Community College Students’ Perceived Value of High School Career and Technical Education Program Experiences

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Community College Students’ Perceived Value of
High School Career and Technical Education Program Experiences

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Dissertation submitted to the Faculty of the College of Education
in partial fulfillment of the requirements for the degree of
Doctor of Education in
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Abstract

The goal of this qualitative, narrative inquiry study was to explore the voices of community college students who have taken Career and Technical Education (CTE) while in high school, investigate if they perceived value from their high school CTE classes, and determine how those experiences impacted their high school and college educations. The central research question for the dissertation was: What value do local community college students believe their high school Career and Technical Education program participation provided? The screening survey had 13 participants that identified as possible candidates. A total of eight community college students were interviewed for this study. There was one exceptional case, Rob’s vignette, where CTE played an important role in defining Rob’s transformative learning experience. The overall outcomes of the study found positive lived experiences from taking CTE while in high school that included employable skills, collaborative learning, and personal behavioral skill building. The study discovered that taking CTE classes while in high school provided value for postsecondary learning and valuable training for the entry-level workforce. This analysis showed that CTE helped participants with personal and work skills to become career ready for an entry-level position and entry in to postsecondary learning.

Keywords: career and technical education, community college students, qualitative narrative inquiry study, perceived value
Dedication

I would like to dedicate this project to my deceased mother who passed away when I was 20 years of age and who never had the opportunity to see me go through my college career and never finished art college herself. I am also indebted to my husband, Robert, of over 30 years who put up with my last stint of college, which included my second Master’s degree in Career and Technical Education and my Ed.D. Without his love, support, telling me how smart I am, and that I could actually do it, I may never have finished.
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I would first like to acknowledge my early community college instructors in the graphic arts program in San Francisco. They were the ones who inspired me to want to teach. I would also like to thank my Vice Principal, Maude Lamont, who gave the opportunity to teach at the high school level and for opening doors in my teaching career. I would like to thank the many professors at my current university for their passing on important knowledge and learning in the Career and Technical Education and teaching profession. Specifically, I would like to thank Dr. Gabbard for guiding me through my dissertation, Dr. Dexter for being my content specialist, and Dr. Kondor for being my content reader. I would also like to acknowledge all of my previous teachers and professors who inspired me along the way and instilled within me a love for life-long learning and teaching. I will be forever grateful to them all.
Table of Contents

Abstract ........................................................................................................................................... iii
Dedication ....................................................................................................................................... iv
Acknowledgments ............................................................................................................................ v
Table of Contents ............................................................................................................................. vi
List of Tables ..................................................................................................................................... xi
List of Figures .................................................................................................................................... xii
Chapter 1: Introduction .................................................................................................................. 1
  History of Career and Technical Education .................................................................................. 3
    National Graduation and Dropout Rates ..................................................................................... 10
    Local Graduation and Dropout Rates ......................................................................................... 16
  Overview of the Research Study .................................................................................................. 22
  Problem Statement ....................................................................................................................... 23
  Purpose of the Study ...................................................................................................................... 24
  Significance of the Study .............................................................................................................. 24
  Research Questions ...................................................................................................................... 25
  Definition of Terms ....................................................................................................................... 25
  Assumptions .................................................................................................................................. 28
  Delimitations ................................................................................................................................. 30
Summary .......................................................................................................................................... 30
Chapter 2: Literature Review ....................................................................................................... 34
  Introduction to the Literature Review .......................................................................................... 34
  Conceptual Framework ................................................................................................................ 34
Childhood Experiences .................................................................................................................36
Mezirow’s Learning Phases .........................................................................................................37
Postsecondary and Secondary Learning ....................................................................................39
Listening to and Giving Voice to the Student ............................................................................41
Student’s Perceptions ................................................................................................................42
Career and Technical Education .................................................................................................47
CTE Framework ..........................................................................................................................49
Rojewski’s CTE Framework .......................................................................................................55
Figure 1: .....................................................................................................................................57
Impact of Career and Technical Education ...............................................................................57
Career Academies .......................................................................................................................61
Student Leadership Opportunities (SLOs) ..................................................................................63
Dual Credit ..................................................................................................................................64
Table2 ........................................................................................................................................72
Every Students Succeeds Act (ESSA) .......................................................................................75
CTE and At-Risk Students .........................................................................................................77
Benefits of CTE for Dropout Prevention ...................................................................................79
CTE Association with Ethnic Groups and Socioeconomic Status ............................................83
CTE Graduation Rates ...............................................................................................................85
CTE’s Overall Impact ................................................................................................................87
Methodology ...............................................................................................................................91
Summary .....................................................................................................................................98
Chapter 3: Methodology ............................................................................................................100
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summary of Findings</td>
<td>130</td>
</tr>
<tr>
<td>Presentation of the Results</td>
<td>131</td>
</tr>
<tr>
<td>Perceived Value</td>
<td>131</td>
</tr>
<tr>
<td>Career Learning Opportunities</td>
<td>135</td>
</tr>
<tr>
<td>CTE While in High School</td>
<td>138</td>
</tr>
<tr>
<td>College Preparedness</td>
<td>140</td>
</tr>
<tr>
<td>College Credit</td>
<td>142</td>
</tr>
<tr>
<td>CTE Underrepresented in High School</td>
<td>144</td>
</tr>
<tr>
<td>CTE Skill Building</td>
<td>146</td>
</tr>
<tr>
<td>Career Opportunities</td>
<td>149</td>
</tr>
<tr>
<td>College and Career Readiness</td>
<td>151</td>
</tr>
<tr>
<td>Student Inspiration</td>
<td>155</td>
</tr>
<tr>
<td>Real World Experience</td>
<td>157</td>
</tr>
<tr>
<td>High School to Postsecondary Transitioning</td>
<td>159</td>
</tr>
<tr>
<td>Rigor in Career and Technical Education</td>
<td>161</td>
</tr>
<tr>
<td>College Success</td>
<td>163</td>
</tr>
<tr>
<td>CTE and Employment</td>
<td>164</td>
</tr>
<tr>
<td>Employable Skills</td>
<td>166</td>
</tr>
<tr>
<td>High School Retention</td>
<td>170</td>
</tr>
<tr>
<td>Vignettes</td>
<td>170</td>
</tr>
<tr>
<td>Mike’s Vignette of CTE experiences</td>
<td>171</td>
</tr>
<tr>
<td>Lucas’s Vignette of CTE Experiences</td>
<td>173</td>
</tr>
<tr>
<td>Tina’s Vignette of CTE Experiences</td>
<td>177</td>
</tr>
<tr>
<td>Section</td>
<td>Page</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Rob’s Story of Success</td>
<td>179</td>
</tr>
<tr>
<td>Rob’s Vignette of CTE experiences</td>
<td>184</td>
</tr>
<tr>
<td>Summary</td>
<td>188</td>
</tr>
<tr>
<td>Chapter 5: Discussion and Conclusions</td>
<td>190</td>
</tr>
<tr>
<td>Introduction</td>
<td>190</td>
</tr>
<tr>
<td>Chapter 1 Overview</td>
<td>191</td>
</tr>
<tr>
<td>Chapter 2 Overview</td>
<td>192</td>
</tr>
<tr>
<td>Chapter 3 Overview</td>
<td>194</td>
</tr>
<tr>
<td>Chapter 4 Overview</td>
<td>195</td>
</tr>
<tr>
<td>Summary of Results</td>
<td>196</td>
</tr>
<tr>
<td>Discussion of Results</td>
<td>197</td>
</tr>
<tr>
<td>Discussion of Results in Relation to Literature</td>
<td>197</td>
</tr>
<tr>
<td>Limitations</td>
<td>204</td>
</tr>
<tr>
<td>Implication of Results for Practice, Policy and Theory</td>
<td>205</td>
</tr>
<tr>
<td>Recommendations for Further Research</td>
<td>207</td>
</tr>
<tr>
<td>Conclusions</td>
<td>209</td>
</tr>
<tr>
<td>References</td>
<td>212</td>
</tr>
<tr>
<td>Appendix A: Preliminary Screening Survey</td>
<td>235</td>
</tr>
<tr>
<td>Appendix B: First-Round Interview Questions</td>
<td>237</td>
</tr>
<tr>
<td>Appendix C: Vignette Instrument and Follow-up Questions</td>
<td>246</td>
</tr>
<tr>
<td>Appendix D: Statement of Original Work</td>
<td>251</td>
</tr>
</tbody>
</table>
List of Tables

Table 1. *Surrounding School District Graduation and Dropout Rates* ........................................15

Table 2. *High School Dual Credit Increases Over the Past Six School Years, 2011-2017* ........70

Table 3. *Participants’ CTE Concentration Areas* ........................................................................123

Table 4. *Themes according to Participants* ..............................................................................184
List of Figures

Figure 1. CTE Framework ........................................................................................................................................54
Chapter 1: Introduction

The challenge today for both high school and college graduate students is they face a more demanding global, technological, and competitive workforce when they leave both high school and college. A multitude of career pathways through Career and Technical Education (CTE) programs provides students with career-focused, hands-on learning that is aligned with specific industries and provides high school students with valuable skill sets that helps set them up for success and obtain higher wage paying positions in the work place (Dougherty, 2016). Although CTE is available in all 50 states, it is regrettable that many high school students do not have access to a meaningful education that offers CTE which can help to prepare them for either the workforce or college (Dougherty, 2016). Education that fails to provide meaning in learning like CTE, can lead to increased high school dropout and retention rates, especially among underserved or traditionally marginalized students, because learning should be meaningful or relevant to the students’ college or career aspirations (Bottoms, 2008; Brand, Valent, Browning, 2013; Dougherty, 2016; Hyslop, 2013) and provide students with value. Increasing retention, graduation rates, bridging the gap between secondary and postsecondary education, and ensuring high school students are college or career ready is a multilevel issue (Dougherty, 2016).

Many professionals have multiple theories about how to provide different strategies in rigorous education that will prepare students for entry-level careers and postsecondary education as students need to graduate high school for postsecondary schooling and better careers (Dougherty, 2016). Providing students with academic instruction that is combined with CTE is one such increasingly popular strategy to ensure high school students are acquiring technical and employable skills to enter into today’s challenging workforce and postsecondary education (Dougherty, 2016; Bottoms, 2008; Brand, Valent, & Browning, 2013; Hyslop, 2013).
If CTE helps students with high school graduation and to continue with postsecondary learning, then school districts should include more CTE classes and complete programs of study for high school students in their master schedules. The importance of CTE in secondary high school is becoming more accepted as a strategy for increasing job and college preparedness (Hyslop & Imperatore, 2013). According to the Oregon Department of Education (ODE) (2015a):

The best explanations available today for CTE graduation rates are anecdotal and come from administrators, teachers, students, etc., in the field. CTE is different from other K–12 instruction for high school students and provides value in some very important ways: The learning helps students develop a sense of career direction based on their interests, it teaches them how to master academic and technical skills through applied learning that is specifically focused on career outcomes, and helps guide them to a higher level of success in school, while addressing other learning styles, such as experiential, kinesthetic, and hands-on learning.

The strength of CTE is likely in “providing additional pathways for students to succeed” and that, “CTE graduation rates and statewide graduation rates are not precisely an apples-to-apples comparison” (Oregon Department of Education, 2015, p. 6). By exploring the lived experiences of community college students who enrolled in CTE classes while in high school, the researcher aimed to identify why CTE worked for them.

Community members, district leaders, teachers, and personnel from departments of education are now realizing the importance and benefits of CTE classes at the high school and postsecondary levels (Association for Career and Technical Education, 2009). CTE offers students the opportunity to learn industry and current skills that are needed in today’s rapidly
changing workforce. By providing high school students with an exposure to specific technical skills needed in today’s workforce, they are better prepared to choose a field in which they may continue on in postsecondary education and their professional careers. High school graduation rates are an important factor in a students’ academic careers and most students who do not graduate high school fail to continue their education in postsecondary institutions (Association for Career and Technical Education, 2010).

This qualitative narrative inquiry research study explored the perceptions of college students who previously took CTE classes while in high school. This study also investigated the value those postsecondary students placed in CTE classes while in high school and researched what impact CTE had in their graduation and postsecondary education. This research study aimed to interview postsecondary individuals who completed CTE classes as part of their high school experience to learn if they found value in their CTE experiences, and if those CTE experiences helped them to graduate.

**History of Career and Technical Education**

Since Greek and Roman times, through the Middle Ages, during the Renaissance, and up to modern times, youths received vocational or trade educations through apprenticeships (Barlow, 1976). After a basic education, the apprenticeship was an important part of the vocational learning of a youth, just as it can be today. Apprenticeships during the colonial period provided, “food, clothing, shelter, religious instruction, reading and writing skill training” (Barlow, 1976, p. 25), whereas today’s internships provide real-world problem-solving skills and on-the-job training and CTE helps to provide real world training for students while in high school (Hyslop & Imperatore, 2013; Kappan, 2015).
Vocational training was implemented in the United States at the beginning of the 18th century as a way of training individuals for specific trade skills and has gone through many versions, finally ending up as what is known today as Career and Technical Education (Barlow, 1976). According to the Barlow (1976), Cubberley explained that there were four major movements in education in the United States from 1785-1805: The Sunday School Movement, City School Societies, The Lancastrian Movement, and the Infant-School. The Sunday School Movement first started in England in 1751 before moving to the colonies. During this time many young children learned a trade through internships or a trade was passed down from the father to the son while domestic skills were passed down from the mother to the daughter. Having a structured education of reading, writing and arithmetic combined both vocational and formal education was though beneficial to young children and young adults (Barlow, 1976). The Sunday School Movement was a proven strategy to educate poor young children, adopted from England into the U.S., which became universally popular in the mid-19th century, educating youth while their parents worked on the weekdays (Barlow, 1976). The Sunday School Movement brought children of all classes together and the idea of a secular school spread quickly throughout the Northern East coast through City School Societies (Barlow, 1976). City School Societies provided early schooling for poor urban children who had no religious affiliations and organized free education that procured funds, trained teachers, and built schoolhouses, and eventually turning over the schoolhouses to the cities and eventually became free education for all young children (Cubberley, 1976).

The Lancastrian Movement according to Barlow (1976) was named after its founder, Joseph Lancaster. This educational system was much like a pyramid, where a group of 10 school boys were first educated and called monitors. Each monitor would then educate 10 more boys.
The system was designed to educate as many students as possible, gaining momentum for the interest in and serving predominantly as one of the foundations for public education (Barlow, 1976). The Infant School Society was first started in Scotland in 1799 by Robert Owen, enrolling children ages three and four years. Much like kindergarten is today, teachers taught children ways of understanding, movement, dance and how to be of a good nature. These attempts at early learning was started in Boston in 1816 with the idea to prepare young students for entry into grammar school. Infant School Societies were established by philanthropists who gave funding to schools to enroll children who may not have had any other opportunities for an education.

During the industrial revolution, Christians thought it best that children were not be illiterate as adults as a result of working six days a week, including Saturdays, as child factory laborers. Children at that time worked long hours and not until 1802 did an English law pass regulating child labor laws that limited the child laborer to work 12 hours a day and, in the United States, 28 states passed child labor laws by 1899 limiting child labor hours (Drury, 2010; Fried, 2014; Maxey, 2005). Many children who lived in poverty had little supervision and roamed the streets of Gloucester, England, stealing, pickpocketing and looting while the prominent were in church (Drury, 2010; Maxey, 2005). Many young children’s lives were a miserable working existence and many were injured in the factories and left to thievery or begging for handouts on the streets (Drury, 2010; Maxey, 2005). Education during this time was largely home-based learning and only affluent families could educate their children while many of the poor could not read or write because there was not a free public education system available (Drury, 2010; Maxey, 2005). The first vocational education system was developed
through this type of educational model where youth eventually worked in apprenticeships and is an early model of vocational education (Gordon, 2002).

After the Colonial period, in the initial decades of American public education up to around 1820, vocational learning was more of a father-and-son relationship or an apprenticeship and very few youths saw the inside of a classroom (Barlow, 1976). Early American education often occurred in the forms of internships and laid a foundation for vocational learning in the classroom, which over the years eventually evolved into vocational education, then, Career and Technical Education. Some of the first vocational hands-on learning was in agriculture and home economics. It was typical for males to go into agriculture as an apprentice while females studied home economics, although there was virtually no educational support for the very young or adults (Barlow, 1976). Vocational education in the very beginning was small starting with agriculture for young men and home economics for young women, it laid the groundwork for the beginnings in vocational learning. It would not be until the late 19th century and into the 1920s when education needs would become a national goal that would include free education at the national level (Barlow, 1976).

During the mid-1800s, private and public high schools were developed as for-profit teaching to mostly male students in leadership skills for the field of business (Barlow, 1976). These schools were focused on reading, writing, arithmetic, and bookkeeping. Although the lack of leadership and organization of these public schools led to a decline, they were then taken over by private philanthropists and reinvigorated the schools (Barlow, 1976). According to Barlow (1976) for-profit colleges were created in the 1850s, focusing first on business. Later, in the 19th century with the addition of shorthand, stenography courses, and, with the invention of the
typewriter, new courses were added to college curriculum to align with the needs of manufacturing and business (Barlow, 1976).

Horace Mann, from Massachusetts, was a significant, influential person in the fight for public education, setting the foundation for vocational education for the future. Another important figure was Henry Barnard who worked in Rhode Island and Connecticut (Barlow, 1976). Mann created 12 reports that focused on the reform and idea of free and public education for Massachusetts and other states, setting high standards for educational practices. Barnard’s influential work was very similar to Mann’s accomplishments. Mann’s influence led to the improvements in administration, schoolhouses, and curriculum (Barlow, 1976; Barnard, 1870). His major achievement was the American Journal of Education, a 31-volume collection of his writings on different aspects of education that helped shape the early educational system on the east coast through lessons of grammar, geometry and languages for both primary and secondary grades (Barlow, 1976; Barnard, 1870).

Another major achievement for vocational education and African Americans was the Tuskegee Institute (Barlow, 1976). When the institute opened in Virginia in 1881, it helped former African American slaves freed during the Civil War by giving them opportunities to be educated and work in trades such as agriculture, leather-work, bricklaying, carpentry, machine work, shoe making, iron working and other skilled labor positions. Not only did this open up opportunities for black communities in Virginia, it stressed the basic vocational skills needed for the new population of learners in fields of labor education. The Tuskegee Institute curriculum day was eight hours long with at least 4,000 hours of practical learning needed for completion. A certificate of completion was awarded after two years of skill building and a diploma after four years of skill-building completion (Barlow, 1976). The Tuskegee Institute can be viewed as the
first hands-on learning higher education institution in the U.S. that set a framework for what eventually would be called CTE in the 20th century.

National educational legislation was not established in the United States Constitution, deferring public education to the states through the 10th Amendment, so educational policies were left up to the states with very little input from the federal government (Essex 2012). Following the Civil War, the 14th Amendment connected the federal government to oversight of education in the states (Essex 2012). In 1917, vocational learning became instrumental when Senator Hoke Smith and Representative Dudley Hughes drafted the Smith-Hughes Act because they observed their own children learning in both the classroom and on their farms. The Smith-Hughes Act appropriated funding to states to pay for salaries of teachers and administration to establish vocational skill building and training in schools. The act authorized government funding for the creation and support of secondary and postsecondary vocational skill building in agriculture, home economics, trades and industry. The importance of the Smith-Hughes Act is that if it did not exist, vocational schooling would not have started as early as it did and CTE would not be where it is today, helping millions of students across the United States (Marion, 2016; Scott & Sarkees-Wircenski, 2004).

In 1936, the George-Deen Act allocated funding for different vocational areas of trade work positions and teacher professional development (Barlow, 1976; Scott & Sarkees-Wircenski, 2004). In 1958, the National Defense Education Act allocated government funding to state and local school districts in order to enhance the instruction in science, mathematics, and foreign languages with additional funding to support technical education, and other skill building programs (Barlow, 1976). The Smith-Hughes Act evolved over time to become the Carl D. Perkins Act, also known as the Vocational Act in 1973.
The Carl D. Perkins Vocational and Technical Education Act was first established by the federal government in 1984 and awards funding to the states to help support the quality of Career and Technical Education. Starting in the early to mid-1900s, Congress passed a series of federal educational acts to help increase the quality and quantity of vocational learning in public schools. The Carl D. Perkins Act was reauthorized in 1998, and, in 2006, was reauthorized again and renamed as the Carl D. Perkins CTE Improvement Act of 2006. The Perkins Act of 2006 officially replaced the previous term vocational education with Career and Technical Education and was established to create a major source of funding at the federal level, giving grant funding to states for the betterment of technical education and CTE by fully developing academics and combining rigorous academia with CTE classes (Canton, n.d.; U.S. Department of Education, 2008). The Perkins Revitalization Grant of 2006 was redesigned to increase the connections between secondary and postsecondary education and improve the state and local accountability in education (U.S. Department of Education, 2006).

The 109th Congress described the goal of the Act was to “develop more fully the academic and career and technical skills of secondary education students and postsecondary students who elect to enroll in CTE programs” (U.S. Department of Education, 2006, para. 1). This was achieved by giving the states and local districts the ability to develop rigorous curriculums that met college outcomes and enabled students to meet industry standards to acquire higher paying jobs, advanced skills, and fill high demand placements in the current job market (109th Congress, Second. Session, S.250—2, 2006). The Perkins grant is still the major source of funding for today’s CTE programs across the nation. The federal government must make sure that CTE funding through Perkins grants continue as CTE prepares students with essential skills for new technologies in science and engineering positions that are needed in
todays’ job force (Brand, Valent, & Browning, 2013; Loveless, 2011). Preparing high school students with essential industry learning including CTE in today’s challenging and ever changing economic workforce is essential to a student’s success in their career and also helps students stay in school and reduce dropout rates (Gottfried & Plasman, 2018; U.S. Department of Education, n.d.).

**National Graduation and Dropout Rates**

National dropout rates are described by the United States Department of Education (n.d.) as the percentage of students between the ages of 16-22 who are not enrolled in school and those who have not earned a high school diploma or credential. Students drop out of high school for many reasons, and this behavior can be described as delinquent behavior, falling into two categories: social behavior and failing academic achievement (U.S. Department of Education, n.d.). Students who drop out of high school are frequently the result of low, personal academic achievement and often come from poorly funded public educational systems, such as inner-city systems (Gottfried & Plasman, 2018; U.S. Department of Education, n.d.). Dropouts also have greater social and family issues and minority ethnic groups drop out at higher rates than white students, which affects society in different negative ways, such as reliance on social problems, less taxes paid, and higher unemployment rates (Gottfried & Plasman 2018; U.S. Department of Education, n.d.).

CTE has been shown to have a higher student engagement rate than non CTE concentrators and helps reduce the probability that a student may drop out of school, and that students who take CTE classes in the last two years of high school are more likely to graduate on time (Kotamraju, 2007; Pals & Fera, 2017). Gottfried and Plasman (2018) learned:
that for each CTE course completed during the junior year in high school, a student was 1.5% more likely to graduate on time and 1.6% less likely to drop out. For each CTE course completed during the senior year, a student was 2.1% more likely to graduate on time and 1.8% less likely to drop out. (p. 343)

The study concluded that students who took CTE classes during the first two years of high school had little impact on graduating on time and dropout rates. Gottfried and Plasman (2018) also found evidence to be lacking for transitioning from high school to college from taking CTE classes. There was a direct positive finding by Gottfried and Plasman (2018) and, as there were no negative findings either, this then opens doors for further research and conversations of CTE courses for high schools.

The 2014-2015 school year graduation rate for the State of Oregon, for example, was 73.8%, although low-income students only graduated at 66.4%. In Oregon the graduation rate was 71% for White students, 60% for Hispanic students, and 53% for African American students (U.S. Census Bureau, 2012). In the 2014-2015 school year, graduation rates across the U.S were at an all-time high at 83% and were the fifth year in a row of growth; despite this growth, in many states the high school student graduation requirements are low, producing high school graduates who are not ready for college or the job market (Kemenetz & Turner, 2016).

For most of documented U.S. history, graduation rates were very low and had reached only 50% in 1940 (Kemenetz, 2016; Simon & Grant 1965; United States Department of Education, 2010). High school graduation was not as common before the 1940s and when someone graduated from high school they were qualified for a white-collar job (Kemenetz, 2016; Simon & Grant 1965; United States Department of Education, 2010). This is certainly not the case in today’s job market, especially for inner-city students, students of color, and low-income
students, whose high school dropout rates are the highest. High school drop-outs and people with just a high school diploma were able to get good paying jobs earlier in the 20th Century but that is not the case now.

Before the age of computers, it was very difficult to track student graduation and dropout rates. Representatives of the American Federation of Teachers and the Business Roundtable set up the Adjusted Cohort Graduation Rate (ACGR) as a way to track a cohort of students using electronic data. The Bill and Melinda Gates Foundation funded the ACGR, and it served as a single measurement tool that followed a cohort of students throughout their high school career. According to the U.S. Department of Education (2017), the high school diploma from a four-year cohort is an important indicator of a high school students’ success. The U.S. Department of Education (n.d.) adopted the ACGR in 2010, defining and outlining the processes for conducting accountable measures for the states’ responsibilities and calculations of ACGR data.

According to the National Center for Education (2015), dropout rates have been declining since 1970 when they dropped from 15% down to 13.9% in 1975 and declined little by little until 2000, when it was 10.9%, then by 2014 had reached 6.5%. Although the dropout rate has dropped about 3% from 12.1% to 7.4% in 2010, the United States ranks 22nd out of 27 developed nations and loses one student every 26 seconds, or 7,000 a day (DoSomething.org, n.d.). The number of high school dropouts across the United States is still too high, at just over 1.2 million students in 2016 with 25% of freshman students failing to graduate on time (DoSomething.org, 2016). According to the U.S. Department of Labor (2015), youths ages 16 to 24 who were no longer enrolled in school accounted for a staggering 16.5 million young people and had an unemployment rate of 27% for men and 22.6% for women.
Since the No Child Left Behind Act (NCLB) was initiated in 2002 and the Every Students Succeeds Act (ESSA) in 2015, all states were required to track and report student dropout rates (Christle, Jolivette & Nelson, 2007). A typical high school dropout will earn $200,000 less in a lifetime than a high school graduate (Christle, Jolivette & Nelson 2007; DoSomething.org, 2016). These earning amounts over the students’ lifetime amount decrease further when compared with college graduates (Christle, Jolivette & Nelson 2007; DoSomething.org, 2016). Balfanz (2004) found that nearly half of African American students and 40% of Latinos in the U.S. attended high schools where high school graduation was not on track. Balfanz also reported that 11% of White high school students did not graduate, making their overall lifetime earning incomes lower than four-year college graduates. This creates a large graduation and earning gap between unemployed ethnic groups. Unemployment rates for those who had a Bachelor’s degree in 2015 was much lower than for dropouts and high school graduates at 4.5% for males and 7.7% for women (U.S. Bureau of Labor Statistics, 2016). When broken down, the dropout unemployment rates for high school dropouts by ethnic group showed more significant gaps: African American male youths’ unemployment rate was 21.6% compared to Whites at 9.5%, with Asians at 6.5%, and Hispanics at 12.8% (U.S. Bureau of Labor Statistics, 2016).

According to the Association for Career and Technical Education (2017), the data that was needed to collect graduation rate information was inaccurate, often misleading, or not present because of poor data tracking. ACTE (2007), stated that students who did not graduate from high school between the ages of 16-24 was at 10.7%, about 3.8 million students across America. The dropout rate of about 10% average has been steady over the past thirty years (Christle, Jolivette & Nelson 2007). The high school diploma and higher degrees in today’s
technological workforce are critical to compete in today’s job market, yet one in three students will not graduate from high school. The jobs available to dropouts declined from 72% in 1973 to about 34% in 2016 and most of the jobs have gone to those who hold postsecondary degrees or certificates (Sundell, 2017). This makes it even more important and valuable for today’s students to stay in school and continue in postsecondary institutions.

Dropping out of high school affects society, as well as the individual students who drop out of school, as they have fewer employment options than those who graduate high school or go onto postsecondary institutions. When high school students drop out of high school it not only costs them a better future and loss of lifetime earning power, it also costs society and taxpayers who depend on the collective outcomes for those students. High school students who dropout have fewer choices of livable wage-paying jobs. If dropouts do gain employment, it is usually in low-wage and low-skill performing jobs with little room for advancement (Christle, Jolivette & Nelson 2007; Lynch, 2014). According to the Education Condition (May, 2016), the number of people ages 20-24 who were employed, but did not graduate high school, was 51% compared to those who did graduate, at 67%. Employment rates of students who completed some college without earning a Bachelor degree is at 76% and the employment rate of those who graduated college is at 89%. Research suggests that graduating high school and entering a postsecondary institution has increased benefits from an education for gaining employment and possible advancements in employment (Hoffman, Vargas, & Santos, 2008; Klopfenstein, 2010, as cited by An & Taylor, 2015).

Additional costs to society for high school dropouts are that they experience more homelessness, especially for youth, are engaged in more criminal activity, have more health problems, and their income is substantially lower, at $12,000 annually, compared to an entry
level position at $21,000 (Christle, Jolivette & Nelson 2007). The Association for Career and Technical Education (2017), reported a slightly higher income range with high school dropouts earning an average of $16,450 and high school graduates making an average of $26,156 a year and this pattern of significant difference between income of dropouts and graduates has been consistent for 10 years. Although the numbers are different, when accounted for inflation, there is a significant difference between dropouts and graduates. The cost to the students who drop out over a lifetime is significant and the cost to society is high, as well. The government loses approximately $154 billion in federal and state tax revenue from the 23 million high school dropouts ages 18 to 67 over their lifetimes (Association for Career and Technical Education, 2007; Lynch, 2014).

The prison system is another major concern for high school dropouts. High school dropouts commit 75% of crimes and taxpayers have to pay for the dropouts’ incarceration and commit more crime than graduates (DoSomething.org, 2016; Christle, Jovette & Nelson, 2007). The total prison population system in 2003 had a high school dropout population of 82%. Welfare recipients comprise 52% of high school dropouts and 85% of high school dropouts represent the juvenile system (Christle, Jovette & Nelson, 2007). In addition to this data, while dropouts contribute less to their local society from forgone local tax revenues, there is a greater need for individual social services and dropouts have reduced political participation (Christle, Jovette & Nelson, 2007). Nationally, broad sets of circumstances relate to high school dropout rates. High school students who dropped out reported disinterest in subject matter, home and socioeconomic problems, parental disengagement, overall school failure, poor school-student behavioral climate and attitudes, limited academic achievement, and low self-esteem (Christle, Jovette & Nelson, 2007).
Many issues that influence a students’ decision to drop out of high school. According to research on student dropout rates, some of the reasons are a students’ school performance and self-esteem when falling behind (Shannon, 2005). Other factors include low income, extreme poverty, lack of parent engagement, not enough individual attention, boring classwork and low student engagement often interacting with other disparaging elements (Shannon, 2005).

Local Graduation and Dropout Rates

Dropout rates across the nation are a major concern for most states’ legislators and school district administrators. While this study did not research a specific site, neither community college or local public school districts, the graduation and dropout rates from four local school district in the Pacific Northwest for this study, will be shared, next, to establish a context from where the majority of the interviewed community college students went to high school. For example, Portland Public School District (PPS) in the Pacific Northwest, has a crisis with dropout and graduation rates of its local high school students. PPS had a student population in 2016 of 3,166 graduating students with only 74% graduating on time (Oregon Department of Education, 2017). The following table represents the graduation and dropout rates for four neighboring upper Northwest public school districts:
Table 1

<table>
<thead>
<tr>
<th>Surrounding School District graduation and Dropout rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016 School Year</td>
</tr>
<tr>
<td>------------------</td>
</tr>
<tr>
<td>Portland Public</td>
</tr>
<tr>
<td>Beaverton Public</td>
</tr>
<tr>
<td>Tigard/Tualatin Public</td>
</tr>
<tr>
<td>Clackamas Public</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

(Note: These sites were not research sites, nor were any K–12 public school district schools)

Table 1 showed that Portland Public School District also had a total of 489 students who dropped out of high school and was the highest rate of dropouts in the state (Oregon Department of Education, 2016). A neighboring school district, Beaverton Public, had a graduating population of 2,902 students with an average of 84% graduation rate for 2016, with 330 students who dropped out. Another metro area school, called Tigard/Tualatin Public for this study, had a graduating class of 1,054 with 74% who graduated on time, and 187 dropouts. Yet another neighboring school district, Clackamas Public, had a graduating class of 1,028 students with an 84% population of on-time graduations and 120 dropouts. These statistics show that in Portland Public and the surrounding three districts, there was a dropout crisis with a total of 1,126 students who dropped out in the year 2016, alone. This problem compounds annually.

In 2008, in the state of Oregon where Portland Public is located, began tracking high school graduation rates using a more rigorous adjusted cohort method and followed students through a four-year period (Oregon Department of Education, n.d.). Students who pursued a
General Education Diploma (GED) or extended diploma were not considered graduates and counted against a school district’s ACGR. In the past seven years, Portland Public has seen a steady increase in graduation rates. Portland Public’s graduation rate was at 53%, far below the state average of 66% (Completion and Graduation Rates; Board presentation, 2016). Graduation rates increased by 2% in the 2009-2010 school year, and rose even more in 2010-2011 to 62.7%. Rates slowly grew in 2011-2012 to 63.09% rising higher in 2012-2013 to 66.91% and even higher in 2013-2014 to 70%. In 2014-2015 the graduation gap between PPS and the state closed with PPS graduation rates at 73.71% and the state at 73.82%. Although this state’s graduation rates have increased 20% over the past 15 years, they are the third lowest in the United States, placed at 47 of 50 states (The Oregonian, 2016). The national average graduation rate is currently 83%, up from about 76 % in 2008-2009 (U.S. Department of Education, 2016). The increase in graduation rates is continuing to produce positive results, but there is still a long way to go for satisfactory results for closing achievement and graduation gaps. It was hoped that the interviews completed for this study would show how CTE can help to increase graduation rates and prevent dropping out of high school.

Local graduation rate increases can be attributed to Portland Public High School System Design (HSSD) approved by the local school board in 2010 (Tracy, 2013). The HSSD reform included the implementation of establishing policies to identify warnings of at-risk students and support systems to help prevent dropouts and improve graduation rates. This also included a strict attendance policy with special teams of counselors and teachers to provide credit recovery and improve academic and assessment scores (Tracy, 2013). In 2013, Portland Public was last in graduation rates and seventh in dropout rates in the state, but now is at its highest graduation rate in 15 years. According to the Portland Public’s website, they attributed a direct link between
graduation rates and the increase of CTE doubling the number of programs helping to increase graduation rates. This was because of an increase of CTE offerings and college credit offered through CTE.

Portland Public has seen a constant growth in CTE offerings, creating more than twice the number CTE programs from 23 in 2010, to 59 CTE programs of study with 84 CTE teachers and supports 5,280 CTE students in nine high schools throughout the district (L. Littler., personal communication, January 26, 2017). The state’s CTE programs of study options include Career Learning Areas (CLA) in six broad instructional categories:

- Agriculture, food, and natural resource systems
- The arts, information, and communications
- Business and management
- Health sciences
- Human resources
- Industrial and engineering systems (Oregon Department of Education, 2015)

Within these six CLAs there are 37 cluster skill-sets. Agriculture, food, and natural resource systems have clusters offering agriculture, environmental services, food science and processing, and natural resources management. The arts, information, and communications cluster includes information and communications technology, performing arts, publishing and broadcasting, and visual and media arts. Business and management offers cluster skill sets in information communications and technology, business management and administration, finance, hospitality, and tourism and marketing. Health sciences offer focus areas of administration in the health industry and support services, health diagnosis services, health information, health and wellness, health research and biosciences, and health therapeutic services. Human resources offer
education and related fields, human services, and public services. Industrial and engineering systems offers automotive and heavy equipment, construction, engineering, information and communications technology, manufacturing, and transportation. According to the PPS website, the CTE programs of study in the nine local schools are:

- Radio broadcasting
- Digital Media/Graphic Design
- Design and Applied Arts
- Engineering
- Health Sciences
- Computer Engineering/Science
- Architecture and Drawing
- Construction Technology
- Electrical Engineering Technology
- Manufacturing Technology
- Transportation Technology
- Natural Resources
- Construction Technology
- Hospitality/Tourism-Culinary Arts
- Video Production
- Audio Engineering
- Multi-Media/Theater Arts
- Business Management-marketing
- Media Studies/ Mass Communications
• Sustainable Agriculture

• Education Preparation

These local CTE programs and classes are offered in nine schools out of 10 eligible high schools in the local district.

Portland Public’s 10 high schools have approximately 12,677 currently enrolled students (Portland State University Population Research Center, 2014) and a total of 59 CTE programs of study. Of those students from the total high school population in 2014-2015, 2,971 students enrolled in CTE classes. This number is up from the 2014-2015 school year, when there were 1,242 CTE students enrolled and in 2013-2014, when there were 1,402 CTE student enrollments. The district also began tracking Technical Skills Assessments (TSAs) four years ago. The Technical Skills Assessments is important because it tracks CTE student data showing the effectiveness of skills learned. The TSA is now a required assessment element for students who go through a career pathway or earn more than two credits in a single program of study. The number of students that took TSAs also rose from 264 TSAs to 424 participating students taking TSAs (L. Littler, March 7, 2017).

Since 2010, Portland Public has also seen an increase in CTE programs of study and a rise in graduation rates, along with an increased interest from high school students who have enrolled in CTE classes, although in the 2017-2018 school year, there were cuts to the educational budget which reduced CTE classes. Portland Public has been trying to increase continued education, graduation rates, student on-time high school completion, and lower dropout rates throughout the district. Portland Public has been looking for alternatives to improve these issues, and CTE may be a part of the solution because of its engaging platform of learning, ability to earn college credit and CTE helps bridge the gap between high school and
college (Southern Regional Education Board, 2008). The state-wide score card shows that CTE students have better graduation rates and continue on into postsecondary school than those high school students who do not take CTE classes (Oregon Department of Education, 2016).

State CTE student data finds that the graduation rates for students who take one-half CTE credit (one semester) while in high school is 86.3%, and for students who take at least one CTE credit (one full school year) while in high school, the graduation rate is 91.7%. The Hispanic student population CTE graduation rate has increased to 86% from 81% just in the past year, so there is a connection between CTE and improved graduation rates in the state and the local district (Oregon Department of Education, 2018).

The increase in graduation rates may also be attributed to an increase in funding from the state, allowing the implementation of additional programs and electives such as CTE and the arts, making the school environment more engaging for local students’ (Oregon Department of Education, 2018). Portland Public has seen a growth of total pupil enrollment from 46,046 to 49,189 students in 2016 and will continue to grow, to an estimated 53,403 students according to enrollment forecasting by 2020 (Rynerson, Dann, & Rancik, 2014).

