STUDENT PERCEPTIONS ON THE IMPACT OF CAREER AND

TECHNICAL EDUCATION PROGRAMS:

A MIXED-METHODS STUDY

A Dissertation

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by

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AUTHORIZATION TO SUBMIT

DISSERTATION

This dissertation of Kimberly Eimers, submitted for the degree of Doctor of Education with a

major in Educational Leadership and titled "Student Perceptions on the Impact of Career and

Technical Education Programs: A Mixed-Methods Study," has been reviewed in final form.

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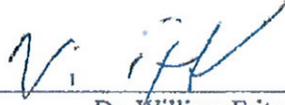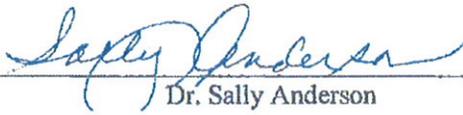
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DEDICATION

This journey is dedicated to my family. My father, Tom Eimers, was an inspiration throughout my life and was always there for guidance, advice, or just a "good talking to." His incredible spirit lives on inside of me and continues to be the voice in my head that keeps me moving forward. To a man known by many, young and old, as "Tommy," I say thank you for always pushing me to be better and reminding me to be a "good one" in whatever life throws my way.

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ABSTRACT

This mixed-methods study analyzed student perceptions regarding the impact of career and technical education (CTE) programs on student engagement, mind-set, support of teachers, and school climate. The Tripod 7C instrument was utilized to gather quantitative data, while focus groups were utilized for gathering qualitative data. Survey results showed statistically significant differences between CTE and non-CTE subjects in the areas of *care*, *captivate,* and *clarify*. These findings were used to develop the questions and structure for the focus group discussions. The focus groups revealed four student-perception themes: *teacher*, *environment*, *student engagement*, and *content*. In the settings studied, CTE programs were noted to have significantly higher levels of student engagement, environments that are welcoming and warm, and caring adults.

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Chapter I

Introduction

The nation's graduation rate for the 2015–2016 cohort reached the highest rate ever at 82.3%, increased in all subgroups of students over the previous year, and is closer to reaching the goal set by GradNation of 90% by 2020 (DePaoli, Balfanz, & Bridgeland, 2016). While the overall graduation rate for the nation may be trending upward, 3.4% of students are choosing to drop out of school rather than graduate, despite school reforms initiatives such as No Child Left Behind (NCLB) Act of 2001 and Every Student Succeeds Act (ESSA) of 2015 (Balfanz, Bridgeland, Bruce, & Fox, 2013; DePaoli et al., 2016; Kalantzis & Cope, 2012; Stetser & Stillwell, 2014). Each year, 1.2 million students drop out of school, which equates to 7,000 students per day or one student every 26 seconds (Kalantzis & Cope, 2012; Miller, 2014). There were 6.7 million youths (ages 16–24) who were neither attending school nor employed in 2011 (Balfanz et al., 2013).

Though dropout rates may be on the decline, the educational system is still losing students at a rate of 7,000 students per day; therefore, it is imperative that education builds a system to keep students in school while providing the skills necessary to be successful in grade 13 and beyond (Balfanz et al., 2013; Kalantzis & Cope, 2012; Miller, 2014). Educators must be the change agents. Students need to feel nurtured, learn how to socialize, and be given the supports needed to build the social capital to be successful in high school and beyond (Khalkhali, Sharifi, & Nikyar, 2013; Rose, 2014; Zaff & Malone, 2016). Education needs to meet the students where they are, and educators need to recognize those outside influences that keep students from engaging in their own education (Loera, Nakamoto, Oh, & Rueda, 2013; Noel, Stark, & Redford, 2013; Wilcox, Angelis, Baker, & Lawson, 2014; Zaff & Malone, 2016). Once

students are in the hallways, they become a captive audience. They are eager to learn. They want to be challenged and given the permission to explore their own pathways. If society truly believes that students are its future, then it needs to become more purposeful in designing schools that not only allow for student exploration, but encourages those ideas. Educators need to offer the necessary resources to support the needs of students so they will be as prepared as those they will be competing against in the workforce (Rose, 2014). Even more importantly, schools need to spark the excitement of learning so students become lifelong learners and advocates of education for generations to follow (Rose, 2014; Wilcox et al., 2014; Zaff, & Malone, 2016).

Unfortunately, students who drop out of school tend to drop into the criminal justice, welfare, and unemployment systems (Neely & Griffin-Williams, 2013; Wood, Kiperman, Esch, Leroux, & Truscott, 2016). Gang violence, drugs, prostitution, and robbery are among the top crimes committed by students who drop out of school (Neely & Griffin-Williams, 2013; Wood et al., 2016). Additionally, the economic costs of dropouts are increasing annually. The National Education Association (NEA) reported that over a lifetime of a single 18-year-old cohort group, wages lost are $156 billion, which makes up for 1.3% of the nation's gross domestic product (Amos, 2008). In addition to the labor costs, many other costs associated with dropping out of school impact society as a whole. Public assistance programs are impacted by students who do not finish high school, which costs an additional $3.8 billion in housing, food assistance, and medical costs (Amos, 2008; NEA, 2008). The Alliance for Educational Excellence reported that if students were to stay in school and graduate, there would be an additional $154 billion infused into the national economy (Alliance for Educational Excellence [AEE], 2011; Amos, 2008). As Figure 1 indicates, high school dropouts make less than those who have a high school diploma and significantly less than those with any type of postsecondary degree. In addition, the

unemployment rate for those who did not obtain a high school degree was almost 2.5% higher

than those with only a high school degree and 3% higher than those who have some college

experience.

