Available from ProQuest Dissertations & Theses.

Franz, J. D. (1979). *A study of the impact of Proposition 13 on vocational education Technical report* [Abstract]. Retrieved from http://eric.ed.gov/?id=ED171917

Fritts, R. (2014). *Why are so many students choosing to take an advanced mathematics course?* [Doctoral dissertation]. Retrieved from http://search.proquest.com/docview/1622571432?accountid=10051

Gaunt, D. P. (2005). *High school seniors' perceptions of career and technical education and factors influencing their decision to attend an area career technical center* [Doctoral dissertation]. Available from ProQuest Dissertations & Theses. (UMI No. 3183588)

German Missions in the United States. (n.d.). *The German vocational training system: An overview.* Retrieved from

http://www.germany.info/Vertretung/usa/en/06__Foreign__Policy__State/02__Foreign__Policy/05__KeyPoints/Vocational__Training.html

Gordon, H. R. (2008). *The history and growth of career technical education in America* (3rd ed.). Long Grove, IL: Waveland Press.

Guttman, R. (1983, March). Job training partnership act: New help for the unemployed. *Monthly Labor Review,* p. 1-10. Retrieved from http://www.bls.gov/opub/mlr/1983/03/art1full.pdf

Hanford, E. (2014, September 09). *The troubled history of vocational education.* St. Paul, MN: American RadioWorks. Retrieved from http://www.americanradioworks.org/segments/the-troubled-history-of-vocational-education/

Harvard University. (n.d.). *Harvard at a glance: History*. Cambridge, MA: Author. Retrieved from http://www.harvard.edu/about-harvard/harvard-glance/history

Hesse-Biber, S. N. (2010). *Mixed-methods research: Merging theory with practice*. New York, NY: Guilford Press.

History Channel. (n.d.-a). *California becomes the 31st state in record time.* New York, NY: Author. Retrieved from http://www.history.com/this-day-in-history/california-becomes-the-31st-state-in-record-time

History Channel. (n.d.-b). *Rosie the riveter.* New York, NY: Author. Retrieved from http://www.history.com/topics/world-war-ii/rosie-the-riveter

Horan, J. M. (1993). *The future of unskilled labor: Low demand - low wage*. Retrieved from https://ia802607.us.archive.org/35/items/ERIC_ED363737/ERIC_ED363737.pdf

Levesque, K., & Hudson, L. (2003). *Trends in high school vocational/technical coursetaking: 1982-1998.* Washington DC: U.S. Department of Education, National Center for Education Statistics. Retrieved from https://nces.ed.gov/pubs2003/2003025.pdf

Lombard, M., Snyder-Duch, J., & Braken, C. C. (2004). *Practical resources for assessing and reporting intercoder reliability in content analysis research projects.* Available from http://www.temple.edu/sct/mmc/reliability/

Marcus, J. (2014). *How to educate Americans for jobs? Ask the Germans, employers urge.* Retrieved from http://www.pbs.org/newshour/updates/educate-americans-jobs-ask-germans-employers-urge/

McMillan, J. H., & Schumacher, S. (2010). *Research in education* (7th ed.). Upper Saddle River, NJ: Pearson Education.

Meehan, B. (2013, November 26). Avoiding the pitfalls of inter-rater reliability testing [Web log post]. Retrieved from http://www.qsrinternational.com/blog/avoiding-the-pitfalls-of-inter-rater-reliability-t

Mirel, J. (2006). *The traditional high school: Historical debates over its nature and function*. Retrieved from http://educationnext.org/the-traditional-high-school/

Mitchell, D. E., & Hecht, J. (1989). *Quality and effectiveness of California's regional occupation centers and programs*. Retrieved from https://ia802605.us.archive.org/10/items/ERIC_ED316653/ERIC_ED316653.pdf

Moore, C., & Shulock, N. (2012). *State and system policies related to career technical education: Program offerings - a working paper*. Retrieved from http://www.csus.edu/ihelp/PDFs/B_CTE_programs_final.pdf

National Association for Social Workers. (1996). *Personal responsibility and work opportunity reconciliation act of 1996.* Washington, DC: Author.