**Overview of the Research Study**

It was not well known or understood how CTE students who graduated from high school and who are now enrolled in community college perceived the value of their CTE classes they took while in high school. The purpose of this study was to find out if they found value in their past CTE programs of study and if CTE helped them to remain in and graduate from high school. If community college students found value in CTE, then it makes sense that CTE programs of study should be a fundamental part of high school education. Thus, the interest arose to study the perceptions of CTE students about their experiences in high school to learn if they found value in
their CTE programs of study, and if so, if those CTE classes helped them to stay in school or graduate. Because researching adults was easier to gain approvals for due to Institutional Review Board (IRB) policies and to avoid having to obtain additional parental and local school district IRB permissions, this study focused on community college students who were 18 years of age or older and who participated in CTE classes while in high school. If the qualitative narrative inquiry study of community college students showed that students receive benefits and perceived value from being a CTE completer, then all public school systems, such as the near by four Pacific Northwest discussed in this section, should try to increase and enhance existing CTE programs of study to help high school students become college and career ready. This qualitative, narrative inquiry study included substantive interviews of eight postsecondary community college students from the local community college to learn their perceptions of value about CTE programming when they were in high school and then compared the findings from the interviews.

**Problem Statement**

It is important to acknowledge that relevant qualitative research through narrative inquiry had not yet been conducted prior to this study about how college students perceived the value of CTE while they were in high school and the impact, if any, that their CTE programming had on them while they were in high school. This research study supported the importance of learning community college students’ perceptions of and value received from their CTE high school experiences and education. The specific problem was the lack of substantial, qualitative narrative inquiry research that provided data on local postsecondary students’ perceptions about the value of CTE in high schools. According to Connelly and Xu (2010), narrative inquiry for studies in school-based research is logical because it is practical and flourishes from teachers
knowing. Using the information gained by narrative studies, teachers can then apply their knowledge to curriculum, teaching, and learning. Similarly, learning about community college students’ perceived values about their CTE programs of study can help CTE teachers and high school administrators know how and where to enhance and create new programs study offering more career exploration options while in high school. If CTE has a positive influence in preparing high school students for continuing into postsecondary education and the workforce so as to become career ready for entry level positions, then more support is needed for CTE at the secondary education level.

**Purpose of the Study**

The purpose of the study was to determine if postsecondary community college students found value in high school CTE programs of study. The study also examined the possibility of CTE preparing high school students for college transition and better entry level job positions. The collection of qualitative narrative data through audiotaped interviews was analyzed to see if there was value in CTE classes that were previously taken by community college students when they were high school students. The study interviewed participants to see if they found value in their CTE educational career pathways with increased high school student graduation rates and continued college education.

**Significance of the Study**

The significance of the study was to find out from community college students if there was importance in CTE and if they found value in taking CTE classes while in high school. Students who take CTE classes and were in a program of study or career pathway that included a career-focused sequence of relevant coursework aligned with industry standards and added core academics are more apt to graduate high school and continue in to postsecondary schooling.
(Hyslop & Imperatore, 2013). If high school graduates indicated CTE was valuable for influencing their drop-out prevention and graduation, and if school districts can increase graduation and academic performance rates through CTE programs offered, then it seems reasonable that school districts should incorporate more CTE programs into high school curriculums to provide value and benefit for students.

**Research Questions**

The following central research question guided this qualitative, narrative inquiry study:

What value do local community college students believe their high school Career and Technical Education program participation provided?

The study was enhanced with the inclusion of three additional research questions that supported the central research question:

1. How does participation in a high school CTE program prepare students for community college?
2. What skills and attitudes were learned in high school CTE programs that have helped local community college students to be successful in postsecondary education?
3. How does participation in CTE programs in high school contribute to why local community college students graduated from, or did not drop out from, high school?

**Definition of Terms**

The following list of terms will be defined and used in this study:

*Adjusted Cohort Graduation Rate (ACGR)*: Adjusted Cohort Graduation Rate (ACGR) is the number of students who graduate in four years in a regular high school with a regular high school diploma. It is a way to track a cohort of students from the ninth through the twelfth grades. It was established by representatives of the American Federation of Teachers and the
Business Roundtable and funded by the Bill and Melinda Gates Foundation. State education agencies (SEAs) calculate the ACGR calculating data that tracks each student over time and reports in four and five-year cohorts. An extended-year ACGR is when a student graduates in one or more additional years after their four years in high school (U.S. Department of Education, 2010).

Articulation: Articulation is when a high school class is aligned to a college class and has the same content and outcomes, while the high school student receives college credit (see also dual credit) (Portland Community College, 2016).

Career and Technical Education (CTE): According to the Association for Career and Technical Education (ACTE Today, 2014), CTE is hands-on, rigorous, learning that prepares high school students for entry-level job placement and/or better preparation for college. CTE students concentrate on career building skills that are needed in today’s technology and economy and in addition may receive college credit for their CTE coursework (Hyslop & Imperatore 2013). CTE, previously known as Vocational Education, is a partially federally-funded program through Carl D. Perkins CTE Act of 2006 (Perkins IV) formula grants that teaches postsecondary and high school students specific industry skills for entry-level employment (Perkins Collaborative Resource Network, n.d.).

CTE Completer: A CTE completer is a high school student who has completed and passed through a series of CTE classes that are a part of a program of study. The completion criteria may be different from state to state, and districts may include alternative classes and courses that differ from other states and districts (Oregon Department of Education, 2015). A CTE completer for this study were high school students that have taken two or more credits in a program of study.
Career and Technical Concentrator: According to Oregon Department of Education (n.d.), a CTE concentrator student has completed one or more credits in a CTE program of study, with at least one-half credit being a part of a required course. According to the Association for Career and Technical Education (n.d.), a concentrator is a CTE student who has taken two or more credits (Association for Career and Technical Education n.d.; Oregon Department of Education, 2015).

CTE Participant: Any secondary student who has earned one-half (0.5) or more credits in any CTE classes as part of an Oregon state-approved CTE program (Oregon Department of Education, n.d.).

CTE Program of Study: CTE programs of study (POS) are a coherent sequence of classes that are aligned with college classes that may also offer college credit. CTE classes are formally aligned with a postsecondary institution where a high school student may continue in postsecondary learning (Association for Career and Technical Education, n.d.).

Dual Credit: Dual credit is when a high school student receives credit for both high school and postsecondary schools simultaneously. Dual credit courses are designed to help students achieve accelerated high school and college progress and to eliminate remedial postsecondary classes (Oregon Department of Education, n.d.).

General education course: General education courses usually address academic core classes and are not primarily based on industry-validated CTE standards, unless it is a required elective, such as Photography (Education Commission of the United States, 2007).

Industry-validated standards: Industry-validated standards are led by the Common Career Technical Core, which is an initiative led by the states to ensure a rigorous CTE curriculum that sets high standards that are developed by teachers, business partners, and
industry experts so that the CTE programs of study are validated and meet industry standards. Industry-stan
dards are validated by industry partners and the CTE teachers’ advisory board (Common Career Technical Core, 2017).

*Maximum required credits:* Due to performance measurement and data-reporting requirements, state-approved CTE programs are limited to a maximum of two credits of required courses (Oregon Department of Education, 2015).

*On-Time Graduation:* On-time high school graduation is when a student finishes high school in four years of starting the ninth grade (National Center for Education Statistics, n.d.).

*Student Leadership Organizations (SLOs):* Student Leadership Organizations or SLOs are in-school organizations that partner with outside organizations such as Distributive Education Clubs of America (DECA), SkillsUSA, and others, to help improve high school students’ skill levels and enhance the lives of both teachers and students. These organizations partner with other industries and offer training, conferences and competitions for both state and national levels (Skills USA.org, n.d.).

**Assumptions**

According to Creswell (2013), a qualitative narrative study is the psychological study of an experience and needs a theoretical framework that is informative about the meaning and problems addressing individuals’ social and human issues. The first assumption is that all participants will answer the interview questions to the best of their knowledge. Second, this study explored the importance of CTE for former high school students who were enrolled in postsecondary schooling at a local community college about the value in how CTE prepared them for a postsecondary institution. Thus the assumption is that the community college students found value in their high school CTE classes. Previous research on the economic and
personal differences of continued education supports that postsecondary schooling is vitally important in today’s challenging economy and encourage lifelong learning (Blowe & Price, 2012; Levesque, Laird, et al., 2008; National Research Center for Career and Technical Education, 2007).

Third, the assumptions of the qualitative narrative inquiry study included evidence that supports CTE as an effective way to help students create a pathway for postsecondary education, as well as helping students to stay in school and to graduate (Oregon Department of Education, n.d.). Previous research conducted by the Association for Career and Technical Education (2010) provides evidence that CTE prepares students for entry-level positions in the workforce and postsecondary education. The assumption is that CTE helped prepare community college students for college and career. This research study was a qualitative narrative inquiry study where the primary data was retrieved from in-depth interviews of postsecondary local community college students.

The paradigm of a qualitative, narrative interpretive study is that the researcher knows the reality of the situation by being involved and engaged with the interview subjects to understand their perceptions and then interpreting their experiences (Hathaway, 1995). It is also important that the researcher understands the participants’ complexities, such as how they experience and understand everyday life, including the context and perspectives of the phenomenon being studied (Hathaway, 1995). Hathaway (1995), also stated the researcher gains knowledge and understanding by studying data objectively that is created by the situation or through understanding of the participants’ views by becoming a part of the inquiry, thus having new knowledge validated experientially. Third, the overall assumption of this qualitative narrative
inquiry study was that there was experiential data to support that postsecondary community college students found value in CTE classes taken while in high school.

**Delimitations**

This study focused on participants found value in CTE and their personal experiences of CTE while in high school. The participants had to have taken at least two CTE credits and did not ask to have other participants who had taken less that two CTE credits while in high school. Another delimitation was sample size and may not be representative of a larger sample population. There may also have been a lack of generalizability of the findings and the data collection might have been limited to the specific population of this study.

**Summary**

Hands-on learning has been a focus of learning strategies used in education throughout modern history to learn necessary trades (Barlow, 1976, 2006). Career and Technical Education is a part of this strategy to incorporate hands-on learning with core academics that prepares students for postsecondary learning and the workforce. CTE has changed over time from being a high school program to learn vocational trades, which some people stigmatized to have been for high school students who were not college bound, to vibrant technological programs of study with real-world applications helping to prepare high school students for continued education and lifelong learning (Oregon Department of Education, 2017). A students’ high school diploma is linked to a greater chance of continuing into postsecondary schooling and of better employment in their careers (Gottfried & Plasman, 2018). For example, CTE has recently been in the forefront of education with many new programs of study being implemented in Portland Public Schools, enrolling 14,343 of students in (Oregon Department of Education, 2104). Nationwide, CTE has seen growth in popularity with over 12.5 million CTE students across the nation.
Research studies about CTE have shown great benefits for high school students including higher grades and reduced dropout rates (Gottfried & Plasman, 2018; Association for Career and Technical Education, 2013). Overall, CTE can be extremely beneficial for high school students because it offers them a chance to enroll in dual credit options, engage in industry disciplines, and helps to prepare students for the workforce and postsecondary education. This qualitative narrative study found that community college students found value in their CTE classes while in high school. These findings show that there were benefits for these participants so it would make sense to add more CTE classes to the high school curriculum.

The purpose of this qualitative, narrative inquiry study was to give a voice to community college students about their lived experiences in high school Career and Technical Education programs. Community college students’ experience were important because they gave a retrospective about how CTE impacted their educational, college and career goals. It was also valuable to gather data on how CTE impacted their goals to learn if CTE helped keep these students in high school. This study investigated the importance of CTE engagement and the possibilities of industry and hands-on learning to discover if participants found this important in their education, college, and career goals, and if they could apply what they had learned in CTE to their educational goals.

Students who graduate high school are more likely to have higher incomes than if they did not graduate, and their incomes will be even higher if they graduate from college (Association for Career and Technical Education, n.d.; Martin, Tobin & Sugar, 2002). According to Martin, Tobin, and Sugar (2002), dropouts are more likely than high school graduates to experience health problems, engage in criminal activities, and become dependent on
welfare and other government programs. Eighty-percent of the incarcerated population are high school dropouts, which impacts every person in their communities (Lynch, 2013). Offering a high-quality CTE curriculum helps keep students in school and creates more opportunities while in high school through internships and job-related experiences. It even helps the economy. CTE programs help students keep an interest in their education by using ways of learning through projects that are career related, hands-on, multidisciplinary, and integrated with Common Core State Standards, and academic core classes (American Institutes for Research, 2013). It was hoped that this study would show a positive analysis from the community college students’ voices and their positive experiences with their CTE programs of study. The findings of the study can hopefully demonstrate value to be found by taking CTE in high school and that community college students learned skills in high school that they could apply in college and careers. Such value supports the need for additional and expanded CTE program offerings for high school students.

Chapter 2 visits literature reviews and previous studies that were done on CTE and how it may or can change the outcome of a high school student’s outlook on their careers, career choices and career and college learning. Chapter 2 also focuses on transformational learning and discusses the methodology of how learning is achieved through different phases and student perceptions. Chapter 3 is the purpose of the study with research questions and research design with expected findings. Chapter 4 is the data analysis with the role of the researcher in the process of the study. Chapter 4 also includes a description of the methodology, description of the sample and, the perceived values found in CTE, personal vignettes and a summary of findings. Chapter 5 is the final discussion and conclusions with a summary of the previous chapters, summary of results, limitations and the implications for practice and theory with future
This qualitative narrative study focused on the narrative of community college students and the value they found while taking CTE while in high school. The study was a series of interviews starting with an online survey to determine qualification. The study then had a series of questions regarding the participants’ found value of CTE through interviews using their own voice as data. The study further interviewed three more participants with more in-depth interview questions and four more participants offered a vignette of their experiences from their high school CTE classes.
Chapter 2: Literature Review

Introduction to the Literature Review

The review of the literature for this qualitative, narrative study examined the factors of local community college students’ achievement in Career and Technical Education (CTE) while in secondary school and the perceptions and values of CTE while in high school. The literature review focuses on CTE learning and perceptions as perceived by other researchers. Research on the value postsecondary community college students who have taken CTE while in high school is extremely limited, with the vast majority of CTE research falling mostly into two areas: how CTE helps graduation rates and the likelihood of students dropping out of high school with CTE helping these at-risk high school students and, the long-term effects of CTE (Arum & Shavit, 1995; Catterall, 1986; Plank, 2001; Stern, et al., 1998). The literature review is divided into four major sections: Transformational Learning and Career and Technical Education; Perception studies; Impact of CTE programs on high school completion; and Methodology.

Conceptual Framework

Transformational learning is based on an adult way of learning where the adult meets specific personal, economic and social needs to acquire specific skills. Mezirow is used in this study as a theoretical framework that guided the study. Meaning is the basis of transformational learning and is not only about acquiring knowledge but that “meaning is making sense of or giving coherence to our experiences” (Mezirow, 1991, p. 11). Mezirow’s theory of adult transformative learning is based on the adult learning process which is a complex, personal growth development that involves life-learning experiences from which people draw from to broaden their cognitive learning. Transformational Learning Theory is described as a constructivist viewpoint that influences the way learners construe and clarify their sense of
experience and is key to understanding personal meaning and learning (Mezirow, 1991). Mezirow developed this world-view of meaning by creating meaning schemas that are smaller components of experiences which include a person’s values and beliefs, holding specific knowledge and providing a perspective from which people draw from to learn. Mezirow (1991) stated that “schemas are the structures memories are stored in… and are the lions at the gates of awareness and the building blocks of cognition” (p. 49). If this theory is perceived to be true for this study, then postsecondary students hold values and beliefs about their education, past educational experiences, and learning awareness. Instilling lifelong learning awareness and the importance it has to the ever-changing high skilled workforce while in secondary school is important to bridging the gap between secondary and postsecondary schooling and entering into the workforce. By focusing on CTE in secondary schooling and providing career pathways that offer dual college credit, students can be better prepared and increase their chances for postsecondary graduation and success in continued career advancement and learning (Hyslop, 2007). Abbott, Suires, and Alteri (2016), similarly found that dual credit programs better prepared students for postsecondary schooling and helps create a seamless transition into college and better prepare them for entry-level career positions.

If a CTE teacher, or any teacher, builds on Mezirow’s (1991) theories, CTE students should acquire the value of life-long learning and will be better prepared for the workforce and postsecondary learning as in Partnership for 21st Century Skills. Vockley’s (2010) study found that students with four years in CTE had a 100% placement into postsecondary schooling and that both life-long learning and learning how to learn are significant factors in postsecondary success. As life-long learners go through life, their experiences form their values, beliefs and through experiences, their perspectives about certain life values change and as these elements
change they transform their perspectives and learning processes. CTE is transformative learning in the sense that CTE transforms a students’ perspective about learning, its relevance and the importance of learning and why high school students need to learn what they are learning. The workforce has changed from a substantial industrial workforce to a more technical and knowledge based workforce therefore CTE helps bring to the forefront important industry-based skills that high school students need to succeed in the present-day workforce (Association for Career and Technical Education Issue Brief, 2012). This impacts the secondary and postsecondary learner as they need to understand that learning is a lifelong endeavor that changes with new innovations and technologies in the workplace and they need to be able to adapt.

**Childhood Experiences**

Childhood experiences formulate certain values at an early age and even though perspectives may change, the students’ value systems basically remain the same (Mezirow, 1991). Thus, it is important at the very beginning of students’ elementary educational careers to instill the value of learning, especially in the sciences, technologies, engineering, art, and math (STEAM) because students start to lose interest especially throughout middle school (Gerstien, 2015). Although certain beliefs may change and continue to change a students’ experience, new knowledge will transform a students’ core being by making learning relevant and important. Students will know this through critical reflection, which is one of Mezirow’s theories of transformational learning mechanisms as a person’s’ life experiences provide a starting point for transformational learning in the classroom. CTE provides transformational learning as it allows students to think as individuals or to think autonomously developing their own sense of meaning through a worldview free from accepted values and beliefs received from other students and their surrounding culture. This is also supported through a self-directed and peer learning process
becoming aware and critical of their own and others’ premises. Core academic classes and CTE classes are blending curricula and district and state personnel are aware of the potential for transformational learning in the CTE classroom and potential benefits for the CTE student (DeWitt, 2008; Oregon Department of Education.org, n.d.).

Mezirow’s Learning Phases

Two of Mezirow’s (1991) transformative learning phases are instrumental and communitive learning and are a plan of action for learning that are influenced by Habermas (1984), who was a forward thinker on social research. Instrumental and communicative learning are important factors of learning as they are based on cause and effect. Instrumental learning is the acquisition of skills and knowledge and manipulating the environment by mastering specific tasks through problem solving (Mezirow, 2003). Communicative learning is based on the feelings of the individual and are based in relationships to the surrounding environment, other people and their influences, and power, respectively. Mezirow’s phases have specific categories for interpreting personal experiences, different methods for discovering knowledge, and methods for validating assertions pertaining new knowledge (Mezirow, 1991). Instrumental learning is the controlling and manipulation of the environment—the how and the what, is empirical and derived from scientific methods—while communicative learning is how people learn to understand others. Through inquiry, students are able to better understand themselves and gain additional knowledge through communicative, hands-on learning, and creative inquiry in CTE classrooms.

Through observation, inquiry, situated learning, or learning by doing—which CTE is, with a focus on creative inquiry and hands on learning—a prediction can be made for instrumental acquisition of knowledge when there is a hypothesis of a cause and effect (Lave &
Wenger, 1991; Mezirow, 2003). If one does something in a certain way, the outcome, or effect, will be X. If one does the same thing, but introduces a variable, the outcome or effect will either be the same or different. Observation in the manipulation of the classroom environment is essential to inform the teacher if the outcome is different and to see if the effect of the variable is better, the same, or worse. By creating a hypothesis or prediction and introducing variables, a students’ learning allows for deductive reasoning of the cause and effect through controlled experimentation and problem-based learning (cf. CTE framework). If the outcome or effect is what the hypothesis states, the inquiry is accepted as truth (Mezirow, 1991).

The second part of Mezirow’s (1991) learning is communicative learning and is associated with the interaction and understanding of people, discourse, relationships, social norms of the community, and new perspectives that guide new actions and new meaning schemas. Communicative learning involves alternate ways of seeing and interpretation while being more reflective of personal past experiences and then applying them to new schemes and being open to other peoples’ ideas and input. Through communicative learning experiences, students become more open to discussions and perspectives, and through these experiences, are able to assess other beliefs. Teachers who want to be more transformational instructors and leaders in these two domains must enable certain conditions. According to Mezirow (1991), to give students transformative experiences, the expectations in the classroom are that teachers must give complete and accurate information to the students and the teacher must be free from intimidation and self-deception. Teachers must measure evidence and assess arguments justly and be open to different points of view and care about how students think and feel. Teachers must become critically reflective and aware of what and how they convey information and create
equal opportunities for all students, having them participate in various roles in their own learning process.

**Postsecondary and Secondary Learning**

Learning is different for adults in postsecondary schooling than it is for secondary educational learners, and even the learning differences between 10th and 11th graders and freshman in college are substantial (Appleby, 2014). Appleby noted that postsecondary students claimed that college classes were much different and took more work in order to succeed and that much more material was covered in a shorter amount of time. Adult learners usually prefer to take a more active role and apply their learning to past experiences and personal perspectives, whereas high school students do not always have such a level of knowledge for autonomous thinking, but acquire information and basic skills through direct instructional methods (Appleby, 2014). Adults usually learn what is needed for emancipatory learning, meaning they are learning to enhance their skills sets to remove them or uplift them to a better place personally and economically (Knowles, 1984). CTE provides secondary students the opportunity to engage in postsecondary learning early, on giving them an edge in gaining skills needed to succeed in postsecondary schooling; hence, they are engaging in emancipatory learning (Hyslop, 2014).

Andragogy was Knowles’ (1984) manner of establishing a theory of adult learning through self-concept, the adult learner’s experience, readiness to learn, orientation to learning, and motivation to learn. Adults, unlike high school students, are more self-directed and motivated by personal experiences, whereas children and youth are instructed to learn through pedagogical means. Although there are significant differences in instrumental and communicative learning, learning takes place in both circumstances. Instrumental learning is a process of learning that is based on stimulus and response. The communicative learning is a
philosophy rather than a method and is based on rote repletion and memorization through communication (Cherry, 2018). CTE lends itself to a more self-directed hands-on learning approach and is more aligned with Mezirow’s adult learning theory than pedagogical instruction. Engaging learning activities are an essential part of this learning process and are considered extremely important by Danielson (2011) and are the core of Career and Technical Educational learning and situated learning as proposed by Lave and Wenger (1991). Hands-on projects, or situated learning, truly engages students, and they learn better by doing rather than from only listening or being lectured to by teachers. Activities and assignments that promote hands-on learning tend to share certain characteristics: (1) they emphasize critical thinking and problem-based learning; (2) they permit student choice and initiative; and (3) they encourage depth rather than breadth (Danielson, 2011). Situated learning as an approach significantly supports students or interns to learn by doing or participation as a better way of learning, which helps them to acquire specific knowledge, such as the hands-on approach used in CTE classes (Lave & Wagner, 1991) that builds meaningful schema (Mezirow, 1991).

Hands-on activities also allow students to resource their critical thinking and problem-solving skills as these challenge students to search for underlying causes, explain their thinking processes, and make choices to solve problems (Danielson, 2011). When coupled with a final written reflection or diary of the activity, students can assess their activities and progress and give their teachers a personal accounting and assessment that provides both instructors and their students with valuable information to guide additional learning and helps lay the ground work for further student development (Danielson, 2011). Assessments also give important information to teachers regarding the instructional approaches used (Danielson, 2011). This allows the teacher
to modify instruction and curriculum to better suit the students’ needs and learning habits and the subject as well as modify the assessment and rubric.

**Listening to and Giving Voice to the Student**

The voice of the student is an important part of education and has been missing in education reform until the late 1990s and must now be viewed as an important part of ongoing reforms (Cook-Sather, 2006). A two-way dialog must be established between the student and the educator in order for students to feel as though they are a part of the discussion. Value must be placed in the students’ voice in order to engage them in their education to create a positive school culture, so students can take ownership of their educational pathways (Mitra, 2006). If adults gather information from students when listening to their concerns about their education and experiences, then they can interpret the information and seek meaning from the data (Mitra, 2006). It is important that teachers and administrators acknowledge the importance of the students’ voice as adults cannot fully comprehend their perspectives without dialog (Mitra, 2006). Mitra explained, that through interviews and qualitative inquiry, adults can learn about students’ experiences and find new ways to improve schools. This type of research is aligned to the narrative inquiry qualitative study that was conducted regarding postsecondary community college students’ experiences with CTE while in high school. Through a narrative inquiry interview, Mitra found that the values and perceptions of the postsecondary community college students are an important factor when thinking about enhancing or creating new CTE programs of study. Connelly and Xu (2010) viewed that narrative inquiry for school-based research should be based on the personal stories of the participants and outlined a sequence of constructed narratives that answer specific questions, often using interviews. According to Conner and Zaino (2014), a growing body of evidence found that the student voice has contributed to major
changes, especially in the Philadelphia School District, which reduced overcrowding classes, expanded free and reduced lunches, offered free transportation vouchers, and increased access to college preparatory classes, while giving a student’s voice to influence policy makers.

**Student’s Perceptions**

Schommer (1993) indicated that postsecondary perceptions of early education and learning are fixed and that early education students perceive that knowledge is black and white. When a young child enters into early schooling and content is given by the instructor by drilling or lecturing information and specific facts; students look at knowledge as just a bundle of facts thus establishing that knowledge recall is equal to understanding which it is not (Schommer, 1993). This type of quick learning creates an over-simplified style of comprehension where content is not absorbed fully, but as isolated facts. The more college students continued to identify with this type of early learning, the more likely they are to do poorly in postsecondary schooling (Schommer, 1993).

In a student perception study done over a seven-year period on the sciences with elementary, middle, and high school students, Yager (1986) found a lack of interest in studying science over the course of their educational careers. This perception comes from quantitative data that supported that early education students found that the sciences were more about inquiry and enjoyment. The questions Yager (1996) asked students were basic, such as, if science classes were engaging, and if they were interesting and exciting. The author found positive results dropping over time from third to twelfth graders because the science classes become more lecture-oriented and written than exploratory. Over the course of students’ education in science, these students found it less interesting and had more negative experiences in the field, which means instructors should perhaps think about teaching science differently (Yager, 1986). Yager
(1986) suggested that teaching needs to change to make students feel more engaged (cf. Danielson, 2011) and needs to be constructed in a dynamic way that students see new knowledge as it exists in the real world (cf. Mezirow, 1991). This is exactly what CTE strives to achieve with real-world applications and experiences that prepare students for college and careers.

Edman and Brazil (2008), conducted a study on community college students’ perceptions about ethnic comparisons and school climate. They completed their study by conducting a survey that reached 475 community college students on the comparison of ethnicity and school climate. They found ethnic differences in self-efficacy between the of community college students, with factors of feeling a sense of belonging among students, students’ backgrounds, support services, financial support, and positive self-perceptions. Self-efficacy can be found in students’ beliefs and confidence in their education, and was found to be a predictor of success in community college students (Edman & Brazil, 2008). Edman and Brazilin also noted that most research studies were done four-year universities and did not include data or studies from community colleges. They also found that one may encounter differences in community college students’ perceptions than those from a four-year university. Edman and Brazil (2008), stated that a study done by the Policy Institute of California showed that only 25% of California community college students successfully transferred to a four-year university after completing two years of education at community colleges, and that White and Asians students were more successful than other ethnic groups. The Policy Institute of California study also found that ethnic and minority community college students reported more negative attitudes and had less social support than Whites, thus having lower academic self-efficacy and grade point averages (Edman & Brazil, 2008).
Edman and Brazil's (2008) study on community college students’ perceptions of the college climate regarding ethnicity social supports, school climate, academics, and self-efficacy associated with academic success, found differences in the perceptions of school climate by community college students. African American and White community college students’ results on academic self-efficacy showed that both groups perceived the college climate with high standards, although Asian and Hispanic students’ results were lower. While Edman and Brazil’s (2008) study found the same academic self-efficacy between African American and White students with the same positive view on school climate, African Americans’ views did not convert into academic success as they graduated from community college at lower rates than Whites. Some of the reasons why, were that African Americans thought they were leaving their family values behind and that their cultural and ethnic values conflicted with school values (Edman & Brazil, 2008). African Americans had a mean grade point average (GPA) of 1.85% while White students had a mean GPA of 2.53. The difference in GPAs may have been due to the quality of the students’ high school preparation. For students who felt positive about their educational goals and were self-efficacious, the authors found a poor correlation between high school GPAs and community college success, as high school grades may have been inflated or inauthentic (Edman & Brazil, 2008). The implications for CTE classes is that they are hands on learning and not all lecture so students are learning by doing and not through all lecture type classes. CTE classes are more engaging and are industry oriented helping students prepare for career and industry learning.

In a study done by Voorhees and Zhou (2000), a quantitative study on Colorado Community College student perceptions and goal attainment, they found that not all community college students planned to graduate with a two-year degree and transfer to four-year
universities. Their sample size was representative of over 87,000 community college students from rural, suburban, and inner-city community colleges and there are few empirical studies showing evidence of student success in continuing their education for a four-year degree (Voorhees & Zhou, 2000). Voorhees and Zhou found that almost two-thirds of community college students intended to obtain certification, degrees or to continue in a four-year college, and that one in five students were enrolled in community college to obtain education for a job or to improve their job skills.

Research studies of community college students’ perceptions of value in CTE while in high school are not extent in the literature. The studies reviewed so far in this literature review are qualitative perception studies of community college students that reference school climates and academic self-efficacy among different student populations (Edman & Brazil 2008; Voorhees & Zhou, 2000). Climate and academic self-efficacy findings represented a difference between socioeconomic standing and ethnic groups when community college students felt as though they belonged and had adequate information regarding to the college (Edman & Brazil 2008; Voorhees & Zhou, 2000). The perception studies of the community college students also reported academic success was not always concurrent with the feeling of positive self-efficacy; students’ GPAs supported this finding, although more research needs to be done in this area (Edman & Brazil, 2008). Another factor in community college students’ success may be that not all high school students of color are properly educated to be college or career ready. If they come from an inner city high school, their chances are that they are less prepared, and CTE may be part of the solution to bridge the preparedness gap (Hyslop & Imperatore, 2013).

A qualitative student perception study done by Nodine et al. (2012) focused on groups of 161 community college students, investigating how students perceived their colleges supported
student learning, experiences, and success. The data was pulled from 15 focus groups that lasted for two hours each. Currently enrolled community college students ranged from 18-27 years of age, and those who dropped out were ages 24-29. Two specific focus groups were those who completed college and those non-completers who did not complete college. Nodine et al.’s main focus was asking about students’ attitudes about higher education attainment, what made them decide to go to college, if they were prepared to go to college, and to discuss their experiences in college. Nodine et al. also investigated institutional student supports and barriers that students needed to overcome to be successful for completing or returning to college, and what changes needed to be made for student success. A team of four researchers transcribed and coded transcripts finding themes and subthemes working in collaboration to ensure consistency in coding methods.

The Nodine et al. (2012) study found that more students had similar college experiences, even though their life experiences were varied, despite similar life challenges. The study also found that both completers and non-completers had insufficient support services from colleges to help them succeed and that the non-completers would have welcomed outreach from the college for re-enrollment (Nodine et al., 2012). The study also found that community college students wanted more exposure to career possibilities. This directly corresponds to CTE in the secondary level of education which exposes high school students to different career possibilities. While not every student will have all careers available through the CTE classes offered in their high schools, their schools can still offer some CTE pathways that will help secondary students to explore career options while gaining employable skills.
Career and Technical Education

A rough definition of Career and Technical Education (CTE) is that it is a broad term applied to subjects and fields that once fell under the term of vocational education, although over the years it has evolved to encompass new technologies and skills that are in demand in today’s workplaces (Hastings, 2015). A CTE curriculum emphasizes education through occupations and is an integration of core academics and learning career occupational skills that help prepare students for entry-level jobs and postsecondary education (Hoachlander, 1999; Rojewski, 2000). CTE started out as vocational learning in the early 1900s, and the title CTE became a prominent term in 1971 when the U.S. Commissioner of Education coined the term as a way to rephrase much needed reform in secondary vocational education. The American Vocational Association in 1998 was renamed as the Association for Career and Technical Education, although in 2006 the term vocational was updated to CTE (Gordon, 2014; National Association of State Directors of Career Technical Education Consortium, n.d.). Previously, vocational education was frequently considered less rigorous and better suited for those students who were entering jobs immediately after high school and not going to college. It was also associated with lower-paying jobs and had a stigma surrounding it that it was for students who were not academically inclined (Hamilton, Malin, & Hackmann, 2015). According to the National Association of State Directors of Career Technical Education Consortium (n.d.), “The federal role in vocational education began as a way to prepare students for the newly industrialized workplace” (para. 2, emphasis in original text) and entered into the workforce right out of high school.

CTE has been in a constant state of flux as it has evolved in response to current and changing technology and the economic needs of community and the workplace. Currently, “CTE is a major part of the solution to a myriad of national economic and workforce problems,
such as high school dropout rates,” student retention, and engagement (National Association of State Directors of Career Technical Education Consortium, para.5). According to Taylor and Dual (2015) and Hoachlander (1999), CTE curriculum provides an avenue to include core academics and helps more students meet essential college and career-readiness standards through authentic real-world problem-solving and projects. Real-world application with core classes is important in CTE classes because it helps maintain interest and motivation through real-world application and integration of core classes, instead of having academic classes presented as isolated studies (DeWitt, 2008). Connecting real-world problem-solving learning experiences while in high school is providing high school students a connection to their economic future through relevant integrated academic and CTE classes (Hyslop & Imperatore, 2013).

While definite improvements in CTE programs have been made across the United States, it is imperative that today’s students are better prepared for tomorrow’s workforce. All CTE pathways are to be integrated with core classes and may lead to either certification, an associate degree, or a bachelor’s degree, as today’s job market requires more well-trained educational professionals (Carnevale, Hanson, & Fasules, 2018). Carnevale, Hanson, and Fasules (2018) cited the 1983 A Nation at Risk report which urged public schools across the nation to create a new set of standards to prepare high school students with a high set of academic standards that prepared them for college. This expectation for high schools has changed with ever-increasing standards to better prepare students for careers, as well as postsecondary schooling. Carnevale, Hanson, and Fasules (2018) also stated that on average, CTE only accounts for 2.5 of the 27 credits high school students typically need to graduate, or 9.3% of classes. They found core high school and CTE classes were not preparing high school students sufficiently as not enough career coursework prepares high school students for entry level careers. Barnum (2017) stated that
CTE helps high school students who complete programs of study to have better short-term employment opportunities, but still lack skills to adapt as industries change, even though there is support in helping students with specific skills while in high school. A recent study by Thomas Fordham Institute (2016) stated that an Arkansas high school requires students to take six career-focused classes in Career and Technical Education which help prepare students for career and postsecondary schooling.

CTE provides both high school and college-level CTE programs of study that offer career pathways from which a high school student can gain real-world, hands-on learning experiences that prepares them for the workforce (Sundell, 2017). Secondary CTE classes provide a rigorous curriculum that include core academics that are aligned or articulated with college-level learning. This provides real-world learning problem-solving experiences that prepare students to be college or career ready and helps students make informed decisions about the future of their education and career choices (Sundell, 2017). Students who took CTE articulated classes and who are provided the opportunity to receive college credit while in high school, gives these students exposure to college-level learning experiences while in high school.

**CTE Framework**

Today's economy and changing industries now more than ever need highly qualified entry-level employees to help fill employment vacancies. The value in a CTE framework is that the framework helps by creating classes that are industry relevant through hands on learning and partnerships with industry companies. According to the Perkins Collaborative Resource Network Office of Career and Technical Adult Education (n.d.), and through a collaboration of other CTE organizations, CTE programs of study need to include 10 basic components that create a conceptual framework that contributes to the success of CTE programs. These
components identify the most basic elements that should be in a CTE program of study, with none of them being more important than the other. The states and their local school districts should consider the relative needs for each of the 10 components of their programs. The theoretical framework for this study was a CTE framework based on the Perkins Collaborative Resource Network Office of Career and Technical Adult Education (n.d.), which was developed through a collaboration of other CTE organizations identified in the literature review and includes 10 components: 1: Legislation and policies, 2: Partnerships with industry and community businesses 3: Teacher professional development, 4: Accountability and evaluation systems, 5: Content and standards, 6: Develop that serve students through non-duplicative sequences of classes and non-remedial classes in postsecondary schooling, 7: Earning college credit while in high school 8: Student guidance and support that is based on state and local guidance support standards, 9: Different creative approaches to hands-on learning that incorporates the integration of core academia, 10: Students are assessed through national, state, or local assessment strategies that provide ongoing data.

The first components are legislation and policies. CTE programs of study are compiled through the coordination of federal and state governments and supporting agencies. CTE programs of study are created through an analysis of the labor market to ensure that they are aligned with current market trends and higher paying skills needed by the workforce. The legislative policies should provide district and local school funding to start and support ongoing programs and professional development for teachers to keep them up-to-date with new technologies and industry standards. Funding allows dedicated time for teacher and program developments, including ongoing program improvements, long-term sustainability for programs, open opportunities for all students to gain access to CTE programs of study, and allowing
students to develop an individual career plan including postsecondary schooling. New legislation and policies help produce new guidelines that help teachers grow and enhance current and new CTE programs of study. This allows for teachers to be up to date with new industry standards and provide valuable and relevant industry learning.

The second component is creating partnerships with industry and community businesses. These relationships will include an understanding of the roles of the partners and the programs of study with the businesses keeping an ongoing relationship with the CTE program of study, ensuring that industry standards are aligned with curricula. Partners will be familiar with economic and job skills trends and teachers should be familiar with industry standards and be knowledgeable of ongoing skills needed in the aligned industry. Partnerships with industry companies provide valuable expertise to teachers and students helping both understand the importance of what is learned in CTE classes.

The third component is the quality of teacher professional development, which should be industry-driven and focused to meet industry standards for the field in which they teach. This ensures that teachers have the professional content and knowledge of their fields of expertise and will have the latest in industry skills to align to their curriculum. Professional development should support the alignment of curriculum from secondary to postsecondary schooling while also integrating rigorous core curriculum so that there is no remedial postsecondary coursework. Relevant and current industry skills are important for teachers to be current with industry skills. Professional development is essential so teachers convey the most recent information and skills to students.

The fourth component is accountability and evaluation systems, which must include the “10 Essential Elements of a State Longitudinal Data System identified by the Data Quality
Longitudinal data is information gathered on the same student through a cohort or every year starting in kindergarten through high school, and into postsecondary schooling. This makes it possible to follow a student’s successes and weaknesses and also provides data on high-performing and low-performing schools. The accountability includes administrative data that follows a student from high school into either postsecondary schooling, the workforce, or unemployment, and data is gathered through school enrollments, unemployment records, and wage-earning records. Following student data allows leaders in education to understand where schools need improvement. This helps leadership and teachers understand where educational improvements can be made.