Figure 1

Earnings and Unemployment Rates by Educational Attainment, 2015
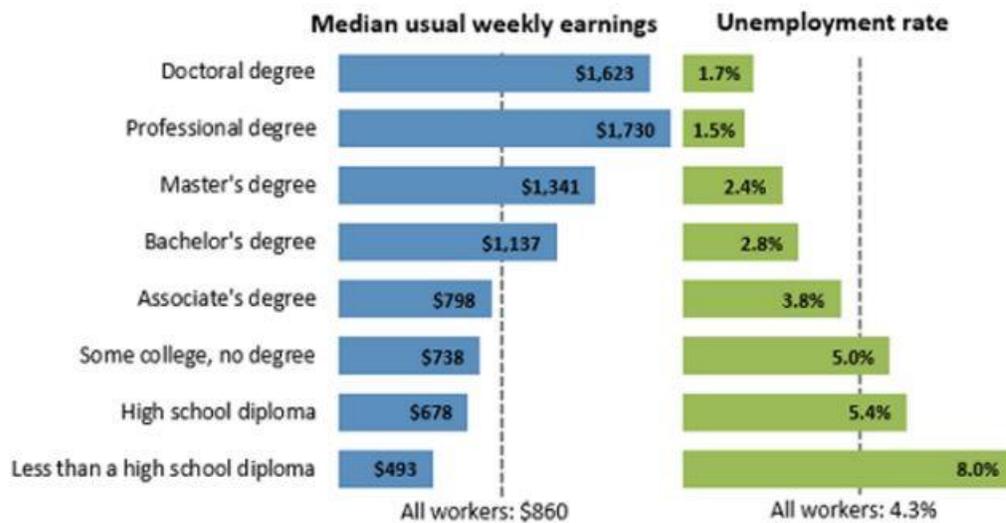
Note. Retrieved from Bureau of Labor Statistics, U.S. Department of Labor, *Occupational Outlook Handbook, 2016–17 Edition*, Disclaimer, on the Internet at https://www.bls.gov/ooh/about/disclaimer.htm (visited March 20, 2017; see Appendix A).

Today's students are not the same as those a generation ago. No longer do the traditional

educational pedagogical teachings of the current educational system relate to how students learn

in the society of today (Kalantzis & Cope, 2012). While students give many reasons for dropping

out of school, data show more students are dropping out of school due to a lack of engagement

(AEE, 2011; Bridgeland, Dilulio, & Morison, 2006; Hardy-Fortin, 2013; Khalkhali et al., 2013;

Ronica, 2013; Zaff & Malone, 2016). In a study conducted by the Association for Career and

Technical Education (ACTE), 47% of students surveyed reported they dropped out of school

because classes were not engaging or interesting and therefore were not motivated to stay in school (Association for Career and Technical Education [ACTE], 2016).

Students who perform better academically self-reported they, "feel both valued by adults and a part of their schools" (Association for Supervision and Curriculum Development [ASCD], 2012, p. 8). Creating environments where students can see the relevance of their course work has a positive impact on student motivation, engagement, and reduces the dropout rate (Bozick & Dalton, 2013; Canning, 2012; Khalkhali et al., 2013; Rose & Akos, 2014). In a multilevel longitudinal study, Rose and Akros (2014) concluded that students who felt valued by their school were more engaged, put forth more effort to succeed, and stayed in school. Rose and Akros (2014) also found that those students who saw a connection between school course work and their own career goals were more apt to be engaged and work toward meeting those goals.

Statement of the Problem

Dropout rates for high schools have remained stagnant at 3.4%, despite school reform initiatives such as the NCLB Act (Kalantzis & Cope, 2012). Research on high school dropouts has shown that lack of student engagement and an absence of personal relationships with caring adults are the top reasons students drop out of school (Aragon, Alfield, & Hanson, 2013; Bowers, Sprott, & Taff, 2012; Branson et al., 2013). When students are in an environment where they feel they belong and with teachers who care, they are more likely to be engaged and, therefore, motivated to stay in school (Branson et al., 2013; Khalkhali et al., 2013; Neely & Griffin-Williams, 2013).

Society is negatively impacted by students who drop out of school (Khalkhali et al., 2013; Rose, 2014). Students who drop out have higher rates of unemployment, lower paying jobs if employed, higher costs of medical care, higher probability of poverty living conditions, and

increased likelihood of incarceration, which is estimated to be $51,000 per person, per year (Neely & Griffin-Williams, 2013; Tavakolian & Howell 2012). Over 80% of the prison population does not have a high school diploma (Neely & Griffin-Williams, 2013; Tavakolian & Howell, 2012).

Students who participate in Career and Technical Education (CTE) programs have a graduation rate of 93% as compared to the 80% of non-CTE participants (ACTE, 2016). CTE students are also more motivated and engaged in their chosen content areas and establish positive relationships with peers and teachers (ACTE, 2016; Rose, 2014). The presence of supportive teachers and other adults in the school has a positive impact on student achievement and success (Chung-Do et al., 2013; Samel, Sondergeld, Fischer, & Patterson, 2011). In addition, CTE offers students the opportunity to learn real-world skills while in high school that position them for an easier transition from high school to college or the workforce (ACTE, 2016). The Idaho Department of Labor (Hyer & Mansfield, 2014) "Occupations in Demand" report, showed that 67% of Idaho students who were enrolled in CTE courses also enrolled in college, as compared to 42% of the general student population. Of those students who were enrolled in CTE courses, 98% graduated and 94% of those graduates found jobs or enrolled in postsecondary institutions (Hyer & Mansfield, 2014). In a meta-analysis study on dropout prevention, it was found that career development and job training had the highest effect size in keeping students in school, (Chappell, O'Connor, Withington, & Stegelin, 2015). As shown in Table 1, implementing career development and job training strategies has the highest effect size when it comes to engaging students and providing an environment for success (Chappell et al., 2015).

Table 1

Meta-Regression Model Statistics for Dropout Rate Analysis

Strategy	Effect Size	*p*
Career Development/Job Training	**0.81**	**0.56**
Family Engagement	0.67	0.00
Mentoring	0.63	0.91
Behavioral Intervention	0.46	0.01
Literacy Development	0.42	0.00
Work-Based Learning	0.26	0.01
School/Classroom Environment	0.25	0.00
Service Learning	0.21	0.00
Health and Wellness	0.18	0.00
Academic Support	0.00	0.00

Note. Reproduced by permission from *A Meta-Analysis of Dropout Prevention Outcomes and Strategies*, by S. L. Chappell, P. O'Connor, C. Withington, and D. Stegelin, 2015. (A technical report in collaboration with the Center for Educational Partnerships at Old Dominion University). Clemson, SC: National Dropout Prevention Center/Network at Clemson University (see Appendix B).