National Center for Education Statistics. (n.d.). *Common core of data.* Retrieved from https://nces.ed.gov/ccd/districtsearch/

National Center on Education and the Economy. (1990). *American's choice: High skills or low wages.* New York, NY: Author. Retrieved from http://www.ncee.org/wp-content/uploads/2013/09/Americas-Choice-High-Skills-or-Low-Wages.pdf

Organisation for Economic Co-Operation and Development. (2010). *Vocational education and training in China: Strengths, challenges and policy options*. Retrieved from http://www.oecd.org/education/skills-beyond-school/45494135.pdf

Patten, M. L. (2012). *Understanding research methods: An overview of the essentials* (8th ed.). Glendale, CA: Pyrczak.

Patton, M. Q. (2002). *Qualitative research and evaluation methods.* Thousand Oaks, CA: Sage Publications.

Perry, J. C., & Wallace, E. W. (*2012*, Summer 2012). What schools are doing around career development: Implications for policy and practice. *New Directions for Youth Development, 2012*(134), 33-44. doi: http://dx.doi.org/10.1002/yd.20013

Poggenpoel, M., & Myburgh, C. (2003). The researcher as research instrument in educational research: A possible threat to trustworthiness? *Education, 124*(2), 418-421.

Roberts, C. M. (2010). *The dissertation journey: A practical and comprehensive guide to planning, writing, and defending your dissertation* (2nd ed.). Thousand Oaks, CA: Corwin Press.

Rossetti, R., Elliot, J., Price, C. L., & McClay, P. S. (1990). *An examination of factors influencing students not to enroll in secondary vocational education.* Columbus, OH: Ohio State University, Department of Agricultural Education.

Saunders, M., Lewis, P., & Thornhill, A. (2016). *Research methods for business students* (7th ed.). Saddle River, NJ: Pearson Education.

Senate Bill 383, Postsecondary readiness commission. (2003, March 26). Retrieved from ftp://leginfo.public.ca.gov/pub/03-04/bill/sen/sb_0351-0400/sb_383_cfa_20030408_084238_sen_comm.html

Shanklin, S. L. (2014). *Educators' perceptions and value of career technical education programs* [Doctoral dissertation]. Available from ProQuest Dissertations & Theses. (UMI No. 3613539)

St. Gean, L. M. (2010). *High school students' perceptions of career technical education and factors that influence enrollment in programs at regional occupational center* [Doctoral dissertation]. Available from ProQuest Dissertations & Theses. (UMI No. 3419760)

Steffes, T. L. (n.d.). *Smith-Hughes Act.* Retrieved from http://www.britannica.com/topic/Smith-Hughes-Act

Stern, D., & Stearns, R. (2006). *Combining academic and career-technical courses to make college an option for more students: Evidence and challenges*. Retrieved from http://www.connectedcalifornia.org/downloads/Stearns.pdf

Strohschein, M. L. (2012). *Academic and career readiness attainment in career technical education* [Doctoral dissertation]. Available from ProQuest Dissertations & Theses.

Teddlie, C., & Tashakkori, A. (2009). *Foundations of mixed-methods research: Integrating quantitative and qualitative approaches in the social and behavioral sciences*. Thousand Oaks, CA: Sage.

The White House; Office of the Press Secretary. (2013). *Remarks by the president in the state of the union address.* Retrieved from https://www.whitehouse.gov/the-press-office/2013/02/12/remarks-president-state-union-address

Tokyo International Communication Committee. (2006). *Comprehensive living guide for foreign residents in Japan.* Retrieved from http://www.tokyo-icc.jp/guide_eng/educ/01.html

Tsushima, C. (2015). *Building career and technical education capacity in California's secondary schools* [Doctoral dissertation]. Available from ProQuest Dissertations & Theses. (UMI No. 3739714)

U.S. Department of Education. (2012). *Investing in America's future: A blueprint for transforming career and technical education*. Retrieved from https://www2.ed.gov/about/offices/list/ovae/pi/cte/transforming-career-technical-education.pdf