In the fifth component, content and standards are developed to align with college and career standards. According to Perkins Collaborative Resource Network Office of Career and Technical Adult Education (n.d.), collaboration with a postsecondary institution and business partners, CTE programs of study are developed to incorporate industry standards that are valued in the workplace and college level skills to prepare students for postsecondary learning. Programs of study are created to incorporate rigorous core academics in order to better prepare students for core academics for continued education and to help advance students in their careers with disciplinary language, technical skills, and real-world problem-solving skills and preparing students for success in a global economy Perkins Collaborative Resource Network Office of Career and Technical Adult Education (n.d.).

The sixth component is to develop programs of study that serve students through non-duplicative sequences of classes and non-remedial classes in postsecondary schooling. According to Perkins Collaborative Resource Network Office of Career and Technical Adult
Education (n.d.), By not having to remediate, this gives them a leg up in postsecondary and thus provides value. Students entering postsecondary learning should not have to take remedial classes, meaning retaking the same level class they had while in high school. By not having to remediate, this gives students a leg up in postsecondary and thus provides value that students do not have to take college classes they have taken while in high school. The CTE classes should be a series of concurrent classes beginning with introductory classes and ending with classes that are more advanced and sometimes offering a certification in a specific discipline. The CTE classes should progress to occupational standards preparing high school students for either non-remedial postsecondary placement with college credit or entry-level career positions.

The seventh component involves the earning of college credit while in high school. According to Perkins Collaborative Resource Network Office of Career and Technical Adult Education (n.d.), high school students receive college credit through a formal agreement that is made with the high school and the high school teacher and the participating college after the high school teacher has been vetted to meet college requirements. The credit is earned by students applying to the college and then enrolling in the college class through their website as a CTE student. The college credit earned while in high school must be able to transfer to a community or state college which then may be transferred to a four-year institution. The students’ applying to college and enrollment into CTE classes provide a seamless transition into postsecondary learning. When students earn college credit they are more likely to continue in postsecondary learning and have reduced college costs (Association for Career and Technical Education n.d.).

The eighth component involves student guidance and support that is based on state and local guidance support standards. This is to ensure high school students receive counseling and advising from qualified professionals that will guide students into Career and Technical
programs of study that will help identify their careers and interests. Support services should offer different resources such as web-based resources, personal one-on-one student support services, career centers in the high school for research about opportunities, and knowledgeable counselors about the CTE programs in the high school. The support services can help students get an early start on career decisions, better preparing them for college and their careers.

The ninth component includes different creative approaches to hands-on learning that incorporates the integration of core academia where high school students learn to apply disciplinary language, mathematics, and reading to project-based learning. Creative strategic learning should combine project-based learning through a collaboration of CTE teachers and core academic teachers. The CTE classroom should encourage team-building and creative and critical thinking, while solving real-world workplace problems and building essential communications and Career and Technical Student Organization activity skills.

In the tenth component, CTE student must be assessed through national, state, or local assessment strategies that provide ongoing data that shows CTE students are attaining the needed skills to enter into the workplace in a specific discipline. Through industry approved assessment throughout a series of CTE classes, students are able to show that they have the technical skills to either enter into the workplace in a specific industry or continue into postsecondary learning with no remedial classes and if no industry standards exist in a specific filed the state or local district must create industry based assessments. Assessments are an important element for both teachers and students. Assessments give specific data to help let both the teacher and the student where they are in their learning. Industry assessments allow students to know how they are doing in accord to the industry they are learning. Assessments at the state and federal levels give important data to analyze nationwide and at the state levels.
Rojewski’s CTE Framework

Three conceptual frameworks make up the umbrella of CTE: pragmatism, reconstructivism, and essentialism, and when combined, create an overview of the philosophy of Career and Technical Education (Rojewski, 2002). Each of these can best be described as the philosophical foundations of CTE and are considered a modern way of thinking about how CTE should be used; how it works within CTE and core academics and how it can adapt and change programs of study (Ebon, 2015).

Pragmatism considers thinking of an instrument of learning and is associated with problem solving and practical application and testing them in a human experience, based on the theories of Dewey, James, and Pierce, and is considered as the most predominant philosophy in CTE (Miller, 1985, 1996). Pragmatism’s most significant features are change and the reaction to change, and “Change, after all, is among the greatest of philosophic certainties for the pragmatist. To accept and even embrace change is necessary for recognition as a philosophic pragmatist, either as an individual or as a field of practice” (Miller & Gregson, 1999, p. 27, as cited by Rojewski, 2002), pragmatic learning enables students to learn through problem-solving in a logical nature by being open-minded to alternative solutions and creative experimentation (Rojewski, 2002).

The second essential framework of CTE is essentialism and emphasizes the three basic academics of reading, writing, and arithmetic, and the current power structure of middle class values and its’ perspectives of producing and preparing the student with building essential skills needed for college and the workforce and the essential needs of all students (Rojewski, 1995; Sarkees-Wircenski & Scott 2014), These needs are met through organized curriculums and
industry-related experiences from instructors that are separate from academic education (Rojewski, 1995).

Reconstructivism is intended to transform the existing educational practices in CTE using proactive measures, rather than settling for current standards and norms, to include options that are more inclusive and meets the needs of all students (Rojewski, 1995, as cited by Ebon, 2015). Emerging from pragmatism, reconstructivism focuses on the injustices in the workforce and initiates change from a traditional way of the work environment to breaking barriers in both education and the workplace (Ebon, 2015).

The overall impact of the theory from the three conceptual frameworks is an environment that promotes hands-on education with core academics that promotes social change in the work environment. This includes including underrepresented students in certain career pathways such as adding more females and socioeconomically challenged students to Science Technology, Engineering Arts and Math (STEAM) classes. This is an all-inclusive approach to include core academics with industry learning and a focus on transitioning into postsecondary learning and the workforce. According to Kazis (2005), there is need for state and federal policies to support and increase the numbers and low-income students into and completing postsecondary learning. The following figure shows the integration of the three elements that make up the framework of CTE.
It is important to understand the theoretical framework for CTE as it is a guideline on how CTE best prepares high school students through problem solving, teachers experience in the industry they are teaching and how CTE takes a proactive stand in reconstructivism in the school environment and in the workplace.

**Impact of Career and Technical Education**

A growing body of evidence over the past 15 years shows an attempt to increase programs of study available through CTE even with budget cuts in many states, to better prepare students for higher paying jobs and increase educational outcomes (Plank, DeLuca & Estacion, 2008). Action research regarding the impact of CTE supports the fact that CTE helps students in all aspects of their academic careers, including connecting youth with new opportunities such as internships that give students essential skills needed in today’s workforce (Dougherty, 2016).

Dougherty also stated,
In general, taking just one additional CTE course above the average increases a students’ probability of graduating from high school by 3.2% points and of enrolling in a two-year college the following year by 0.6% points… [and that] CTE concentrators are 21% points more likely to graduate from high school than otherwise identical students (with similar demographics, eighth grade test scores, and number of CTE courses taken) who do not concentrate. (p. 5)

There is also strong evidence that students who take CTE classes are performing better in other classes and are more engaged in their work (Demerst & Gerht, 2015). CTE concentrator students graduate at higher rates than non-concentrator students and more than 70% of high school CTE students further their education in postsecondary schooling. (Demerst & Gerht, 2015). According to Butters and Knobloch (2006), the U.S. Bureau of Labor and Statistics stated the more people learn, the more they can earn and the more likely they are to be employed. Butters and Knobloch also stated that the workforce is looking for 10 specific personal employability skills:

1) Communication skills
2) Honesty and integrity
3) Teamwork skills
4) A strong work ethic
5) Analytical skills
6) Flexibility and adaptability
7) Interpersonal skills
8) Motivation and initiative
9) Computer skills
10) Being detailed-oriented

Butters and Knobloch (2006) also found in a study of an Illinois agriculture program where detail-oriented employees were needed, that students learned these 10 personal employability skills through their CTE programs. CTE programs of study became even more effective with the signing of Illinois Bill 575, which initiated higher standards in high school graduation requirements, of which CTE programs can play a big part (Butters & Knobloch, 2006). According to the Association for Career and Technical Education and National Association of State Directors of Career Technical Education Consortium and Partnership for 21st Century Skills (2010), the job market is also looking for 21st century skills such as critical thinking, communication, collaboration, and creativity, and these will be more important in the future (Bray, Hyslop, DeWitt, & Kay, 2010). Personal soft skills are also an important job skill to have in this ever-changing economy and CTE is a way to help students achieve these soft skills such as work ethics, positive attitudes, problem solving, team work and are invaluable tools to have.

CTE programs of study also benefit students and provide value in their educations by helping them to graduate from high school. Five studies, among others, have been done in several states and concluded CTE programs help keep students in school and guide them towards graduation (Association for Career and Technical Education, n.d.; Blowe & Price, 2012; Calcagno, Hughes, Jeong, & Bailey, 2007; Hyslop & Imperatore, 2013; Karp, Leary & Thorn, 2014). Portland Public acknowledged that the increase in CTE programs of study has helped to improve graduation rates (Oregon Department of Education, 2017). For instance, a study in Arizona, and data from the CTE (2004) Arizona data snapshot, stated that 65% of CTE concentrators met or excelled in both math and reading, while non-concentrators fell short at
Cardin (2015), in a study of CTE high school graduation rates, found a “significant difference in graduation rates as opposed to those not enrolled in CTE programs” (p. 60) and that “out of the 51,267 students included in the data sample, those participating in CTE programs graduated at a 12.3% higher rate than non-CTE participants” (p. 62). Cardin also pointed out that in a specific region of Texas, CTE students graduated at a rate of 94%, which was significantly higher than the state average of 88%. The author believed that CTE could be a factor in helping to solve the dropout problem in Texas.

According to Adams (2016), in an address to the Oregon Senate Interim Committee on Workforce, CTE concentrators graduated at higher rates across all student populations, with African Americans, Hispanic, and Native American students graduating at 20% higher rates than non-CTE students of the same populations in Oregon. In Oregon, CTE students graduated at a higher percentage rate than the state average of 72% and were 17% more likely to graduate high school (Adams, 2016). Adams (2016) completed additional research in 2013 in Mississippi, comparing the graduation rates between CTE students and that state’s average. He found that CTE student concentrators graduated 7% higher than the Mississippi state average. According to Camera (2016), in a study in Arkansas, CTE student concentrators were found to be 21% ahead of the state average graduation rate. In the same study, Arkansas CTE student concentrators were more likely to go onto postsecondary institutions, be employed, and earn higher wages than non-CTE student concentrators. According to Superintendent Valenzuela (2016) of the Three Rivers School District in Oregon, their graduation rates from their Science Technology, Engineering, Arts and Math (STEAM) CTE program where the CTE programs are taught in a separate building; students are bused in twice a week to a career like academy student graduation rates are 15% higher than the state average and above the non-CTE student. The overall impact
of CTE programs is that students who take CTE classes are more likely to stay in school, have higher graduation rates, are more apt to graduate on time and continue into postsecondary schooling.

**Career Academies**

There is no silver lining to keep students engaged in their academic studies. All schools need to explore and adopt different strategies to keep students in high school. One of these strategies is creating career academies (Stern, Raby, & Dayton, 1992). The idea of career academies has been around for about 40 years and has taken root in high schools in various locations across the United States to keep students engaged in their education and prepare students for postsecondary education and employment (Kemple & Willner 2008). The first Career Academies were started in the United States in 1969 to help prevent high school dropouts and were part of a prevention plan to help increase student retention rates (Kemple & Willner 2008). The Career Academy concept made its way to California in 1981 where it gained momentum and popularity. The first Career Academy in California was established just south of San Francisco and was headed by Marilyn Raby, a leading CTE researcher (Stern, Charles & Raby, 2010). According to Boyd and Gladden (2013), there are between 6,000 and 7,000 career academies nationwide and about 4,800 high schools have a career academy in place for their students. In Florida, the 2011 legislature required at least one career academy to be in each school district; by 2013 there were 33 career academies across 10 high schools (Boyd & Gladden, 2013).

In 1998, the Comprehensive School Reform Program (CSRP) was implemented by Congress and later became a component of the No Child Left Behind (NCLB) Act of 2002 (U.S. Department of Education, 2004). The focus of the CSRP was to raise student achievement
through a series of school reforms by strengthening proven methods and strategies for school improvement (U.S. Department of Education, 2004). Career academies were among the CSRPs’ most promising components and were an essential method used to help improve school reform and student achievement (Stern, Dayton, & Raby, 2010).

Career academies provide career path educational courses where students will enter into a program with CTE classes aligned with industry-specific curriculums, such as agriculture, dentistry, and human resources. Career academies provide students with hands-on, real world learning, while obtaining entry-level skills sets for employment right out of high school. CTE classes were considered to be an essential part of career academies and can be designed as schools within schools or small learning communities where students will learn in a career-related fields of their choice and experience entry-level college curriculum (Stern, Dayton & Raby, 2010). Career academies can also be separate brick-and-mortar schools that focus on specific industry careers or career pathways (Association for Career and Technical Education 2009a: Career Academies, 2009; Stern, 2010). It is important to discuss Career Academies because they have a higher graduation rate than CTE concentrators who take CTE in regular High school setting (Stern, Dayton, & Raby, 2010).

Career academies have been serving students by providing them with career and college readiness learning experiences through career pathways and has been especially helpful in retaining students of color who are less often ready for employment (Kemple & Willner, 2008). By having career academies that focus on specific industry jobs it helps students find pathways to their career choices and allow them to explore different careers while in high school. They help students when making a choice about their careers and earning college credits before entering postsecondary schooling, thus shortening their time in postsecondary schooling and
reducing costs to approximately $200,000 (Stern, 2010). Keeping students engaged and interested in their learning through career pathways in secondary CTE provides valuable benefits such as reduced costs, work-based learning, early college credits and become college and career ready (Brand; Valent & Browning, 2013).

One of the problems with career academies is the high demand for placements. An incoming freshman high school student, according to Boyd and Gladden (2013), was applying for one of 400 spots at the Marine Academy of Science and Technology, competing against 1,600 other applicants. In Florida, there were more than 2,500 freshman students applying for 1,320 available seats so the demand for more or expanding current CTE career academies is evident. One reason is that CTE career academies graduation rates are higher and parents want their children to acquire a combination of rigorous hands on and core academic education that prepares them for their future. The value of a career academy is that these schools focus on career pathways and business partnerships giving the CTE student a quality experience in a specific field.

**Student Leadership Opportunities (SLOs)**

Student Leadership Opportunities (SLOs), also known as Career and Technical Student Organizations (CTSOs), provide CTE students with leadership, conferences, and competition events. According to Career and Technical Student Organizations (n.d.), there are nine different national student organizations: 1) Business Professionals of America; 2) Educators Rising; 3) SkillsUSA; 4) Distributive Education Clubs of America, now known as just DECA; 5) Family Career and Community Leaders of America; 6) Future Business Leaders of America (FBLA); 7) Phi Beta Lambda, Health Occupations Students of America (HOSA) - Future Health Professionals; 8) The National Future Farmers of America (FFA); 9) Organization Affiliate:
National Young Farmer Educational Association, and the Technology Student Association. These SLO organizations partner with outside businesses to offer leadership opportunities such as internships, scholarships, and other resources to help build CTE students into the leaders of tomorrow (Association for Career and Technical Education n.d.).

Student engagement in these types of organizations helps build self-confidence and promotes self-efficacy and leadership skills needed for today’s workforce (Association for Career and Technical Education, n.d.). In a report by Alfeld et al. (2007) for the National Research Center for CTE Program, the study found that SLOs/CTSOs offered many opportunities for CTE students to engage in industry competitions, and that the more a CTE student was involved with SLOs/CTSOs, the higher their academic grades were for their college aspirations and giving them greater employable skills. The competitive SLO events are both technical and non-technical ones that provide industry-developed scenarios in hands-on competitions for students who may win scholarships and other awards and recognition. Alfeld et al. (2007) also found that when a CTE program of study included membership in an SLO, students were more apt to become more involved with their community and that students felt that their learning objectives were relevant to their education and program of study. The interviews conducted in this qualitative narrative study asked participants if they were active in any CTSOs to explore any value associated with any affiliations with SLOs.

**Dual Credit**

One of the most significant ways CTE adds value and benefit for high school students is through dual credit programming with community colleges. Dual credit is an arrangement through community colleges and local secondary schools to offer college credit to high school CTE students. It is important to note that not all CTE classes offer dual credit. The terms dual
credit, concurrent enrollment, and dual enrollment are similar, but have some differences, and can often be confusing to those who do not know about dual credit.

The dual credit system is a change from the linear education approach established in the 1800s when a student started in kindergarten, went through elementary, then middle school, high school, and then into college or the workforce (Andrews, 2004; Richardson, 2007). The typically linear educational route mandates that every student complete one grade at a time before moving onto the next stage of a student’s education (Smith, 2007). The dual credit experience provides the high school student an opportunity to explore career options and gain college credit while in high school shortening the time in college while lowering college expenses.

When high school students are enrolled in dual credit classes, they must also be enrolled in the college the class is articulated with. The student may receive both high school and college level credit and this option provides high school students with an early college level learning experience (Rodriguez & Hughes, 2012). When a student is concurrently enrolled, they can be on a college campus or in high school, taking both high school and college level classes and receiving credit for the college class that is also applied to high school. Concurrent enrollment can also be when a student is in college, but has not yet earned their high school diploma and the college credit may be applied toward their high school diploma. Not all CTE classes are dual credit, but it is better when a student receives dual credit as it shortens their time in college and reduces fees, as dual credit is often free to the student. There must be a strong collaboration between high school teachers, college instructors and both facilities to maintain rigorous curriculum and positive outcomes for the students (National Alliance of Concurrent Enrollment, n.d.)
In 2002-2003, in the United States there were over 1.2 million high school students enrolled in dual credit classes (Kleiner & Lewis, 2005, as cited by Smith, 2007). Students may also take dual credit core classes that will transfer at the college level so they do not have to take remedial-level, college core classes. According to Smith (2007), dual credit students are 83.3% more likely to complete a four-year degree compared to 39.1% of students not enrolled in dual credit.

An increasing number of students have been enrolling in CTE programs across the nation and in 40 states there have been state-level programs that have been created to help support students to earn college credit while in high school through dual credit high school classes (Lynch & Frieda, 2008). The articles refer to studies done in Georgia, New York, Florida and use of a dataset obtained from the Community College and Beyond (CCB) study (Kim & Bragg, 2008). The CCB study represents students from the states of California, Florida, Illinois, Ohio, Oregon, North Carolina, and Texas with approximately 4,700 students (Kim & Bragg, 2008). The CCB study found that earned college credit and articulated credit had a positive impact in career preparedness. The Karp and Hughes (2008) study also used a data set following students from New York City and Florida that show increased graduation rates and earned college credit and students are better prepared for college, which relates to this qualitative narrative inquiry study which also found that there is a positive impact in college preparedness when a high school student takes CTE while in high school.

Additional studies that reflect and communicate the educational benefits for students who are enrolled in dual credit classes and earn college credit while in high school (Karp & Hughes, 2008). Although not enough is known about high school students’ success in college, CTE programs offering dual credit in high schools benefitted the high school students through
exposure to postsecondary education while easing students’ transition into postsecondary education (Karp & Hughes, 2008). The studies cogitate the short term and long-term effects of participation in dual credit programs showing an increase of dual credit enrollment, the success and positive outcomes of CTE programs of study and college readiness as both dual credit hours and articulated hours earned had significant relationships with college readiness (Karp & Hughes, 2008; Kim & Bragg, 2008).

These studies (Karp & Hughes, 2008; Kim & Bragg, 2008) also asked about the impact of dual credit, articulated credit, and college readiness, to determine whether credit-based transitional programs facilitated college access and success for students and, what are the effects of long and short-term enrollment in CTE programs and, does the program effect vary by high school achievement, gender or socioeconomic status (Karp & Hughes, 2008). The questions asked by the researchers have a common, centralized position that CTE programs of study greatly enhance and benefit a students’ education goals in high school and a students’ transition into post-secondary schooling or work place. The participants in the studies were individuals and groups of students who were enrolled in CTE dual credit classes, as well as students who were not enrolled (Karp & Hughes, 2008).

According to Lynch and Hill (2008), in a Georgia study it followed 17,442 high school students who were enrolled in dual credit classes in a state college between July 2001 and June 2004, with an increase of dual enrollment by 93% over the three-year period of the study. Lynch and Hill (2008), Georgia study was a mixed method and multi-phase study conducted over three years. The remarks from the participant surveys talked about student achievement and their capability to tackle college level work and create career paths through critical thinking about their choices to advance their education through dual credit. Kim and Bragg (2008), completed a
quantitative study showing ranges of data using Astin's I-E-O model of relationships denoting Input, Environment, and Output, sampling 1,141 students. Kim and Bragg (2008), investigated a sample drawn from the Community College and Beyond (CC&B) database that already existed. Kim and Bragg (2008) completed a quantitative comparative case study of students who were enrolled in dual credit classes and of those who were not enrolled in dual credit classes, with information gathered from datasets from New York City and Florida school system, as well.

The results of the three studies (Karp & Hughes, 2008; Kim & Bragg, 2008; Lynch and Hill, 2008), each concluded that high school students benefit when enrolling in CTE dual credit classes. More students continue into postsecondary schooling if they enroll in dual credit options and when students take dual credit they are more likely to enter into postsecondary schooling (Lynch & Hill, 2008). According to Karp and Hughes (2008), when states start to redefine their CTE schooling regarding Perkins grants, policymakers should strongly consider creating dual credit offerings for high school students by collaborating with colleges to produce career pathways that are integrated with high school CTE programs of study (Lynch & Hill, 2008). College departments that have a closed-door policy to articulation and dual credit for high schools should open their education doors to include the dual credit process and give students additional opportunities, as it is important for students to prepare themselves as best and as soon as possible for their careers (Lynch & Hill, 2008).

According to South Texas Colleges (n.d.), CTE and dual credit enrollment increased from only eight students in 1997 to over 12,000 students in 2013 and offered high school students the opportunity to earn an associate’s degree starting as a junior and continuing into their senior year of high school. In one example of an effective dual credit program, South Texas College works with Early College High Schools (ECHS) that are public high schools
specifically designed with a small student population to ensure students graduate high school with an associate degree (cf. Career Academies). ECHS schools have over 3,000 students and were created for students who would not normally continue on into college, thus, creating an opportunity for a seamless transition into a four-year institution or leaving high school with an Associate’s degree (DeWitt, 2017; South Texas College, n.d.). As reported by Southern Regional Education Board, students who take CTE and add dual credit as part of their curriculum, with rigorous core classes, do better in math, reading, and science than students with less integrated CTE programs (Berger, 2013; Techniques, 2008).

New York State and Michigan are two of the most important states for being on the cutting edge of CTE as New York and Michigan are offering CTE schools through early and middle high schools (E-MHSs) (Barnett, Maclutsky, & Wagonlander, 2015). E-MHSs are designed with dual credit in mind and offer CTE to students who may not have had the opportunity to continue in postsecondary education. According to Barnett, Maclutsky, and Wagonlander (2015), the classic E-MHSs are small schools that are on college campuses and offer high school curriculum while also offering college level courses. The college level classes are offered as early as the ninth grade, with no cost to students for the college credits, while also earning high school credits. The classes are small and intimate, ensuring that students get one-on-one instruction from their teachers. Students in these CTE, dual credit programs are eligible to earn at least one year’s worth of college credit and may graduate high school with an Associate’s degree. These opportunities for underrepresented students or students that normally would not continue to postsecondary school provide a college experience while in high school and a smoother transition into postsecondary institutions if a student chooses to go on to college.
The Salem-Keizer School District in the state of Oregon has a new CTE Center (CTEC) where students have CTE educational choices of manufacturing, cosmetology, 3D design, video and television production, and manufacturing (Pate, 2015; Salem Kaiser Public Schools, 2016). The new CTEC is a $12 million investment into the surrounding community in by the school district and Mountain West Investment Corporation, a private real estate and business development company based in Salem, Oregon. CTE funding is provided from Mountain West and provides infrastructure to the building. The district will provide staffing and industry partners and the CTE teachers will come directly from the industry. The CTEC will give students the opportunity to earn dual credit while learning industry standard skills while better preparing students with real world opportunities, internships and certifications. The CTEC plans on adding two to three programs a year for the next five years with plans for a medical program of study, dental courses and agro science course (Pate, 2015).

Not all CTE classes qualify as dual credit, but when a student is enrolled in a dual credit CTE class, the percentage rates of graduation are higher than their non-CTE counterparts, although GPAs were similar in a study conducted in California (Rodriguez, Hughes, & Belfield, 2012). More than ever, today’s technical workforce needs employees who are highly educated because of the ever-changing technologies and the high demand to fill these positions. Today’s high school students need additional education after high school and dual credit enrollment helps to provide them with a pathway to postsecondary schooling by exploring career options while in secondary school. Dual credit learning gives a student a rigorous college-level experience while in high school and often, and frequently, the students are not charged tuition for these credits. According to Rodriguez, Hughes, and Belfield (2012), “Previous research has found dual enrollment participation to be correlated with a range of positive high school and college
outcomes, including college enrollment and persistence” (p. 4; see also Karp et al. (2007); Speroni (2011a, 2011b). Dual credit CTE students are more likely to continue into postsecondary schooling because they have already earned college credit and they also tend to have higher grade point averages and more college credit than students who are not enrolled in dual credit CTE classes while in high school. Including a dual credit class improves students’ academic outcomes and provides a smoother transition from high school into postsecondary education (Zinth, 2014).

College courses that are taught in high school through a dual credit program must be approved through an approval process through the college department to which the high school class is aligned and have the same class descriptions as the college course (Oregon Department of Education, 2014). Articulating a CTE high school classes to college-level classes demands the high school classes have the same rigor and outcomes as the college courses. Collaboration between colleges, school districts, high schools, university faculty, and high school teachers is a crucial part of adding dual credit classes to a high schools’ curriculum. The college credit earned by the high school student is recorded in college transcripts in the students’ name, just as a regular college student. Dual credit instructors must meet the academic college requirements as an adjunct instructor and continue a collegial interaction that includes annual meetings with the college, professional development and address course content, assessment, and course evaluation and development (Oregon Department of Education, 2014). Students register at the college or online as a dual credit student and are held to the same standards as a regular on-campus college student and take the class at the high school or in some cases a high school class on the college campus.
According to Andrews (2004), the amount of dual credit high schools offered nationwide was on the rise and has helped to answer the question about what to do with students during their senior year, as many students have late arrival and early dismissal because they already have enough credits to graduate. According to the Education Commission of the States (2013), dual enrollment programs that focus on CTE classes, were expanding and as of 2010-11, 82% of high U.S. schools had students enrolled in dual credit classes with nearly half of the schools having students enrolled in dual credit CTE classes. For example, the community college serving Portland Public Schools, where the interviewed students for this study attended in the upper Northwest, has seen an increase of high school dual credit enrollment over the past seven years (Oregon Department of Education n.d.). The following table shows the growth of high school CTE staff and students who have earned college credit from the local community college while in high school:

<table>
<thead>
<tr>
<th>School Year</th>
<th>Faculty</th>
<th>Unduplicated Students</th>
<th>Total Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011-12</td>
<td>149</td>
<td>4,284</td>
<td>26,243</td>
</tr>
<tr>
<td>2012-13</td>
<td>149</td>
<td>4,568</td>
<td>28,975</td>
</tr>
<tr>
<td>2013-14</td>
<td>165</td>
<td>5,268</td>
<td>33,003</td>
</tr>
<tr>
<td>2014-15</td>
<td>230</td>
<td>6,742</td>
<td>42,295</td>
</tr>
<tr>
<td>2015-16</td>
<td>268</td>
<td>7,626</td>
<td>45,402</td>
</tr>
<tr>
<td>2016-17</td>
<td>268</td>
<td>6,759</td>
<td>42,432</td>
</tr>
</tbody>
</table>
In the 2015-16 school year, the local community college offered dual credit to 25 school districts, had 266 articulating faculty with 776 articulation agreements with high schools, and 50 different program areas, with a total savings in college tuition costs for students in the amount of $4,358,592 (Portland Community College, 2016). When students access dual credit as juniors or seniors in high school, it shortens the time to receive Associate’s and Bachelor’s degrees. In 2004, it was estimated that it took 5 to 5.5 years for a student to obtain a four-year degree without having earned dual credits (Andrews, 2004). Dual credit is offered in all 50 states and is helping to close the gap between both high school student graduation rates and students who continue into postsecondary schooling or certification (Association for Career and Technical Education, n.d.).

A possible critique of questioning the use of dual credit while in high school includes the perception that students may not receive the same education as in college, and that students may not be mature enough to handle the rigorous curriculum. Other research shows CTE is working and beneficial for students’ growth, graduation rates, postsecondary learning, career pathways, and tuition savings (Smith, 2007).

There have been an increasing number of students who have been enrolling in Career and Technical Education programs across the nation and in 40 states there have been state-level programs that have been enacted to help support students to earn college credit while in high school through dual credit high school classes (Association for Career and Technical Education, 2016; Lynch & Frieda, 2008). Previous research refers to studies done in Georgia, New York, Florida and the use of a data set obtained from the Community College and Beyond (CCB) study. The CCB study represents students from the states of California, Florida, Illinois, Ohio,
Oregon, North Carolina, and Texas with approximately 4,700 students (Kim & Bragg, 2008). The Karp and Hughes (2008) study also uses a data set following students from New York City and Florida. These studies reflect and communicate the educational benefits for students who are enrolled in dual credit classes and earn college credit while in high school. Although not much is known about the high school students’ success in college, CTE programs and dual credit in high schools are benefiting the high school student through exposure to postsecondary education while easing students’ transitions into postsecondary education (Karp & Hughes, 2008). The CBB studies cogitate the short term, long-term effects of participation in dual credit programs with studies showing an increase of dual credit enrollment, the success and positive outcomes of CTE programs of study (POS) and college readiness as dual credit hours earned and articulated hours earned had a significant relationship with college readiness (Kim & Bragg, 2008; Karp & Hughes, 2008). The studies ask about the impact of dual credit, articulated credit and college readiness, to determine whether credit-based transitional programs facilitate college access and success for students (Karp & Hughes, 2008). Karp and Hughes (2008), investigated the effects of long and short-term enrollment in CTE programs and, if the program effects vary by high school achievement, gender or socioeconomic status. The researchers inquired about a common, centralized position that CTE programs of study greatly enhanced and benefited a students’ education goals in high school and a students’ transition into post-secondary schooling or work place.

There is the opportunity that more students will continue into post-secondary schooling if they enroll in dual credit and, there is strong evidence that when students take dual credit they are more likely to enter into post-secondary schooling (Lynch & Hill, 2008). According to Karp and Hughes (2008), when states start to redefine their CTE schooling regarding to Perkins grants,
policy makers should strongly consider creating career pathways that offer dual credit for high school students while collaborating with colleges to produce career pathways that are integrated with high school CTE programs of study (Lynch & Hill, 2008). College departments that have a closed-door policy to articulation and dual credit for high schools should open their education doors to include the dual credit process and help give students additional opportunities as it is important for students to be able to prepare themselves as best and as soon as for their careers (Lynch & Hill, 2008).

**Every Students Succeeds Act (ESSA)**

The Every Student Succeeds Act (ESSA) was signed into law by President Obama in 2015 and while the bipartisan measure replaced the controversial No Child Left Behind (NCLB) Act of 2002, the ESSA is viewed as a more positive change that will benefit U.S. school systems, shifting federal power back to the states (U.S. Department of Education, n.d.). The NCLB was viewed as an important step to shed light on students’ progress, tried to close student achievement gaps for underserved students, and implemented student support systems (U.S. Department of Education, n.d.). Over time, though, it seemed that NCLB was not working and many states were not producing proficiency level learners even though each state was able to define what their proficiency looked like (U.S. Department of Education, n.d.). There was not an efficient way to organize NCLB and accommodations were made for different state that could not meet the requirements (U.S. Department of Education, n.d.). Under the NCLB, states were required to chart Adequate Yearly Progress (AYP) of student academic progress in each school and if a state or school was not able meet their standards, assessments, and plans, they were ineligible to receive federal funding (Kymes, 2004, para. 7). Under the waiver policy the federal government put in place starting in 2009-2012, certain states were allowed to have some
flexibility in the NCLB requirements so they would not lose their federal funding (U.S. Department of Education, n.d.). CTE institutions that offered only CTE programs as curriculum were exempt from NCLB requirements, as CTE programs have well-defined accountability standards, had to meet federal Perkins funds requirements already, and did not receive federal Title I funds.

Lynch (2016) stated that ESSA is a new era for CTE as it reauthorized the NCLB Act, ensuring that all students are prepared for college and career success. Lynch also stated the ESSA places an emphasis on CTE, as CTE prepares students for college and career pathways and promotes positive outcomes for all students through an integrated class environment that includes core academics in CTE classes. According to Phelps (2015), the government has called for college and career readiness as a benchmark and standard in ESSA. The ESSA also includes CTE as a major component in a students’ academic career and strengthens the connection between core academics and rigorous project based CTE learning, but there is little research, yet, to support that CTE and the policies will work for students (Lynch, 2015; Phelps 2015). The ESSA also calls to action provisions that promote specialized professional development for CTE teachers and administration, improved CTE student performance through curriculum, rigor, and improved access to CTE programs, and schools that offer Career and Technical Education (U. S. Department of Education n.d.). The ESSA acknowledges and supports career academies and the important role they can play in school reform, student engagement, and positive learning outcomes (U. S. Department of Education n.d.). The new ESSA will help students with equity and hold schools accountable although different legislation ESSA has a more flexible frame for states to work with (U. S. Department of Education, n.d.)
CTE and At-Risk Students

Even though the graduation rates in the United States education system are slowly rising, the dropout rates and overall graduation rates still need to improve (U. S. Department of Education n.d.). In the 1940s, 60% of the student population in the U.S. between ages 25 and 29 did not finish high school, and yet today, dropout numbers remain extremely high at about 3 million (Gottfried & Plasman, 2018). CTE programs of study can be excellent gateways for educational opportunities that provide skill-building opportunities for at-risk students while in high school (Association for Career and Technical Education, 2012). CTE programs of study are providing urban schools with new opportunities in education and careers for socio-economically challenged and minority students (Barnett, Maclutsky, & Wagonlander, 2015). CTE dramatically increases the opportunity and aspirations for at-risk and socio-economically challenged students to continue their education by either acquiring a certification in a career field or continuing onto receive an Associate’s or Bachelor’s degree (Association for Career and Technical Education, 2012).

Across the nation, CTE helps 94% of all high school students from different socio-economic backgrounds and ethnicities stay in school. The beginning of the 21st Century saw an increase of lower income and rural students, students with disabilities, and students with low academic performance enroll in CTE classes (Association for Career and Technical Education, n.d.). In the 2013-2014 school year, 7.5 million secondary students were enrolled in at least one CTE class with a national average of 3.6 CTE credits earned in 2009 (Association for Career and Technical EducationOnline.org, n.d.). Students with a financially challenging background when enrolled in CTE programs of study, aspire to change from a disadvantaged background and improve their employability (Hioki, Lester & Martinez, 2015). Urban schools face more
challenging academic performances, have reduced resources and, students are more likely to perform far below proficiency standards (Association for Career and Technical Education Issue Brief: Urban Education, 2012). Urban graduation rates are significantly lower than rural graduation rates for the 50 largest cities in the United States. The urban graduation rate is 53% while in the suburbs it is 71%, showing a large gap in graduation results.

Urban students are more apt than suburban students to face more complex challenges such as extreme poverty, family issues, single parenting, young pregnancies and, social pressures that contribute to student attendance, dropout rates and lack of postsecondary enrollment (Hyslop & Imperatore, 2013). The graduate gap though acknowledged by urban leaders where 30% of the nations’ economically disadvantaged students are educated are still looking for a solution (Association for Career and Technical Education, 2012). According to research regarding CTE, it does help solve the problem of dropout and graduation rates by connecting students with their futures in either postsecondary schooling or jobs through relevant hands on learning (Association for Career and Technical Education, 2012). According to the Association for Career and Technical Education (2012), CTE in urban schools can be overlooked as a way to engage students and is not widely used. CTE can be used to help improve student achievement gaps, graduation rates and, student engagement is a major factor in core academic success. Students who find relevance from CTE for their educational or career goals may see better why it is valuable and useful and become more engaged in their education. This is one reason why this study is interested in the voices of community college students about their own high school CTE experiences (Hyslop & Imperatore, 2013).
Benefits of CTE for Dropout Prevention

Career academies are one way to reduce the dropout rate and prevent loss of lifetime earning capacity of students (Stern, Dayton & Raby, 2010). According to Wilson (2012), in a study done by the California Dropout Research Project from the University of Santa Barbara, the cost to the state of one year of high school students who drop out will be $24.2 billion during their lifetimes. These costs take into consideration that most crimes are committed by high school dropouts and include incarceration and victim costs paid by the state and taxpayers (Plank, DeLuca, & Estacion, 2008; Wilson, 2012). Additional data shows that the San Diego school district in 2004-2005 had a cohort of 11,509 high school students in ninth grade of which only 6,769 students graduated on time four years later (Wilson, 2012). Adding all four years of steady dropout rates in San Diego, according to Wilson (2012), the number is a staggering 56,880 dropouts between the ages of 16 and 22. One of Wilson’s (2012) suggested remedies to prevent dropping out is the career academy that graduates students at a 90% rate in San Diego.

Whether a student is at risk for dropping out of high school or is just socio-economically challenged and may struggle in school, anyhow, CTE can help that student stay in school by finding a career pathway or exploring different educational pathways leading towards employment or postsecondary education. According to Hyslop and Imperatore (2013), high school students who take two to three more CTE credits in a program of study are more likely to graduate and at higher rates. Helping students find out what they like to learn while in high school is key in helping them stay in school; CTE offers hands-on, real-world learning experiences that helps keep students engaged in their learning so they can apply what they are learning in core classes to CTE classes, making their learning viable (Kaiser, & Kosine, 2008). CTE teachers and classes are not the only link in the chain. Students and parents need to work
with the school, their counselors and mentors, helping to bridge the gap between education and learning that helps prepare them for postsecondary learning and the workforce (Lynch, 2014). When a student explores CTE in high school, they are more likely to continue on through postsecondary school earning certificates and degrees and are more likely to engage in life-long learning (Frazier, 2015; Lynch 2014).

CTE helps to engage students in both CTE classroom and core academic classes and offers a wide variety of fields that students can explore while in secondary school and college (Association for Career and Technical Education, n.d.). By offering CTE classes, students are able to explore career and postsecondary options while in high school and help make career choices early in their education. This allows for better planning in their career choices if they plan to go to a postsecondary institution. CTE also helps students by including core subjects to help contextualize English, math, and the sciences in a career field, helping to learn disciplinary language and terms.