In 2012, the Obama administration unveiled its plan to reauthorize the Carl D. Perkins Act (U.S. Department of Education, 2012). In 2016, Obama released the new accountability platform, ESSA, in which CTE was recognized as a component to a *well-rounded education* (ACTE, 2016, p. 26). Within their plan was the push to increase CTE programs so students are well prepared to enter the workforce with the necessary skill sets to be successful (ACTE, 2016; Balfanz et al., 2013). Schargel and Smink (2001) identified five benefits students gain from participation in CTE programs: (a) enhancement of motivation and achievement, (b) increased

personal and social competence, (c) broader understanding of specific occupations and industries, (d) career exploration and planning, and (e) employable skill sets for specific occupations and industries (p. 212). A primary focus of this study was looking at enhancement of motivation and achievement to see if schools that integrate CTE programs with academics help motivate students, raise student achievement, and create strong adult–student relationships that in turn will decrease the dropout rate and increase the graduation rate (ACTE, 2016).

In a survey of small businesses conducted by Manpower Group, it was reported that 34% of open positions were unable to be filled due to a talent pool that was not adequate for the positions posted (Rogers, 2011). Of that 34%, 24% was specifically due to a lack of technical competencies, while 15% was due to limited knowledge of business or other qualifications (Rogers, 2011). CTE programs can and should be the backbone of preparing the future workforce in the trades, skills, and technical course work for the 21st century (Dereu, 2010). The National Institute for Metalworking Skills (NIMS) was organized due to the shortage of skilled workers in the manufacturing industry. NIMS is dedicated to creating manufacturing technology education standards in which CTE programs adopt at both the secondary and postsecondary levels of education (Dereu, 2010). In a short time, NIMS has become the benchmark industry standard for manufacturing, and students who leave with a NIMS certification have demonstrated industry standard knowledge and skills within the industry they serve (Dereu, 2010). CTE pathways provide excellent training and development of skills necessary to compete in the workforce (Hemmelman, 2010). In addition, the training received from CTE programs and pathways can set the course for students to become hired in well-paying jobs, as well as provide them with the skills that are marketable across a variety of industries (Hemmelman, 2010).

Background of the Study

With a graduation rate for CTE students that is 13% higher than non-CTE students, educators must wonder what CTE is doing to keep students in school and on track to graduate (ACTE, 2016). CTE programs of study offer students more personalized learning, as well as teachers who create strong caring relationships with students that are critical in student engagement (ACTE, 2016; Loera et al., 2013). The ability for students to connect with an adult in the school system is one of the most critical components to student engagement, which then leads to higher levels of student achievement (Chung-Do et al., 2013). Engagement in school by students is important because it determines whether a student stays in school or drops out (Bilge, Tuzgol Dost, & Cetin, 2014). This engagement is fostered by environments that are supportive, which give students a feeling of belongingness through positive relationships with teachers, peers, and other school personnel (Bilge et al., 2014; Strati, Schmidt, & Maier, 2017).

The purpose of this study was to explore the perceptions of CTE and non-CTE students within their classrooms based on seven attributes of highly effective teachers (Tripod Education Partners, 2015). The study determined whether there were significant differences between the perceptions of CTE and non-CTE students. The tool used to measure these perceptions was a student perception survey that asked students to rate their experiences based on the following seven components:

- Care: warmth and emotional support
- Confer: encouragement and value of input and ideas of students
- Captivate: students' interest in their learning
- Clarify: measure degree of student understanding by teacher
- Consolidate: integration and synthesis of ideas presented

- Challenge: academic rigor and expectations

- Classroom management: on-task student behavior (p. 5)

The measurement tool, Tripod 7Cs framework of effective teaching, provided a way to measure student perceptions in areas such as engagement, motivation, and mind-set in relation to their classroom experiences.

The Tripod survey was developed by Dr. Ronald F. Ferguson in 2001. The survey used in this research has been administered to students across the nation, as well as in China and Canada. The Measures of Effective Teaching Project (MET), sponsored by the Bill and Melinda Gates Foundation, used the Tripod survey as its only student perception survey, which has since become the most widely student perception survey administered (Burniske & Meibaum, 2012; Tripod Education Partners, 2015). The use of a student perception survey has been shown to predict student gains in achievement and provides an insight into the classroom as seen through the perception of the students in areas where no standardized assessment exists (Burniske & Meibaum, 2012; Bill and Melinda Gates Foundation, 2012).

Description of Terms

Association for Career and Technical Education (ACTE). National education association for CTE programs committed to providing educational opportunities for students in preparation for careers and workforce readiness. The mission of the association is to prepare students to be successful in today's competitive and global workforce.

Association for Supervision and Curriculum Development (ASCD). National education association providing educators opportunities in professional development in areas such as leadership and innovative educational methods.

Career and technical student organization (CTSO). Educational organization for students involved in CTE programs designed to build capacity in students in the areas of leadership, citizenship, and other industry-based skills. Students compete in co-curricular events with other CTSOs at local, state, and national levels. Most common CTSOs in CTE are Business Professionals of America, Distributed Educational Clubs of America, Future Farmers of America, and Skills USA.

Career technical education (CTE). Educational system consisting of multiyear pathways in technical and occupational courses to prepare students for college and workforce readiness. CTE is also referred to as PTE (professional technical education) in some states such as Idaho. In 2006, vocational education changed its name to CTE.

Common core state standards. A set of high-quality academic standards in English language arts (ELA) and math. CCSS outlines goals in ELA and math that students K–12 are expected to know to be prepared for college and career experiences upon graduation.

Every Student Succeeds Act (ESSA). Legislation implemented in 2015 that replaced the current NCLB legislation. On December 10, 2015, President Obama reauthorized NCLB with an emphasis on equal learning opportunities for all students.

No Child Left Behind (NCLB) legislation. Legislation implemented with the intent to raise the bar of accountability of states, districts, and schools. This legislation was the reauthorization of the Elementary and Secondary Act of 1965 and was signed into law in 2001 by President George Bush.