U.S. Department of Education. (2014a). *Career, technical, and adult education: Fiscal year 2015 request.* Retrieved from http://www2.ed.gov/about/overview/budget/budget15/justifications/o-ctae.pdf

U.S. Department of Education. (2014b). *Programs: Tech-prep education*. Retrieved from http://www2.ed.gov/programs/techprep/index.html

U.S. Department of Education. (n.d.). *Elementary and secondary education act*. Retrieved from http://www.ed.gov/esea

U.S. Department of Education. (n.d.). *NCLB overview executive summary*. Retrieved from http://www2.ed.gov/nclb/overview/intro/execsumm.html

University Corporation for Atmospheric Research. (2014). *Congress looks to reauthorize America competes.* Boulder, CO: Author.

University of California. (2014). *Admission requirements*. Bakersfield, CA: Author. Retrieved from http://admission.universityofcalifornia.edu/freshman/requirements/

Vocational training in Germany. (n.d.). Retrieved from www.make-it-in-germany.com/en/for-qualified-professionals/working/prospects/vocational-training-in-germany

Voytek, S. (2015, December 23). Legislative update: Congress renews ESEA and passes an FY 2016 funding bill [Web log post]. Retrieved from http://blog.careertech.org/?cat=14

Wall Street Journal. (2013). *Full Text: Obama's state of the union address*. Retrieved from blogs.wsj.com/washwire/2013/02/12/full-text-obamas-state-of-the-union-address/

Wonacott, M. E. (2003). *History and evolution of vocational and career technical education. A compilation*. Retrieved from http://files.eric.ed.gov/fulltext/ED482359.pdf

APPENDICES

APPENDIX A: SYNTHESIS MATRIX

	Dissertation	Book	Website	Research Report or Journal Article	History of CTE and Legislation	California CTE	CTE Student Profile	Impact of CTE	Factors that influence enrollment
ACT. (2013).				X			X		
Ainsworth, J. W., & Roscigno, V. J. (2005).				X				X	
Allfeld, C., & Bhattacharya, S. (2013).				X				X	
Alonzo, V. S. (2011).	X					X			
Apprenticeship in England. (2014).			X						X
Association for Career and Technical Education. (n.d.).				X	X				
Association for Career and Technical Education. (1976).				X	X				
Association of California School Administrators. (n.d.).				X		X			
Barlow, M. L. (1976).				X	X				
Bergmann, A. (n.d.).			X						X
Bill number: 1330				X		X			
Blazejowski, L. (2013).	X				X		X		
Bottoms, G. (2002).				X			X		
Bottoms, G., & Feagin, C. (2003				X			X		
Bottoms, G., Pucel, D. J., & Phillips, I. (n.d.).				X			X		
Bozick, R., & Dalton, B. (2013, June 2013).				X				X	
Bragg, D. D. (1994, June 1994).				X				X	
Brewer, J., & Hunter, A. (1989).				X					X
Brown, B. L. (2003).				X			X		
CTE included in LCFF budget compromise. (2013).			X		X				
Cadena, N. (2013).	X			X		X			
California Legislative Information. (n.d.).			X			X			
California Law. (2012).			X			X			
CDE. (1983).			X			X			
CDE. (2013).			X			X			

CDE. (2014).			X			X			
CDE. (n.d.).			X			X			
Capriola, P. A. (2014).	X				X			X	
Cashen, M. E. (2014).	X				X				
Castellano, M., Stringfield, S., & Stone, III, J. R. (2003, Summer).	X								X
Catarro Jr., A. F. (2014).	X				X			X	
Chadd, J. A., & Drage, K. (2006).				X	X			X	
Chapman, J. I. (n.d.).			X			X			
CNN Money. (n.d.).			X						X
Cohen, M., & Besharov, D. J. (2002).		X						X	X
College Board. (2014).				X				X	
Collins, K. M., Onwuegbuzie, A. J., & Jiao, Q. G. (2006).	X								
ConnectEd. (n.d.).			X			X			
Creswell, J. W., & Plano-Clark, V. L. (2007).		X							X
Davidson, K. P. (2014).	X				X			X	
Domenico, D. M., & Jones, K. H. (2006, Fall 2006).				X	X			X	
Ed Source. (n.d.).			X			X			
Edmonds, W. A., & Kennedy, T. D. (2013).		X							
Education Commission of the States. (2014).				X	X			X	
European Commission. (n.d.).			X				X		
Findlaw. (n.d.).				X					X
Fleming, K. J. (2014).	X					X	X	X	
Floyd, L. S. (2014).	X				X			X	
Fritts, R. (2014).	X						X	X	
German Missions in the United States. (n.d.).			X				X		
Gordon, H. R. (2008).		X			X			X	
Green, R. (2012).	X							X	
Guthrie, J. W., Odden, A. R., Cagampang, H. H., & Picus, L. (1988).			X		X			X	
Hagen, S. N. (2010).	X				X			X	
Haniford, R. L. (2008).	X							X	
Hesse-Biber, S. N. (2010).	X						X	X	
Horan, J. M. (1993).	X				X				X
John P. Healey Library. (n.d.).			X		X				
Lessons of history: famous quotations and quotes. (n.d.).			X		X				