Students who take CTE classes and pursue a CTE concentrations are less likely to drop out of school and are more likely to go on to college (Berger, 2013). The risk of dropping out is even lower when a high school students’ curriculum is at least 40% CTE and when a school reforms its high academic expectations around CTE, core class academic achievement of students increases (Berger, 2013). Overall outcomes are better for all students when schools offer rigorous programs of CTE than when schools do not offer CTE programs. Another benefit of CTE programs are Student Leadership Opportunities, which can motivate and engage students to remain in high school.

Another benefit of dual credit programs is that traditionally underrepresented students who normally would not enter postsecondary learning are able to start earning college credit
while in high school. This helps socio-economically challenged students financially and also helps to close the academic achievement gap (McGlone, 2014). CTE helps bridge this gap significantly, making a students’ education relevant, because CTE classes are aligned with a future career or college classes, and disadvantaged students who face a variety of challenges are more inclined to stay in school when they see that their education has a purpose (Association for Career and Technical Education, 2012). The achievement gap runs along racial lines, with African Americans and Latino students who graduate from the 12th grade typically graduating four years behind White students, and not possessing the same academic skills. This gap results in lower literacy, reading, and math achievement rates, making these students less employable right out of high school and more unlikely to continue in postsecondary education (Association for Career and Technical Education, 2009).

CTE schools specifically designed for disadvantaged and socioeconomically challenged students but were career-oriented students, saw a significant rise in student academic achievement and graduation rates. One of these schools in Chicago focused on a CTE agriculture program of study because 25% of the jobs in Illinois were agricultural (Association for Career and Technical Education Issue, 2012). The local Illinois CTE institution became a model urban CTE school with the agricultural sciences playing an important part combined with core classes. This is because it provided advanced career pathways classes in agriculture, animal sciences, agricultural mechanics, finance horticulture, and food sciences that are used in nearby industries. Students gained hands-on experience when working on a local 50-acre farm raising sheep, growing livestock of pigs and cows, dairy cattle, and goats, growing food, caring for a green house, working in a food science lab, and working at a farm stand (Association for Career and Technical Education, 2012). This type of interactive education keeps students engaged
through hands-on learning experiences that promotes healthy and steady graduation rates and helps the agricultural industry as well (Association for Career and Technical Education, 2012c).

An aviation CTE school in New York, where 60% of the students are low income, provided career pathway opportunities in the aerospace and aviation maintenance industries and combine rigorous course work in math, science and language arts that were aligned with industry standards using disciplinary language in the core curriculum (Association for Career and Technical Education, 2012d). The school had close ties with the aviation industry and used state-of-the-art technologies and equipment purchased by the school and donated from industries to help students become college and career ready. The award-winning school was considered one of the best CTE schools in the nation. The school focused on having students continue onto postsecondary schooling, even though right out of high school they were able to apply for an entry-level position in the industry that typically paid $50,000-$60,000 annually. The school had an 88% graduation rate compared to 57% citywide (Association for Career and Technical Education, 2012e).

Previous research has determined that there is enough evidence that supports CTE helps reduce the high school student dropout rate and increase the chances of high school students’ completion (Association for Career and Technical Education, 2012; Gottfried & Plasman, 2018). Although there has been a body of research done regarding high school students and impact of CTE while in high school, there has been little research done on college-going behaviors and that certain populations such as students of color, challenged socioeconomic status and urban students would likely have reduced enrollments in postsecondary institutions as these student populations have the lowest graduation rates and postsecondary level success (Gottfried & Plasman, 2018). Obtaining a high school diploma has many benefits such as increased wages,
attending postsecondary schooling and benefits the community as well through additional taxes and community involvement (Gottfried & Plasman, 2018).

CTE Association with Ethnic Groups and Socioeconomic Status

Socio-economic status (SES) and racial and gender inequities in CTE programs of study are found to restrict a student’s employment in specific Science, Technology, Engineering and Mathematic (STEAM) fields (Hamilton, Malin, & Hackman, 2015). The research done in regard to gender and ethnic backgrounds consists of only 25% of total research with ethnic subgroups except whites significantly underrepresented (Hamilton, Malin, & Hackman, 2015). The definition of non-traditional fields, as defined by the U.S. Department of Education, are those where an individual or ethnic group makes up 25% or less that of the occupation or industry field (Hamilton, Malin, & Hackman, 2015). Individuals who are ethnically and racially diverse and people from low SES backgrounds are more likely to enter the workforce right out of high school (Rojewski & Kim, 2003). This population was mostly male and from minority backgrounds and performed at lower rates academically than their peers (Rojewski & Kim, 2003). In the past when people thought about CTE when it was formerly called Vocational Training, it was sometimes thought of as a dumping place for certain populations of students who were considered second rate students, and thus, that vocational training was for students who were not college bound (Smith, 2007). Smith (2007) acknowledged that an insufficient amount of research has been done to determine the role of race and ethnicity in Career and Technical Education. Race and ethnicity are complex and multifaceted constructs and are used to determine differences and there is a major concern about the accurate reporting when it comes to minorities when doing research regarding CTE students (Smith, 2007).
The term *ethnicity* comes from the Greek word *ethnos* and means that groups of people share the same ancestry or similar culture and most likely share the same lifestyle (Dougherty, 2016; Oxford Dictionary, n. d.). Racial and ethnic categories identified by the U.S. Census Bureau (2017) are Black or African American; Hispanic or Latino/a; Asian; American Indian, Native American, or Alaskan Native; Native Hawaiian; Pacific Islander; White or Caucasian; Two or more races; and Other. Enrollment for African American students in CTE is low and this may be due to the lack of diversity in CTE teachers (Waid, 2004). CTE programs of study need to recruit students of color, balance genders, and serve the socioeconomically challenged so that these diverse populations are eventually present more equitably in higher wage paying positions after postsecondary learning. These diverse populations are an important need in the workforce as these people may become leaders of their communities and end up teaching, which is positive, since students need to see teachers who represent a diverse population (Waid, 2004).

African American students also graduate high school at lower rates than Caucasians and fewer African Americans continue onto pursue four-year degrees than Caucasians. The African American and Hispanic populations are underrepresented in STEAM fields, too, which is a fast-growing and ever-changing field that is short of qualified graduates in general to fill these good-paying positions (Fletcher, 2012). Relevancy in education is important as it helps engage students in their learning (cf. Danielson, 2011) and is even more important as teachers apply equity policies in their classrooms to help those students who are underrepresented and may need the additional help. Without the equitable, hands-on learning CTE offers, 81% of students who had dropped out of high school would have remained in school if they had applicable real-world learning while in high school (Association for Career and Technical Education, 2012a). African American and Hispanic students who drop out of high school are less likely to go on to college.
than White students. Urban African American and Hispanic young male students have a higher percentage in urban, inner city schools and drop out because they often do not see the relevance in their academic schoolwork (Association for Career and Technical Education, 2012b).

It is important that educational leaders focus on closing the gap in the minority groups who fall behind in high school, especially in STEAM classes which are typically can lead to higher paying wage positions (Hamilton, Malin, & Hackman, 2015). In a study by Hamilton, Malin, and Hackman (2015), overall averages showed White students were 67.6% more apt to enroll in CTE/STEAM classes and 64% more likely to enroll in other CTE clusters, while Hispanic CTE high school students were 14.8% more likely to enroll in CTE/STEAM classes and 16.3% more likely to enroll in other CTE clusters. African American students were 12.1% more likely to enroll CTE/STEAM courses while enrollment in other CTE clusters was at 14.1% (Hamilton, Malin & Hackman, 2015). The sub populations in this study did not conclude that they chose or did not chose specific classes.

**CTE Graduation Rates**

CTE helps students stay engaged and are more motivated with their coursework and, because CTE classes are related to real-world projects and students see the relevance in their learning and CTE helps retain students in high school especially with the three mechanisms described by Gottfried and Plasman (2018): skill building, engagement, and real-world relevance. These three mechanisms contribute to a successful high school CTE experience and helps increase the expectations for a student’s graduation. The first mechanism, CTE skill building, relates to critical thinking, research and development, problem-solving logic, and collaboration and introduce students to a variety of disciplinary languages and a broader range of industry skills than in core classes. The second mechanism described by Gottfried and Plasman
(2018), was engagement, which can be abstract and theoretical. Because CTE focuses on careers and industry, and can be seen as a link between core classes and identifying industries, students may become more engaged through hands-on experiences. As students become more engaged, the less likely they will be to drop out. The third mechanism Gottfried and Plasman (2018), presented was real-word relevance, which is how CTE students learn what is relevant in the jobs of industries to help make them successful either in careers right after high school or by taking high school classes that are relevant to a college career, thus bridging between core class learning and industry experiences. A good example of these mechanisms is one provided by Frito (2017), who discussed a CTE agricultural class. Frito stated that a teacher named Wood took the time to make sure her student, Mink, would succeed, reach her potential, and that Wood was truly a mentor. Frito (2017) continued:

Because of Wood’s unwavering determination to see her succeed, Mink was well-prepared to take on a leadership role at the local and state levels of the National FFA Organization, one of nine career and technical student organizations. Mink had multiple opportunities to develop and hone her leadership skills and make an impact on her community. (p. 31)

Frito’s description is similar to what a narrative inquiry design reveals about participants’ experiences through their stories and lived experiences (cf. Connelly & Clandinin, 2006).

Research shows that CTE helps increase academic grade and graduation and retention rates. Castellano, Sundells, and Richardson’s (2017) three-year study stated that from a sample of 2,004 students in high schools, 1,175 were enrolled in dedicated CTE programs of study in two high schools and 829 were enrolled in non-CTE concentrating high schools. The population from the dedicated CTE high schools met core subject benchmarks and had higher grades overall.
that non-dedicated CTE high schools. The CTE non-concentrators who took less than four CTE classes also had a weaker academic program, with less than half meeting core benchmarks, and only half aspiring to continue on with their postsecondary education (Sundell, 2017). According to Rodriguez and Hughes (2012), Bottoms (2008), and the National Association of State Directors of Career Technical Education Consortium (n.d.), when students are enrolled in CTE classes, the likelihood for them to stay in school is higher than for non-CTE students, and the pattern is also more likely to continue on into college.

**CTE’s Overall Impact**

Today’s global economy and rapidly changing workplace demands that workers have a desire for life-long learning because of constantly emerging technologies. Companies now require managers and workers to know how to manage content, rather than just people, with organizations needing to provide ongoing professional development and retraining to compete in the market (American Institutes for Research, 2013; Rojewski, 2000). In the past, workers who came out of college could expect to stay in the same position for life, with some retiring with a pension. The rules have changed in the new economy, demanding new ideas through creative inquiry, creative problem solving (CPS), changing educational knowledge due to new technologies, and employees needing to have a broader set of skills that include both technical and interpersonal and communications skills (Rojewski, 2000). In addition, employees will need higher level critical thinking skills, such as advanced creative problem solving, decision-making, resolving conflict, information management, creative brainstorming, and ideation, with a capacity to reflect and dissect information (Rojewski, 2000). CTE is in a position to prepare and support student guidance with the beginning of their career skills in the areas that the new economy and society needs.
In the past, high school students were also able to get a job after graduating high school; however, this is not the case in today’s ever-changing job market. According to Sundell (2017), the number of jobs that were available to high school graduates has shrunk. Senior citizens and people who have had some or no college are now taking these low paying jobs. Today’s economy and job market requires a more advanced and technical education than ever before and CTE helps students get a jump-start on their educational goals and careers while in high school. When students graduate high school, they need to be career and college ready and CTE programs of study provide students with a rigorous and relevant curriculum paired with hands on skill building to help them be successful and to continue on with their education, go into the job market or both (Dagget, 2010; Lynch, 2013). According to Advance Career and Technical Education.com (n.d.), there are now approximately over 12.5 million students currently enrolled in CTE classes including high school and college. According to Dougherty (2015), high school students are more engaged and graduate with higher grades than non- CTE students. A 70% rate of CTE students pursue postsecondary learning or earn a credential and four out of five students are still enrolled in college two years later. Because of the overall climate and issues with dropout and graduation rates and the claims that CTE high school students perform better, educational leaders will have to clearly demonstrate how CTE effects a students’ academic results and how it helps the business community.

Full CTE schools and CTE career academy schools are high quality incubators of our future workers and Association for Career and Technical Educationonline.org (2012), holds to their idea that specific actions are essential to maintaining and advancing CTE programs through promotion and funding. When students enroll in CTE classes it helps them see the relevance and connection of other core classes that are connected to specific industries and needed to succeed
academically and to be successful in life. Students will begin to see what types of core classes they will need to take while in high school and in college to become successful in their career while in high school because CTE classes expose students to specific academics need to be successful in their careers. CTE classes also help students relate to how their course work is aligned with their career goals and helps students see the importance of lifelong learning and staying in school (Rodriguez, & Hughes 2012). When students use hands-on learning, and use real-world creative solving problems, they are more career college ready and know more of what is expected of them when they enter the workforce or college (Rodriguez, & Hughes 2012).

Most research that has been completed shows there is a definitive difference when students are CTE concentrators then when they are not. When a student takes a series of CTE classes, weather in a pathway or not, the increase of them graduating is 3.2% higher and, 70% of CTE high school students pursue postsecondary schooling (Demerst & Gehrt 2014). According to Association for Career and Technical Educationonline.com the number is even higher at 75% (Association for Career and Technical Educationonline.org, 2015). Reducing the school dropout rate is a high priority across the nation and CTE programs of study can help reduce the dropout crisis. When students become more engaged with their own learning the tendency is that they can see the meaning in their studies and this helps keep them in school boosting graduation rates (Daugherty, 2016; Demerst & Gehrt, 2015; Frazier, 2015).

According to Gottfried and Plasman (2018), juniors and seniors who take CTE classes in their third and fourth years are more likely to graduate on time and less likely to drop out of school. Juniors who take one CTE credit are 1.5 times more likely to graduate from high school on time and 1.6% less likely to drop out of high school. Seniors who takes one CTE credit while in their last year of high school are 2.1 times more likely to graduate and 1.8% less likely to drop
out. The benefits from graduating outweigh those from not graduating, such as an increase in wages, flexibility in careers, contributions to society, transferable personal soft skills, and hard skills such as the use of computer software. In the ever-changing world of information technologies and new manufacturing, there is an increased knowledge base that is needed and can only come from a student’s further formal education and training. If a student drops out of high school, it is unlikely that they will continue any form of education (Lynch, 2016).

CTE is available in 94% of all high school students in the U.S, including all racial groups and sub-populations, and starting in early 2000, lower income students, students with disabilities, and students who entered high school with lower scholastic knowledge were more apt to enter into CTE programs of study (Association for Career and Technical Education, n.d.). Through promotion and substantial funding for CTE programs and creation of additional CTE programs will help students academically, and also help businesses, the local community, and all of society (Association for Career and Technical Education, 2015). If government and school districts would invest more federal and state funds into CTE programs of study and career academies, enhancing students’ hands-on learning and provide counseling to help prevent dropout rates, society would see a drop in incarceration rates, higher graduation rates, reduced poverty, and fewer people on government aid and more well-educated people entering into long-term, higher paying careers (Lynch, 2013).

In the past, vocational training was an avenue for those who did not plan to go to college and trained students for low-level, blue-collar jobs. Vocational learning has changed into vibrant CTE programs that are rigorous, offer hands-on learning approaches that promote critical thinking through real-world learning projects and prepare students for career and college readiness (Brand, Valent, & Browning, 2013). CTE programs also teach students that critical
thinking, Creative Problem Solving (CPS) and collaboration are important skills needed in todays’ work environment. CPS is when the imagination is valued as much as knowledge (Brand, Valent, & Browning, 2013). The process of CPS and divergent and convergent thinking allows for new discoveries rather than just using the current knowledge one knows. CTE allows for both divergent and convergent thinking through brainstorming coined in the 1940s by Alex Osborn. The literature review presented a myriad of perceptions and positive results for having high school students take CTE as part of their curriculum. The literature review identifies specific skill industries, such as agriculture and technology, and how important it is in today’s job market for students to be better prepared. This qualitative, narrative inquiry study explored this aspect of the literature review.

**Methodology**

The central research question that guided this qualitative narrative, inquiry study was: What value do local community college students believe their high school Career and Technical Education program participation provided? Qualitative research is defined as a situated activity that locates the observer in the world to study behaviors in a specific, natural setting, and beginning with assumptions that address social problems within the meaning of individuals or groups (Creswell, 2013). According to Xu and Connelly (2010), Connelly and Clandinin were the first to use the term narrative inquiry in 1990, a qualitative research design that has continued to change and expand to keep up with developments in the social sciences and a diverse group of other fields beyond education. Narrative inquiry for the researcher in school-based, experiential studies must become part of the experience in the life space of those being studied. According to Xu and Connelly (2010), who cited Polkinghorn (1995), narrative inquiry is a form of discourse
or story of human lived experiences and that every story is a portal that the researcher may enter into the world of the participants.

The researcher is a key participant in a narrative, qualitative research study as researchers conduct past literature reviews on the subject, collect data, conduct interviews, observe behaviors, and analyze artifacts and effects. Researchers organize all gathered data to find patterns, categories, and themes from the bottom up into abstract units of information to shape a set of comprehensive themes (Creswell, 2013). A qualitative, narrative inquiry design was chosen because of the interest in learning about the lived high school CTE experiences of community college students. According to Creswell (2009), narrative inquiry is a way to explore and understand the experienced meanings of individuals and groups related to a social or human issue.

Characteristics of qualitative research are defined by certain traits used by the researcher. The research study is conducted in the natural setting of who or what is being studied, and when interviewing in a neutral environment, so both the subject and researcher feel comfortable (Creswell, 2013). The researcher is a major factor in the collection and interpretation of data. Qualitative research is comprised of different methods and involves complex reasoning with both inductive and deductive interpretations (Stake, 2010). The narrative inquiry researcher focuses on the participants and their environment, meanings, and multiple views, and is situated within the environment of the participants and their lived experiences as told through personal narratives. The researcher conducts an evolving and emerging research design, allowing the research to be fluid and have the ability to change. Stake (2010) proposed that “new questions emerge more frequently than new answers” (p. 28) in such a process. The narrative inquiry researcher conducts a reflective and descriptive narrative study that focuses on a holistic and
complex interpretation of the participants in their environment. The researcher must consider ethical treatments and circumstances of the participants in the study so as not to offend or hurt participants (Creswell, 2013).

Ethical considerations must be taken into account at the beginning of the research study as the researcher must assess specific issues facing the participants who may not want to disclose and respect their privacy. Creswell (2013) stated his approach in thinking about ethical issues in qualitative research is to examine them as they apply to different sections of the research process and that they should apply before the study, during the research phase, and during data collection, analysis of the data, and reporting of the data.

One characteristic of narrative inquiry research studies is use of vignettes, where the researcher, “emphasizes personal experience of a particular situation, and knowledge of the classroom (or other site) as a teacher (or researcher) might know it” (Stake, 2010, p. 29). Vignettes are stories that provide a first-person experience, written either by the subject or the researcher to allow the reader a more in-depth view of a particular instance during the research. Vignettes may be used for three main purposes in social research: they allow actions in a specific context to be explored, help to clarify a person’s judgment, or provide a less personal and less threatening way of exploring sensitive topics (Barter & Renold, 1999). In qualitative research, vignettes or interviews used in narrative inquiry designs, the researcher allows the participants to define the situation in their own terms, giving them a voice in the research study (Barter & Renold, 1999).

Qualitative research differs from quantitative research in that it is primarily exploratory, subjective, and includes personal experiences that are “often long and episodic” that evolve over time with the researcher’s bias understood from the beginning (Stake, 2010, p. 29). Quantitative
research tries to answer a question through a quantifiable method generating numerical data that can be used as statistics (Crewsell, 2013). Qualitative research tries to provide data to understand reasons, meaning, experiences, and underlying motivations to insights of a problem or social issue (Crewsell, 2013). Qualitative research and data collection methods may vary from unstructured to semistructured techniques where quantitative research uses a very structured scientific method (Crewsell, 2013. Creswell (1994), as cited by Camp (2001), categorized theoretical frameworks into three groupings: (1) Grand theories used to explain large categories of phenomena, those of which are more common in the natural sciences; (2) Middle range theories that sit between an everyday, working hypothesis; and (3) Substantive theories that offer explanations in a restricted setting or of a limited scope. Overall, the qualitative research method is a more personal way of doing research which tries to understand the meaning and issues of a person or a group of people in their natural setting, sometimes informally, whereas, quantitative is by the numbers, sometimes more formal, and impersonal. When a researcher uses a survey and or an interview, the researcher’s qualitative approach seeks to define and gather a detailed account of a behavior, beliefs, and experiences within a context of which they have occurred (Crewsell, 2013).

A qualitative, narrative inquiry approach was best achieved in this study through personal interviews that allowed interviewees a means to give a personal narrative or story in their own voices of the specific topic of having taken CTE classes while in high school. This method will give the researcher a first-person account of the community college students’ experiences of CTE while in high school, making this study a substantive, but limited scope, qualitative narrative inquiry study (Alshenqeeti, 2014; Camp, 2001). The interviews completed sought to
reveal the perceptions of value the community college students may have had of their high school CTE experiences.

Other narrative inquiry perception studies using narrative inquiry, similar to this study regarding postsecondary students’ perceptions of value of their high school Career and Technical Education experiences, were limited because no other qualitative, narrative studies were found in the extant literature in education or other fields about CTE and community college students’ perceptions. The literature only contained a few other qualitative perceptual studies of college students. For example, Wang (2016) used a narrative inquiry approach to understand the lived experiences of student nurses. Wang’s study provided the researchers with lived human experiences to help understand the relationships between Chinese nurses in Australia and their patients, allowing the nurses to tell their stories through a series of interviews. Wang (2016) acknowledged that little prior research existed that explored this phenomenon, and that there was a gap in the field that needed to be filled to close the gap in the literature. The purpose for Wang’s study was to explore and interpret, through a narrative inquiry, the learning experiences of Chinese nursing students and their career opportunities by giving the nurses a voice to tell their stories (cf. Clandinin, 2006). Wang (2016), sought to understand how cultural interactions of international Chinese nursing students addressed their specific learning needs so that universities and teachers might learn how to better teach the Chinese nursing students. The process Wang (2016), used was a three-dimensional, qualitative, narrative structure where the data was in the form of field texts, interviews, observations, and conversations using interpreters to bridge the communication gap and to better understand the lived experiences of the Chinese nurses. In addition, the nurses were all assigned pseudonyms to protect their identities.
The three-structured design of Wang’s (2016) research included interaction, continuity, and situation/place. The interaction included a personal aspect of feelings, conditions, hope, and moral dispositions. The social aspect was designed to look outward to their environment and interactions with other people, assumptions, and viewpoints. The continuity aspect was intended to remember past lived experiences, feelings, and narratives and also to look at the present stories and how they relate to events and actions from the past. Continuity explored the possibilities of the Chinese nurses’ future experiences while the situation/place refers to context of a physical landscape and settings. Wang’s process was to analyze the data through transcribing coding, gathering additional, updated data though personal emails, identifying, defining and, reviewing themes, and finally producing their report. Wang concluded there was no better way than to let a person’s voice be heard and to let a person speak about the lived experiences to gain insight about specific issues. Similarly, in this study, the researcher will conduct qualitative, narrative interviews with community college students to gather their stories and experiences and use a process like Wang’s approach.

Holmegaard (2015) used a qualitative, narrative design to study 38 Danish upper secondary (postsecondary) students in six upper secondary schools. Holmegaard employed a theoretical, narrative framework combined with post-structural thinking and studied two schools from an urban area, two schools in a suburban area, and two schools in outlying towns to gather and analyze differences in student populations. The student populations varied, including some from privileged families, multi-ethnic backgrounds, and some students traveling an hour to get to school. Holmegaard designed a questionnaire of 31 questions to select students to participate in a focus group regarding Science, Technology, Engineering, and Mathematics (STEM) education in upper secondary education. The Danish upper school system differs from the U.S. college
system in that the Danish system is free and pays upper students a stipend to continue their education. Holmegaard pointed out that students continuing their education are faced with decisions about how their cultural influences shape their everyday meaning. He stated that through a consistent and progressive story, students bring with them a myriad of resources and personal histories that influence their choices in education. Holmegaard’s aim for the study was to investigate how upper school students make their choices through a pattern seen in the students’ narratives.

Holmegaard (2015) used interviews and semistructured focus groups to collect data through qualitative, narrative inquiry about the lived experiences of upper student choices in science education and their expectations for their future. A six-step thematic approach was used to identify patterns in a constructive approach through organizing the narrative script by transcribing data, finding sub themes in the interviews, such as academic interest, coding the data, situating sub-themes, analyzing a more comprehensive meaning of the data, and reviewing themes. In the final step, Holmegaard reviewed the themes to ensure the theoretical framework worked with the complete data set. A final analysis was then constructed, looking deeper into the students’ narratives. Holmegaard’s results showed that students’ narratives collected through inquiry explored their decisions about continuing their education in science. The students’ decisions in their higher education showed that their culture and interests in science were not the only factors and that other interests were taken into consideration, such as staying close to home and their friends. Holmegaard’s research design and analytical process were also influential for the design of this study.
Summary

The literature review sets the foundation of this qualitative, narrative inquiry study with a transformational learning framework as described by Mezirow (1991). The transformation framework stated that meaning, according to Mezirow (1991), is the basis of learning and that the adult learns from experience, which is described as a constructivist viewpoint, from which adults understand personal meaning. It is from a worldview built from schemas, which are the components of lived experiences used to build adults’ learning.

A successful CTE program of study will have these 10 components to meet the needs of both students and teacher ensuring a strong growth for each through professional development and student learning. The literature review, also examined Rojewski’s theoretical framework for CTE and how it is a modern way of thinking about CTE combining pragmatism, reconstructivism and essentialism and how these three elements work together through problem solving, reading and writing, and math building essential learning skills (see Figure 1). The third element, reconstructivism, was very important for this study because it identifies how students feel included and receive what they to be successful.

Today’s economy demands that students leaving high school and entering into the workforce are better educated than ever before because of higher educational demands with more complex skills knowledge. According to Brand, Browning and Valent (2013), “Two thirds of jobs created in the United States by the year 2018 will require some form of postsecondary education” (p. 1). Students must also have a more creative and skills-based knowledge to be more prepared than students in the past for entry-level careers that offer better pay (Rojewski, 2000). CTE classes help high school students obtain a higher level of industry-related skills from teachers who previously worked in the industry (Rojewski, 2000). A CTE program that
offers students a rigorous curriculum based on industry standards, combined with academic core classes will help students stay in school by providing engaging hands on skill building classes in a career learning environment (Association for Career and Technical Education, 2016). While CTE helps to keep students’ interest in school, they also gain essential industry skills the workforce currently demands. Students also have a decreased risk of dropping out of high school when they add CTE courses to their curriculum (Martin, Tobin & Sugai, 2002). CTE also increase so overall graduation rates and students are more engaged in their education if classes helped them acquire skills and knowledge relevant to future careers (Association for Career and Technical Education, 2016). Considering the benefit for any public school district that has a low graduation rate, increasing CTE programs would and should be a part of the solution to the graduation crisis and included in the schools’ improvement plans, since national studies show an increase in high school graduation rates among students who are enrolled in a CTE program (Association for Career and Technical Education, 2016). The theoretical frameworks discussed in this literature review have been influential in guiding design of the qualitative research questions for this study. They provided a theory of how students learned, why they want to learn, and the transformational experiences they lived while taking CTE classes while in high school and what was found important in hindsight regarding the value of their CTE programs of study.
Chapter 3: Methodology

This chapter focuses on the methodology of qualitative narrative inquiry design, the study’s research purpose, and objectives of this qualitative, narrative inquiry study. This study sought to determine if community college students found value by taking Career and Technical Education (CTE) classes while in high school. Through in-depth interviews of postsecondary students who completed CTE classes while in high school, the proposal aimed to justify that the research findings were viable, and had purposeful design and contributed new meaning to the field. The postsecondary population studied were CTE concentrator students who had taken two or more CTE credits while in high school. It is important to note that Portland Public School District has been trying to increase the graduation rates and decrease the dropout rates and while local graduation rates have been rising they are still low compared nationally and the state of Oregon graduation rate is listed 47th in the United States (Hammond, 2014). The dropout rate for Portland Public School District in 2013-2014 was 4.7%. The graduation rate increased in the 2014-2015 school year to just fewer than 74% meeting the state average which was also 74%. Although a single, overall solution to the graduation problem in high schools does not exist, by creating more engaging classes, such as those offered by CTE programs, with a focus on career and skill building and the addition of earning more college credit while in high school, could help the problem (Rodriguez & Hughes, 2012; Karp & Hughes, 2008). If postsecondary students find value in CTE programs while in high school, and if CTE helps these high school students continue on with postsecondary learning, then CTE in high schools should be strengthened and expanded.
Purpose of the Study

The purpose of this study was to determine if local community college students found value in high school CTE programs of study. A series of interviews started with a preliminary screening survey, then a second series of in-person interviews, then a follow up with a vignette and more in-depth interviews. The collection of narrative data was analyzed to see if the value in CTE classes that were previously taken as high school students. The study hoped to discover if taking CTE classes while in high school provided value for postsecondary learning and high school retention. The study investigated if the value that local community college students placed in their CTE educational career pathways increased high school student engagement, graduation rates, and continued college education. If this was affirmative, then CTE would provide positive lived experience for the study’s participants. This qualitative, narrative inquiry study included completion and analysis of detailed interviews of a specific population—local community college students who were enrolled in CTE programs in high school—and included comparative statistical high school graduation rate data from local surrounding districts.

The importance of how students valued their high school CTE experiences was determined by interviewing former high school CTE students who are now in community college. The community college research participants took two or more CTE classes in an urban or suburban school district. The study was interested in finding out if there was personal value in CTE enrollment while in high school. The interviews of postsecondary students were conducted to see if CTE programs of study while in high school helped with student retention, dropout prevention, high school completion, graduation and, subsequent college enrollment. The qualitative narrative interview data collected was analyzed for potential values to CTE enrollment. The specific problem is the lack of prior substantial, qualitative narrative inquiry
research that provides data on postsecondary students’ perceptions about the value of CTE in high schools. If CTE has a positive influence in preparing high school students for continuing into postsecondary education and the workforce so as to become career ready for entry level positions, more support is needed for CTE at the secondary education level.

Research Questions

The importance of how students value their high school CTE experiences was determined by interviewing former high school CTE students who are now in community college. The community college research study participants who were interviewed have taken two or more CTE classes in an urban or suburban school district. The study was interested in finding out if there was personal value in CTE enrollment while in high school. Interviews of postsecondary students were conducted to see if CTE programs of study while in high school helped with student retention, dropout prevention, high school completion, graduation, and subsequent college enrollment. The qualitative, narrative interview data collected was analyzed for potential values to CTE enrollment.

The following central research question guided this qualitative, narrative inquiry study:

What value do local community college students believe their high school Career and Technical Education program participation provided?

The study was enhanced with the inclusion of three additional research questions that supported the central research question:

1. How does participation in a high school CTE program prepare students for community college?

2. What skills and attitudes were learned in high school CTE programs that have helped local community college students to be successful in postsecondary education?
3. How does participation in CTE programs in high school contribute to why local community college students graduated from, or did not drop out from, high school?

**Research Design**

Unlike quantitative studies where the data is primarily numerical, qualitative data explores the lived experiences of the participant or subject being studied (Creswell, 2013). When using a qualitative, narrative inquiry research design, the emotions and perspectives of both the participant and the researcher must be taken into consideration (Creswell, 2013). The research design used was a qualitative, narrative inquiry research study that explored the personal value of CTE concentrator students’ experiences through semistructured interviews from an upper northwest public community college. This study examined if local community college students found value in their high school Career and Technical Education programming. The narrative inquiry methodology is a way to understand the personal lived experiences of individuals as human beings while focusing on personal meaning and the meaning derived from their experiences (Waters, 2017).

The first phase of the research was to initiate a preliminary survey to determine and select the most appropriate participants for subsequent face-to-face interviews. The preliminary survey was administered online through Qualtrics and was a short survey of 13 questions that determined students had previously taken two or more CTE credits while in high school (see Appendix A). The preliminary survey also asked respondents to report ethnicity and socioeconomic standing while in high school by asking students if they were approved for a free or reduced meals. The preliminary survey was used to determine if potential participants were enrolled in a program of study and completed any type of CTE certifications while in high school. The preliminary survey also asked if CTE students were a part of any CTE leadership
groups such as Skills USA and DECA and if, now as postsecondary students, they were still in the same field of study as their CTE studies had been while in secondary school. The preliminary survey was used as a tool to select the most suitable candidates for interviews.

Twelve respondents completed the preliminary survey in Qualtrics.

After the survey was completed and analyzed, a set of eight participants were selected for further, in-depth interviews from an urban, local community college in the Pacific Northwest. The selected final participants were contacted via email and a time was set for a face-to-face, audio taped interviews, except for Rob (pseudonym); Rob was emailed the interview questions and additional questions. The reason researchers use interviews is not to test hypotheses, but to understand the human lived experience and gain an understanding of other’s personal meaning and what they make of that experience (Seidman, 2013). The design of this research study included a first-round audio recorded interview lasting 30 to 45 minutes and asked a series of questions to examine if the postsecondary subjects found value from taking CTE classes while in high school. The interviews used a semistructured interview protocol that allowed community college student participants to voice and expound upon their CTE experiences from high school except Rob’s whose interview was done through emails (Seidman, 2013). The research design allowed not only for preparation of semistructured, interview questions prior to the interviews, but also gave flexibility to ask additional questions to gain a deeper understanding of the participants’ experiences (Strauss & Corbin, 1998). Participants were asked to review the transcriptions, called member checking, for accuracy to help ensure the validity of the transcriptions.
Research Population and Sampling Method

The purposeful sample population for this narrative inquiry study were postsecondary students enrolled in a local community college in the Pacific Northwest who had taken CTE classes while in high school. The purposeful sample was identified from college students taking an initial survey to see if they qualified for the study. They provided their email for the ability to follow up with study questions. This study used a purposeful, qualitative interview model of investigation. Purposeful sampling is when specific subjects are selected based on the criteria of the research question based on specific criteria of having taken CTE classes while in secondary school (Creswell, 2013). The final interview sample included eight postsecondary community college students who were interviewed in depth about their CTE experiences while in high school. Seven of the participants were currently enrolled in community college. The eighth participant (Rob), now works in the industry and was researched as a CTE success story related to this study’s central question.

The Portland Community College’s CTE office and dual credit faculty were instrumental in finding previous high school CTE students and how to best acquire participants for the final interview questions. In order to increase the potential survey participation, an email was sent informing the community college students’ professors about the survey and it was announced on the news board at the local community college campuses. This step was done prior to emailing out the survey so participants were prepared to allow time for taking the survey. Recruiting flyers were put up at all Portland Community colleges that included a Q code to be able to access the preliminary survey quickly. Tables were set up to procure participants at the Rock Creek and Sylvania campuses. The preliminary survey had 13 questions and took no more than five minutes to complete. The preliminary survey was used to determine qualified candidates for the
face-to-face interviews and was left open for two months, with email reminders sent to remind
teachers to encourage students to take the survey. School and classroom visits were conducted to
acquire participants as well.

The detailed interviews were done face-to-face in a setting of the participant’ choice. The interviews were audiotaped to ensure accuracy and then transcribed and uploaded into Atlas.ti for coding and analysis. Interview data was analyzed from recorded interviews to triangulate data and to find reoccurring themes and patterns within the data from the participants.

The data was examined for connections between the seven community college students who were enrolled as CTE concentrators while in high school to find out if their CTE classes had an impact. Participant 8, Rob, was used as a comparative case. Interviewing college students who had previously enrolled in CTE classes while in high school did not need to receive parent permission and was easier and less complicated to find participants rather than going through a high school.

**Instrumentation**

Regarding the creation of interview survey questions, Groves, Kalton, Schwarz, and Skinner (2009) stated, “The critical task for measurement is to design questions that produce answers reflecting perfectly the constructs we are trying to measure” (p. 43). Surveys have been used throughout recorded history: even Roman Emperors surveyed their citizens, and in the Middle Ages surveys were used by clergy and nobles to gather information about the condition of the people (Prairie Research Associates, n.d.). Surveys have been used since the early 1900s and were used to have people report on their working conditions. It was once thought that large population samples were needed to get an accurate representation of the population. During the social reforms in London in the late 1800s it was common to have 10,000-20,000 people
surveyed, but statisticians have concluded that smaller sample populations provide the same and accurate information as larger population surveys (Prairie Research Associates, n.d.). In the modern era, new technologies allowed for the advancement of the survey to larger and broader populations, such as the census survey and political poll surveys.

Surveys can be a process of gathering quantitative information regarding a sample group or smaller populations that may represent a larger or whole group (Creswell, 2014). Surveys may also be used to initially sort out participants who can be used for qualitative research studies (Creswell, 2014). Interviews are a type of survey. Conducting an interview survey is a formal way of examining specific and relevant information from provided facts and opinions (Creswell, 2014; Qualtrics.com, n.d.). Survey questions need to be developed so that the population being surveyed understands the questions, preventing errors in the data collected (Creswell, 2014). To produce the most accurate qualitative data for this study, qualitative, open-ended narrative interview questions were created and used as recommended by the researcher’s university doctoral department and aligned with best practices in qualitative research (Creswell, 2014). The pre-selection survey was created in Qualtrics and was accessed electronically from populations of previous high school CTE students who now are enrolled in a Pacific Northwest community college. Creating and having students use an initial online interview survey is an effective, economical, and timely way to choose eligible participants for a narrative inquiry type of interview research. Online survey rates can be low and may limit the richness of data available from participants (Creswell, 2014).

The preliminary survey was used as an instrument to collect initial data about community college students’ Career and Technical Education background while in high school and analyzed the responses to find out if each of the applicants was a qualified candidate. Participants needed
to meet the requirement that they had taken two or more CTE classes and were 18 years of age or older and, were currently enrolled in community college, except for one exceptional case, an aviation engineer, who had attended the same local community college previously. Upon survey completion, the data was immediately available for analysis, making it a very effective research tool to find candidates for the interviews. Twelve students, not including the aviation engineer, completed the preliminary survey and seven were determined eligible to participate further with interviews.

The semistructured, face-to-face interviews included seven students who completed the initial survey, who attended the local community college, and met the other eligibility criteria from the screening survey. The interview questions aimed to find out if community college students placed value in their CTE classes while they were high school students. The research used a personal, face-to-face semistructured interview with detailed questions of seven college students exploring the phenomena of CTE classes while in high school. One participant (Rob), was researched to tell an overall CTE success story. Compensation was offered through $25 Amazon gift cards to help increase interview participation in the longer interviews. The qualitative narrative inquiry interview questions were administered in person, audiotaped, and all participants responded to the same questions. The interviews gathered personal experiential information in relation to the value of CTE classes the participants may have had while in high school.