Outside student factors. Issues or barriers students bring to school that are outside the control of the school but have a significant impact on students' ability to be successful in school.

Tripod education survey. Student perception survey administered to students as the measurement tool for the research. Tripod education surveys are administered by Tripod Education Partners and have been accepted as a reliable and valid measurement tool for student perception in the areas of student engagement, mind-set, support from peers and teachers, and school climate. The tool uses Likert scoring to measure student perception.

Research Questions

Educators know that factors of engagement are essential to educational achievement (Branson et al., 2013; Finn & Zimmer, 2012). The research questions for this dissertation were used to guide the study and formulate methods to answer questions posed. The primary research questions for this study were the following:

1. Do CTE programs have an impact on student engagement?

2. What are students' perceptions of engagement in CTE and non-CTE classes?

Significance of the Study

The significance of this study was to provide insight to determine how CTE programs provide an educational experience relevant to students and keep students on track to graduate. The study was designed to verify whether students perceive that CTE programs are rigorous, centered on student choice and prepare them for college and workforce readiness through engagement in their own learning. When students are allowed to become active participants within their own education—masters of their own destiny—then they will be more motivated to finish school and become more engaged in the learning process (Asunda, Finnell, & Berry, 2015). A part of this research focused on students' perception of CTE courses versus general education courses. The questions posed were meant to determine what kept students engaged and excited about learning. In addition, the questions were meant to determine what specific factors

played into their perceptions of belonging or, to the contrary, feelings of being disenfranchised within their schools. This study will have the most influence on the public comprehensive high school that is traditional in its approach to the delivery of education.

Since the adoption of common core standards, a larger emphasis has been placed on the ability of students to show mastery in technical reading and writing, as well as college and career readiness attributes, all which are components of CTE programs (ACTE, 2016). A fundamental cornerstone of CTE programs is technical reading and writing and the ability for students to show mastery through project-based education (DeFeo, 2015).

Overview of Research Methods

Creswell (2013) outlined the importance of the research questions guiding the methods used to answer those questions. For this study, the researcher chose to use a mixed-methods model to answer the research questions. Mixed-methods research has gained popularity and is now considered an acceptable method in which to conduct social science studies (Creswell, 2013; Teddlie & Tashakkori, 2009). Mixed methods merge the numeric analysis found in quantitative research with the narrative analysis found in qualitative research, which give the study a holistic point of view that encompasses the scientific and the philosophic elements of the research topic (Creswell, 2013; Teddlie & Tashakkori, 2009).

The sample group was 11th and 12th grade students who were currently participating in CTE programs, as well as those who were in general education classes. The sample came from four comprehensive high schools (800–1,500 student body enrollment) located in the United States Pacific Northwest region.

Research question 1. Do CTE programs have an impact on student engagement? The research method used was quantitative. The data were collected through student perception

surveys given to the students using the Tripod 7Cs Student Perception Survey—Version 2016. The data set is numerical in nature and allows for consistent comparison of the variables between the sample groups (Tripod Education Partners, 2015).

Research question 2. What are students' perceptions of engagement in CTE and non-CTE classes? Focus groups were conducted to answer question two (2). The data from the student perception survey were analyzed, and the results drove the questions that were asked in the focus groups. Marshall and Rossman (2016) wrote that qualitative research is "grounded in the lived experiences of people" (p. 2).

The intent behind the focus group was to hear the voice of the students as they saw their experience and to identify any trends among students in both CTE courses as well as non-CTE courses. The focus group was based on a set of open-ended questions to identify any trends or patterns that may exist between CTE courses and non-CTE courses.

Quantitative and qualitative methods were used to answer the research questions. The first research question surveyed students for perception differences between CTE and non-CTE courses. Independent *t* tests were performed to determine significant differences between the two sample groups. The second research question used focus groups to further study the results of the quantitative data.

Chapter II

Review of the Literature

Introduction

School reform laws, such as No Child Left Behind and Every Student Succeeds Act, call

for schools to become more accountable for student achievement and preparation for college and

workforce readiness (Basch, 2011; Coppes, 2016). Basch wrote,

> No matter how well teachers are prepared to teach, no matter what accountability
>
> measures are put in place, no matter what governing structures are established for
>
> schools, educational progress will be profoundly limited if students are not motivated and
>
> able to learn (2011).

Berliner (2009) wrote, "The accountability system associated with NCLB is fatally flawed

because it makes schools accountable for achievement without regard for factors over which

schools have little control" (p. 6). Part of the literature reviewed within this chapter will look at

those contributing factors that impact student motivation and ability to learn at the secondary

grade levels (grades 6–12). There are many barriers that keep students unmotivated and

disengaged from school that are not directly related to best practices of instruction but rather to

external factors, such as the neighborhood a student lives in, family structure, peers, and personal

factors (Berliner, 2009). The focus of this study, however, was to look at what schools can do to

keep students motivated and engaged in their own learning, specifically through the lens of CTE

programs at the secondary level (grades 9–12).

In December 2015, President Obama signed into law ESSA, which reauthorized the

Elementary and Secondary Education Act and replaced NCLB (U.S. Department of Education,

2016). One of the top priorities of this act is career and technical course work as a component to

ensuring a well-rounded educational experience for students. The passage of this act was heavily applauded by the ACTE and the National Association of State Directors of Career and Technical Education Consortium. The executive director of ACTE said, "ESSA will foster a public education system that empowers students through high-quality CTE . . . and strengthen the linkage between academics and CTE" (ACTE, 2016).

In order to understand how schools engage students, educators must first understand the framework in which the current system is operating. The current framework for school improvement is based on a two-component model that focuses on instruction and management of instruction (Adelman & Taylor, 2011). Figure 2 illustrates the current two-model concept used to guide school reform.