Marcus, J. (2014).			X					X	
McMillan, J. H., & Schumacher, S. (2010).		X							
Middleton, D. T. (2012).	X						X	X	
Mike Rowe Works Foundation. (n.d.).			X				X		
Mirel, J. (2006).			X				X		X
Mitchell, D. E., & Hecht, J. (1989).				X		X		X	
Moore, C., & Shulock, N. (2012).				X				X	
National Center for Education Statistics. (n.d.).			X		X			X	
Organisation for Economic Co-Operation and Development. (2010).			X					X	
Patten, M. L. (2012)..		X							
Peel, V. L. (2003).	X							X	
Perry, J. C., & Wallace, E. W. (2012, Summer 2012).			X				X	X	
Plano-Clark, V. L., & Creswell, J. W. (2008).		X							X
Society for Human Resource Management Foundation. (n.d.).			X					X	
St. Gean, L. M. (2010).	X						X	X	
Stern, D., & Stearns, R. (2006).			X				X	X	
Strohschein, M. L. (2012).	X						X		
Teddlie, C., & Tashakkori, A. (2009).		X							
The Association for Career and Technical Education. (2006).			X		X		X		
The Library of Congress. (2014).			X		X				
The White House; Office of the Press Secretary. (2013).			X						X
Thompson, B. A. (2005).	X				X				
US DOE. (2012).			X		X			X	
US DOE. (2014).			X				X		X
U.S. DOE. (n.d.).			X		X				X
Vocational training in Germany. (n.d.).			X				X	X	
Wall Street Journal. (2013).			X					X	
Whitecap, B. (n.d.).			X		X				
Wilson, D. H. (2010).	X						X	X	
Wonacott, M. E. (2003).				X	X			X	

APPENDIX B

One-On-One Interview Protocol

Interviewer: Richard Radcliffe

Date of Interview: _____ Time: _____

Place: _____

Interviewee: _____

Interviewee #: _____

Demographic Data:	Male	Female	
District Students:	0-5000	5000-25,000	25,000 +
District Community:	Urban	Suburban	Rural
District County:	_____		

Beginning of interview:

One-on-One Interview Script

*Good Morning/Afternoon/Evening Mr./Mrs.*_____,

a) *Thank you again for agreeing to participate in this interview. As part of my dissertation research for the doctorate of education degree in Organizational Leadership at Brandman University, I am interviewing administrators responsible for establishing policy related to career and technical education within their school district.*
b) *The purpose of the interview is to learn about your experiences related to the recruitment practices of career and technical education programs with consistently high enrollment.*
c) *The interview should take approximately 30 to 60 minutes and will include five questions, with possible follow-up questions if further clarification is needed.*
d) *Any information that is obtained in connection to this study will remain*

confidential. All of my data will be reported without reference to an individual or an institution. After I record and transcribe the data, I will send it to you so you can make sure I have captured your thoughts and ideas accurately. I want to make this interview as comfortable as possible for you, so at any point during the interview you can ask that I skip a particular question or discontinue the interview.

e) *With your permission, I would like to record this interview to ensure I capture your thoughts accurately. Thank you.*
f) *Do you have any questions before we begin?*

Before we begin, please tell me a little bit about yourself and your experience as an educational leader?