**Data Collection**

Qualitative data collection is done for the purpose of gathering personal lived experiences about a certain phenomenon and at the root of the interviewing process is to gain an understanding and the meaning of that lived experience (Creswell, 2011; Seidman, 2013). The
purpose of gathering data for this study was to determine if postsecondary students found value in Career and Technical Education while in high school. The preliminary survey identified 13 college students who had taken two or more CTE classes and were considered CTE concentrators by the state of Oregon. Of these 13, only eight responded for interviews. The relationship of the interviewer and a participant is a reflection of the interaction between the two people, as it is a relationship that exists in a social context (Seidman, 2013). The importance of the interviewer and participant relationship allowed for an interaction that gave a personal insight to the lived experiences of the community college students in a relaxed setting. A critical reflection of these lived experiences will help to better understand the meaning of CTE after secondary schooling. Participants’ data relating to the value of CTE while in high school came from in-person interviews in the form of semistructured, narrative inquiry type questions, which provided a rich data set that contrasts with the starkness of most CTE statistical data coming from different sources such as the state, local school districts, colleges, and the federal government.

This qualitative, narrative inquiry, research study used open-ended, semistructured interview questions that had no direct numerical value with respect to identity of potential participants and very limited ethical intrusion to research subjects. Semistructured, open-ended, survey questions allowed participants in this study to answer questions about their own personal values, insights, and thoughts through critical reflection regarding their high school CTE experiences. The open-ended questions allowed for exploration of personal insights, experiences, and personal perspectives through a rich narrative inquiry that provided data investigating if and how current community college students found value from taking CTE classes while in high school.
Data Analysis Procedures

According to Creswell (2013), the data analysis procedure consists of preparing and organizing data from transcripts and includes coding and condensing the data into themes representing the data in figures tables and discussion. The preliminary survey identified 12 college students who had taken two or more CTE classes and were considered CTE concentrators. The purposeful sample attempted to include demographics of gender and ethnicity, including sub-groups of White, African American, Asian, Latino/a, Pacific Islander, and Other, as defined in the preliminary survey. All participants selected for this study identified themselves as White, Asian, Hispanic, or Other. The surveys were then analyzed to find the most suitable candidates for the semistructured narrative interviews. The criteria for a participant to be interviewed was they needed to have been CTE concentrators while in high school, which is at least two CTE credits, and to have been 18 years of age or older.

Qualitative data analysis software provides tools that help the researcher in transcription analysis coding and text interpretation. Computer assisted qualitative data analysis software (CAQDAS) helps researchers to save time and accurately organize, code, and interpret large amounts of text. The data was analyzed with Atlas.ti qualitative data analysis software to transcribe the audio transcripts. The investigation and subsequent analysis reduced the data into meaningful segments and codes to make comparisons to create categories and find themes and patterns in the data which revealed deeper insights to the central research questions. Creswell (2013) stated that qualitative, narrative data should be compiled using a process of building and revising the data and that there are no distinct steps in the process other than an iterative process of learning by doing and revisiting.
For this study, the steps of analyzing data were, first, listening to the participants’ interviews to become familiar with the data present in the narratives. Second, a transcription was created by listening to the interviews from each participant. Third, the transcripts were reviewed numerous times to ensure accuracy and were then member checked to ensure that data was correct. Fourth, emails were sent to participants to confirm if the transcripts were accurate (member checking) and fifth, categories and themes were identified from the data and created in Atlas.ti. Sixth, the categories and themed data was then put into Atlas.ti and coded using in vivo coding method thus being able to find relative data that appeared across the participants’ responses, creating codes, categories, and themes (Contreras, 2016). Finally, data were organized by being chunked into themes from each participant.

**Limitations of the Research Design**

Limitations of research are defined by the characteristics that influence or impact the interpretations of the results in the data (Creswell, 2013). Survey, questionnaire, and interview limitations may be that students do not answer questions to the best of their ability, lack of thought about their answers, or do not recount accurately what has happened in the past (University of Leicester, n.d.). Other limitations can be that limited data gathered from the questions and interviews results in low experiential data because of low-interest in participating in the survey and interviews (Creswell, 2013). The local community college school where participants were recruited was the main CTE postsecondary institution in the region and did not have an abundant number of individuals who were CTE concentrators while in high school who chose to participate in this study.

Other limitations taken into consideration were the demographics and economic standing of the neighborhood where the community college was situated, even though it attracts students
from all over the city and metropolitan area, many of the community college students came from different socioeconomic backgrounds. The preliminary survey sample was announced via teachers, classroom presentations, posting flyers in community college campuses, and a Facebook announcement board that may or may not have attracted participants. There may have been limitations in the teachers’ class announcements without stating the importance of the study. The sample population was purposeful, and not randomized, and may not represent the whole CTE population. Findings from a small sample size may not be indicative of a larger sample size and cannot be generalized (Creswell, 2013). The qualitative, narrative design of the study was analyzed by the principal investigator and may be subject to researcher and doctoral candidate biases. The research participants were volunteers and were not randomly selected; thus, results may differ as volunteers may want to voice their opinions and have bias towards the research topic. Another limitation is positionality: the researcher is a CTE educator, and with this role comes a wealth of experience and knowledge that may unintentionally influence participants’ or researchers’ views on Career and Technical Education (Creswell, 2013). By using the strategy of triangulation of CTE data from interviews, and member checking, accuracy was increased and risk mitigated in the study.

**Validity and Reliability**

Validity is the measurement of correctness in the findings; in order to achieve a high level of correctness, the data must be interpreted through a series of strategic steps (Creswell, 2013). Leung (2015) described validity as the appropriateness of the tools used to collect and process the narrative data to recognize and make sense of patterns, while building a large and meaningful image, without compromising the core of the participants’ experiences. Educational researchers often design surveys and conduct interviews in order to measure the constructs of
behavior, emotional traits, personality traits, and attitudes (Creswell, 2013). Validity and reliability are terms used by researchers to determine not only single statistics, but a body of research that can establish a relationship or correlation regarding the testing instrument and what is being measured (Dunn, 1999).

Reliability are consistent results from an instrument or survey (Dunn, 1999). The reliability in this qualitative narrative study was strengthened by using two rounds of interviews along with a personal vignette. Possible bias is also considered as the researcher must rely on thick descriptions and rather than validity, the researcher must rely on dependability (Creswell, 2013). In addition to validation, the study relied on the credibility of the participants and researcher’s confidence about the interpretations of the participants’ answers and conclusions (Creswell, 2013). Validity of this study was constructed by creating two instruments with questions about participants’ CTE experiences, with an additional instrument guided by items for a vignette written by the participants. Transferability is the degree in which these results can be transferred to other populations and the instruments’ items were designed to have open ended question that could be asked by other researchers (Creswell, 2013). The dependability of this qualitative narrative study is that other researchers could use the same question and have the same results and outcomes.

**Member Checking**

The member checking process ensured the accuracy and validity of the participants’ responses and the authenticity of the narrative (Creswell 2013). Member checking lets the interview participant check the researchers’ transcriptions of the narrative audio from the interview. The researcher transcribes the audio and is returned to the participants for validation and accuracy (Creswell 2013). Creswell (2013) stated that when researchers use member
Member checking ensures that what the researcher has transcribed is authentic, trustworthy and valid and, is a critical aspect in qualitative, narrative inquiry (Creswell, 2013). Member checking, also known as respondent validation, is the process of returning narrative data to the participant to check for accuracy and resonance of their lived experiences (Burt, Scott, Cavers, Campbell, & Walters, 2016). All of the participants’ narrative data was returned by email to have the participants read and ensure the interpretation of their narrative data was correct. Participants then emailed back their responses stating that the interpretation of their narratives were correct.

**Triangulation**

According to Denzin (1978) and Patton (1999), there are four categories of triangulation: (1) method triangulation, (2) investigator triangulation, (3) theory triangulation, and (4) data source triangulation. In this study, three sets of narrative data were used to test validity and understand the phenomena. The study used data source triangulation, with three interview narrative sources (screening survey, initial interview, and second in-depth interview), creating three data sets from three collection points from each participant. Each subsequent interview delved deeper into the participants’ lived experiences of their high school CTE classes; additionally, four of the eight participants provided a longer, descriptive narrative about their CTE lived experiences.

The advantages of triangulation included increased validity in the research data, creating additional ways of understanding the phenomenon, revealing unique themes across multiple
narratives, challenging or integrating narratives that provided a clearer understanding of the participants’ lived experiences (Thurmond, 2004). These advantages largely came from the diversity and quantity of narrative data that was used for analysis. One of the primary disadvantages of triangulation is that it can be time-consuming. Collecting more data requires greater planning and organization and additional interviews—resources that are not always available to lead researchers (Thurmond, 2004).

Expected Findings

The literature does not contain extant studies or data regarding postsecondary community college students’ experiences of value perceived from their high school CTE courses. After extensive searches of databases for peer-reviewed articles and other sources, no specific ones showed evidence of such research. The expected findings for this study were that CTE had a positive impact on postsecondary community college students and that they found their past experiences from taking CTE in high school had personal, educational, and career value. Other expected findings were that postsecondary community college students had been better prepared for college classes, will have taken little to no remedial classes in college, and have earned college credits while in high school. In some high school CTE career pathways, the postsecondary students may have already earned certification in a field of study, better preparing them for their college education and future careers.

Similar to a null hypothesis in quantitative research, some other expected findings were that CTE might not have actually provided any differences for continued education and that these students would have gone into community college, anyhow, and not as a result of Career and Technical Education. Other findings may be that the college credit earned while in high school may not have been enough to make drastic financial differences in college, and the students may
think they should have taken more than two college-level CTE classes that offered credit while in high school. In an average year of CTE, a high school student can expect to earn six to seven college credits. The overall expected findings were that postsecondary community college students who were enrolled in at least two classes of CTE in high school will have found value in their CTE programs of study.

**Ethical Issues in Study**

In qualitative narrative research is researcher bias. Sarniak (2015), stated bias may exist for both the respondent and the interviewer and listed nine types of bias to try to avoid: acquiescence bias, social desirability bias, habituation bias, sponsor bias, confirmation bias, culture bias, question-order bias, leading questions and wording bias, and the halo effect. For respondent bias, Sarniak (2015), listed acquiescence, which is when the respondent agrees with the researcher in every situation or does not question the researcher. Social desirability is when respondents would answer a question in a way to be liked by the researcher, and present themselves as not being their true selves, to be viewed in the best possible way. Habituation is when participants answer questions using the same words, but with different questions that may seem to be worded the same, but are asking for different information, thus answering by habit. Sarniak listed confirmation as a passive form of bias using the participants’ answers to confirm a hypothesis by looking through a cultural lens and basing answers on the participants’ culture. Question-order bias is when survey or interview questions are in a sequential order that will influence the outcome of the survey or interview as well as having leading questions and wording. The halo-effect bias of the researcher is a positive comment to a participants’ remark that may influence the rest of participants’ answers. The aim of limiting bias is to try to design interview questions and surveys with thoughtful positioning, delivered in such a way that
respondents may reveal their true experiences and feelings (Sarniak, 2015). Bias can also be found in how subjects are selected for interviews and subsequent validity may be undermined by selecting subjects who would give the researcher answers that will prove their hypothesis correct (Collier & Mahoney, 1996). Bias was limited in this study through triangulation and careful analysis of the narrative data and by adhering to Sarniak’s recommendations. The data from interviews was then organized into themes that were repeated from individual participants.

Over the past 20 years, the nature of ethical practices has changed since methods of educational research, in part, have also changed because of new technology, such as more access to personal computers, narrative audio transcription software, and video capabilities (Brooks, Riele & Maguire, 2014). For instance, people are able to retrieve personal information from the Internet, bypassing any interaction with participants. Information is ready available on the Internet and is accessible by anyone with proper equipment and Wifi. There are five principles of research according to Laerd Research (2012) that align with the requirements for research studies set forth by the university Institutional Review Board (IRB): (1) minimize the risk of harm; (2) obtain official consent; (3) protect anonymity and confidentiality; (4) avoid deceptive practices; (5) provide the right to withdraw from the study. In qualitative research, the researcher must protect anonymity, confidentiality, informed consent, and the right to withdraw. Ethical issues in qualitative research have become more of a concern with new technologies and ways to gather information (Banister, 2007). Consent forms need to include all data collecting systems such as video, audio, and, personal artifacts, all of which can strengthen the quality of the research even when the participant may not want to be identified (Banister, 2007). Ethical behaviors in research should be applied to all types of research, where human beings are at the center of what is being studied (Creswell, 2013). Participants who are to be interviewed or
taking an open-ended survey are less likely to be inconvenienced and feel less threatened by intrusion than if researchers have direct contact with their study’s population (Raffe, Blundell & Bibby, 1989).

This study employed the basic elements of ethical principles outlined in the Belmont Report of 1976 that helps researchers to resolve ethical issues regarding human subjects (Banister, 2007; U.S. Department of Health and Human Services, 1979). The Belmont Report (1976) consists of three principles that researchers must use as a guide to provide ethical practice in their research studies. Part A sets boundaries between practice and the researcher, although the distinction may be sometimes blurred because both may occur at the same time (U.S. Department of Health and Human Services, 1979). Part B defines basic ethical principles determining that the researcher has respect for persons in the study. This includes subjects capable of knowing they are in a study, those who may not know they are in a research study because of mental instability or illness, and those who may need extensive protections who may harm themselves or others (U.S. Department of Health and Human Services, 1979). For research that includes human subjects, participation must be voluntary, informed consent must be given, and assurance provided that they have been given all the information about the study, its potential risks, and that it is generally safe and beneficial to society (Banister, 2007; U.S. Department of Health and Human Services, 1979). Part C refers to applications that include informed consent and that subjects must be given the chance to choose what will or will not happen to them. The researcher must mitigate and strive to eliminate human risk and know that subjects comprehend the information about the study provided by the researcher (Banister, 2007; U.S. Department of Health and Human Services, 1979).
For this qualitative narrative research study, all data was protected and secured on an encrypted portable hard drive to protect the identities of interview participants. All guidelines set by the IRB of Concordia University–Portland were followed and met, starting with the IRB application. Ethical considerations were taken into account and interviews were conducted in quiet, public settings of participants’ choice to help put them at ease. All data was recorded by audio, transcribed, analyzed, and coded using ATLAS.ti, and used member checking to ensure accuracy and eliminate as much bias as possible. To protect participants’ identities, pseudonyms were used.

Limitations of the Study

Limitations are the elements of a research study that the researcher cannot control and place restrictions on the research study (Creswell, 2013). Limitations for this study were the number of college students interviewed, the time available with each student, and that their responses may not reflect the larger population of Career and Technical Education community college students. Another limitation is that there is little extant research about the community college students’ voices, in general, and nearly none in CTE qualitative narrative research. This qualitative narrative inquiry study included interviews of seven community college students and one former community college student from a local community college in the Pacific Northwest who were previously enrolled in high school CTE classes. This study investigated if these community college students found value in their high school CTE classes. The eight participants represented a small portion of the total population of CTE programs and may not be fully representative of the larger population. Time was limited for this qualitative narrative study, as there was a small-time frame to allow for interviews, analyze, and write the data analysis and
draw conclusions. Interviews were conducted in person and audio recorded, coded, and member checked to ensure data was accurately recorded and analyzed to limit bias.

**Delimitations**

This study focused on participants who found value in CTE and their personal experiences of CTE while in high school. The participants had to have taken at least two CTE credits and did not ask about other participants who had taken less than two CTE credits while in high school. Another delimitation was sample size, which may not be representative of a larger sample population. Findings cannot be generalized and the data collection was limited to the specific population selected for this study. The budget was limited and more research may have been done if there was more time and more funds. There may have been additional frameworks to use and different interview questions might have been used to gather a differentiation of outcomes and narratives.

**Summary**

The research plan for this study was to complete a qualitative, narrative inquiry study that included in-depth, face-to-face interviews of community college students who completed CTE classes while in high school. The research was important because there was no existing qualitative, narrative inquiry research from local community college students who had taken CTE programming while in high school. This study explored the participants’ shared experiences of how CTE classes impacted them and if their CTE program helped prepare them for college and the workforce. CTE has been gaining more attention nationally as an important part of preparing high school students and making them career and college ready after graduation (CTE Today, 2016). The literature review supported the value present when high school students take CTE classes and that there is even more value when a student leadership
organization accompanies a CTE program of study (Association for Career and Technical Education, 2016) The value evident in statistical reports showed that graduation rates were higher among CTE concentrator students than for those students who did not take CTE classes, and that the impact is even more evident in minority and at-risk populations and urban schools, (Gewertz, 2016; Hyslop & Imperatore, 2013; Gottfried & Plasman, 2018). The literature reviews also supported that there are benefits to becoming career ready and continuing on into postsecondary education with college credit earned while in high school through Career and Technical Education in dual credit programs (Association for Career and Technical Education, 2015; Dagget, 2010; Demerst & Gehrt, 2014; Institutes for American Research, 2013, Lynch, 2013; Rodriguez, & Hughes, 2012; Rojewski, 2000).

Creating career readiness and success for secondary and postsecondary students is at the forefront of public education as today’s economy demands higher levels of education for a more technically-driven and specialized workforce (Brand, Valent, & Browning, 2013). Educating students and reducing dropout rates in secondary schools is a multilayered issue and requires a complex strategy with CTE playing an important part in preparing high school students for continued learning, as the workforce helps students become entry-level, career-ready and reduces dropout rates (Brand, Valent, & Browning, 2013; Bottoms, 2008; Blowe & Price, 2012). There are many benefits to incorporating CTE into a schools’ curriculum from increasing graduation rates, student retention, and student engagement, earning college credit while in high school, and providing career readiness skills. CTE should be viewed as a pathway for school and student improvement (Bray, Hyslop & DeWitt, 2010). The conducted research was important as there is little to none local qualitative narrative inquiry research from community college students that share their experiential data on CTE while in secondary schooling.
Chapter 4: Data Analysis and Results

Introduction

This chapter focuses on the analysis of the qualitative data collected from the interviewed participants for this narrative inquiry study. The purpose of this study was to hear the voices of and gain insight into the value perceived by community college students who had previously taken Career and Technical Education courses while in high school. This section of the chapter includes a description of the processes used to interview, record, and gather data from qualified participants, and subsequent coding of the data using Atlas.ti and in vivo coding to distinguish categories, themes, and patterns of similar and dissimilar information.

Research Questions

The following central research question guided the study:

1. What value do local community college students believe their high school Career Technical Education (CTE) program participation provided?

The study asked three additional research questions that supported the central research question:

1. How did participation in a high school CTE program prepare students for community college?

2. What skills and attitudes were learned in high school CTE programs that have helped local community college students to be successful in postsecondary education?

3. How did participation in CTE programs in high school contribute to why local community college students graduated from, or did not drop out from, high school?

The Role of the Researcher

I am a certified CTE teacher teaching a diverse population of students from grades 9 to grade 12 in a media design program in a local urban high school. My role as a CTE teacher puts
me in the center of exploring the need for CTE curriculum that helps support students’ needs for exploring career options as soon as possible, engaging them in hands-on learning that is industry aligned. I find there is a broader need for complete high school CTE career pathways that offers community college credit for early college graduation and continuing college success, such as those available in dual credit programs (Dagget, 2010; Lynch, 2013; Schommer, 1993; see also Chapter 2). This can only be achieved if sufficient college credits are aligned and articulated through community colleges. Local community colleges can be hesitant to give out college credits piecemeal and open their classes for articulation. I know this first hand from trying to articulate to classes that had not been opened for high school articulation. The importance of my narrative inquiry research was to investigate the lived experiences of community college students to learn if they placed value in their high school Career and Technical Education classes and if those classes helped with graduation, retention, dropout prevention, and college and career readiness. If the findings were positive, then more CTE career pathway programs should be created to ensure all students have success with high school and their continuing postsecondary education.

**Process for Generating and Gathering Data**

The first step in preparation for gathering participants and data was to gain permission from my university’s Institutional Review Board (IRB) and then from the local community college’s four campus sites. Once a community college’s Director of Institutional Research granted permission, I visited the community college campuses and posted flyers to recruit community college students to take a preliminary survey. I visited 10 classes to present my dissertation research study and that I was looking for community college students who had taken CTE classes while they were in high school. All participants contacted me via flyers and from
class presentations. A Qualtrics screening survey was then used to identify qualified participants before any interviews took place (see Appendix A). This step was to ensure that community college students met certain requirements for the study. Qualified participants had to meet the following criteria to be interviewed: First, they had to agree that they knew this was a preliminary survey to determine eligibility for a more in-depth narrative qualitative study that included semistructured interviews. Second, they had to have been community college students who were at least 18 years of age. Third, they had to have completed at least two year-long credits of Career and Technical Education while in high school and knew they were to be audio recorded. Fourth, the participants had to agree to review a transcribed version of the interview and member check the transcriptions to ensure accuracy of the transcription.

The screening survey included additional demographic questions. One preliminary question asked about free and reduced meals participation in high school to better understand potential participants’ socioeconomic standing and attempt to include a variety of backgrounds in the sample. A second question inquired how college students identified ethnically to understand the diversity of the participants. The most important criteria for selection was that participants were community college students who were 18 years of age or older and had taken at least two Career and Technical Education credits while in high school. Potential participants were also asked to share their contact information in the screening survey.

A total of 12 survey participants responded. Two of these 12 participants were selected by going to one of the local community college’s campuses and setting up a table inviting people to take the preliminary survey. If students had the time, they could be interviewed immediately. All 12 screening survey participants were determined eligible, and I contacted them by email to set up a date and time for deeper interviews. Eight of the 12 eligible preliminary survey
participants agreed to conduct in-person interviews. One of these eight interviews was later completed via email (Rob). The remaining seven interviews were conducted on the community college campus, according to participants’ choices to make them feel more relaxed and comfortable. Four of the eight participants in the final in-depth interviews were given a sample vignette (see Appendix C). Participants were given an interview instrument (see Appendix C) to help participants guide them to write about their personal lived CTE experiences.

**Description of the Sample**

Overall, there was some difficulty in gathering a larger number of participants from receiving permission from the local community college to put up flyers, visiting campuses, class presentations, and Facebook notices, and then, getting participants to fill out the preliminary survey. The participant population included three females and five males, and each student had taken two or more Career and Technical Education credits while in high school. Ethnicity among the participants was one Asian, three identified as Other, and, three identified as White, and one identified as Hispanic. All were 18 years of age or older. This study required participants to have taken two Career and Technical Education credits. Thus, the steps for research were, in summary: (1) Twelve community college students completed the preliminary screening survey to determine eligibility; (2) first round interviews, lasting 30-40 minutes, were completed with seven of the 12 participants; and (3) second round, deeper interviews, lasting 45 minutes, were conducted with four of seven remaining participants. Four participants volunteered to write instrument-guided vignettes about their personal experiences with CTE (see Appendix C for the instrument-guided vignette). One of these four final participants were a former community college student who now works in a CTE-related industry. During these
deeper interviews, the final four participants wrote their own narratives of their lived CTE experiences.

For the sake of protecting privacy in this study, the eight participants from the first and second rounds of interviews are referred to with the pseudonyms Lucas, Tina, Joan, Riley, Sean, Danny, Mike, and Rob. Joan, Riley, Lucas, and Rob completed the second, deeper interviews. Rob was an exceptional case, who completed his interview by email, and had already graduated from community college many years prior, and works now in a CTE-related industry. The breakdown of the participants’ studies and personal demographics is listed in Table 3.

Table 3.

Participants’ High School CTE Concentration Areas

<table>
<thead>
<tr>
<th>Participants</th>
<th>CTE Program</th>
<th>Free/Reduced Meals</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lucas</td>
<td>Digital Media</td>
<td>No</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Tina</td>
<td>Video Production</td>
<td>No</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Joan</td>
<td>Drafting &amp; Engineering</td>
<td>No</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Riley</td>
<td>Computer Science</td>
<td>No</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Sean</td>
<td>Woodworking/Construction</td>
<td>No</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Danny</td>
<td>Computer Science</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Mike</td>
<td>Engineering</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Rob*</td>
<td>Aviation</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
</tbody>
</table>

*Note: Rob is an exceptional case, and will not be discussed until the Lived Experiences section.

Research Methodology and Analysis

In qualitative data analysis, codes, categories and groups are used to organize the qualitative data through coding (Radivojevic, 2018). In vivo coding is the term applied when a qualitative researcher uses the interviewees’ actual words from the data as the code (Atlas.ti
n.d.). In vivo coding is highly recommended as a tool to use for qualitative data, as it lends the participants’ voices well to the coding process (Manning, 2017). Five categories were created for this qualitative narrative study: (1) The value of CTE and high school, (2) CTE credit, (3) lived experience, (4) learning, and (5) retention. Member checking was completed after the audio-recorded transcriptions were written and sent back to the participants for approval. All participants approved the initial transcriptions and no information was added or subtracted from the member checking process.

One of the most important processes in research is the analysis of the data collected by the researcher (Leech & Onwuegbuzie, 2007). The validity of this qualitative, narrative inquiry study was assured through triangulation. Triangulation of narrative data is achieved by using more than one instrument to explain in detail the richness of the lived experiences of the participants (Thurmond, 2004). This qualitative study used a survey and two interview processes with a personal vignette about participants’ CTE experiences to ensure the data reported was reliable and valid. In addition, this study used member checking which is used by researchers to ensure credibility and validity.

Triangulation sources included the preliminary survey, the first and second rounds of interviews with vignettes, participant-created narratives, and subsequent member checking process with detailed descriptions from the participants. Both rounds of interviews used semistructured, open-ended question interviews that were conducted with all the participants, investigating the values placed through real life, lived experiences, and giving a voice to the community college students’ CTE backgrounds. The longer interviews used open-ended questions and lasted approximately 45 minutes, giving participants the opportunity to fully express their feelings and insights into their CTE experiences and allowing for variations of
responses. All participants answered all the questions fully and presented a picture of their experiences while in CTE classes and their overall high school experiences.

After the interviews, four of the participants were given an instrument to guide them in their writing vignettes (see Appendix C). The vignettes helped triangulate lived experiences to interview questions. To ensure validity, I relied on the participants’ rich descriptions and the dependability of the participant and the validity of the instrument (Creswell, 2013). The validity of the two instruments used a parallel construct to ensure validity in the exploration of the community college students’ voice of their lived experience in their CTE classes. I had to rely on my own credibility and my confidence about participants’ experiences and use their words directly rather an interpretation of their statements (Creswell, 2013). Transferability was found across participants’ answers from the two instruments used and their personal vignettes about their lived experiences about their CTE high school classes. Parallel-forms were used between the two instruments with the second instrument delving deeper into the participants’ lived experience from taking CTE. The two instruments were compared with each other and further compared to their personal vignettes that formed a triangulation of the narrative data.

Data Analysis

The data analysis started with listening to the recordings of the interviews and absorbing the feeling and emotions in the voices of the participants and acknowledging their personal stories. The audio was reviewed numerous times for each participant so I could become familiar with the narration of their experiences. I transcribed the audio using the software Atlas.ti and double-checked for accuracy listening to both the narrations and reading the transcripts. The audio is imported into Atlas.ti into the Hermeneutic Unit (HU) editor and a blank document is created. The process is simple: Hit the play button and the audio plays and text is created from
the audio. The transcriptions were copied into a Word document and sent to the participants for member checking. All participants agreed their interviews were transcribed correctly and accurately. The participants’ narrative experiences were then coded through Atlas.ti with in vivo coding, using selected and important experiences that stood out to be used as code. Next, the codes were put into categories and examined for themes and patterns to develop insights into the participant’s experiences and personal meaning. Using their direct voices helped to reduce bias as questions were asked, so as not to distort the outcome.

According to Maxwell (2005), the goal of coding is to fracture the qualitative data and arrange it into categories that create a comparison between things in the same categories, thus gaining a development of theoretical concepts. Creating and categorizing codes is usually the first phase in data analysis, followed by establishing themes (Hollaway, 1997). The following categories were determined through in vivo coding and categorizing the data in this study: 1) CTE credit, 2) learning, 3) retention, 4) value, and 5) lived experiences. Eight important major themes were also found through the participants’ answers:

1. CTE is a valuable asset in high school;
2. Why participants took Career and Technical Education courses;
3. Community college students placed value in taking CTE while in high school;
4. Memorable experiences in a CTE program;
5. College credit was/was not earned while in high school;
6. CTE classes were underrepresented in schools;
7. CTE offered real world, hands-on learning experiences; and
8. The importance of quality education.
The data was constantly analyzed and reviewed iteratively throughout the transcription process and subsequent writing of the findings.

**Summary of Findings**

The following central research question guided this qualitative, narrative inquiry study:

What value do local community college students believe their high school Career and Technical Education program participation provided?

The study was enhanced with the inclusion of three additional research questions that supported the central research question:

1. How does participation in a high school CTE program prepare students for community college?
2. What skills and attitudes were learned in high school CTE programs that have helped local community college students to be successful in postsecondary education?
3. How does participation in CTE programs in high school contribute to why local community college students graduated from, or did not drop out from, high school?

The following narratives provide a detailed look into community college students’ perceptions of value who took CTE classes while in high school. The findings follow a logical sequence, using the first and second series of interview questions that were asked of the seven participants during both rounds of interviews. Additional vignettes from the second interviews provided a deeper analysis of four participants lived CTE experiences. The coded data results were broken down into categories and then themes were assigned which are represented in the data collected from the participants’ narratives. The overall narratives give voice to the
perceived value that community college students had of their past lived experiences from taking CTE courses while in high school.

**Presentation of the Results**

This section includes descriptions of individual participants’ interviews. The interviews and vignettes were comprised of descriptive narratives from the participants’ lived experiences in high school education, in general, and their Career and Technical Education (CTE) programs of study. Perceived value of CTE will be identified through the discussion of findings in the next sub-section.

**Perceived Value**

The first interview question was about how community college students defined perceived value and what made something valuable to them. Seven participants found value in high school and CTE and one participant thought high school was a waste of time and graduated early. The participants’ high school experiences provided lasting effects in their lives, with applicable, practical, and useful educational and employable skills. The value participants received showed that CTE teaches about, or exposed students to, careers. The participants also learned transferable skills that will be applicable to continued education and a future career.

The participants’ overall value found in high school was a mix of rich narratives, ranging from finding high school very valuable to not valuable at all. Lucas, who participated in a digital media CTE program, found that his high school education was very valuable. He learned not only that he was interested in pursuing a career in video production, but also found value in learning what he did not want to do for a career. Tina, who participated in a video production CTE program, found value in many of the skills she learned in high school, and that she still uses in college:
Looking back, it was helpful in forming many of the skills I have today. I imagine that having a decent education has been very important to me in terms of how I think about the world. In high school, I took many advanced math and science classes that helped my critical thinking and influenced the classes I took in college.

While Joan, who participated in a drafting and engineering CTE program, said, “[I] didn’t find a lot of value in my high school education,” she had very good experiences with teachers who took on mentor roles to help her. Joan stated her Advanced Placement (AP) history class “was probably my favorite class because it was extremely challenging” and found that succeeding in that class was a rewarding experience. Joan also found value in a Physical Education (PE) class she did not care for, but found value in it because it was challenging.

Riley, who had participated in a computer science CTE program, reflected on her memories from high school as a “mixed bag of positive and negative experiences” and found her liberal arts classes, more often than not, to be boring and saw little application for their use outside of school. On the other hand, Riley found her electives to be the most rewarding, especially her CTE classes, because she said they “offered a much more practical set of tools for me than what I was learning in history, science, or mathematics.”

Sean, who was enrolled in a woodworking/construction CTE program, was working nearly full-time while he was in high school and was not giving his classes the time or attention that was expected. Sean would often miss class because he was working long hours into the night. He was making good money and was quickly getting promoted, so it made it easier to ignore the value of time at school; however, Sean attended woodshop classes with much more vigor because he actually enjoyed producing something with his hands. Now that Sean is 28,
and has been employed in a variety of fields, Sean believes his work and life experiences now are much more valuable as compared with his overall high school education. Danny, who participated in a computer science CTE program, said his high school education was valuable because of the practical information and training he received. Often, the things Danny remembered the most were things he learned by having conversations with his favorite teachers or by getting hands-on experience in the classroom. Danny thought that is why he valued his CTE classes as much as he did: he acquired real world training and skills, but also learned a lot conceptually from those experiences.

Mike, who took CTE engineering classes, defined something as valuable if it provided an important lesson or thing that he cannot part with, whether it is due to sentimentality or the fact that he worked hard to obtain that value. Mike stated, “Thus, things become valuable because parting with them makes all the work or all memories related to that value worthless.” Mike said, undoubtedly, others may find things valuable that he does not value, and vice versa. He also stated that as he grew up, dealing with various problems and learning different things, he discovered that while what others value may differ, some people value things in common. In Joan’s CTE class, she valued the idea that anything can be fixed with enough hard work and effort, that nothing in learning is a mistake, rather is a learning opportunity, and serves as the next step to a new challenge. She also said that such perceptions of value from CTE are also life lessons, and undeniably important to people moving forward.

All participants expressed that their CTE classes were valuable and provided very meaningful experiences. All but one participant, Joan, stated her high school classes had some value and was why she took CTE classes, too. Joan said she felt “fed up and was wasting all my time in high school doing nothing,” although she learned “patience, endurance, problem solving,
and the ability to start something over or restructure it.” Joan stated she left high school early in her junior year, as CTE influenced her ability to graduate ahead of schedule. She did not enjoy high school much, other than her woodworking class, and she thought her CTE teacher was not knowledgeable about the material. Joan’s statements about value could also be applied to themes three, the best and worst of CTE and eight, the importance of education as well.

Lucas found that taking CTE classes was more similar and related to jobs and careers than his usual high school classes. He also found CTE classes more interesting. Lucas stated, “CTE classes are an entirely different experience from traditional classes” and he found value in something that taught or exposed him to a career that he might be interested in pursuing. Lucas also found value in learning about a career that he had wanted to consider, which is related to three themes: theme two, Community college students placed value in taking CTE while in high school; theme six, CTE is a valuable asset in high school; and theme eight, the importance of quality education. Lucas found “CTE classes challenging because they provided an environment that is more similar to on-the-job experience than the usual high school class.” According to Lucas, “after working in broadcast television and doing freelance work, I have noticed that I still use things that I learned in the CTE video production classes that I took” and that Lucas “received a lot of information on careers and was exposed to many possible career options” which relates to theme one, why he took CTE classes, and theme seven, real-world hands-on experience, and theme six, CTE is a valuable asset in high school.

By listening to the students’ voices, an analysis of the study’s data found that students placed value in Career and Technical Education and learned skills that better prepared them for postsecondary schooling and careers. Through a two-way dialog (cf. Mitra, 2006), participants in this study found they were more prepared because they acquired essential skills to further their
learning and could apply to careers. Through a constructivist viewpoint of the participants’
hindsight or personal schemas, there were definitive transformational learning experiences that
arose from interview discussions, which is a major component of Mezirow’s (1991) theory of
transformational learning.

According to Dougherty (2016), who conducted a study on Arkansas CTE student
outcomes, students were more likely to enroll in a two-year college, be employed, have increased
wages, and were 21% more likely to graduate high school. Dougherty stated that his study adds
to a growing body of literature and evidence about the positive impact of CTE programming if
taken while in high school. Dougherty stated that connecting students with learning experiences
that is aligned with the local economic climate is an important part of the success of a CTE
program giving students more opportunities (Dougherty 2016). Participants of this study found
that their CTE learning experiences had value and contributed to their success in postsecondary
learning.

Career Learning Opportunities

All participants mentioned that they experienced value from career learning opportunities
in high school CTE classes. All participants visited industry work places, and two obtained
internships to get a better understanding of the type of work they might be interested in doing
after high school. Riley mentioned that career information was relatively sparse in her school as
a whole, although in the CTE class, information was given about the industry. Sean did not feel
as though there was much information that was oriented to any specific careers, and learned his
career information at his after-school jobs, which relates to theme five, under-representation of
CTE in high school. Danny’s narrative stated, “There was a lot of emphasis placed on choosing
a career and getting a head start on a career path, but that’s where the information stopped.”
Danny also stated, “Of course, we had the resources to do our own research and speak to advisors about choosing a career path, but I don’t think there were enough seminars or workshops about choosing a career.” Danny also thought about the value and importance of obtaining information early on about careers and opportunities about how to get started on a career path. He said this was very important, but was hard for high school students to make those choices. Joan’s high school education was very valuable, but stressful: “I spent years of sweat, stress, tears, and pain, all to get to the point I am at now.” She gained new friends, interests, and beliefs, and a new sense of self. High school transformed Joan in ways she never expected (cf. Mezirow, 1991), and also ways she would never regret or forget. Joan made friends with people she respected and trusted that she believed would last a lifetime, into the work place and later in life. They, in turn offered the same notions to her. Joan’s teachers were also a major influence on her, some more than others. One CTE teacher, Mr. Smith, influenced Joan for the better, teaching her new information and self-reliance, which are skills that Joan continues to use today. Tina stated there were ample opportunities for career exploration during her first two years of high school because she was expected to explore different career classes.

When asked about teachers and CTE values and why participants became involved with CTE, all participants became involved in CTE classes to explore career options. Tina was not aware that the computer programming and coding class she enrolled in was a CTE class, but took it because she was interested in computer programming, lending to theme five that CTE classes were underrepresented in her school. Joan, who was also enrolled in a CTE computer programming class, had a very similar narrative and found her class to be challenging with a large learning curve, but also rewarding, when solving problems in programming. All participants felt challenged in their CTE classes, except Riley, who thought her CTE class was
less challenging because the other students did not take the class very seriously. Riley felt that “CTE classes began with a moderate learning curve that challenged me with rewarding outcomes” and “when projects did not seem challenging enough, I explored further concepts that gave me a good, fun challenge.” These narratives fall under themes six, CTE was a valuable asset in high school, and seven, CTE offered real-world, hands-on learning experiences.

Tina expressed that there was a “new way of thinking as coding is a foreign world for most people.” She also said, “Once you get it, it’s a great feeling” and that “programming in CTE class was easily the most engaging class I was in while in high school.” Tina’s statement fits into theme eight, importance of education, theme two, placed value in CTE, and theme six, there is value in CTE. Riley talked about students checking out and not finishing their projects, but she blamed the teacher for this, since the teacher did not appear competent to teach the class and did not have industry experience. Riley acknowledged that discipline and choice complement each other “so if a kid is going to choose what they want, there should be consequences if they aren’t committed to it” (the class). The participants’ responses fall into the themes 2, Career and Technical Education offered real world hands-on learning experiences, 6, Career and Technical Education is a valuable asset in high school, and 8, the importance of quality education.