Figure 2

Two-Model Component Framework for School Reform
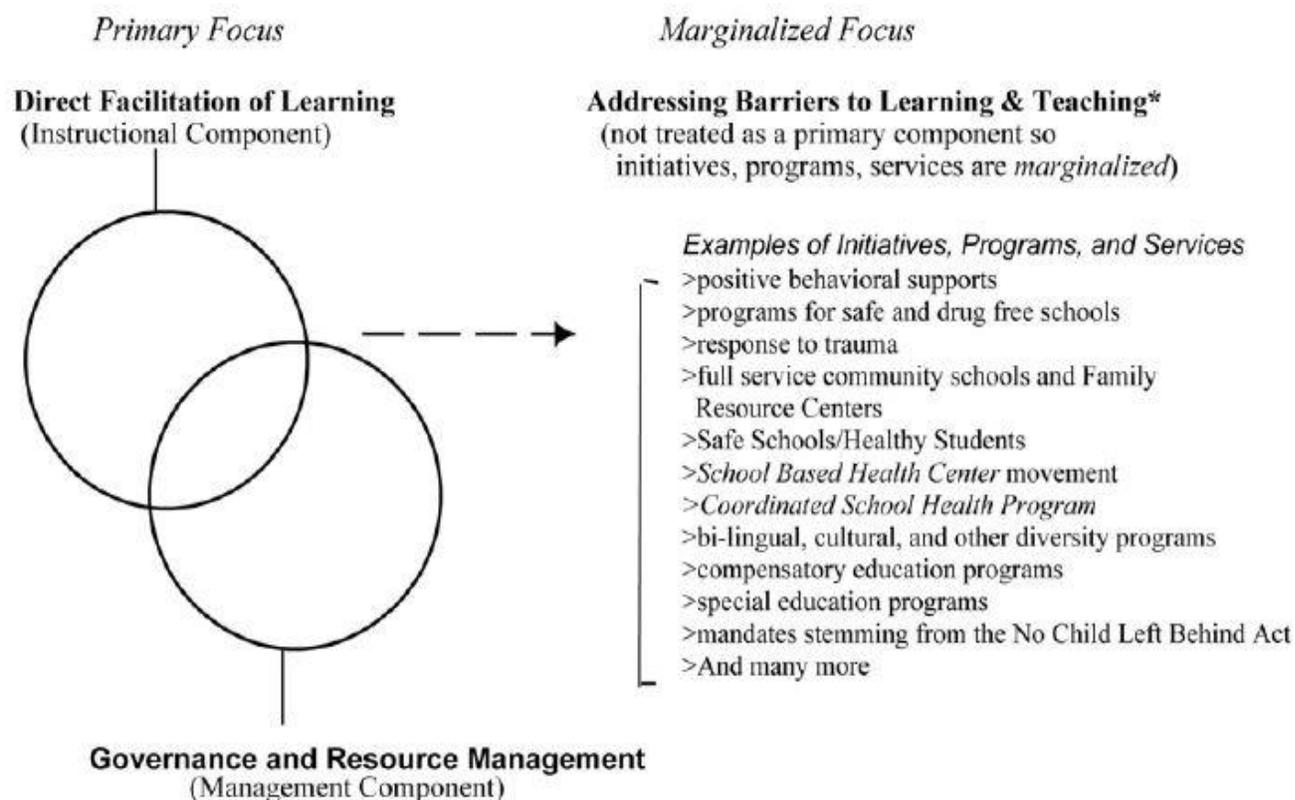
Note. Reproduced with permission from "Turning Around, Transforming, and Continuously Improving Schools: Policy Proposals Are Still Based on a Two- Rather Than a Three-Component Blueprint," by H. Adelman and L. Taylor, 2011, *International Journal on School Disaffection*, *8*(1), 22–3 (see Appendix C).

A third component needs to be added that addresses the area Adelman and Taylor (2011) referred to as "barriers to learning and teaching." Figure 3 illustrates the model Adelman and Taylor (2011) argued should be implemented.

Figure 3

Three-Model Component Framework for School Reform
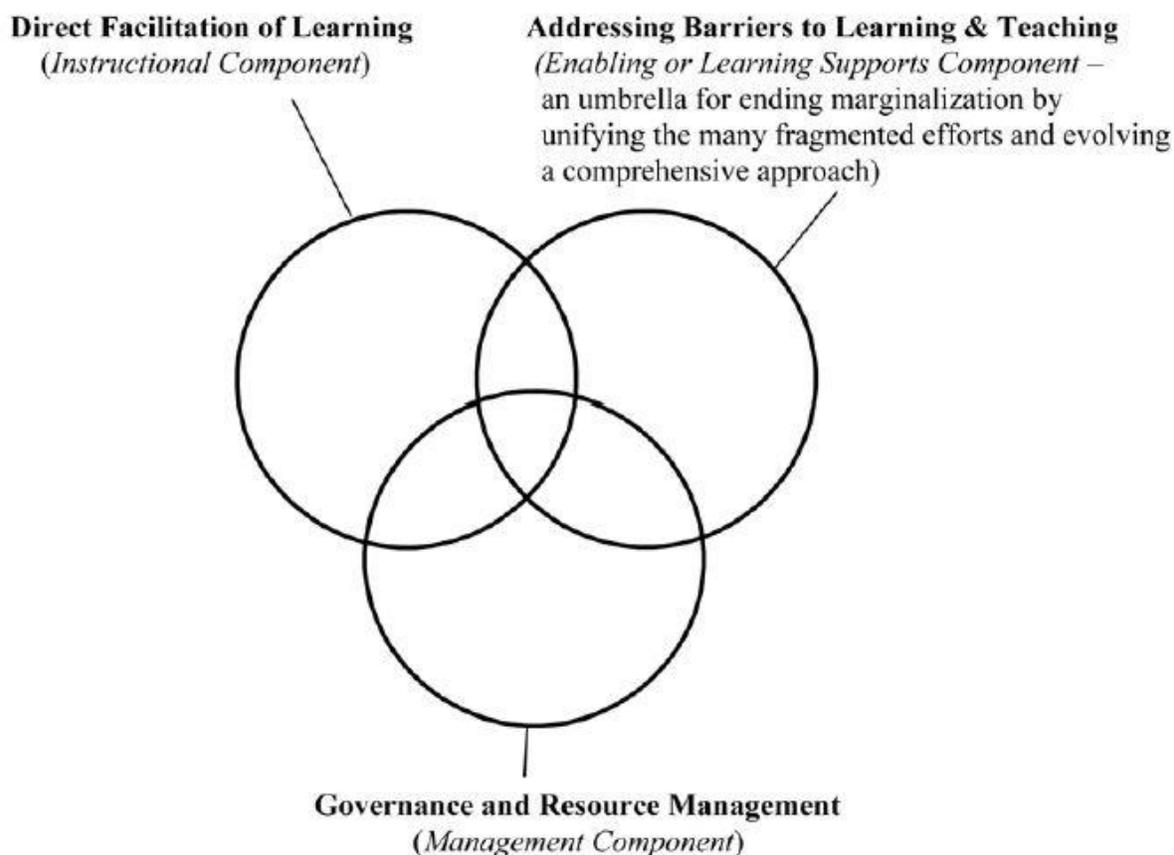
Direct Facilitation of Learning
(*Instructional Component*)