Specific Script Questions

Set up: The California Career Pathways Trust Grant and the Career and Technical Education Incentive Grant are providing millions of dollars for the revitalization of CTE across the state. As CTE is considered an elective in most districts in California, students are not required to enroll in CTE. In order to effectively use the funds being spent on CTE, students must choose to enroll in programs. The following questions will seek to understand the factors that impact enrollment and the methods employed to recruit students.

General Question

In your school district, what are the factors that determine CTE pathway offerings?

_____
_____
_____

Follow-up questions

_____
_____
_____

Discouraging Factors

Set up: Most educators involved in career and technical education have talked to students who would have benefitted from participation in CTE as part of their high school experience but did not choose to.

General Question

In your experience, what are the factors that discourage student enrollment in secondary CTE programs?

_____
_____
_____

Follow-up questions

_____
_____
_____

Encouraging Factors

Set up: For some students, career and technical education is the reason they get out of bed in the morning. Not all students are that heavily invested but all had to choose to sign up for the class.

General Question

In your experience, what are the factors that encourage student enrollment in secondary CTE programs?

_____
_____
_____

Follow-up questions

_____
_____
_____

Recruitment Strategies

Set up: The following question is designed to assist in developing a comprehensive list of all the of the methods used by teacher, administrators, and other stakeholders to encourage student enrollment in career and technical education courses.

General Question

In your experience, what are the strategies, effective or not, employed to increase enrollment in secondary CTE programs?

_____
_____
_____

Follow-up questions

_____
_____
_____

Recommended Recruitment Strategies

Set up: For this question, consider the real world where there are constraints such as teacher time, financial resource limits, student availability, as well as ones not mentioned.

General Question

Of the strategies you discussed previously, which ones would be most beneficial to secondary CTE programs seeking to increase enrollment?

_____
_____
_____

Follow-up questions

_____
_____
_____

This concludes our interview. Do you have any other information that you would like to add or share regarding your experiences with recruiting students into career and technical education programs of study?

Conclusion of interview:

Thank you very much for your time and support in completing this interview. If you would like a copy of my final research findings once my research is accepted by the university, I would be happy to share it with you.

Thank you again.

APPENDIX C

Qualitative Interview Release

INFORMATION ABOUT: A Mixed-methods Study Examining Effective Practices for Increasing Secondary Student Enrollment in Career and Technology Education Courses

UNIVERSITY CONTACT INFORMATION:

Brandman University, 16355 Laguna Canyon Rd., Irvine, CA 92618

RESPONSIBLE INVESTIGATOR: Richard Radcliffe

PURPOSE OF STUDY: The purpose of this study is to determine the most effective methods for increasing enrollment in CTE programs of study at California comprehensive high schools.

This study will fill the gap in existing research regarding recruitment program effectiveness. While there is existing literature related to the reasons students may choose to enroll at a centralized career technical education center or choose to remain at their comprehensive high school, much of the data is out of date, was generated from schools east of the Mississippi river, and reflects educational systems which depend heavily on centralized career technical education centers. This study seeks to understand the recruitment methods currently in use in California school districts and will then survey district CTE administrators throughout the state to determine the effectiveness of each method.

By participating in this study I agree to participate in a private one-on-one interview. The one- on-one interview will last between 30 – 60 minutes and will be conducted in person and audio recorded. The one-on-one interview will take place in June, 2016.

I understand that:

_____a) There are minimal risks associated with participating in this research. I understand that the investigator will protect my confidentiality by keeping the identifying codes and research materials in a locked safe that is available only to the researcher. I understand the audio recordings WILL NOT be used by the researcher beyond the use as stated in initial scope of this research.

_____b) The possible benefit of this study to me is that my input may help add to the research regarding the effectiveness of career technical education recruitment methods in California comprehensive high schools. The findings will be available to me at the conclusion of the study and I may be provided the results of the available data, summary, and recommendations. I understand that I will not be compensated for my participation.