The participants in this study showed that they learned important skills needed in this economy. Today’s ever-changing economy needs, more than ever before, skilled workers. CTE is a way to expose high school students early on to a career they might be interested in learning (Southern Regional Education Board, 2008) and which could benefit the economy if the CTE career exploration is aligned with the needs in the job market. There is not just one way to achieve complete student success by allowing student to explore different career through
programs such as CTE; students must have more opportunities to help them succeed in today’s challenging workforce (Bray, Hyslop & DeWitt, 2010).

**CTE While in High School**

Regarding Career Technical Education (CTE) as a piece of a complete high school education, the participants’ statements showed support for the idea that CTE should be a part of, and a requirement for, high school graduation. Lucas agreed with having CTE as a mandatory element for high school education, although not as a main focus, because he valued the hands-on learning experiences that come with CTE. Tina thought that requiring CTE in high school sounded reasonable because it provides unique lessons that teach important skills related to keeping a career. Joan believed it was a rare opportunity for students to choose to specialize in something, such as a career choice, during high school. She felt this was a way for students to be able to express themselves.

Joan’s statements relate to themes one, why did you take Career and Technical Education, six, Career and Technical Education is a valuable asset in high school, and seven, Career and Technical Education offered real world hands-on learning experiences. Riley thought it was viable to have CTE as a mandatory element in high school because so many jobs focus now on technical aspects. Riley also stated that freshman and some upper class high school students are only exposed to core classes, and if lucky, some art classes. She found CTE to be valuable and important parts of her high school education. Sean strongly believed that there should be some exposure to CTE as it taught him valuable skills as he was able to experience a specific field and what it is like from a workers’ point of view. Sean was taught important skills that would not have learned without CTE classes. Danny believed that it was too easy to “just coast through high school” without any real work experience and that Career Technical
Education should be a part of the high school learning process, which fits into themes two, community college students placed value in taking Career and Technical Education while in high school, six, CTE is a valuable asset in high school, and seven, CTE offered real world, hands-on learning experiences.

Mike’s CTE course was called Tech Survey. It was a hands-on engineering course with the entire class devoted to making a guitar from just a block of wood, learning how to machine, use a computer numerical controlled (CNC) router, and learn computer-aided design (CAD) in the process. There were many things Mike found valuable in his CTE classes. For years, students around Mike had been working on similar projects, and he never understood how or why his contemporaries worked in such a way. The CTE class opened Mike’s eyes to the study of machining and engineering.

An example of one of the major values Mike and Joan both shared that they gained through CTE was the idea that nothing is a mistake, only the next step to a new learning experience. Joan stated, “Such a value had never been more truthful.” Mike sadly mentioned he had completely failed the paint job on his guitar body, and was stuck without an idea of how to fix it, until his teacher taught him this lesson. With his teachers’ words rattling around in his head, Mike learned to see his problems from a new angle, and with the failed work serving as a new canvas, he was able to use it to “create a masterpiece.” The same circumstance happened with his guitar neck, but instead of considering it a failure, it was an "ah ha!" moment allowing Mike to make the neck even better than he had envisioned. This was a learning experience through the process of making mistakes and problem solving and how to find solutions when faced with issues. Theme three, what was the best and worst of a Career and Technical
Education program, and theme seven, CTE offered real world, hands-on learning experiences best fit to describe the student experiences in these areas.

High school CTE is now more rigorous and includes inter-disciplinary learning, industry-focused language, incorporating core classes, and is intended to be a pathway to credentials, postsecondary learning, and entry-level careers (Dougherty, 2016). Participants in this study stated that CTE needs to be a part of a regular high school curriculum because of today’s economy and that CTE helps let a student know about careers. In the past 20 years, policy makers have learned the important of CTE and the effects it has on student outcomes, skill building, and career readiness (Dougherty, 2016; Southern Regional Education Board, 2008; Connelly & Hyslop, n.d.; Association for Career and Technical Education, 2018). Participants in this study stated that they valued real-world learning experiences while in high school and CTE should be a major part of the high school learning experience because of the technical skills students they learned from their high school CTE classes. CTE also helped with college readiness.

**College Preparedness**

Seven participants felt that CTE better prepared them for college through hands-on learning experiences, learning preparation, soft skill building, and college credits earned. The participation and acquisition of dual credits, both college and high school credits, is under the CTE credit category and themes four, college credit, and six, CTE as a valuable high school asset. Lucas’s narrative explained that he received college credit and he had more time to familiarize himself with learning software and hardware. He also stated that CTE classes taught him the basic skills needed to succeed in college and he learned skills he was still using to this day. Tina specified that CTE classes introduced her to career specific classes that were designed
to teach industry-specific skills learned in other core classes. Joan became more independent and acquired adaptable traits she found were needed in college. Riley was more advanced in her skills at the beginning of college because she found CTE classes gave her the idea of what she wanted to pursue in college and to do for a career; without CTE she may not have found that interest until a later date, possibly in college, or later. Riley stated, “I was way ahead of the curve when I entered into college and was months ahead of everyone else and my projects showed that” and “This made the first few semesters of college less stressful, knowing I had most of the skills already down.” Lucas found that he had learned valuable skills in basic camera operations and something even more valuable, talking with a client while working freelance and with other professionals in a team environment.

Mike’s CTE classes included engineering and woodworking and those classes taught him everything he needed to know for a workshop in the industry. There were dozens of machines, techniques, and ideas that he absorbed into his mind after taking the CTE classes. He said that all of those skills will be used for his future endeavors. In the engineering class, Mike learned Inventor, a software program that was used to design multiple wood pieces, and then the class moved on to using a CNC router and laser cutting, and from there, the students moved into the final stretch of the class, the actual designing and the creation of a guitar. Throughout it all, Mike stated the best part was the “hands-on teaching that our teacher used. He did not believe in lecturing for hours, but rather a set of criteria and constraints, and once they were delivered to us, we were able to set off and work in our own ways on our own projects.” Mike found it to be a much better learning experience compared with the constant lecturing that other teachers used in their classrooms. Overall, Mike gained enough hands-on learning in engineering that he believed he was quite well prepared for his own college major of engineering and had earned
college credit from his CTE classes. The themes apparent in this interview data are theme two, community college students placed value in taking CTE while in high school, and theme six, Career and Technical Education is a valuable asset in high school. These themes are supported by the research at the American Institutes for Research (2013), which showed that an increasing amount of skills are needed in today’s workforce and helps to prepare high school students for college.

One of the main focuses of CTE is that students are better prepared for college by learning new skills needed for postsecondary learning or for a career. These include both soft and hard skills needed for college and career. Students in CTE programs of study understood how their learning is relevant to their careers, helping them to become more engaged in their learning and education choices. An essential element of CTE are pathways that have sequential pathways of learning and should eliminate remedial classes in postsecondary schools (Hyslop & Imperatore, 2013).

**College Credit**

Part of CTE’s value can be from earning college credit while in high school (Andrews, 2004; Richardson, 2007; Rodriguez & Hughes, 2012). College credit can be offered through CTE, although it is not the only way to receive college credit while in high school. Not every CTE class or program offers college credit. This is partly due to the process of articulation being long and difficult and may also be that CTE teachers need to meet requirements of the community college (e.g., Portland Community College, n.d.; Mt. Hood Community College, n.d.; San Francisco Community College, n.d.). Three of the participants in this study received college credits for their participation in CTE classes. According to Tina, Joan, and Sean, they did not receive college credit for their CTE classes, while Lucas and Riley received one college
credit and Danny received four college credits through CTE while in high school. High schools may offer dual credit classes, even though they are not CTE classes (Andrews, 2004; Richardson, 2007; Rodriguez & Hughes, 2012). Mike indicated that he took AP U.S. History and AP English as dual credit classes, due to the AP exams, but they were not part of a CTE program. Danny stated:

I received college credit for all of the advanced drafting/engineering classes I was in. Anything from drafting 4+. Officially, the classes ended at drafting 4, with students given the opportunity to take more advanced classes if they had chosen drafting as their focus program of study. It was this way for all of the classes taught in the same department (drafting, architecture, electronics, and robotics).

Mike received college credit in AP English Language and AP Environmental Science, because of passing the AP tests, and also from a CTE course which was Tech Survey in the field of engineering and machining. Another class Mike received college credit for, which was a non-CTE and non-AP course, was Anatomy/Physiology. Mike stated there was not much of a difference between the Anatomy/Physiology and CTE class, other than that they were in different fields of study. Mike was able to skip a small portion of the credits required when entering community college, making it an easier transition.

Students who receive college credit through articulated college classes are more likely to continue in postsecondary learning and can help reduce education costs. High school students benefit from dual enrollment classes and that it helps reduce the costs for college (Karp et al., 2007) and is especially beneficial for students of low-income and underserved student populations (Doody, 2018). The students who received college credit while in high school found dual credit beneficial in creating an easier transition into postsecondary learning.
CTE Underrepresented in High School

Among the participants, there was a mixture of not knowing about CTE classes to participants thinking there should be more variety to choose from to explore career choices. Lucas’s narrative showed that he wished there would have been a larger selection of CTE courses offered at his high school. Although Lucas did not think he would have personally taken them, he knew some students who would have liked more options, and he felt that their interests were not reflected in the courses offered. Lucas was fortunate that a media class was offered his freshman year. Tina was unaware that CTE classes specifically existed and ended up in a CTE programming class because that is what she was interested in pursuing. Joan was satisfied with what she learned in her CTE class, although she was not satisfied enough to complete the entire course. At Joan’s school, students were required to spend two years in a rotation of CTE classes, and then two more years studying a career path of their choosing. Joan spent one year studying computer science while graduating during her Junior year, because she felt high school was not challenging enough.

Riley wished there would have been more of a selection of CTE courses while she was in high school. Riley learned Photoshop, After Effects, and Premiere Pro applications, but never went further. She was interested in learning more about 3D computer graphics, but that was never offered in the program. Since she did a lot of research and experimenting outside of school, she came across other 3D software to explore on her own; however, Riley wished it was a part of the curriculum. Sean was very satisfied with the selection of CTE classes and stated that auto mechanics and woodshop were the most popular. Danny said he was quite satisfied, but it was not something he really thought much about; mostly he was just excited at the idea of earning college credit for classes that he could complete in high school. Danny mentioned that
“looking back on it, though, I think a lot more importance should have been placed on CTE courses.

Most of their peers didn’t really recognize the potential of taking CTE classes.” Danny did not think CTE classes were important until he was almost finished with high school, and after about a year into a CTE program. His school wanted its Junior and Senior students to choose a CTE focus program and start on a path toward a career. He felt there was not a difference in how his CTE courses, which offered real work experience and college credit, were advertised as compared with other focus programs that did not offer the same opportunities. Mike mentioned that there was only Tech Survey offered as a CTE course, so Mike was dissatisfied, along with that there were no career pathways or certifications, which made it “somewhat annoying as a student.” While Mike wished more CTE courses had been offered, so he might have learned more and experienced more interesting classes, although he said that Tech Survey was still an amazing class and completely worth his time and effort spent.

These participants’ narratives related to theme five, CTE classes were underrepresented in schools. In the state of Oregon, Measure 98 will help enhance current CTE programs and help develop new CTE programs of study in schools across the state (Pate, 2017). As new research on CTE emerges, findings from such as those by Karp et al. (2007) and Hyslop (n. d.), there needs to be more representation and funding to help support CTE in high schools. CTE programs can better prepare students for career skills and the economy if appropriately funded. As stated by Doody (2018):

Despite the value of the credential, more than a third of CTE students (35 percent) enrolled in CTE courses say they have no contact with future employers, with only 12
percent experiencing site visits, 13 percent having pathway-related after-school jobs and 20 percent having pathway-related summer job (para. 9).

According to the American Institute for Research (2013), high school students need to receive appropriate advising and counseling to make informed decisions about their career and college plans and with limited resources in schools, teachers need to help advise high school students about careers, opportunities, and postsecondary exploration.

**CTE Skill Building**

CTE classes are supposed to be rigorous, challenging, and rewarding, teaching industry relevant skills that can be used right out of high school or going into college knowing relevant information, sometimes with college credit (Gottfried & Plasman, 2018; Leary & Thoron, 2006; Gray, 2002;). All but one of the participants, Joan, found that their CTE classes were rewarding and challenging and helped prepare them with specific skills needed for college and the workforce. Lucas’s CTE classes were an entirely different experience from traditional classes. His CTE classes were challenging because they provided an environment that was more similar to on-the-job experiences than the usual high school classes. After working in broadcast television and doing freelance work, Tina noticed that she still used skills that she learned in the CTE video production classes that she took while in high school.

Riley stated that programming was difficult because learning about it required a new way of thinking that took a while to get used to: “Once you ‘get it’, it’s a great feeling.” Riley’s CTE classes were easily the most engaging for learning a new skill up to that point. After taking her CTE classes, she spent over a year using the skills she had learned to work on a personal project outside of school. Joan was also in a CTE programming class and stated that it was challenging to know where to begin learning how to program. She had to endure a steep learning curve and,
competed with students who already knew a lot more than her. Nonetheless, Joan felt that it was great experience and she felt it was a rewarding class. Joan felt she was on par with the best students when she was chosen to go to special coding events.

Riley said her CTE classes began with a moderate learning curve that challenged her with rewarding outcomes in most of her projects. Riley felt that it really paid off after working for weeks on a project and then receiving praise from her peers and teachers for all the hard work she put in. When the CTE projects did not seem challenging enough, the teacher encouraged her to explore further concepts that gave her the opportunity to build more skills. Sean stated that it was challenging to have a plan and follow many detailed steps in order to build a piece of furniture. He stated, ultimately, it was incredibly rewarding to build something with his own hands and learn to use power tools. This confidence gave Sean a sense of pride. Danny stated that he also found reward and challenging aspects in his CTE classes:

I found them to be rewarding mostly because of the challenges that they presented to me… [T]he classes were underfunded and were taught in a very unconventional way. The teacher was always around to ask questions, but he really valued critical thinking and solving problems on your own by working through them. So, he fostered a lot of those skills in the students that attended his classes. Those are also, in my opinion, some of the most rewarding experiences a student can have. Working through a problem with minimal outside help, using the skills you’ve learned and the knowledge you have to solve new and challenging problems taught me so much about working for myself and personal responsibility.

All of the participants’ answers to what ways that they found CTE classes to be challenging and rewarding learning experiences, fell into the following themes: Theme two, Community college
students placed value in taking Career and Technical Education while in high school; theme six, Career and Technical Education is a valuable asset in high school; theme seven, Career and Technical Education offered real world hands-on learning experiences; and theme eight, the importance of quality education, making their CTE classes challenging and a valuable asset in their overall education. All eight of the participants in this study found that CTE offered them life skills, whether a soft skill like patience or client relations, or a hard skill such as software and coding, and there were definite benefits for taking CTE while in high school.

Mike stated that his CTE Tech Survey woodworking class was a rewarding course, but that did not change the fact that Mike found the course quite challenging. While Mike said that plenty of issues “popped up,” he felt the class had a somewhat rushed feeling due to lack of time with the constant working and thinking of possibilities for each project, the guitar especially. There were issues with paint jobs and problem-solving his designs and more; however, in hindsight, the most difficult part of the class was the very beginning because the software had a large learning curve and was difficult to learn, which was a problem that Mike faced. After learning the software, this became the least challenging part of the class because he had learned the interface and tools. In the end, while it did push Mike out of his comfort zone with the difficulty of the class, he said it was perfect for the students to work and progress with their projects through hands-on learning and fun projects.

Six of the participants felt their CTE classes were a challenging and rewarding experience and also helped them in future pursuits. The basic premise of CTE is to offer students hands-on learning building hard and soft skills needed in today’s work place and to help high school students transition into secondary schooling or into entry level career opportunities (Brand, Valent & Browning, 2013). According to Dougherty (2016), a study in Arkansas
changed CTE policy to improve career readiness through skill building and having all high school students take at least six units of CTE classes in order to graduate. Taking CTE helps students to gain skills needed in the industry.

**Career Opportunities**

As part of a CTE program of study, it is important for CTE teachers to inform and expose students to different career pathways that may be offered through the CTE classes they are taking while in high school (Tkaczyk, 2015). Tkaczyk (2015) pointed out educators were beginning to realize that CTE was viable way to help students find real-world applicable skills and were informing students about the wealth of attainable and rewarding careers that exist in the workplace and the need for advanced knowledge and STEM skills. Lucas agreed with the idea of having CTE as part of the high school experience because he valued hands-on experience, although he did not think it should be the main focus of a high school experience; however, he did think it was important for a well-rounded high school experience. Lucas also believed that some classes are not applicable to a CTE program, although CTE can also provide similar hands-on experiences, like a science class. It seemed reasonable to Tina that even if an individual in high school was not as interested in the CTE classes, CTE may provide unique lessons that teach things important for starting and keeping a career. Although Tina ended up changing her college major from programming to video production, she learned many skills from her high school CTE classes that she uses daily in community college. She believed that CTE is certainly something that was necessary in a complete high school education.

A complete high school education, according to Joan, should feel like a positive school community and, she attributed that attending her local tech school was a valuable personal experience. Choosing something to specialize in during high school in relation to a career was
one of the rare occasions Joan was able to express herself in a productive way about her high school education. Joan thought it was healthy for kids to experience putting effort into careers they chose, but she also felt it was important that students earned that choice. Joan stated, “Most of the kids in my CTE class ended up checking out (which I blame the teacher for) and didn't have any projects to present at the Tech Show—this thing where people tour our school and see all the cool stuff we do.” Joan further noted that “discipline and choice complement each other, so if a kid is going to choose what they want, there should be consequences if they aren't committed to it.” Riley thinks it is a viable idea to include a mandatory class in CTE for career exploration. She stated, “there are so many jobs available now that focus on technical aspects, whether that be graphic design, game production, visual effects, etc.,” and that “incoming freshmen are only exposed to the traditional subjects such as math, science, literature, and so forth.” Riley knew that the global job market is changing and that while core subjects are important, more than ever, CTE courses are needed to succeed in digital, technological, and creative work places.

Since jobs in this new economy require more complex knowledge and skills (American Institutes for Research, 2013), schools need to create viable third pathways for high school students in skills preparation for today’s job market (Sanchez, 2016). Sean felt CTE classes prepared him with valuable life skills, although he did not continue his high school field of CTE study in community college. Danny also felt that “it is almost too easy to coast through [regular] high school and finish without any real work experience and be worse off for it afterwards” and said CTE should be a part of high school curriculum. Mike believed a high school education should require some CTE study for career exploration. Mike also stated, in his high school, there were counselors and information about careers, but the CTE teacher did not talk about careers
because the teacher felt that was why the counselors were there. Mike’s school had a career center that allowed students to visit and learn about colleges and careers, but he found it was unnecessary. The counselors gave students the information they needed and it was up to the students to go out and research their career preferences and possible future in the work force. At Mike’s school, every student was able to make an informed and unbiased decision about colleges, as students were able to research everything they were interested in before choosing their preferred career and educational path.

Career opportunities are an important element in CTE learning (Brand, Valent, Browning, 2013), and becoming prepared for college through exposure to careers is an important part of CTE (Association for Career and Technical Education, n.d.). Participants in this study found experienced mixed experiences with exposure to career opportunities through CTE classes. According to the Association for Career and Technical Education (2013), it is important to have industry partners that work alongside of CTE programs of study. One such school that focuses on aviation in New York City, was recognized by the U.S. Department of Education (n.d.) as one of the best high schools in the nation because of its relationship with the aviation industry.

**College and Career Readiness**

According to the American Institutes for Research (2013), CTE is not just about teaching students a narrow set of skills, but readying students for careers and college preparedness. Lucas stated that CTE provided him with college credit and the CTE classes he took taught him the basics of his career well before he first attended college and that he had more time to familiarize himself with the skills relevant to his desired career. Lucas believed that letting students work in a full four-year CTE program of study is especially beneficial because it lets students take their
time to learn things in addition to allowing time for more self-directed learning. Tina said it introduced her to the concept of career specific classes that were designed to teach a skill for a specific purpose aligned to an industry, as opposed to general use skills like math, English, and physical education. Lucas felt that CTE made him more independent and adaptable, traits he needed to have in college. Lucas felt as though CTE classes gave him the idea of what he wanted to do when he was older. Lucas stated:

Without Career and Technical Education, I may never have been introduced to Photoshop and other software, forming my interest for digital creation. After taking several classes in high school, I was way ahead of the curve when I entered college. I was months ahead of everyone else and my projects showed it. This made the first few terms of college much less stressful, knowing I had most of the skills already down.

Sean acquired valuable life skills that did not come from most core classes that helped him be better prepared for college. Danny said CTE taught him many practical skills and reinforced his critical thinking abilities and that those elements really helped him when it came to college coursework. Danny said he was someone who enjoyed taking engaging classes that did not hold the hands of the students. He said a lot of his freshman/sophomore classes were a little like that, but he felt fortunate enough to have teachers that held the same opinion in their freshman and sophomore years, so he was able to avoid the “easier” classes, although Danny did not feel it was only CTE courses that prepared him for college. He stated his junior and senior high school years prepared him for college because of the choices he made with all of his classes, and a persistent desire to get a worthwhile education. A combination of International Baccalaureate (IB) and CTE courses prepared Danny very well for college.
Mike stated that a complete high school education should consist of prepping students for college and some knowledge about careers. This is so students can make better decisions about college majors and careers. Mike believed that CTE courses should be included in high schools as they teach students about different careers and college majors. This gives the students more information when thinking about career choices in life, whether that is in the form of CTE pathways or core classes. He said the absence of either results in students’ lack of knowledge for their future career paths and that is “detrimental to high school graduates” not to have CTE in a school curriculum. In Mike’s opinion, the lack of CTE courses was quite unfortunate because from the one class Mike had taken, he gained a large amount of “knowledge in the field of engineering which is thankfully the path I am taking in college and career.”

According to the American Institutes for Research (2013), jobs in this ever-changing economy have evolving technologies, and students need to be more prepared for college and industry, with learning considered as a multilayered strategy to ensure student success. Lucas talked about earning college credit from the CTE classes he took, CTE classes taught him basic skills well before he first attended college. Lucas had more time to familiarize himself with relevant hands-on learning in video production. In Lucas’s Freshman year, he was learning skills that he still uses every day. Lucas stated, “Letting a student work in a full four-year CTE program is especially beneficial because it lets them take their time to learn things in addition to allowing time for more self-directed learning.”

Tina said CTE classes introduced her to the concept of career specific classes that were designed to teach students skills for a specific purpose, as opposed to general use skills like math, writing, gym, etc., while Joan said that CTE made her more independent and gained adaptable traits that are required for a job and for college. Riley stated that CTE classes gave her
the idea of what she wanted to do for a living when she enters the workforce. Without Career and Technical Education, Riley may never have been introduced to industry-specific or other software, thus forming her interest for digital creation.

Sean felt that although he was not going into a career in woodworking or construction, CTE classes taught him valuable life skills that do not come from other classes. Danny stated that CTE taught him a lot of practical skills that reinforced his critical thinking abilities. Those things really helped Danny when it came to college coursework. Danny thought it was important to mention that he was also an International Baccalaureate (IB) student for most of his last two years in high school. Danny did not take all IB classes, but he did take enough to qualify as an IB workload student. Danny was someone who enjoyed taking engaging classes, classes that did not hold the hand of the student, and he stated a lot of the freshman and sophomore classes were somewhat like that. Danny mentioned the combination of IB and CTE courses prepared him very well for college, often to the point where he never recognized a difference in the workload and what was expected of him as a student or the responsibilities he had in class. Mike said that CTE had better prepared him for his engineering major in college, for multiple reasons, with one of the most significant being that he had become comfortable in a work shop being surrounded by tools, which he said, “is a major benefit for learning industry skills.” The hands-on training was also definitely important for Mike, as it was a much better form of learning as compared to lecturing and simulation as is done in core classes.

The best themes to describe these experiences are theme 7, where CTE offered real world hands-on learning experiences and because students acquired other skills from their CTE education, and theme 6 Career and Technical Education is a valuable asset in high school also describes the student’s CTE experiences. According to Bottoms (2008), contemporary CTE
programs are much more advanced than previous vocational programs and CTE students now know the why behind the what they need to learn for today’s economy. The narratives of the participants in this study stated they have been better prepared for college and careers through CTE while in high school. CTE and high schools have had a history of partnerships that help make it easier for high school students’ transitioning into postsecondary school (American Institutes for Research, 2013).

**Student Inspiration**

According to Association for Career and Technical Education (2012), CTE teachers can reach students who lack role models and can be inspirational by connecting them to industry and educational leaders. Reducing class sizes to become more personal and have personalized learning also helps students become more successful (Association for Career and Technical Education, 2012). Through smaller class sizes, CTE teachers can create a more personalized learning environment which fosters more intimate teacher student relationships and provides more inspiration for students (Association for Career and Technical Education, 2012). According to Lucas, his inspiration was creating a video for a client and on a set producing a video for a clothing store, he felt “really inspired.” It was his first time working with a real client and learning how to interact, ask the right questions, and work quickly, which was exciting. Tina had to create a version of Conway’ Game of Life from scratch using JAVA and it was a “ton of fun to see how many different versions people made, and the variety of different ways they accomplished them.” Joan felt inspired one specific time when the most talented kid in the class insulted her work. She stated, “I think competition is fun, it can push you to be better at something than you thought was possible.” Riley felt very inspired during a CTE class when her
class was asked to design posters for the annual teen job fair, stating, “I didn’t win it, but I placed a close second and that really got me thinking that I could do this kind of work as a real job.”

The project Riley talked about was a great introduction to the available work in the digital industry from her CTE classes. Sean’s inspiration came when he remembered watching a video of amazing wood projects that students had created and felt inspired to work harder on his own projects, trying new ways of woodworking that were more challenging designs. Watching others who have mastered a skill is something Sean still uses to this day. Sean learned and was inspired by people who did what they hoped to be able to accomplish in the future. Danny said he was probably the most inspired when the class was asked to create a senior project that related to, and utilized all their skills from the CTE class’s focus program of study. At first, Danny had trouble coming up with an idea for his project, until one day when an idea hit him. For Danny, it seemed like a crazy and over-ambitious project for a high school senior, but for some reason he was so inspired by the idea, he decided to see it through. Danny chose to design a wheel that allowed a robot to drive instantly in any direction. Danny stated, “I literally set out to redesign the wheel and it was mostly successful.”

According to Mike, while there were many times he felt inspired and excited to work, one certain situation stood above all the rest: It was when the class was told that they would “design a guitar and created to fit the image we chose, with outside interference being nonexistent. It was at that moment I knew I wanted to make my guitar truly my own, with nobody else’s being able to compare.” Mike thought of “many wacky and unexpected ideas, all in order to ‘sign’ the creation as their own.” In the end, Mike realized that comparing his guitar to others was counterintuitive. Mike designed his guitar to his own liking, ignoring other students’ designs although Mike created a piece of art he could proudly call his own. These
recollections of being inspired falls into the theme eight (8) of the importance of quality education and as a valuable asset for high school students.

Because students were inspired by their CTE classes, theme 6, that CTE is a valuable asset in high school, theme seven (7), CTE offered real world hands-on learning experiences, and theme 8, the importance of quality education, fit best to describe the students’ lived experiences in their CTE classes. According to the Illinois Agricultural Education Report (2016), many students from various studies in agriculture stated students were inspired by their teachers, as well as that the teachers found their students to be important to them. All eight participants from this study found inspiration in their CTE classes, as well as from their CTE teachers.

**Real World Experience**

Career and Technical Education classes offer high school students the chance to work with local clients and have partnerships with the industry aligned with the program of study, and some may offer internships and employment right out of high school (Association for Career and Technical Education, 2012). Lucas had the opportunity to work in the field while in high school and still works in his chosen field while in community college although he found this “gig” on his own. Tina started programming for a business right out of high school, which seemed unlikely because of the skill level needed in the work force. Tina’s spare time was spent introducing the concepts of programming skills to other college students so they could continue their education outside of high school. Tina has used the skills she learned to augment the work she does now, but not as the primary activity in any job. Joan almost had the opportunity to work in her field. The teacher sent her and one other student to a place called "Puppet Labs" for a career day. At the career day, the company taught the students about their industry and possible opportunities to work there. Joan did not follow up on it, partly because she did not
want to work on servers, and partly because she did not want a job, then, and has not looked for a job in computer science, since. Riley, although not fully employed right now, had the opportunity to work with clients while in high school and plans to enter into the field because of her experience taking CTE classes in high school.

Danny had opportunities to work in the CTE field he took after high school, although it was limited in scope. It was limited simply because computer science requires a lot more schooling than two years of CTE in high school, as well as various licenses and training for computer science though he was ahead of his classes. In Danny’s particular CTE field of study, the focus was more about continuing his education past high school and making sure he was well-prepared. Danny stated there were volunteer opportunities in his chosen CTE field. His drafting teacher believed that STEAM education was extremely important, especially for younger students, so his teacher created summer programs for elementary and middle school students to get into STEAM at an earlier age. The CTE classes allowed high school students to participate as volunteers during these programs, providing students with real world teaching experience. Mike had the opportunity to work in the same field as his Career and Technical Education class, as the CTE course inspired him to go into the engineering field in college. After graduation, Mike was working in a position that related to the CTE engineering course he took in high school. Mike considers the knowledge and skill he has gained in his CTE course valuable, as he had no doubt that he was ahead of the rest of those in his field, and had already learned many of the things that his peers still have to learn.

Offering real world learning experiences through CTE classes while in high school better prepares high school students for postsecondary schooling and future careers. It is important that high schools incorporate industry learning as part of a high school curriculum to achieve this
goal (Association for Career and Technical Education, 2010). Participants of this study had the opportunity to gain real world experiences through their CTE classes while in high school, which relates to themes 6, CTE is a valuable asset in high school, and 7, CTE offered real world hands-on learning experiences.

**High School to Postsecondary Transitioning**

CTE programs of study should be aligned and are sometimes articulated with community colleges so that students do not have to take remedial college course work, which can motivate high school students to continue with their education (American Institute of Research, 2013). When I asked participants if they found connections between their CTE courses and their college courses, participants found similarities and differences.

Lucas found many similar things but in college, classes are taught at a higher level such as more advanced lighting concepts and more advanced video editing techniques. Lucas stated the classes in college are focused on specific topics whereas in high school there was one CTE class for all things video production related. Tina found that besides subject matter, the college teacher seemed more excited about the subject matter, which is something she had found common in college classes. The CTE class was taught more “freeform” compared to other high school classes she had taken being similar to many classes Tina has taken in her community college experience. Joan found that her college computer science classes were refining what she learned in high school CTE classes while Riley found what she learned in her CTE courses was for the most part, “very connected to what they are teaching in college.” Riley stated, “the foundations and principles of design are always popping up and I’m grateful for being introduced to them so many years ago.” While what she is learning in college is more complex, the same skills were demonstrated in college from what she learned in CTE while in high school and
acknowledged these were important. Sean found the attention to detail and the high expectations of the college instructors are very similar to what is expected of him from his woodshop teacher. Sean stated, “there are processes that cannot be skipped and it takes planning and follow through to get the desired outcome.”

Danny found the connections he had were with the skills he acquired in his CTE coursework: critical thinking, design, organization, and personal responsibility. This is just because he changed career paths shortly after he started going to college. Danny is currently a multimedia student, so while the work he is currently doing is different than engineering there is still a lot in common with the design process and how one can approach projects. Mike found there are a lot of repetitive teaching skills he will use in a workshop and how to use the same technologies correctly and safely which Mike already learned in the CTE course. Mike stated, “in fact, due to my experience with these advanced technologies, I am already much further ahead than the average co-student putting me in a good situation for the future.”

The participants’ narrative analysis fit in to theme one, why they took Career and Technical Education, theme two, students place value in their CTE classes, theme six, CTE was a valuable asset while in high school and eight, the importance of a quality education. According to the National Commission on Excellence in Education (1983), the U.S. was a nation at risk with high dropout rates in secondary schools and vocational education stigmatized to student populations not going to college and CTE is part of the solution to help the transition from high school to postsecondary schooling (Hyslop & Imperatore 2013). According to Daugherty (2016), students who are enrolled in CTE acquiring industry skills are more likely to enroll in college and those students are just as likely to enroll in a four-year college.
Rigor in Career and Technical Education

CTE programs of study offer a combined rigorous program of study that blends core academics and career education at the college level (Bottoms, 2008). Six participants found their CTE classes to be rigorous and demanding. Lucas found there was rigor in his CTE classes and stated,

Going into college I felt ahead of people who had taken the equivalent class that I had gotten duel credit for. I felt that the longer high school class gave more time to learn the same things as an entry level college class and was graded accordingly.

Tina found that her CTE classes were not rigorous and the purpose of the CTE class seemed to be to “help understand the concepts of the field so they could take college level classes easier.”

Riley found the classes to be at a slower pace and have a less structured timeline to allow for students to thoroughly understand the material while students worked at their own pace. John stated, “There were no deadlines and no consequences.” Riley also did not believe that her high school CTE classes were taught at a difficult enough college level. Riley found that the average comprehension of the class guided the direction in which it went, which was often not as challenging as it should have been. Riley stated, “There were so many slackers and goof-offs in the classroom that the class had to be taught with a lower standard to not have them all fail.” For Riley, this was disappointing and she felt she missed out on higher learning opportunities. Sean stated. “My high school shop teacher also taught the college level classes and those students often worked along-side the high school students. The teacher had the same expectations of behavior and commitment” as would be found in a college level class. Danny believed he was taught with rigor and at a college level and the students in the CTE class were given a lot of freedom and the teacher was hands off to a certain degree. Danny said there was a lot of
responsibility placed on the student to keep up with the coursework and learn the material at their own pace. Danny stated “This felt pretty rare over the course of their core classes.” CTE classes taught a lot of students’ complex knowledge such as time management and organizational skills which is much needed in today’s workforce (American Institutes for research, 2013). Mike stated:

Actually, my high school CTE course had a distinct lack of rigor, as once one was taught or understood a subject, it become very easy. Of course, there was a few students who struggled throughout the entire course, but for me it wasn't that difficult. The largest problem in the class would have to be the time constraint, as it became a very big issue towards the end of the year, since it became nearly impossible to finish our work unless we came in after school.

The responses about rigor in CTE classes are evidence that there is room for improvements in the area of high school CTE rigor and college level learning. This is important as CTE classes are supposed to be aligned to prepare high school students for industry and college. If there is not enough rigor in CTE high school classes, then the curriculum is not preparing high school students for transition into postsecondary learning for the workforce.

The participants’ discussions fall in theme 3, the best and worst of CTE, as CTE classes are expected to be taught with rigor and at the college level, and theme 8, the importance of quality education. Curriculum rigor and core class integration is a part of CTE curriculum that helps prepare high school students for a myriad of careers and postsecondary schooling (Hyslop & Imperatore, 2013). According to the American Institutes for Research (2013), rigor aligned with industry learning, core academics, and earning college credit while in high school, engages
the student in their learning and increases their access to and transitioning into postsecondary schooling.

**College Success**

When CTE classes are aligned and sometimes articulated to a college class, CTE classes may offer college credit to high school students. This helps in the transition from high school into college and is to reduce remedial course work and help community college students graduate earlier. Some CTE offer programs in Career Academies where high school students may actually earn their associates degree while still in high school (Zinth, 2014).

Participants were asked if taking CTE helped in completing their college classes on time. Lucas stated “yes!” because they came to community college better prepared and had college credits while Tina felt that their CTE did not help her in high school but not because of the CTE program but because she changed college majors. Joan also stated “yes!” she was better prepared for college because the CTE class gave her independence while Riley stated she did not think CTE had an impact on her community college completion on time. The reason for this is because Riley chose to take all her digital design courses at another institution while she took general education classes at the local community college and finished on time. Sean stated “yes” and that he learned that planning and meeting deadlines was very important for his long term goals and important for college success. Danny did not “think so” because he switched fields so early in his college education. The credits Danny earned became elective credits, and he decided not to put them toward his degree requirements in order to take more classes in his chosen field. Danny had already strengthened and had applicable skills that were able to help him earn college credits and complete community college in half the time as his contemporaries. Mike believed his CTE program of study was a major help when it came to completing community
college. Mike stated, “in fact, the class itself gave college credit, thus speeding up the time it took to finish the credits necessary to leave community college significantly.” This, along with the AP exam credits he received, just made it “child's play.”

The participants’ discussion and answers fall into theme number 4 since students were able to earn college credit through their CTE classes while in high school and could then benefit from graduating community college earlier. According to the American Institutes for Research (2013), this multilayered strategy needs to be in place for students’ success, making them college and career ready, by teaching relevant information that is needed for the economy and job force. By offering students early college credit while in high school, the high school student is more inclined to be successful in college (American Institutes for Research, 2013; Rodriguez & Hughes, 2012). The American Institutes for Research (2013) also stated that early college credit gives students essential academic and social skills to better equip them for college success.

**CTE and Employment**

CTE classes provide hands-on industry learning to help ensure that students are college and career ready and industry partnerships can help students by offering internships or job placement (American Institutes for Research, 2013; Association for Career and Technical Education, 2016). Lucas stated that CTE led him directly into the position he is employed in and currently is working in his field of choice while going to community college. Tina is not employed in the same field as the CTE classes she took in high school, but felt those CTE classes enriched her life in other ways, such as that CTE classes helped in acquiring better paying jobs. Joan and Riley are not currently employed, but Joan plans on being employed in the same CTE field she took while in high school. Sean stated his CTE class did not relate directly to his
current employment, but many of the skills and attitudes he learned from his CTE classes help
him in his current position. Danny stated:

The job I have now wasn’t really a result of my CTE classes from high school. However,
when I was still seriously pursuing engineering as a career, I did some freelance work
where I used drafting experience from my high school classes. That was definitely a
result of my CTE classes, and I firmly believe that if I kept pursuing engineering, those
skills would have absolutely had a positive impact on my ability to find a better paying
job after high school.

Mike is not currently employed, now, but believed that his CTE experiences will be a great help
in moving towards a career that will help him in the future. Due to Mike’s interest and
specialization in engineering, he had no doubt his future job will have some relation to his CTE
course, which was also an engineering course.

During the interview, I inquired if the participants were still taking classes that are in the
same field as their high school CTE classes. Four are still pursuing the same career fields as they
studied through their CTE classes. Lucas is studying in the same field of video production while
working in the same field and taking classes at community college. Tina is not currently
pursuing the same classes in her field, but plans to do so in the future. Joan is taking computer
science classes in community college and is the same field studied while in high school CTE
classes. Riley is not taking any design classes, rather only core classes through the local
community college, but she is taking classes through another multimedia institution so they are
in the same field. Sean is not taking community college classes in his high school field of CTE
study, and Danny has changed his focus from engineering in high school CTE to multimedia
classes in community college. Mike is currently in engineering and is the same field that he
studied in CTE classes while in high school. In addition to this question, I was interested to learn if there were CTE classes offered through the local community college. Only Lucas and Danny are enrolled in community college CTE classes, currently. These CTE study participants’ narratives best fit into theme 77, CTE offered real-world hands-on experiences. According to the Association for Career and Technical Education (2013), 54% of students taking CTE while in high school planned to continue to pursue a career and continued education related to their high school CTE areas of study. Kappan (2015) stated “Job experience, industry credentials, and college credits can put career-technical students ahead of students who have only an academic education” (p. 1).