Addressing Barriers to Learning & Teaching
(*Enabling or Learning Supports Component –
an umbrella for ending marginalization by
unifying the many fragmented efforts and evolving
a comprehensive approach*)

Governance and Resource Management
(*Management Component*)

Note. Reproduced with permission from "Turning Around, Transforming, and Continuously Improving Schools: Policy Proposals Are Still Based on a Two- Rather Than a Three-Component Blueprint," by H. Adelman and L. Taylor, 2011, *International Journal on School Disaffection*, *8*(1), 22–3 (see Appendix C).

This third component, governance and resource management, becomes the uniting component to ensure components 1 and 2 have the *teeth* with which to operate (Adelman & Taylor, 2011). Although schools are aware of their own barriers to learning, until the component to manage those barriers exists, schools will continue to operate at the conceptual level and not be able to implement the necessary third component. (Adelman & Taylor, 2011).

Through implementation of this third measure, a comprehensive educational system can be developed that not only focuses on academic areas but also addresses those outside barriers that keep students from learning. Such a supportive system would create an environment where students felt they belong (Adelman & Taylor, 2011).

Several studies have indicated that 40%–60% of students are disengaged with school by the time they reach high school (Bryk & Schneider, 2002; Skinner, Furrer, Marchand, & Kindermann, 2008; Klem & Connell, 2004). This disengagement leads to issues for students in the educational setting, such as discipline, attendance, and ultimately dropping out of school (Klem & Connell, 2004). Studies by Battin-Pearson and Newcomb (2000) and Loera, Nakamoto, Oh, and Rueda (2013) found students who are connected to school have higher achievement rates. This leads to higher motivation, more engagement in their education, and higher attendance rates that in turn lead to more students staying in school and graduating (Battin-Pearson & Newcomb, 2000; Richman, Rosenfeld, & Bowen, 1998).

Many studies have been conducted to find out the perceptions of students and their schools, as well as how parents and teachers perceive schools (Adelman & Taylor, 2011; ASCD, 2012; Barge & Loges, 2003; Coleman & McNeese, 2009; Ehrenreich, Reeves, Corley, & Orpinas, 2012; Gorard & See, 2011; McNeal, 2012). According to the 2006 High School Survey of Student Engagement, students gave many reasons for dropping out of school. These reasons included: students did not like the school (73%), students did not see any value to the schooling they were receiving (60%), students did not like the teachers (61%), and students reported that no one cared about them at school (24%; Yazzie-Mintz, 2007). Bridgeland, Dilulio, and Morison (2006) argued that dropping out is not a sudden reaction to a single event but a gradual process that begins when students become disengaged in school. Many factors contribute to this gradual

process, such as lack of connection to the school, course work that is not challenging and relevant, and teachers who don't take the time to know their students (Bridgeland et al., 2006). In their study, Bridgeland et al. (2006) reported that 81% of the students interviewed said schools need to be more relevant and show a connection between the content being taught and how it is related to their future.

The overall cost of a student dropping out is not only significant for the students who dropout, but also for the U.S. economy. Unless the dropout rate is reduced within the next decade, it is predicated that 12 million students will drop out of high school costing the U.S. economy $1.5 trillion in loss revenue (AEE, 2011). At the individual level, the average dropout will make 27% less annually than a high school graduate, have a 72% higher unemployment rate, experience decreased life expectancy, and be more likely to need public assistance (Branson et al., 2013). Table 2 shows the real costs of dropping out of high school (ACTE, 2007).

Table 2

Real Costs of Dropping out of High School

Area of Impact	Consequences
Employment	High school dropouts are 15% less likely to be employed and earn almost 30% less than their diploma- or GED-holding peers
Earnings/Tax Liability	Over a lifetime, a high school dropout pays about $60,000 less in taxes
Criminal Justice	About 75% of the state prison inmates, almost 59% of federal inmates, and 69% of jail inmates did not complete high school
Health	Those who graduate from high school live more than nine years longer than high school dropouts due to factors that include improvement in cognitive ability and decision-making, income, occupational safety, and access to health insurance

Note. Adapted from *Career and technical education's role in dropout and prevention and recovery* (Issue Brief), by the Association for Career and Technical Education, 2007, June, Alexandria, VA: Author. Retrieved from https://www.google.com/url?q=https://www.acteonline.org/WorkArea/DownloadAsset.aspx%3Fid%3D2094&sa=U&ved=0ahUKEwijluzotbnSAhVD1WMKHZ14Cr0QFggEMAA&client=internal-uds-cse&usg=AFQjCNFYKCuGqV3PBgiy-x0c5I9Y8e8dWQ.

Career Technical Education Programs: A Historical Overview

CTE (formerly vocational education) has undergone vast changes since its inception in the early 1900s (American Institutes for Research, 2013; Wonacott, 2003). Barlow (1976) described three ways in 1776 that existed to prepare a person for the workforce: (a) voluntary or involuntary apprenticeships, (b) children learning from their parents a specific trade, and (c) observing others doing a specific job or trade. By 1913 there was a push for vocational education to be taught in the public school system as a way to keep students in school. In 1913, Melvin

Prosser explained that by offering vocational training in school, students were able to take courses that were more relevant, which made them more apt to stay in school and graduate (Wonacott, 2003). In 1910, David Snedden, Commissioner of Education for Massachusetts, noted that vocational education was intended to increase a student's capacity to earn a living in specialized work areas (Wonacott, 2003). As vocational education was being implemented within the public school system, Charles Prosser, recognized as the father of vocational education in the United States, outlined the major differences between vocational courses and academic courses as shown in Table 3 (Wonacott, 2003).