_____c) Any questions I have concerning my participation in this study will be answered by **Richard Radcliffe**. He can be reached by e-mail at **rradclif@mail.brandman.edu**

_____d) My participation in this research study is voluntary. I may decide to not participate in the study and I can withdraw at any time. I can also decide not to answer particular questions during the interview if I so choose. I understand that I may refuse to participate or may withdraw from this study at any time without any negative consequences. Also, the investigator may stop the study at any time.

_____e) No information that identifies me will be released without my separate consent and all identifiable information will be protected to the limits allowed by law. If the study design or the use of the data is to be changed, I will be so informed and my consent re-obtained. I understand that if I have any questions, comments, or concerns about the study or the informed consent process, I may write or call the **Office of the Executive Vice Chancellor of Academic Affairs, Brandman University, at 16355 Laguna Canyon Road, Irvine, CA 92618, (949) 341-7641.**

_____f) I acknowledge that I have received a copy of this form and the Participant's Bill of Rights. I have read the above and understand it and hereby consent to the procedure(s) set forth.

Participant Signature	Date
Researcher Signature	Date

APPENDIX D

Participant Bill of Rights

BRANDMAN University Chapman University System

BRANDMAN UNIVERISTY INSTITUTIONAL REVIEW BOARD

Research Participant's Bill of Rights

Any person who is requested to consent to participate as a subject in an experiment, or who is requested to consent on behalf of another, has the following rights:

1. To be told what the study is attempting to discover
2. To be told what will happen in the study and whether any of the procedures, drugs or devices are different from what would be used in standard practice.
3. To be told about the risks, side effects or discomforts of the things that may happen to him/her.
4. To be told if he/she can expect any benefit from participating and, if so, what the benefits might be.
5. To be told what other choices he/she has and how they may be better or worse than being in the study.
6. To be allowed to ask any questions concerning the study both before agreeing to be involved and during the course of the study.
7. To be told what sort of medical treatment is available if any complications arise.
8. To refuse to participate at all before or after the study I started without any adverse effects.
9. To receive a copy of the signed and dated consent form.
10. To be free of pressures when considering whether he/she wishes to agree to be in the study.

If at any time you have questions regarding a research study, you should ask the researchers to answer them. You also may contact the **Brandman University Institutional Review Board**, which is concerned with the protection of volunteers in research projects. The Brandman University Institutional Review Board may be contacted either by telephoning the Office of Academic Affairs at (949) 341t 9937 or by writing the Vice Chancellor of Academic Affairs, Brandman University, 16355 Laguna Canyon Road, Irvine, CA, 92618

Brandman University IRB Adopted November 2013

APPENDIX E

Interview Question Alignment Table

Research Questions	Interview Question	Analytical Technique
What do CTE administrators perceive are the factors that discourage student enrollment in secondary CTE programs?	In your experience, what are the factors that discourage student enrollment in secondary CTE programs?	Interviews transcribed, transcripts individually coded by separate researchers, themes developed from the codes, themes used to generate survey questions.
What do CTE administrators perceive are the factors that encourage student enrollment in secondary CTE programs?	In your experience, what are the factors that encourage student enrollment in secondary CTE programs?	Interviews transcribed, transcripts individually coded by separate researchers, themes developed from the codes, themes used to generate survey questions.
What are the strategies employed by secondary CTE programs to increase student enrollment?	In your experience, what are the strategies, effective or not, employed to increase enrollment in secondary CTE programs?	Interviews transcribed, transcripts individually coded by separate researchers, themes developed from the codes, themes used to generate survey questions.
What are the most beneficial strategies for increasing enrollment in secondary CTE programs?	Of the programs you just mentioned, which ones are the most effective for increasing enrollment in secondary CTE programs?	Interviews transcribed, transcripts individually coded by separate researchers, themes developed from the codes, themes used to generate survey questions.

APPENDIX F

Invitation to Participate in a Research Study Expert Panel

Study: A Mixed-methods Study Examining Effective Practices for Increasing Secondary Student Enrollment in Career and Technology Education Courses

Dear Potential Expert Panelist:

This letter is to invite you to participate in an exploratory mixed-methods research study as a professional expert. My name is Richard Radcliffe and I am a doctoral candidate in the Organizational Leadership program at Brandman University, a division of the Chapman University system. I am currently conducting research under the supervision of Dr. Marilou Ryder on the factors that encourage and discourage enrollment in CTE pathways at California comprehensive high schools as well as the recruitment methods used to encourage students to enroll in those CTE pathways.