**Employable Skills**

Learning employable skills such as problem solving, collaboration and, specific industry skills is one of the forefronts of Career and Technical Education. According to Association for Career and Technical Education (2013), preparing students for higher wage, entry level positions and learning new and employable skills is important for the current and changing job market. From this Association for Career and Technical Education (2013) study, which had a large sample size of 58,179 high school students, 57% of high school students from the study were in CTE to learn new skills, 63% were taking CTE to prepare for life after high school, and 34% were taking CTE in high school to learn about specific careers. All participants interviewed in this narrative inquiry qualitative study had a similar opportunity through CTE to learn new skills, explore career opportunities, and gain early college level experiences to continue with their education. Lucas learned basic camera operations and other equipment operations such as sound and industry standard software. Lucas also learned how to work on set with on camera talent and client relations. All real-world scenarios that CTE classes provided helped improve his work
ethic and obtain skills needed in the real-world job place. Tina explained that learning JAVA programming in high school helped her in completing her computer science classes early in community college. Joan learned more soft skills in patience, endurance, and problem solving with the ability to learn how to start over or “restructure it.” Riley stated that:

Overall, the CTE classes taught me how to familiarize myself with digital software and have a solid foundation of design principles. Specifically, I learned how to use Photoshop and After Effects to do a whole array of different things that all had a real-world value to them. I learned shortcuts, ideology, terms, processes and so forth that would all come into play later down the line.

Sean learned that attention to detail is an important skill along with project planning, learning to be held accountable, being responsible while gaining confidence, and having environmental awareness. Danny acquired personal responsibility, critical thinking, design skills, and organizational skills, stating “they were the most important skills that prepared me for college and future careers.” For Mike, the skills he learned were more hard skills, like operating machinery and computer software. Mike stated, “CNC knowledge and skills that I was taught back in high school was a major part of my learning here in college, as the multiple classes I have taken required some basic knowledge of the CNC router and the programming that came with it.” Because Mike already had the knowledge, he did not have to take the prerequisites necessary, allowing him to be on a faster track toward college graduation. Mike’s woodworking skills were also a great help, as they went hand-in-hand with the CNC work and the woodworking skills that he gained some time ago and came in quite handy.

All CTE high school students in my study learned important entry level employable career and college level skills, an important part of the CTE experience, which further helped the
participants’ transitions into college and their college experiences. Career exploration is an important part of CTE as it offers students the ability to take different classes to see what they may want to do after high school and what opportunities they may wish to pursue (Association for Career and Technical Education, 2010). While some participants knew what they wanted to do out of high school, others did not think about a career while in high school. Lucas knew he wanted to be in the video production industry from his freshman year and continued throughout his high school education taking different CTE classes related to media production. He continues to take college classes and work in the media sector and believes that CTE is a great way for students to explore careers, although believes there should be more CTE opportunities for high school students. Tina explored game design and programming Information Technology (IT) while Joan did not think about any type of career while in high school, although she thought it was important that high school students be offered the opportunity explore career opportunities while in high school. Riley stated:

I had no idea what I wanted to do after high school until my Junior year. After I took my first design class, I became very passionate about learning more and considering it as a line of study. For a lot of students, they never find out what they want to do and thus aren't setup to do well in college. High school should be a great starting point of exploring ideas to later further a students’ education. This is why I think it is imperative to introduce students to all kinds of studies early, so they have options when deciding on what to do for college.

Clearly, Riley believed that early career exploration is an important part of the high school experience while Sean believes that career exploration can be found through field trips and internships in different work places.
Danny was in band, IB, and drafting/engineering classes for most of high school. He entertained the idea of a career in art, literature, music, or engineering at various points throughout his education. Drafting/Engineering was the first field of study that he actively pursued after high school. Writing and Media was the second field of study Danny pursued, and is currently pursuing, in community college. Mike did not explore any career options, but believed that “high school should be a place to explore career options by taking classes that are career oriented, instead of just taking multiple classes for the sake of base knowledge and credits towards graduation.” Because of the lack of choice, Mike only gained information in engineering and while he “got lucky and enjoyed such a field,” there were many students who did not feel the same and “got cheated by the lack of options.” Having career courses in high school, and even being able to earn college credit for them, would benefit students and put many students on the “fast track” towards high school and college graduation and their careers (Rodriguez & Hughes, 2012; Kim & Bragg, 2008). The participant’s responses showed that career exploration is an important part of the high school experience and more opportunities should be available to the high school student. Addressing how students learn is also important.

The narratives aligned with theme number 5, as participants discussed how more CTE exploration should occur in high school and that CTE classes were underrepresented in schools. Learning and teaching environments are important and can help high school students engage in learning and discover new interests and excitement for different career opportunities (Association for Career and Technical Education, 2010). Kappan (2015) stated strong evidence shows that if high school students are enrolled in CTE, and become more involved and engaged with CTE, they perform better in high school and graduate at higher rates than non-CTE
students. These students are more likely to enter into postsecondary schooling and graduate from college (Kappan, 2015).

**High School Retention**

CTE studies have demonstrated, in some circumstances, that CTE reduces high school dropout rates by keeping students engaged through meaningful hands-on education that is relevant to their futures (Pate, 2017; Gewertz, 2016; Mason, 2016; Blowe & Price, 2012; American Institute for Research, 2013). None of the participants in this study felt as though they would drop out of high school if the opportunities of CTE classes did not exist. All of the participants believed they would have finished high school regardless of CTE and all participants found their high school experiences too valuable to just give up and not graduate. This aligns with theme 2, that community college students placed value in taking Career and Technical Education while in high school because while all had students had plans to continue their education, although they found CTE beneficial to their overall high school education and helped them make choices about their future education and career goals.

**Vignettes**

Follow up questions were asked of four volunteer participants to gather additional information to gain a more in-depth, rich narrative to support the first series of questions through personal vignettes and to provide an opportunity for the student’s voice to be heard clearly about the research questions. All participants were emailed a sample vignette with additional questions on how to guide their narrative. Four participants answered the email with their complete vignettes and these were the vignettes used in the study. The questions were created to guide the participants writing about their CTE experiences while in high school. After reading a sample vignette (see Appendix C) participants were asked to write their story using provided questions
as a guide to create a vignette that shared their lived CTE experiences. The vignettes were an instrument that was developed to help guide the participants and allow them to fully reflect on their high school CTE experiences. These instruments were used to gather additional information that delved deeper into the participant’s experiences. By allowing the participants to do this on their own time gave them additional time to reflect on how they perceived their CTE experiences. The answers were then analyzed and written chronological order according to the questions. All participants received the same questions. The four participants who were further interviewed were Mike, Tina, Lucas and Rob. Please not that Rob’s interview questions and vignette were done by email because he was in the process of moving.

Mike’s Vignette of CTE experiences

In Mike’s interview vignette Mike stated his participation in his high school CTE program allowed him to learn and advance as a person in many ways such as problem solving and team work. However, there was one value that he will never forget, something that has allowed him to be a better person and student as he has carried this lesson with him to this day. Mike stated: “That value can be summarized in the words of the watercolor artist, Bob Ross, ‘We don't make mistakes, just happy little accidents.’” Throughout Mike’s CTE program, there were many mistakes and problems that he faced and struggled with, but his teacher always told him that “all mistakes can become features, and nothing is unfixable.” This is a value that has held strong for Mike for years, and will continue to be remembered for years to come. One of the biggest reasons being that Mike has become comfortable in a workshop being surrounded by tools and is a major benefit for an engineering career. Mike stated, “in fact, it was so hands-on that many times the class could be considered a type of guess and check (with help there if necessary), allowing students to prosper and advance with independent decisions.”
The CNC router learning experience and learning the programming that came with it was an essential skill learning needed in the industry. Because Mike already had the knowledge, he did not have to take the prerequisite college classes necessary for community college, allowing him to be put on a “faster track” towards graduation. Mike’s woodworking skills was also a great skill to learn, as it went hand-in-hand with the CNC work, as when problems arose Mike was able to use problem-solving skills needed in the industry and in college. Mike stated:

There were also multiple instances where team skills came into play even though we were separate students with separate projects everyone was still there for each other working in a collaborative way to help each other on their projects.

The CTE program was a major reason for keeping Mike in school and interested in future career paths in college. Mike never really thought about dropping out of high school. This was because of the CTE program and classes being a lot more fun and interesting than the rest of the “boring classes,” thus allowing Mike to excel in the program. In fact, Mike did his best work in the CTE program, rather than in his core classes. While there were many times that Mike felt inspired and excited to work, a specific situation trumps all the rest. As mentioned previously, it was around the time students were told that a guitar would be designed and created to a design of each student’s choosing. It was at that moment Mike knew he wanted to make his guitar truly of his own being able to do his own design. As such, Mike gained many “wacky and unexpected ideas, all in order to [sign] the creation as my own.” However, in the end, Mike realized that “comparing my guitar to others was counterintuitive, and designed my guitar to my own liking, ignoring the surrounding designs. Thus, after hours of work, I gained a piece of art I can proudly call my own.” In conclusion Mike found that taking CTE was a valuable experience because of the engaging CTE classes that helped him stay in school.
Lucas’s Vignette of CTE Experiences

Lucas’ experience was that for three years in high school, he was enrolled in CTE classes with the overwhelmingly beneficial value he had simply being introduced to, and then learning, different software applications. Lucas was completely unaware of how things like posters, advertisements, or special effects were created and designed. His classes were gradual learning experiences, different from just pasting images in Microsoft Word, to learning the way it is actually done in the business world. Lucas believed that his second design class was the one he got the most out of as a CTE student. In contrast, Multi Media Design 1 (intro to Photoshop) was mostly a struggle to learn the tools and apply them to the assignments. The second class offered much more freedom in creativity for Lucas. This class urged Lucas to go above and beyond, because it was something Lucas liked and he wanted his design projects to look good, beyond just getting an A grade. Lucas’ teacher, besides teaching them the software, provided him with the knowledge of good vs bad design. Lucas learned concepts like color theory, typography, emphasis, and animation, which are very important fundamentals of design, and which he still uses to this day.

Lucas learned direct ways to apply his knowledge in the industry through CTE classes versus not seeing the connection in his other courses. Lucas would begin to interpret the design of advertisements and posters differently, thinking, “How would I design that?” Lucas would then think step-by-step in the technical process to get professional results. Lucas could not say the same about his other courses. While learning algebra and chemistry was good work for the brain, Lucas could see little application of using that skill set in a job one day. Lucas’ CTE experience was very valuable to him for acquiring a better understanding of the software for use in his college classes. Lucas felt he had a leg up from everyone else by already having three
years working with Photoshop and After Effects. Lucas found his college assignments to go much easier and without difficulty compared to the other students.

Lucas stated that his high school experience “certainly had its moments for preparing… for college.” There were some extraordinary teachers that gave Lucas excellent writing skills and problem-solving techniques. Other classes, however, felt more like busy work and still, to this day, Lucas has had no real-life instances to use that knowledge. The CTE courses Lucas took gave him “a ton of knowledge and experience working with the design industry’s standard tools.” Specifically, these tools were Photoshop and After Effects. Lucas felt that the CTE classes gave him more technical hard skills, such as speaking, communicating, and presenting, which were covered generally well in some of his courses, while he learned the “real meat” of the information on the computer in his CTE class.

If hands-on learning is defined as working solely with one’s hands and is devoid of lectures, then Lucas did experience a goodly amount of that style in his final CTE class for visual effects. The students in the class worked with stop-motion in both individual and group projects, creating a narrative, props, and effects all by themselves, which Lucas stated, “was very satisfying.” When introduced into groups, the hands-on learning began to fall short. This was not directly caused by the instructor or course material, but rather by other students’ work ethics, which in turn caused class adjustments to fit the speed and behavior of the “troubled” students.

Because of Lucas’ classmates not following through 100% of the time, Lucas learned to take on a leadership role in order to be successful on the project. While Lucas did not like acquiring this role, it was necessary for the team’s objective. This leadership experience translated well into college, where he has kept a leadership personality in order to help guide his groups to meet deadlines and produce work that really shines. The hard skills Lucas learned
were by far the most important value obtained in his CTE classes. Lucas became very familiar and “savvy” with Photoshop and After Effects. A few of the many things Lucas learned were creating selections, color adjustments, composition, tracking, and particle effects. The soft skills Lucas learned were not as prevalent as compared to the hard skills; however, Lucas thought he made substantial progress on assuming a leadership role and being responsible for meeting deadlines. Lucas learned how he should and should not work in a team through collaborative work. These classes reinforced Lucas’s personal morals to complete work on time and be nice to group partners, even if he really did not like them. With a good foundation already in place, the CTE classes improved Lucas’ habits to work beyond expectations. Lucas could not say this carried over into all classes, as he still barely met the requirements to turn in his biology homework. For the subjects, he did have a passion in, Lucas’ experience with CTE greatly improved his work ethic and even spent additional time working outside of class.

CTE is not the reason Lucas decided to graduate high school. Lucas already had a plan to graduate, but CTE just made the process not as rough, as he stated that he “really enjoyed those classes.” Lucas learned through repetition of skills practice better ways to communicate with his classmates. For example, if classmates were not doing as they were asked, Lucas would simply ignore them and let them fail. Lucas later improved his communication and leadership skills to give students, instead, helpful hints and guide them towards their goal. There was also a great opportunity where Lucas’s class got to design posters for an Oregon job fair. Lucas stated, “This was a cool, real-world application of using the skills that we had learned.” While Lucas did not win the competition, he was glad to have the opportunity to gain a feel for what this line of work was as a profession.
CTE did not help Lucas stay in school, either, because of the standards already set in place prior by his parents and teachers. Lucas learned from an early age that he would not get as far in life if he did not complete high school and college, as Lucas’s parents had done. Lucas stated before “the Oregon job fair project was one that really interested me. I felt I had really learned useful skills that I could actually get paid for doing design, which was very inspiring.” The scenario was designing the annual Oregon job fair poster where employers would gather in one place and allow high school students to see what interested them and maybe apply for a job. Lucas’s class was tasked with creating posters to advertise the event to local high school students for the companies involved in the event. The objective was to create a visually appealing poster that had all of the necessary information for the event while being both legible and intriguing. The class was assigned with each student creating three different posters, which would then be sent to the client to be reviewed for selection. “Our instructor would come around and help us, looking at all of the designs for any issues before being sent off to the client.” The winner was tasked with additional work of making adjustments to the clients’ needs before printing and distribution. In the end, one poster was selected as the winner.

While Lucas was not the winner, he still felt that he learned a lot from the project and enjoyed creating a design for a real client. This was the first time Lucas had the “business mindset of making it look really good for the client instead of looking just okay for the class.” Lucas stated though “while not a great achievement, it was very much a personal win for Lucas being introduced to the field of graphic design on a professional level.” Lucas’ vignette reveals that CTE is a rewarding experience and is valuable because of the skills learned from working with a real client and doing design work that was critiqued by other people in the industry.
Tina’s Vignette of CTE Experiences

Tina’s CTE and English classes helped her the most with becoming the person she is today. Through Tina’s CTE classes, Tina learned how to work collaboratively in a professional environment. By taking CTE classes, Tina learned the value of working with others by working collaboratively on creative projects. Tina stated: “CTE classes value employable skills more than core classes by using hands on learning and creative projects geared towards specific industries.” According to Tina “CTE classes provided an environment where students can learn to do things as they would in a professional environment.” Her core classes focused on doing things a certain way whereas CTE classes give her the freedom to find the best way for her to accomplish things. High school prepared Tina for college by introducing topics and skills that she would focus on more in college. In high school CTE classes, Tina learned how to work in a professional way as she would with a client on their video projects. Tina learned how to deliver a creative video product and provide revisions in a professional way. These skills help Tina in order to get jobs and work professionally.

A lot of creative and industry related hands-on learning occurred in Tina’s CTE classes. Lectures were short, but on topic, and there was ample time for working on her individual video projects. Projects would be assigned to the class and students would be given time to complete them according to industry and class standards. Tina had the opportunity to ask for help, but it was not forced, and she learned to ask other students who were working and learning in a collaborative environment. In Tina’s video classes, she learned how to work with video editing special effects software to enhance clients’ videos. She also learned how to export video and to interact and develop relationships with clients for video promos while working on real-world projects. Tina learned many hard skills like how to lead a group of peers in producing websites
and soft skills such as working relationships with clients on school projects. Working with a client who wanted a certain website, how to show up on time, and work with people in order to find out what kind of sites they wanted were important skills that Tina’s learned from taking CTE classes.

Tina’s CTE classes provided her with additional working habits, such as turning in projects on time, asking questions, and taking notes that are important to both college and the workplace. Tina’s CTE classes provided her with good working habits that are essential in the workplace. Once, during Tina’s CTE video production class, she was asked to produce a video for the school district. This project helped her learn how to work in a professional environment with a deadline. Working with a client was an important skill. Tina thought she would have stayed in school whether or not she had taken CTE classes, but CTE classes made Tina’s high school experience more interesting.

One experience that especially helped was when Tina was working on a video of a school play and everything was going according to plan. Tina had planned the set up the day before and then had been setting up all the next day when the video feed from one of the cameras went down. Then the audio coms went out. After that, the whole thing unraveled and some other equipment stopped working. Despite this failure, afterwards, Tina was inspired to do better and find out what skills of operating the video system she could improve on and learn better how to problem solve while working creatively. These were important skills to have in the video production industry. Tina’s lived experience in CTE was an exciting way to learn how to work for clients gaining real-world experience in the video and film industry. Learning what you would like to do early on while in high school can have rewarding experiences such as Rob’s vignette covers.
Rob’s Story of Success

Rob is not a current community college student, but has been working in the aviation industry was directly related to his CTE experiences while in high school. Rob saw one of the posted flyers at the local community college and emailed me because of the importance CTE classes had while in high school. Rob’s initial interview and written vignette was conducted by email, because he was in the process of moving to Cape Canaveral. I have included his lived experience because I thought it was an important validation of the importance of CTE while in community college and high school.

Rob values hard work, education, setting goals, and pursuing something he is passionate about. These are the valuable aspects of CTE programming that have made him successful in his chosen profession. Rob thought that other people may find value in the same traits, and they typically are successful, motivated, and driven. Rob stated he thought all people learn in different ways. Rob is dyslexic and has always struggled with putting his thoughts down on paper. Rob also likes to work with his hands and learns from actually doing instead of just getting information out of a book, which what CTE is: hands-on learning. Rob valued his high school experience and is what guided him into the career field that he now loves and is employed. If Rob did not have the opportunity to learn about different career options available to him while in high school, and really explore careers and learn new skills, he stated, “I don’t know which way my life would have gone.” Rob is very thankful he was given the opportunity of CTE while in high school and is very happy how career has taken shape.

At Rob’s high school, he had the opportunity to rotate through different tech classes in his Freshman and Sophomore years, which gave him the opportunity to experience different trade skills and helped him figure out what interested him. Rob had always loved building things
so he gravitated toward the mechanical classes and eventually majored in aviation. Rob’s high school CTE experience is what sparked a life-long love and fascination with the aerospace industry. He recalled being very proud of himself the first time he disassembled and successfully reassembled a horizontally opposed, four cylinder Cessna engine in high school. The class also had a huge WWII radial aircraft engine in an engine test cell and hearing the raw power in that engine when they would run it was “mind blowing at that age.” One of Rob’s clearest memories from high school was when his aviation instructor took him and a few classmates out for a flight over and around the local area. After they had all passed their private pilot ground school tests, the teacher took them for a flight in his own plane and let them log their first flight hours toward their pilot licenses. Rob placed value in all the qualities that helps people be successful, but one thing he said that was really important is that students have the opportunity to pursue career fields that they are really passionate about while in high school, and CTE provides that opportunity.

Rob learned a lot the first two years rotating through the high school tech classes and gained many skills he uses to this day. Carpentry, machining skills, and auto class sparked Rob’s main hobby today, which is building hot rods. Computer drafting, electrical, and other similar classes provided Rob with life skills that he has used extensively in his career. Rob’s typical high school schedule was nine periods, with seven periods being typical high school classes, such as English, math, and science, and two periods a day were tech classes where he was able to rotate through CTE classes. In his Junior year, Rob was able pick a major, allowing him to focus in the last two years of high school on the aviation field. Since Rob chose to major in aviation, all of his tech classes were automotive. The class year was split into four quarters: In the first quarter, students disassembled a car engine and rebuilt it. In the second quarter, the
focus was all auto body, sheet metal, and fiberglass. The third quarter was all about automotive electronics. Rob’s fourth quarter was drivetrain, transmission, shocks, brakes and his senior year was all aviation-specific tech classes.

The first semester of his senior year was all study classes for students’ private pilot license for Ground School. Rob’s semester final was the actual Federal Aviation Administration (FAA) Ground School test, and when he passed, the only thing left that he needed for a pilot license was flight time and a flight instructor sign-off although, he was unable to complete any flight time because of costs. Rob’s second semester of his senior year was all aviation maintenance, where students rebuilt plane engines, safety wire, nondestructive testing, inspections, which are all skills he uses every day, now. Rob has always loved his tech classes, because that is where his interests were. No matter how much Rob struggled in his regular classes, and averaging C grades, Rob always had straight A’s in his tech classes. A desk job is not for everyone and it was clear where Rob’s talents and passion was. Rob stated, “I always had fantastic grades in my tech classes. I actually still have a hammer that I made, [with] the hammer head in machine shop, and the handle in wood shop.” This sparked a sense in him that he could build things from scratch and that experience has translated into teaching himself different sets of skills throughout his career.

Although Rob does not remember one specific “ah-ha” moment, he recalls one particular instance when his instructor took him flying in his personal Cessna airplane, “fanning the aviation flame that had already been going in him.” Rob liked these classes because they gave a person with a learning disability like himself a way to thrive and be successful. Rob never finished getting his private pilot license, mostly because the flight time, aircraft fuel, and flight instructors needed were too expensive for him at the time. However, it did help teach him skills
needed to later get his FAA Airframe and Power-Plant License, and a Federal Communication Commission (FCC) License with Radar endorsement. Rob left high school and went directly into the U.S. Army as a Black Hawk Helicopter Crew chief (Mechanic/Door gunner) and the skills he learned in high school helped him become successful as a helicopter mechanic.

Rob never received college credit while in high school, although he did eventually get his Bachelor of Science in Professional Aeronautics, with a minor in Aviation/Aerospace Safety, and another minor in Aviation Business Management after the military. Rob had Army experience that transferred over into college credits, but did not receive college credit through his High School CTE curriculum. While Rob did not receive college credits in high school, many students can (see Chapter 2, Dual Credit section). Rob was very satisfied with the selection of CTE classes offered as his high school had a wide range of tech courses available. Each one gave Rob an opportunity to learn a new skill that he took with him for life. Rob stated that he “thinks that every high school should offer some tech classes as not everyone learns the same [and] because tech classes are not for everyone.” Rob thinks all people have their strengths and weaknesses and the key is to find out what works for them. Having the flexibility in education curriculum to accommodate and offer differentiation is key to better prepare students for college and careers. Rob stated that career pathways are fantastic when a student has figured out what their career passions are. Rob stated: “CTE classes are great for learning trade skills even if you do not go into a particular industry and they can give a student life and career skills that can be used elsewhere, and all schools should offer some trade skills. Some people excel at math others at rebuilding an Engine.”

Rob believed that having some type of certification directly out of high school would be valuable; however, mostly he thought in hindsight, “high school was a time to familiarize
yourself with your options, and give a student an opportunity to choose their career path” as most industries require more specialized training outside of high school. Rob stated, “It would have been cool if the school had the time or money to be able to help me complete my pilot’s license” but did not think it would have changed his career path. Rob’s high school career was a struggle with the main curriculum in high school, but by the time he went to college, he had maintained a 3.5 GPA. Rob said it was because he was more engaged with what he learned because of CTE classes. Rob’s classes mostly guided him toward a field he was interested in. The skills he learned were beneficial, but the biggest advantage was being in that field and really experiencing what was involved. Rob’s CTE course set him well on a path to the aviation and aerospace industry. CTE gave Rob a head-start as an aircraft mechanic in the army and drove him to pursue additional education in aviation such as his BS in “Pro Aero” and his A&P license. This experience and education lead Rob from a Helicopter Mechanic in the army, to helicopter mechanic for Columbia Helicopters, Sikorsky Helicopters, then he moved onto a Quality Assurance position with Boeing at their Everett Factory, and then eventually as a Launch Quality Inspector with Space-X at the Kennedy Space Center in Cape Canaveral Florida. This greatly shows the value of CTE and how it prepares students for what they can achieve by starting to take CTE while in high school.

Hands-on learning is an important part of CTE and when Rob decided that he wanted to join the Army as a helicopter mechanic, his instructor was able to let him work on a Hughes 500 helicopter that was in the high school shop. Rebuilding the engine gave Rob the confidence to “tear into something that I didn’t understand, and I realized that I was capable of figuring out more than I had given myself credit for.” Pilot Ground School gave Rob the general aviation knowledge that has been valuable throughout his career. Being able to learn how jet engines
worked gave Rob a huge advantage starting off his career. Rob thought his CTE pathway was a direct influence in his career, as he stated, “I most likely would not have known this was a career path option had it not been for my CTE” program and that his teachers were a factor in his success. He also stated: “When I first was hired with Space-X, I found my old high school aviation instructor on Facebook and thanked him personally for his help and guidance as I started my journey.”

He believes his employment now is a direct relation to his CTE classes, in addition to learning about aviation and getting set on his career path. Some of the most valuable skills Rob learned while in high school were from the CTE classes in automotive shop. Rob stated, “To this day I am my family’s personal mechanic and I tear down and rebuild cars and hotrods as a hobby in my spare time.” Rob never had any formal college education as a mechanic, only what he learned in high school and what he has been able to teach himself over the 20 years since.

Rob’s Vignette of CTE experiences

Rob had dyslexia and struggled through elementary school and middle school. Rob could read and comprehend above his grade level but getting his thoughts down on paper was a struggle. Rob learned some work-around, such as using a computer, as they became more popular in the 1990s, which was a huge benefit. However, when it came time for high school, Rob’s mother suggested he apply to a technical high school. Rob applied for the local Polytechnic in 1995 and was accepted. In Rob’s first two years he had no idea what he wanted to do, but Rob enjoyed and excelled at all his tech classes. Rob quickly found out that working with his hands was the way he was going to be successful. Rob was particularly drawn to the transportation classes, both automotive and aviation. The summer before Rob’s senior year, he witnessed a bad car accident, a head-on collision, and his dad and he were the first on the scene.
One driver had to be cut out of the car with the jaws of life, a helicopter from the local Army base responded to the scene and was life-flight to a hospital. As Rob stood, only feet away, and watched this helicopter land in a field next to the freeway, he knew immediately which way he wanted to go with his education. Starting his Junior year, Rob majored in aviation at the local tech high school and after graduating Rob joined the Army as a Black Hawk Helicopter crew chief.

When his aviation instructor at the local tech school really fanned the flames for his aviation passion by teaching the mechanics of helicopters using that Hughes 500 which was in the school shop, Rob learned valuable skills like torqueing, riveting, safety wire installing, and how to build and work on aircraft. Rob also did things he did not think he was capable of, like rebuilding a Cessna Airplane engine and passing his private pilot ground school tests while in high school. Working on our ground school for private pilot license also gave Rob the general aviation knowledge he needed to be successful in the industry. The local tech school sparked an interest in aviation and aerospace that has lasted his entire career. Rob graduated from the local Polytechnic high school in 1999 and went directly into the Army as a Black Hawk Helicopter mechanic. In 2005 Rob left the Army and started as a helicopter mechanic for Columbia Helicopters doing Helicopter logging and chasing forest fires across the US, then Rob worked for Sikorsky Helicopters for about four years as a mechanic.

In 2011, Rob was hired by Boeing as a Flight Line Quality Assurance Inspector at their factory in Everett, Washington. Rob loved that job and was very good at it. Rob was very successful at Boeing and worked his way to being maxed out at his position with the company by the time he was only 36. Rob thought for a long time about what he wanted to do with the remainder of his career staying and doing the same thing at Boeing for the next 20+ years at
Boeing was the comfortable choice; however, one thing CTE taught Rob was that he is capable of more than what he thinks he is. So, Rob started reaching out to the one area of industry he had always thought was out of reach: aerospace.

In February 2018, only a few weeks after the Falcon Heavy test launch that put a Tesla roadster into space, Rob sent his resume into Space-X on a Sunday, which had all his experience “listed out from my aviation major in high school at age 17 up to today at age 37.” Space-X called him back Monday morning, and over the next two weeks Rob had six interviews with one flight to the Kennedy Space Center in Cape Canaveral, Florida. Rob was hired as a Launch Quality Inspector for Space-X at the historic launch site 39A where the U.S. launched the moon missions and most of the Space Shuttle launches. For Rob, it has been a dream come true to be in this position. One of the first people Rob called when he was hired was his teacher at the local tech high school, his aviation instructor. The biggest advantage to attending a CTE school for him was he had a laser-like focus on what he wanted to do from very early in high school, and Rob knew this gave him an advantage in every step of his career. Rob’s story about his lived experiences gives a strong example of how CTE can provide high school students inspiration and specific industry skills that can be used right out of high school.

The following table visually expresses the themes as identified by the participants through their narratives.
Table 4

<table>
<thead>
<tr>
<th>Themes</th>
<th>Mike</th>
<th>Lucas</th>
<th>Tina</th>
<th>Joan</th>
<th>Riley</th>
<th>Sean</th>
<th>Danny</th>
<th>Rob</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Why did you take Career and Technical Education?</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>2. Community college students placed value in taking Career and Technical Education while in high school.</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>3. What was the best and worst of a Career and Technical Education program?</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>4. College credit was earned while in high school.</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Career and Technical Education classes were underrepresented in schools.</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>6. Career and Technical Education is a valuable asset in high school.</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>7. Career and Technical Education offered real world hands-on learning experiences.</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>8. The importance of quality education.</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

All participants except for Joan took CTE because they wanted to learn about an industry that excited them. Joan did not know she was in a CTE class until after she was in the class.

Number two in the table shows that all participants found value in their CTE classes. All participants found that there was a positive experience as well as some found there were some negative aspects of their CTE experiences such as curriculum and other students as factors of
CTE learning. The biggest discrepancy was that there was not college credit earned through CTE for all participants. Mike, Tina, Joan, Sean and Rob did not earn college credit through CTE. This can be attributed to the representation of CTE and that teachers can articulate their CTE classes with colleges for college credit which is number five in the themes table. All participants found CTE is a valuable asset for high school curriculum that offered all participants real-world learning experiences themes six and seven. The overall impact of CTE was that all participants found value and realized that high school education is an important factor in furthering education and career goals.

**Summary**

The findings from this qualitative narrative, inquiry study align with the expected findings and the literature review and fit into the framework of CTE in a positive way given that all eight study participants found value in their CTE classes. All participants found value on both a personal level with soft skills and benefitted from CTE classes that helped prepare them for college and the workplace. Participants also learned valuable hard skills, such as using computer software, coding, and wood working skills. Some participants changed fields of study from high school to college, although they still stated there was value in what they learned from their CTE classes. All participants stated that they thought there should be more offerings of CTE while in high school to be able to make better choices for their future careers and not have to wait until college find out what they really wanted to do for careers.

The central research question for this qualitative, narrative inquiry study question was: What value do local community college students believe their high school Career and Technical Education program participation provided? The community college participants in this study gave voice to their lived experiences in CTE programs while in high school. I learned that
community college students found great value in taking Career and Technical Education classes. I believe this qualitative narrative study is an important part of CTE research that has had little previous exploration. By listening to community college students’ voices about their Career and Technical Education experiences while in high school, this dissertation helps to fill a gap of in the literature about community college students’ lived experiences and adds value to the entire field of Career and Technical Education.
Chapter 5: Discussion and Conclusions

Introduction

There is much discussion in the literature pertaining to the importance Career and Technical Education (CTE) and if it really benefits high school students (Buglewicz, 2018; Christle, Jolivette, & Nelson, 2007; Hyslop & Imperatore, 2013). This study discovered that community college students found many beneficial factors and value from taking CTE while in high school. In this chapter, I presented a summary of the study by revisiting the first three chapters along with a summary of findings. In Chapter 4, I presented how the study’s findings reflect the literature review and established my place as a researcher as a Career and Technical Educator (CTE). I also presented detailed narratives of the lived experiences and voices of eight community college students who participated in CTE programming in high school. Chapter 5 presents the conclusion and related discussions for the dissertation, including recommendations for further study and policies. The purpose of this qualitative narrative study was to give a voice and to better understand the value community college students’ may have received from their experiences with their high school Career and Technical Education (CTE) programs. This qualitative, narrative inquiry study was guided by the following research questions that were thoroughly answered by interviewing participants and asking additional questions in a detailed follow up interview.

The following central research question guided this qualitative, narrative inquiry study:

What value do local community college students believe their high school Career and Technical Education program participation provided?

The study was enhanced with the inclusion of three additional research questions that supported the central research question:
1. How does participation in a high school CTE program prepare students for community college?

2. What skills and attitudes were learned in high school CTE programs that have helped local community college students to be successful in postsecondary education?

3. How does participation in CTE programs in high school contribute to why local community college students graduated from, or did not drop out from, high school?

A qualitative narrative archetype was conducted to find out how community college students perceived their high school CTE experiences giving a voice to an underrepresented field of study, as there was little to no previous research conducted about the voice of community college students’ lived experiences of CTE while in high school. Through the participants’ interviews and analysis of their narratives, I gained a better understanding of their stories and how their lived experiences related to other research that has been conducted about Career and Technical Education.

**Chapter 1 Overview**

Chapter 1 introduced the study’s purpose, research questions, and gave a history of vocational education in the U.S. along with basic graduation rates through a national and local lens. The background of the problem, rooted in high school retention and completion, and how local schools and schools across the nation have been trying to increase lagging graduation rates was also discussed. Various CTE career areas were explained and research was also discussed about the current and future demand of the workplace, with specific skills high school students need to be successful in the current and future job force (Hyslop & Imperatore, 2013). The first chapter continued with how Career and Education came to fruition and why it is important that CTE should be a fundamental part of a high school students’ education. Chapter 1 addressed the
problem statement specifically, that little to no research had been conducted on the voice of community college students’ lived experiences with their high school CTE experiences. Chapter 1 also stated that the study’s purpose was to determine if community college students who took CTE while in high school found value in their high school Career and technical classes or programs of study. The study aimed to discover if community college students who took CTE while in high school found value such as personal soft skills and applicable work skills to become career and entry level community college ready. Chapter 1 also discussed the significance of the study, as there has been little to no qualitative narrative inquiry studies done about community college students’ voices who have taken CTE classes while in high school and how these classes helped to prepare them for their future education and career goals. The research questions for the dissertation were listed in Chapter 1, as well as the definition of terms, assumptions of the study, and the limitations of the study.

**Chapter 2 Overview**

Chapter 2 reviewed an extensive series of literature that relates to qualitative narrative inquiry studies, studies on CTE, and perceptions as perceived by college students. The literature review focuses on the values of high school CTE. It also established the theoretical frameworks for the study, including Mezirow’s (1991) theory of transformational learning which is based as a personal growth development that involves life-long learning experiences, Pragmatism the philosophy of learning as an instrument of problem solving and, the 10 components of CTE. If CTE can be a part of a students’ life-long learning experience, helping them to acquire skills and values that students will use in their education and professional careers, then CTE should be a focal point of high school curriculum.
Chapter 2 also examined research conducted regarding the student voice and the importance of how it is reflected in educational reform and relates to the qualitative, narrative inquiry form in ways of listening to the student’s voice and the lived experiences of high school and college students. An important part of Chapter 2 is student’s perceptions and how they perceived their own personal learning and that students needed to be engaged in their learning so they felt a part of their learning choices and experiences. The definition of CTE was explained and how it has developed over the years. It was meticulously defined in Chapter 2 and how it relates to studies done by other researchers, including and an explanation and definition of the CTE Career Academy (Kemple & Willner, 2008; Stern, Charles, & Raby, 2010).

Chapter 2 also explained the theoretical framework of CTE and its 10 basic elements that create the CTE framework and the importance of association and industry partnerships (Perkins Collaborative Resource Network, Office of Career and Technical Adult Education, n.d.). Additional evidence researched in Chapter 2 literature review talks about other studies in regard to this dissertation, such as the importance of career academies where high school students may receive certification and also associate’s degrees in a chosen field of study (Association for Career and Technical Education 2009a: Career Academies, 2009; Stern et al., 2010). Career Academies also have shown they help student retention and decrease high school dropout rates (Kemple & Willner, 2008). An important part of CTE programs of study are the student leadership opportunities or SLOs where CTE students have leadership and competition opportunities state and nation wide to help build confidence, comradery and skills while networking with other CTE students around the nation (Association for Career and Technical Education, n.d.). One of the benefits of CTE is dual credit and is discussed in Chapter 2 and how it helps high school students with a better transition into community college and how it helps at
risk students especially in urban settings (Gottfried & Plasman, 2018). The overall impact of CTE is discussed in Chapter 2 and how it helps high school students and the community, as well. Chapter 2 explained the CTE framework with the 10 components needed for successful CTE programs of study and the qualitative narrative methodology used for the study (Seidman, 2013).

Chapter 3 Overview

Chapter 3 described the methodology section that presented the design of the research study and the rationale and purpose of the study with questions. This qualitative, narrative inquiry study focused on the following central research question: What value do local community college students believe their high school Career and Technical Education program participation provided? The design of the study was a qualitative, narrative inquiry study conducted through a series of semistructured interviews that provided a rich set of narratives that focused on the value of the lived experiences of the community college students’ experience in CTE classes while in high school. The study comprised, first, a preliminary questionnaire that identified qualified participants and then followed up with of a series of interviews that were transcribed and coded finding various themes and categories.

Chapter 3 also discussed the data collection method and the use of Atlas.ti coding and narrative analysis of transcriptions, limitations, ethical considerations, and validity and reliability of the study and how bias may affect the outcomes of the study. Having ethical procedures in an important part of the study and I followed the basic ethical principles as outlined in the Belmont Report of 1976 regarding human subjects (Banister, 2007). This qualitative narrative study interviewed eight participants with a vignette follow up of four of the participants. Chapter 3 also described and explained the importance of member checking, triangulation, and how participants played an important role in viewing the transcriptions of the narratives provided in
the study to ensure accuracy (Thurmond, 2004). Expected findings were stated in Chapter 3 with expectations being that CTE was a valuable learning experience for community college students while in high school.