Table 3

Comparative Points Between General Education and Vocational Education

Factors	General Education	Vocational Education
Basic Theory	Faculty psychology	Habit psychology
Form of training	General faculty training	Specific habit training
Character of content	Standardized	Widely diversified specific content
Origin of content	Traditional selection	Experiences of competent workers
Environment	Isolated from life	Under life conditions
Special interest	Not regarded	Regarded
Special aptitudes	Not capitalized	Capitalized
Basis of admission	Ability to meet standardized academic requirement	Ability to profit by the instruction
Scope of service	Limited—chiefly youth	Serve all groups, all ages

Qualifications of instructors	Know content	Hold specific occupational experiences
Standards	Academic	Occupational
Objectives	Appreciation and trained faculties	Ability to meet demands of a specific occupation
Method of training	Illustrations, information, exercises, pseudo jobs	On the job
Working conditions	Practically common to all courses	Different for each course
Basis of operation	To offer a general opportunity	To meet specific needs
Leadership	General	In specific occupations
Group characteristics	Ignored	Considered
Administration	Easy, simple, rigid	Difficult, complex, elastic

Note. Used with permission from the Center on Education and Training for Employment, College of Education and Human Ecology, the Ohio State University. "History and Evolution of Vocational and Career–Technical Education," by M. E. Wonacott, 2003, p. 10 (see Appendix D).

When vocational education was introduced into the public school system, it was kept separate from core academics (Fletcher & Zirkle, 2009). The students in the vocational programs were being trained to work in the factories, on the farms, or in the homes (Fletcher & Zirkle, 2009). However, with the passage of the Vocational Education Act of 1963, the programs became more mainstream and began to focus more on academics rather than simply skills acquisition (Wonacott, 2003). Subsequent amendments (1968 and 1972) to the act broadened the scope even further and included students with disabilities, students with language barriers, students who were socioeconomically disadvantaged, and training for nontraditional occupations by gender (Wonacott, 2003). In 1983, a report, "A Nation at Risk," was published, which claimed that academics and not vocational education was the answer to keeping up with

Germany and Japan in the arena of manufacturing (Wonacott, 2003). These claims were countered by a report, "The Unfinished Agenda," written by advocates for vocational education, in which they reasoned vocational education contributed to student development in the following ways:

- Personal skills and attitudes

- Communication and computational skills and technological literacy

- Employability skills

- Broad and specific occupational skills

- Foundations for career planning and lifelong learning (p. 13)

These reports laid the work for a major overhaul in vocational education that resulted in Congress passing the Carl D. Perkins Legislation in 1984, which would become the foundational act for future legislation in vocational education (Wonacott, 2003). Originally, the funding called for 53% to go toward underserved or disadvantaged students, while the other 43% went toward improvements in programming (Wonacott, 2003). During this time, enrollment in vocational education decreased dramatically as students were opting out of vocational education courses for classes with an academic focus. Enrollment continued to decrease as more funding was allocated for inclusion of students with special needs rather than students in general education programs (Wonacott, 2003).

In the 1990s, the Perkins Act saw two major shifts within the legislation. In 1990 the Carl D. Perkins Vocational and Applied Technology Education Act (Perkins II) was adopted with the charge to create a more fully developed program that would prepare students from all segments of the population for gaining skills needed to be successful in a "technologically advanced

society" (Wonacott, 2003, p. 13). The emphasis within this legislative change was to address both academics and occupational skills for *all* students (Wonacott, 2003).

The second major shift to legislation occurred in 1998 with the passing of Perkins III Amendments, which added the postsecondary element into the requirements. This amendment put into place the requirement that schools develop programs with the purpose of preparing students to continue their education into postsecondary education and to track such data for all students (Wonacott, 2003).

This evolution of vocational education fulfilled its purpose of preparing students with the skills needed to be successful in the world of work upon graduation (Wonacott, 2003). However, this time there was a purposeful and intentional connection between academics and vocational education due to the sophisticated society that was developing (Wonacott, 2003).

The 21st century has continued to see CTE programs move toward a more integrated model that includes components of core academics (AIR, 2013; Wonacott, 2003). No longer was CTE only for learning a trade, but rather it was about career preparation for students in areas that are part of the 21st-century workforce (AIR, 2013; Wonacott, 2003). While there are still the traditional agriculture, family and consumer science, automotive, and mechanical pathways, CTE has broadened its scope to include high-tech skills, such as computer science, engineering, and robotics, that require students to learn how to be critical thinkers and problem solvers, work in teams, and use collaboration and communication skills (AIR, 2013; Wonacott, 2003).

Elements of Career Technical Education Programs: Pathways to Success

CTE programs offer an educational environment that encompasses three areas of concern: (a) engagement, (b) achievement, and (c) relevance. All three areas are crucial in terms of keeping students in school, engaged in learning, and motivated to continue beyond graduation (AIR, 2013; Plank, DeLuca, & Estacion, 2005). A critical aspect of keeping students in school is the relationship that is created between adults and children (Coleman & McNeese, 2009; Gentry, Peters, & Mann, 2007; Gorard & See, 2011; Joyce, 2015).

Gentry, Peters, and Mann (2007) found that students rated their CTE teachers higher, when compared to their core academic teachers, because they were perceived to be more caring and relevant. When interviewed about their CTE teachers, students used words such as "committed, passionate, excited, and energetic" (Gentry et al., 2007, p. 385). Gentry et al. (2007) also reported that students saw the CTE environment as positive and professional, more like what they would expect in the workplace. Students also saw their teachers as those who were looking for what they did right more than what they were doing wrong, and the teachers went out of their way to help students understand the concepts so they could succeed (Gentry et al., 2007). In contrast, when students were asked about their general education teachers, the responses were negative (Gentry et al., 2007). Students cited reasons such as lack of relevance, lack of meaningful application, lack of quality of teachers, and lack of connection made with general education teachers (Gentry et al., 2007).