What is the purpose of this research study?

The purpose of this exploratory mixed-methods research study is to identify and describe the factors that encourage students to enroll in CTE pathways at California comprehensive high schools as well as the factors that discourage enrollment. In addition, this study will seek to develop a list of recruitment methods used by CTE pathways with consistently high enrollment and then rank those methods in order of perceived effectiveness.

What will your involvement in this study mean?

As a professional expert, your involvement will encompass reviewing and critiquing the research instrument and pilot test. To reduce the impact of researcher bias and to ensure the safety of the participants, you will first be asked to evaluate the interview protocol, which includes the introduction script, interview questions, background information for the interview questions, and any follow-up questions. Your feedback will be used to improve the interview protocol instrument. Upon completion of the pilot test, I will be sharing the results with you and asking that you review the data to ensure the accuracy and reliability of the instrument and to ensure the interview questions are aligned with the research questions.

If you have any questions regarding this exploratory mixed-methods research study, please do not hesitate to contact me at (760)684-9584 or by email at rradclif@mail.brandman.edu. You can also contact my dissertation chairperson Dr. Marilou Ryder at (760)900-0556 or by email at ryder@brandman.edu.
Thank you very much for your interest and assistance in this study.

Sincerely,
Richard Radcliffe

APPENDIX G

Quantitative Phase Survey Instrument

Effective Methods for Career and Technical Education Recruitment

1. Thank you for your participation in the data collection interviews. The following themes were developed from the responses provided during those interviews. Please rate each item based on your perception of its ability to impact student enrollment in Career and Technical Education courses.

	Least Effective	Less Effective	Neutral	More Effective	Most Effective
Business and Community Partnerships: Chamber of Commerce membership, guest speakers, networking, or hosting workshops.	◯	◯	◯	◯	◯
Counselors: Part of the recruitment team, gatekeepers, first line of contact with parents.	◯	◯	◯	◯	◯
Feeder School Promotion: Presentations at feeder schools, educating feeder school counselors.	◯	◯	◯	◯	◯
Posters and Brochures: Hanging up posters around campus, printing brochures to hand out at recruitment fairs or to provide to counselors.	◯	◯	◯	◯	◯
Recruit at Home Site and Other District High Schools: Educating the captive audience, publicity at other sites with teachers and students.	◯	◯	◯	◯	◯
Recruitment Fair: Specific opportunities for potential incoming students to interact with students and instructors from a CTE program. This may be at the school site, the feeder school, or a central location.	◯	◯	◯	◯	◯
Recruitment Specialist: This person organizes and directs recruitment for CTE pathways at a site.	◯	◯	◯	◯	◯

	Least Effective	Less Effective	Neutral	More Effective	Most Effective
Sense of Community From Participation in California Partnership Academy (CPA): Being a part of a CPA may provide students with the same feeling as being involved in a sports team. Mentoring from older students and structured support.	◯	◯	◯	◯	◯
Social Media and Website: Posting pictures of students to Facebook/Twitter/Instagram/etc., page on school website, information within an app.	◯	◯	◯	◯	◯
Student and Product Showcase: Any opportunity for students to display what they have learned (projects or skills). This could be at an event designed as such, a school board meeting, a meeting of a community service organization, or a local mall.	◯	◯	◯	◯	◯
Students Visible in Community: CTSO students presenting at school board meetings, students catering or doing floral arrangements.	◯	◯	◯	◯	◯
Summer Experience or Camp: Immersive experiences that leave a lasting impression.	◯	◯	◯	◯	◯
Targeted Recruitment: Specifically seeking underserved populations.	◯	◯	◯	◯	◯
Visits to CTE Classroom: Bringing students, parents, and community members to the school site to experience the program in action. Students already enrolled in the pathway may be demonstrating skills or concepts.	◯	◯	◯	◯	◯