**Chapter 4 Overview**

Chapter 4 provided the explanations of findings through a rich narrative of the participants’ answers to the four research study questions that focused on the community college students’ values, how CTE better prepares high school students for college, and the community college students’ career and college readiness skills acquired through participation in CTE classes. Each question asked in the interviews was addressed by the participants and was described through a series of rich narratives that provided thorough descriptions of the participants lived experiences in their high school CTE classes. Chapter 4 gives a detailed description of eight participants’ lived experiences of CTE while in high school through the voices of each participant and the similarities and differences of each participant are apparent and give a good analysis of similarities and differences in CTE experiences. The analysis of the narratives identified four categories: 1) CTE credit, 2) learning, 3) retention, 4) value, and 5) lived experiences, and eight themes: 1) Why did you take Career and Technical Education? 2) Community college students placed value in taking Career and Technical Education while in high school. 3) What was the best and worst of a Career and Technical Education program? 4) College credit was earned while in high school. 5) Career and Technical Education classes were underrepresented in schools. 6) Career and Technical Education is a valuable asset in high school. 7) Career and Technical Education offered real world hands-on learning experiences. 8) The importance of quality education.
Summary of Results

In the discussion of the summary of results of this qualitative narrative inquiry design study that use semistructured interviews. The following central research question guided this qualitative, narrative inquiry study:

What value do local community college students believe their high school Career and Technical Education program participation provided?

The study was enhanced with the inclusion of three additional research questions that supported the central research question:

1. How does participation in a high school CTE program prepare students for community college?

2. What skills and attitudes were learned in high school CTE programs that have helped local community college students to be successful in postsecondary education?

3. How does participation in CTE programs in high school contribute to why local community college students graduated from, or did not drop out from, high school

A series of questions (see Appendix B) was asked through semistructured, open-ended interviews that allowed the community college student to express their voice of their high school CTE lived experiences. The audio was transcribed given back to participants for member checking and then coded in Atlas.ti. According to Boyce and Neal (2006), when conducting in-depth interviews, the researcher obtains a more detailed picture of the lived experience than other data collection methods, such as surveys. The eight participants interviewed for this study were enrolled in different Career and Technical Education programs or classes in different schools, with some participants enrolled in inner city high schools and others in suburban setting high schools.
Discussion of Results

The expected findings of this qualitative narrative study were that CTE classes would provide high school students with value in personal skills, employable skills, hard skills, and that CTE better prepared high school students for college and learned entry level career skills needed in today’s work force. The participants’ responses reflected the expected findings and there was a positive analysis from the participants’ interviews.

Four categories were developed from the data: 1) Value (in education and CTE); 2) Learning; 3) Retention; and 4) Experiences. The eight following themes were derived from these categories:

1) Why did you take Career and Technical Education?
2) Community college students placed value in taking Career and Technical Education while in high school
3) What was the best and worst of a Career and Technical Education program?
4) College credit was earned while in high school
5) Career and Technical Education classes were underrepresented in schools
6) Career and Technical Education is a valuable asset in high school
7) Career and Technical Education offered real world hands-on learning experiences
8) The importance of quality education.

These guiding components illustrated the common findings from all the participants (See Table 3).

Discussion of Results in Relation to Literature

The literature review reflected a strong positive influence from taking CTE while in high school such as increased grades, high school retention and future education possibilities (Hyslop
& Imperatore, 2013; Stern, Dayton & Raby, 2010). The positive outcomes and learning advantages for students who participated in this study who took CTE while in high school were employable skills, personal skills, collaborative learning, hands on skills building, exposure to industry work places through internships and filed trips, early college credit while in high school and a more engaging learning environment that allowed for career exploration. The findings of this qualitative narrative inquiry study and the literature review had similar outcomes, in that CTE provided a positive education learning experience. Taking CTE classes for the participants in this study was not the only factor in graduating high school on time, as participants stated that they found their high school education important, had value and, needed to graduate to become successful in continuing their education and society. According to Dougherty (2016), Arkansas students who had a greater exposure to CTE were more likely to graduate, continue into a two-year college, become more employable, and have higher wages and these students are even more likely to go into a four-year college. Those who concentrate in CTE are 21% more likely to graduate high school compared to non-concentrators (Dougherty, 2016). According to the findings of this study, CTE high school students acquired additional skills that participants said they would not have been learned in just core classes and CTE classes allowed participants to explore their own career options and be better prepared for college and or a career (American Institute for Research, 2013). All participants in this study had plans for continuing on in their education by going to community college and transferring to a four-year college.

This qualitative narrative inquiry study focused on the value of CTE through the voice of the community college student who took CTE while in high school. According to Nodine et al (2012), students in their study reported that community college students wanted more exposure to career opportunities, so those students could make better decisions about setting educational
and career goals. Participants in this qualitative narrative study also stated there should be more exposure to industry related learning experiences through CTE.

One additional special narrative, Rob’s success story was conducted, as I believed it was an exemplary example of how CTE can play a part of a high school students’ success. Some participants in this study stated their reason for taking CTE classes was that there were options for career exploration, although all participants stated there should be more career learning options for CTE at the high school level. One female participant did not know she was in a CTE class until she was actually learning in the classroom. By exposing students to more careers early in their educational career the better informed they are to make better decisions later in high school and the beginning of college (Hoachlander, 1999; Rojewski, 2000). Allowing students to take control of their own education by choosing classes that are career oriented in a field the student finds interest in, engages them to take ownership of their own education pathway (Mitra, 2006). All participants stated they thought there should have been more CTE classes to choose from to better explore different career opportunities.

The participants in this study found there were advantages to being more prepared for college and three participants earned college credit while in high school from taking CTE classes. Though CTE was not the only way participants earned college credit as some participants enrolled in Advanced Placement and International Baccalaureate classes and earned college credit through those classes as well. One participant said that it was a combination of IB and CTE classes that better prepared them for college. One of the big advantages of taking CTE classes is that students may earn college class credit and not have to take remedial courses when entering community college and some participants were able to enter college and not have to take beginning classes or were better prepared than college students who did not take CTE
classes (Andrews, 2004; Richardson, 2007). Participants stated, some did receive college credit through CTE and other college credit through AP and IB classes.

All participants found value in the hands-on learning aspect of CTE learning. Participants stated that hands-on learning is more engaging and CTE classes were some of their favorite classes while in high school (Dagget, 2010; Lynch, 2013). In addition to hard skills, participants stated they learned patience, endurance, problem solving while one participant found that their high school experience was a mixed bag of positive and negative and wasting their time in high school and was fed up. One participant thought their CTE class was not what they thought it would be as the teacher was not knowledgeable about the content which is why it is important that CTE teachers some directly from the industry or have been prepared for teaching through professional development. Gewertz (2016) stated nearly all state CTE directors surveyed in a report say they are making it a priority to bring industry experts into the classroom but because of low pay this proves to be difficult. Arizona has mitigated this problem by creating a 15-course of professional development on teaching industry skills to help improve the effectiveness of professionals in the classroom and has been working to improve instructional outcomes (Gewertz, 2016). The participants in this qualitative narrative study stated they found CTE beneficial to the high school experience and that there is a need for more choices regarding career learning in high school. Rob’s vignette provides strong evidence that CTE does work and that industry learning is beneficial in high school.

All eight of the participants found value in their CTE education classes and I believe this study shows they are students who have been transformed by taking CTE while in high school. This directly relates to Mezirow’s (1991), theory of transformation through learning as the data supports that when the participants were high school students, they were transformed from taking
The students were meeting specific needs in preparing for postsecondary schooling and their careers even though some changed their major (Mezirow, 1991). The community college students from this qualitative narrative study were able to draw on specific skills and past educational experiences they learned from their high school CTE classes. I believe his study showed the participants held values and beliefs about their education, past educational experiences, and learning awareness as stated previously in Chapter 2. By taking CTE, it helped instill lifelong learning awareness and the importance education has to the ever-changing highly skilled workforce (Rojewski, 2000; Institutes for American Research, 2013). It is important to bridge the gap between secondary and postsecondary schooling and entering into the workforce which this study proved to do and CTE does exactly that, if it is program that offers a rigorous curriculum that is aligned with core classes (Dagget, 2010; Lynch, 2013).

Funding is one of the biggest problems in education today and that most states are cutting funding over the last 10 years and our future depends on the creating the best schools possible (Leachman, Masterson & Figueroa, 2017). This statement directly reflects CTE framework component one that CTE needs proper funding from the federal and state levels. Oregon passed Measure 98 in 2016 that over two years is to appropriate funds to the state to help build new CTE programs of study, enhance CTE programs of study already operating and, create opportunities for professional development for CTE instructors (Oregon Department of Education, 2016). By funding schools and CTE properly there will be more educational opportunities for the students.

The CTE educational experiences for all participants stated there needs to be more CTE available to students and there needs to be a more rigorous curriculum to make programs challenging. This recounts the CTE framework component six where CTE needs to have a
rigorous program of study aligned with college curriculum (Perkins Collaborative Resource
Network Office of Career and Technical Adult Education, n.d.). One participant stated that her
teacher did not know the subject matter while another participant stated their teacher was their
mentor. This is CTE framework component two and three where teachers need to keep up with
and be knowledgeable of the content they are teaching; it needs to be relevant to today’s
industries and technologies.

Participants concluded that there were opportunities to work with clients creating
partnership with industry gaining real world experience. Working with business partners ensures
that students are gaining skills that are aligned with the industry standards. A teachers’
professional development is the core of the CTE framework’s component three and teachers
need to be up-to-date with the latest technologies and be an expert in their field. Teachers and
programs of study need to have partnerships and build relationships which I believe is lacking
from what the participants experienced in this study. One of the biggest partnerships is with high
schools and local community colleges where high schools align and articulate high school CTE
classes.

Component four relates to accountability and assessment although this study did not go
into any assessments participants complete it is now a requirement for CTE to ensure CTE
students are meeting industry standards and are better prepared for their choice in career. Three
participants in this study earned college credit from taking CTE classes. Each CTE credit is
equal to three college credits when the student enrolls in community college (Portland
Community College, n.d.). None of the participants had to take remedial college classes and all
participants felt they were ahead of the community college counterparts in their chosen field of
study. It is also the fifth component that high schools, colleges and, industry are aligned with
standards to ensure high school students are learning current industry skills to better prepare them for college and career. One of the major goals of CTE is to align and better to articulate to receive college credit to help prepare students to be college and career ready (Association for Career and Technical Education, n.d.; Rodriguez & Hughes, 2012).

Two participants stated that their CTE programs of study were not created with enough rigor and is a part of component six where instructors and the district need to create CTE programs of study that offer real world curriculum scenario so students are better prepared for college and career. None of the participants of this study had to take a remedial class except two who went into different careers. Component seven is that CTE programs of study can offer college credit if the CTE class is articulated with a specific class offered through the local community college. Three participants in this study earned at least six college credits while in high school. Component eight is that students receive guidance through CTE and the school about options for choosing a career and CTE classes (Association for Career and Technical Education, n.d.). Participants stated that there needed to be more representation of CTE in high schools and career choices through multiple resources. Component nine is to have different creative approaches although this study did not address differentiation in CTE learning there was opportunity for CTE high school students explore different creative projects. This study also did not explore component 10 according to the Perkins Collaborative Resource Network Office of Career and Technical Adult Education (n.d.). Overall this qualitative narrative study found positive alignments with the components as described by Perkins Collaborative Resource Network Office of Career and Technical Adult Education (n.d.).
Limitations

Surveys, questionnaires, and interview limitations could have been that participants did not answer questions to the best of their ability though this unlikely because of the nature of the participants’ rich narrative answers. Participants may have or did not recount accurately what happened in the past (University of Leicester, n.d.). Other limitations were that there was limited data gathered from the questions and interviews resulted in low experiential data because of low interest in participating in the survey and interviews, though the number of participants was met as described in Chapter 3.

Other limitations to take into consideration were the demographic and socioeconomic standing of the participants, even though the local community college attracts students from all over the city and metropolitan region, many of the community college students come from different socioeconomic backgrounds. Only two participants were on free and reduced lunches, and the research did not account for CTE success because of socioeconomic standings. The sample population is not randomized and was a purposeful sample selection that was not representative of the whole CTE population of students who took CTE while in high school. Thus, the small sample size may not be indicative of a larger sample size (Creswell 2013). I personally analyzed the narrative inquiry design of the study and therefore, the analysis may be subject to investigator and candidate bias as I am a CTE teacher. With my teaching role comes a wealth of experience and knowledge, though by using the strategy of triangulation of CTE data from interviews, and member checking, I was able to mitigate bias and risk associated in the study.
Implication of Results for Practice, Policy and Theory

The implication of the results, practice, policy and theory arising from this dissertation’s research is that CTE has positive benefits in a myriad of ways for high school students. CTE should be considered as a core part of a high school curriculum. Including CTE career pathways in a high school curriculum benefits students in that it better prepares high school students for entry-level positions in the work force through hands-on learning, acquiring needed skills to be successful (Dagget, 2010; Lynch, 2013). In today’s job market it is even more critical that high school students be better prepared for the work place, and CTE offers opportunities in many disciplines that students may explore while in high school. Even if a student wishes to continue study into college, having developed working skills provided through CTE will help that high school student acquire a better paying job while in postsecondary institutions (Association for Career and Technical Education, 2009). Team building, collaborative work, creative problem solving, and ideation are beneficial for today’s work force and CTE offers this through CTE curriculum framework offering business/school partnerships and hands on learning that are relevant to today’s workforce (Association for Career and Technical Education, 2009). By creating non-duplicative CTE program classes that are developed with local and state guidelines and assessments that provide CTE student-level data, students will have better career opportunities from CTE while in high school (Perkins Collaborative Resource Network, n.d.).

The framework and theory is that CTE works and, provides better opportunities for high school students through career learning (Bray, Hyslop, DeWitt, & Kay, 2010; Hyslop & Imperatore, 2013). The CTE framework and theory also promotes that CTE helps retain high school students and also reduces high school dropout rates (Castellano, Sundell, & Richardson, 2017). This study contributes to the body of growing evidence helping to demonstrate that CTE
can be a major part of helping to engage students, retain students in school, and help students graduate. Thus, it makes sense to provide more funding in CTE programs of industry to help the students and the economy. CTE curriculum would best serve students with full programs of study, and not just as an elective of one or two classes, since students need full programs of study to become successful in the work force. Past research on Career Academies showed that CTE student success was more prominent through career pathways that offered high school students’ full programs of CTE as it prepared them for careers (Bottoms, 2008; Mason, 2016; Stern, Dayton, & Raby, 2010).

When implementing CTE programs of study, school districts need to identify a full career curriculum rather than offer CTE as an elective of a couple of classes. Measure 98, which passed in the state of Oregon in 2016, to help enhance and create CTE programs of study should be used to help create programs of study that are fully equipped to prepare high school students for careers or college without taking remedial course work and not just CTE classes as one-off electives. School districts that received funding from Measure 98 should include creation of multiple, broad-based CTE programs of study, starting in the ninth grade with strong integration of academic core classes, that enable high school students to access essential academic learning skills associated with industry careers (Bottoms, 2008). School districts should create CTE career pathways in all schools. Each school could have different career pathways students might choose to enroll in. Also, districts might consider having a dedicated school building that offers many choices of CTE programs of study for students.

States should create policies that help schools to provide programs of study that lead to employer certifications and college degrees. More efforts should be made by community colleges to enable high schools to offer more dual credit for high school students and form
partnerships that allow high school students to take classes in more advance class environments such as college technology centers. Florida requires high school students to complete eight credits in a career major of the students’ choosing thus better preparing high school students for career learning in college (Bottoms, 2008). States should set policies that open community college classes for articulation to high school CTE classes, ensuring that they are taught by qualified instructors that creates curriculum at the college level. According to Bottoms (2008), CTE instructors sometimes lack the rigorous academic knowledge that CTE classes need to integrate to be successful with combining core academics with CTE programs of study. CTE instructors should be provided professional development that will help ensure that CTE classes combine essential core academics such as math, reading, writing and the sciences so high school students can demonstrate basic skills in order to function properly in the workforce.

CTE has recently become better known as a way to engage high school students, increase graduation rates and acquire college credits and employable skills (Barnett, Maclutsky, & Wagonlander, 2015; Gottfried & Plasman, 2018). Even those students who do graduate from high school do not always possess the necessary skills to continue into college or the workforce (Bottoms, 2008). States, districts, and schools need to work together to ensure that CTE is offered not just as an elective but is created as a program of study that offers rigorous academic preparation with career readiness so that high school students are better prepared for entry into college and the work place.

**Recommendations for Further Research**

There has been a multitude of quantitative research done on CTE with findings that it better prepares high school students for college and careers (Association for Career and Technical Education, 2012; Gottfried & Plasman, 2018; Hyslop & Imperatore, 2013). As this
dissertation went into review and publication, a new CTE framework by Imperatore and Hyslop (2018) was released in October. This new CTE framework was not available for full review during the time for research and review of the literature, but should be considered as a source for future research in CTE and the perceived value that community college students or high school students receive from participating in CTE. Imperatore and Hyslop’s (2018) framework for high-quality and rigorous CTE programs of study includes 12 components: 1) Standards-aligned and integrated curriculum; 2) Sequencing and articulation; 3) Student assessment; 4) Prepared and effective program staff; 5) Engaging instruction; 6) Access and equity; 7) Facilities equipment, technology and materials; 8) Business and community relationships; 9) Student career development; 10) Career and technical student organizations (CTSOs); 11) Work-based learning; and 12) Data and program improvement. These 12 components build on the previous CTE framework and add additional important elements that help build a better and more rigorous CTE program of study (Imperatore & Hyslop, 2018).

Future research should include a comparison of schools where CTE is offered more often as an elective in schools such as Career Academies where they offer CTE as full career pathways (Stern, Raby & Dayton, 1992). The student voice is important in future research and can help close a gap in CTE research about where CTE needs to change and how it can adapt to better prepare high school students for college and careers. The participants in this qualitative narrative study voiced their opinions that there needs to be more CTE opportunities at the high school level, so they may have more choices about their future careers. Creating CTE programs of study takes a lot of funding from states and districts for teachers’ salary and all the equipment needed to sustain the program. Funding for education is always an issue for school districts as there never seems to be enough and teachers are always expected to do more with less. In
addition to educational funding, college costs are always rising so it makes sense to better prepare high school students as best as schools can and CTE can help bridge the gap by offering more classes that are aligned with industries and core academics. State and local research needs to include the best ways to create and incorporate CTE programs of study that benefits the student for a career or continuing education and can provide adequate and sustainable funding.

Future research should be done to find a brick-and-mortar facility which can be turned into a fully functional CTE facility in a local school district. According to Demarest and Gehrt (2016), northern Delaware operates four comprehensive high schools that offer 40 different career programs of study where high school students must apply for admission to the districts programs of study. The schools can only admit around 1,300 students each school year and turns away more than 500 high school students because there is not enough space. Additional research on Career Academies and schools that offer complete CTE pathways could investigate the need for more of these types of institutions.

Conclusions

According to Demarest and Gehrt (2016), CTE students are purposefully preparing to be both college and career ready. Through CTE classes, students are earning certifications, college credit while at the same time earning high school credits and gaining work experience by working part time (Demarest & Gehrt, 2016). Participants in this study found that CTE classes were beneficial in different ways and that there should be more CTE classes offered in high schools so high school students may have better options about career exploration. Participants learned soft skills needed in the workplace such as creative problem solving, creative thinking, collaboration, and participation in CTE better prepared them for college and a career. Participants also stated that they learned hard skills through hands-on learning beneficial for the
work place. Some participants are already working in the field they chose while in high school though their CTE classes while some explored different careers such as computer science, engineering, and media arts; although they may not be in community college taking these classes, the participants felt they were better off for taking CTE classes because of the skills they learned while in high school.

There are many factors that keep students in school and the research found the participants placed value in high school education because they knew that finishing school was a valuable asset to further their education and career goals. Although the participants of this study did not think about dropping out of high school, the problem of graduation rates still exist in the state of Oregon and across the nation (Oregon Department of Education, 2017). One participant finished high school early because she thought high school was a waste of time. CTE, because of its nature for hands-on learning and student engagement, can help students remain in high school (Gottfried & Plasman, 2018). Many of the circumstances that arise when students choose to drop out of school can be a mixture of issues, such as family issues or support, self-efficacy, and socioeconomic status, which is directly related to high school students dropping out (Cohen & Besharove, 2002). None of the participants stated that they had socioeconomic issues with staying in school, although two participants were on a free or reduced meal plan. Participants stated there was support from their families to finish high school and that their families valued high school education, which is an important factor in graduating high school (Association for Career and Technical Education, 2012).

Participants also stated that some of their CTE classes were engaging and helped them in high school, while some felt that their CTE classes were not challenging enough or at the level of college classes. Some high school CTE classes are categorized as electives and are not complete
career pathways. For instance, if a high school student is interested in media design as a career and a Photoshop class is offered through CTE, and there is a Photoshop 1, 2 class and second year a Photoshop 3, 4 class, this is not a career pathway as a media designer needs more than a couple of classes in Photoshop. Students would need to study additional classes such as design principles and other software that relates to media studies. This is important to note when creating a career pathway with a fully developed career curriculum, such as used in Career Academies, because is the best way to prepare the high school student broadly for career success, not just through a couple of electives of CTE (Bottoms, 2008; Stern, Dayton & Raby, 2010).

This qualitative narrative inquiry study focused on the central research question that asked what value local community college students believed their high school Career and Technical Education program participation provided. The findings showed that high school Career and Technical Education can and does have lasting value in the lived experiences of community college students. The important stories related by participants in this dissertation provided evidence that CTE can help students to stay in school, graduate, and acquire beneficial skills and career knowledge that they can apply in college and the workforce. By offering a fuller range of courses and creating more career pathways, CTE programs of study and the entire high school course catalog will be enriched and provide greater value for students.
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Appendix A: Preliminary Screening Survey

Q1 I am currently a Portland Community College Student.
   - Yes (1)
   - No (2)

Q2 Did you successfully complete at least two credits in CTE classes while in high school? (1 CTE credit is earned in one high school year.)
   - Yes (1)
   - No (2)
   - Not sure

Q3 Did you receive college credit for your Career and Technical Classes while in high school?
   - Yes (1)
   - No (2)
   - Not sure

Q4 I am willing to participate in an interview that will be audio-taped about my experiences with CTE classes while in high school
   - Yes (1)
   - No (2)

Q5 I agree to go over a written transcript with the researcher to ensure the accuracy of the interview.
   - Yes (1)
   - No (2)

Q6 Have you taken more than three credits CTE classes while in high school?
   - Yes (1)
   - No (2)
   - Not sure (3)
Q7 Did you participate in a high school Career and Technical Student Leadership Organization, such as SkillsUSA or DECA?
  o Yes (1)
  o No (2)
  o I am not sure (3)

Q8 I am over 18 years of age.
  o Yes (1)
  o No (2)

Q9 Were you eligible for reduced or free lunch while in high school?
  o Yes (1)
  o No (2)
  o I am not sure (3)

Q10 How do you identify?
  o White
  o African American
  o Hispanic
  o Pacific Islander
  o Asian

Other: _________________________________

What is your email address?

Thank you for your time and input
Appendix B: First-Round Interview Questions

1) This study will consider the values you may have found in CTE classes in high school. What makes something valuable to you?
   a) Please elaborate on these specifics and go into detail about personal value.
   b) Why are these valuable to you?
   c) Do you think others find value in the same things you do, why or why not?
   d) Where and how do you think value should be placed in CTE classes?

2) How valuable was your entire high school education? What made it valuable?
   a) Please elaborate on these specifics and go into detail.
   b) Please describe specific detailed experiences that make you come to this conclusion or conclusions.
   c) Think about learning experiences and how teachers influenced you (or didn’t) in your learning.
   d) What specific areas did, or you now place value in-please be specific.

3) Thinking about your CTE teachers or program of study in high school, what did you learn from them that you find valuable?
   a) Please outline your whole program of study or classes you took and give a detailed view of these experiences.
   b) How did you (or now find in hindsight) value in these experiences. Please be specific in describing different scenarios and specific experiences.
   c) What were you learning outcomes from these classes and specific learning experiences?
   d) Were there any “AH HA” moments in your learning from your teachers?
4) What field of CTE study did you take while in high school?
   a) Please elaborate on your specific field of study and what you learned while in your different classes.
   b) If it was a series in the program of classes please elaborate on the curriculum.
   c) What did you like about this-these classes? Please elaborate.
   d) Did you earn a certificate? Why or why not?
   e) Did these CTE classes give you actual hands on learning in industry specific skill sets? How do you come to this conclusion(s)?

5) Did you receive college credit for any classes while in high school? If so, how many were CTE college classes?
   a) Please be specific where and what classes you received college credit

6) Did you take dual credit classes that were not CTE?
   a) Can you be specific to which of these classes and the experiences you had in these classes?
   b) If you were to compare them what differences were there?
   c) If you are unsure why is that?
   d) When you entered college did you have dual credits in your transcript?

7) How satisfied were you with the selection of courses in CTE available while you were in high school?
   a) Please describe what was offered in your school.
   b) Were there any career pathways?
   c) Were there any certifications.
   d) What were or are your feelings toward the selections you had in your school?
e) Did you wish there were more CTE classes to choose from? why or why not?

8) In what ways did you find CTE classes to be a challenging and rewarding learning experiences?
   a. Please pick specific scenarios with teachers and projects and elaborate in detail about these experiences.
   b. Specifically, what was challenging? Give specific examples you experienced and explain them in detail.
   c. What do you perceive as the most challenging in your experiences and what was the least challenging?
   d. Do you think classes and projects should be more challenging?

9) How much information about careers did you receive in high school? Do you feel that information was adequate and how did it help you to make good future decisions?
   a) Did your CTE teachers talk about different careers?
   b) Did you have a career center that helped with CTE career choices?
   c) Were your career center personnel familiar with CTE?
   d) If the information was inadequate why please explain.
   e) What could have been done to improve CTE information?
   f) Was there enough CTE career information for you to make an informed decision about your college choices.

10. What are your feelings about an idea that a complete high school education should include some study in Career and Technical Education?
    a. Please explain in detail about your feelings and ideas what a complete education experience should be.
b. Some schools offer CTE as electives and not career pathways. In a career pathway, you enter into a series of CTE classes where you may earn a certification at the end of the CTE course.

c. What do you believe the benefits and values are to have CTE as a part of curriculum in high school?

d. Do you think it is important to add more CTE electives into high schools? Why or why not? Please be specific and detailed.

e. Should there be a complete pathway of CTE studies meaning there can be some sort of industry certification at the completion of the CTE course? In specific detail, why?

f. Would this have helped your CTE experience in high school and would you have found your experience more valuable if there were more CTE pathway options at your high school?

11. In what ways do you feel CTE has better prepared you for college?

a. Please describe in detail different experiences that you think better developed yourself for continuing education.

b. What specifically in CTE helped prepare you for a job position if you are working and college. Please be specific and give detailed descriptions.

c. Did you receive hands on learning in your CTE classes from your teachers?

d. Please give three scenarios in detail that will describe your learning experiences from your teachers and specific projects.

12. Can you remember a time during a CTE class when you felt really inspired? What were the circumstances?
a. Please describe in depth the scenario around this inspiring experience.

b. Who, What and where was involved?

c. Who was the teacher and how was the lesson being taught, what was the lesson, what was the project(s), how did it relate to the industry? Please give as much information as possible.

d. What were the outcomes for this project? Did you meet the requirements and how did you meet the requirements? Please explain in detail how you arrived to your outcomes and your experience going through the project.

13. CTE courses include information for those students who plan on working after graduation. Did or do you have to opportunity to work in the field that you took CTE in? Why or why not?

    a. If you had the opportunity to work in the field what were your experiences?

    b. Did you feel as though you were prepared? Why or why not?

    c. Did you receive enough information about different fields while taking CTE classes while in high school?

    d. Please provide in detail the situations of receiving or not receiving CTE career information.

    e. If you did not receive career information what do you think could be done to improve this situation.

14. What connections did you find between what you learned in CTE courses and what you are learning in college?
a. Please describe in detail what you find in hindsight that make connections from CTE classes to college classes. Please describe in detail. Put me in that setting by using rich descriptions.

b. Can you describe specific situations while in a CTE class that can be directly related to a college class? Please describe in detail about these situations.

c. Do you think these connections will be of value to you in the work place? If so how?

15. Do you believe your High school CTE classes were taught at the college level in terms of rigor?

   a. Do you believe your high school classes had curricular rigor?

   b. Do you think they were at the same level as college classes of the same discipline?

   c. If your CTE class was articulated and giving college credit you class should have the same academic outcomes. Do you believe this was true? Why or why not? Please describe in detail why you come to these conclusions.

   d. If so how and where did you find this rigor in your projects?

16. Do you believe your high school CTE program has had an impact on your ability to complete community college on time?

   a. Were there any determining factors that led you to believe that CTE had an impact to be able to complete community college on time or earlier?

   b. If so could it be because of college credit earned while in high school? Please explain in detail what college credits you received and how it helped you in community college?

   c. If not please explain in detail why you don’t think extra college credit helped you.
d. If you did not receive college credit while in high school do you think taking CTE for college credit may have been and advantage for you? Please explain.

17. If you are employed now, do you feel you were able to get a better paying job after you graduated high school because you have taken CTE classes?
   a. Are you employed now?
   b. What is your position
   c. Does it relate to CTE classes you took while in high school?
   d. If not are there any skills from CTE classes while in high school that and be aligned with your present job position? Why or why not?
   e. Do you believe that there is value in taking CTE classes while in high school to potentially get a better job if you need one while in community college?
   f. Do you think over all that taking CTE classes that are aligned with industry standards and being involved with internships while in high school could better prepare you for a better job out of high school?

18. Do you take college classes that are in the same career field as the CTE classes you took in high school?
   a. Can you describe in detail the sameness and differences in high school CTE classes and community college classes?
   b. Do you think the college classes are more rigorous?
   c. Do you feel as though you received a rigorous high school CTE education to maintain your college level learnings? Please describe in detail how this is possible.
   d. Did you advance in your placement when first entering into community college in front of other just starting community college?
e. Did you feel better prepared? Please explain why or why not?

19. Are you still in a CTE program in community college?
   a. If so can you describe the similarities of the college class to the high school class?
   b. What are the differences? please explain?
   c. Are you on a CTE career path for certification or four-year college?

20. What specific skills did you learn in CTE classes that helped prepare you for college and or a career?
   a. Please be specific about what hard skills you learned in a rich narrative.
   b. Please be specific about what soft skills you learned in a rich narrative.
   c. Place yourself back in a setting that you remember when something you learned had meaning and meant something to your learning experience. Please describe in detail.

21. What career options did you explore while in high school and if not do you think High school should be a place where you can explore career options by taking classes that are career oriented?
   a. Please describe why you chose to explore the careers while in high school.
   b. Were there enough career options to explore while in high school?
   c. If not do you think there should be more options? Why or why not?
   d. If you were to find a career while in high school do you think you should be able to pursue the career and get college credit for the class while in high school. Please explain in detail why or why not?

22. Was there ever a time you thought about dropping out of high school, and if so, what were the circumstances?
a. Please describe why you chose to stay in high school. Please give detailed descriptions about school community, parent involvement, student clubs and groups friends in school etc.

b. If you thought about dropping out what were the reasons for thinking about dropping out?

c. What made you change your mind? Please describe in detail.

23. Please tell me about your CTE experiences in high school that I didn’t ask you about today?

a. Please give a rich narrative about your whole experience of taking CTE while in high school.

b. Please talk about your teachers and what you remember best about them.

c. Please talk about your teachers and how you think they could improve about themselves.

d. Please give me an overall in depth look into your experiences while taking CTE while in high school. Please be as in depth as possible and give me both the strengths and weakness of your insights.
Appendix C: Vignette Instrument and Follow-up Questions

Please read the following vignette about a high school girl who took CTE classes. After reading the vignette, please respond to the following questions about your own personal experiences while taking CTE in a narrative form.

Vignette:

CTE classes teach students about working in a wide variety of career fields, and are designed to give them the technical and ‘soft’ skills they need to succeed in an industry of their choice post-high school graduation. Students get hands on learning experiences, can practice specific industry jobs in live settings, and, in some circumstances, prepare for professional level certifications and college entry, while also earning college credit.

Consider this scenario: One local student, Cecilia, had a dream of becoming a dental technician and learned that her local tech high school offered a certification program that could be completed by the time of graduation. Cecilia had found out about the dental technician program when the local tech school’s staff came to her middle school and gave a presentation about the CTE courses they offered. She was excited to start her high school experience and enrolled in the tech high school for the fall.

When Cecilia first arrived as a freshman in September, she was informed that first, she had to take an entry level CTE class that showed her all the different occupation pathways the school offered. Cecilia started the entry-level class enthusiastically, but really had wanted to take the dental tech intro course. One of the programs that she explored in the entry-level class was computer science and she was surprised that she ended up loving computer science and the software industry.
Cecilia now decided that she wanted to go into computer science, so in her second year of high school, she enrolled in the computer science program of study and found that writing code was a lyrical experience, almost like writing a love story; she loved it! By the end of her sophomore year in high school, she had mastered the basics of many coding languages and thirsted for more. Cecilia entered her junior year of high school, had many friends, and was well known in the computer science department by her CTE teachers and students, alike. Cecilia was enrolled in dual credit and received college credit and high school credit at the same time. Cecilia also became active in the Technology Student Association and her local chapter of Skills USA. She started to enter contests in her junior year. Her first contest was a state-wide contest in hand coding a game from the beginning. She was amazed that she placed second in the state and was asked to compete nationally.

During Cecilia’s senior year she had the opportunity to compete again making websites and apps. She came in second place in the statewide challenges for her coding and app designs and then competed nationally. Although she did not place, Cecilia had a lot of fun traveling and meeting new people while learning. At the midpoint of Cecilia’s senior year, a local tech company came in for a presentation and offered students in the class to apply for short internships. She applied and received placement in the company, working part-time after school. During her final year, she also received additional college credit for her CTE class and certification for her coding skills by passing a test from a local testing office. Cecilia’s efforts in CTE offered her valuable soft and hard skills needed in today’s work force. Not only did she receive a job right after high school, she earned eight college credits and her new job had benefits that helped pay for college, as well. Cecilia pointed out that all of her training and skills
were because of two CTE teachers and the fact that CTE had an educational pathway that gave her the skills necessary to succeed in high school and in a competitive workforce.

Take a moment to think about Cecilia’s experience and compare and contrast it with your own high school CTE classes. Think about the value your program may have brought you. (Pause)

Now, I will ask you some reflective questions about your CTE experience:

Using Cecilia’s experience as a narrative model please tell your CTE experiences using the following questions and sub-questions.

Follow up questions:

1. What lasting benefit or value do you believe your high school CTE (CTE) program participation provided to you?
   a. When thinking about your high school and CTE classes, which ones did you think helped you the most with becoming the person you are today?
   b. What value, specifically, did you acquire from your teachers in your CTE studies?
   c. In hindsight, what value did you gain from the CTE and general high school curriculum? Please elaborate on the similarities and differences in value between CTE and core classes.

2. How did your participation in a high school CTE program prepare you for community college or the workforce?
   a. How did high school as a whole prepare you for college?
b. What aspects in high school CTE specifically prepared you for college? What other skills needed for college did CTE help to prepare you for college and/or the workforce? Please be specific and elaborate on these skills.

c. How much hands-on learning occurred in your CTE classes? Please tell me more about what it was like.

3. Can you please talk more about the skills and attitudes learned in high school CTE programs that helped you as a community college student to be successful in postsecondary education?

   a. Can you go into depth about your hard skills you learned, such as learning software, construction, or auto mechanics?

   b. Can you go into depth about the soft skills you learned such as personal skills, teamwork, communication, leadership skills, problem solving and responsibility?

   c. How well did your CTE classes provide you with good working habits that have helped you to be successful in college or in the work place?

4. How did your participation in a CTE program in high school contribute to why you graduated from, or did not drop out from, high school?

   a. Can you describe in depth your CTE learning experiences throughout your CTE career, including interactions with other students, your teachers, and industry relations, if any?

   b. Whether or not CTE influenced and helped you to stay in school, why do you think that was? Please be specific.
5. Can you remember a time during a CTE class when you felt really inspired? What were the circumstances? (If not, what would have been needed to make the learning inspirational?)

   a. Please describe in depth the scenario around this inspiring experience.
   b. Who and what was involved and where and when did it occur?
   c. What was the lesson, how was the lesson taught, what was/were the project(s) or activity(-ties), and how did it relate to the industry? Please give as much information as possible.
   d. What were the outcomes for this project? Did you meet the requirements, and if so, how did you meet the requirements? Please explain in detail how you arrived to your outcomes and your experience going through the project. (If not met, what would it have taken to meet the requirements?)

6. Is there anything else you would like to share with me that I didn’t ask you about today?
Appendix D: Statement of Original Work

The Concordia University Doctorate of Education Program is a collaborative community of scholar-practitioners, who seek to transform society by pursuing ethically-informed, rigorously-researched, inquiry-based projects that benefit professional, institutional, and local educational contexts. Each member of the community affirms throughout their program of study, adherence to the principles and standards outlined in the Concordia University Academic Integrity Policy. This policy states the following:

Statement of academic integrity.

As a member of the Concordia University community, I will neither engage in fraudulent or unauthorized behaviors in the presentation and completion of my work, nor will I provide unauthorized assistance to others.

Explanations:

What does “fraudulent” mean?

“Fraudulent” work is any material submitted for evaluation that is falsely or improperly presented as one’s own. This includes, but is not limited to texts, graphics and other multimedia files appropriated from any source, including another individual, that are intentionally presented as all or part of a candidate’s final work without full and complete documentation.

What is “unauthorized” assistance?

“Unauthorized assistance” refers to any support candidates solicit in the completion of their work, that has not been either explicitly specified as appropriate by the instructor, or any assistance that is understood in the class context as inappropriate. This can include, but is not limited to:

• Use of unauthorized notes or another’s work during an online test
• Use of unauthorized notes or personal assistance in an online exam setting
• Inappropriate collaboration in preparation and/or completion of a project
• Unauthorized solicitation of professional resources for the completion of the work.

As a member of the Concordia University community, I will neither engage in fraudulent or unauthorized behaviors in the presentation and completion of my work, nor will I provide unauthorized assistance to others.
Statement of Original Work (continued)

I attest that:

1. I have read and understood, and complied with all aspects of the Concordia University–Portland Academic Integrity Policy during the development and writing of this dissertation.

2. Where information and/or materials from outside sources has been used in the production of this dissertation, all information and/or materials from outside sources has been properly referenced and all permissions required for use of the information and/or materials have been obtained, in accordance with research standards outlined in the Publication Manual of The American Psychological Association.

Digital Signature:

Name (typed): Martin R. Douglass

Date: 04/05/2019