Tennant et al. (2014) reported students felt a closer bond with their CTE teachers, as compared to core academic teachers, on a social–emotional level. This study indicated that students in CTE programs had a higher grade point average, in contrast to their academic

courses. In addition, girls showed higher academic achievement when they perceived their teachers to care (Tennant et al., 2014).

Ehrenreich, Reeves, Corley, and Orpinas (2012) studied perceptions of students who dropped out and why they dropped out. While external factors were common for all students across the socioeconomic range, additional common themes emerged. One such theme was student motivation, which increased when teachers, particularly coaches, took the time to acknowledge the student. Even if the coach was redirecting a bad behavior, students still felt an increased bond with the coach, as compared with their other teachers (Ehrenreich et al., 2012). While the exact reasons were varied, the majority of students said they felt like the coaches cared and took the time to see how they were doing (Ehrenreich et al., 2012). Ehrenreich et al. (2012) concluded that while the students mentioned coaches by name, at no time was this perception based on athletic abilities but rather how the coaches portrayed they cared about the student in a positive manner. Ehrenreich et al. (2012) stated from this study that, "perhaps no factor is more critical for academic success that culminates in high school graduation than the presence of caring adults in the lives of adolescents" (p. 205).

In a longitudinal study of student perceptions of control (ability to choose), You, Hong, and Ho (2011) found a direct correlation between student choice and student achievement. When students were given the freedom to choose their pathway, they showed a higher rate of success in academic achievement. You et al. (2011) suggested student confidence increases when allowed to choose because they are taking an active role in their education. Inherent in CTE programs is the component of student choice based on the specific focus or theme of the courses offered within the pathways (You, Hong, & Ho, 2011). Teachers who teach CTE courses have a direct impact on students and their choices for pathways (You et al., 2011). The more engaged teachers

are within the program and with their students, the more engaged the students become.

Therefore, students become more apt to stay in school and continue their education (Loera et al.,

2013). Motivation, engagement, and student achievement were found to increase as students

were given choice, and they could see the relevance of their education and how it would impact

their future (Loera et al., 2013). Interestingly, Hyslop and Imperatore (2015) found CTE

programs can also be used as an intervention for students who are at-risk and have become

disengaged with their education.

Another critical component in CTE programs is that the course work fits into preparing

students for college or workforce readiness (Plank et al., 2005). CTE pathways prepare students

for occupations that give them a skill set and experience needed to move into entry-level jobs, or

advanced-level occupational trade schools (Plank et al., 2005). Relevant and rigorous curriculum

also prepares students for college and workforce readiness and yields higher achievement levels,

which reduces dropout rates (Castellano, Sundell, Overman, & Aliaga, 2012). Castellano,

Sundell, Overman, and Aliaga (2012) also found that CTE programs have in common three

components that contribute to student engagement and success: (a) support, (b) integrated

technology, and (c) project-based learning. Barton (2007) claimed CTE programs are designed to

offer students this education while still in high school because of its strong work-based

curriculum:

> Arrangements that combine school with related work such as internships,
>
> apprenticeships, and co-operative education programs and courses in CTE can provide
>
> the preparation and work experience that employers want. Such programs also have the
>
> potential to reduce high school dropout rates by enabling the 20–30 percent of students

who now drop out of high school to see the benefits of staying in school until graduation.

(p. 27)

When a student leaves a CTE program with industry certification or workforce readiness skills, they have a greater chance of gaining entry-level employment and are prepared to go right into postsecondary schooling with the background and experience needed for success (Barton, 2007).

The Office of Career, Technical, and Adult Education, which is part of the U.S Department of Education, is, "responsible for helping all students acquire challenging academic and technical skills and be prepared for high-skill, high-wage, or high-demand occupations in the 21st century global economy" (U.S. Department of Education, 2016). Today's CTE programs not only offer the hands-on skills of traditional vocational education, but they also have crossed over into the academic world and now include those concepts within their course work (Canning, 2012). While students can take a wide variety of career and technical courses, the common factor throughout all the classes is the rigor, relevance, and integration of 21st-century skills aligned with academic standards (Canning, 2012; Castellano et al., 2012; Choi, Kim, & Kim, 2015; Cox, Hernandez-Gantes, & Fletcher, 2015).

Career Technical Education: The Benefits

CTE programs benefit students in many ways, such as reducing the dropout rate, increasing engagement, creating sense of belonging, offering relevant and meaningful course work, and preparing for college and workforce readiness (Aragon et al., 2013; Asunda et al., 2015; Bozick & Dalton, 2013).

Schargel and Smink (2001) identified five CTE components at-risk students benefit from when they take CTE pathways: (a) enhancement of motivation and achievement, (b) increased personal and social competence, (c) broader understanding of specific occupations and

industries, (d) career exploration and planning, and (e) employable skill sets for specific occupations and industries (p. 212).

Schargel and Smink (2001) contributed these benefits to CTE because students had a sense of belonging and could see that the work they were doing could lead to the future they envisioned. For at-risk students, this is key to keeping them in school, in spite of outside influences or their current life circumstances (Schargel & Smink, 2001). Another study found CTE programs had a dramatic positive impact on students with a high risk of dropping out because they were found to have higher levels of student–adult relationships, were provided more intensive training and guidance in specific career areas, and had high levels of support for the choices they made in their education (Kemple & Snipes, 2000; Mainhard, Wubbles, & Brekelmans, 2013). When curriculum contains academics and career exploration, students have a sense of purpose and are more engaged in their own learning (Loera et al., 2013; Rose, 2014).

Engagement in school increases when there is a connection between student and teacher, which is a main benefit found in CTE programs (Loera et al., 2013; Rose, 2014). There is an immediate connection between the teacher and the student in CTE courses due to the mutual interest each has in the content of the course. Building relationships is a significant contributing factor to students staying in school (Ehrenreich et al., 2012; Gentry et al., 2007; Gorard & See, 2011; Hardy-Fortin, 2013). The result of such connections is that students are more engaged and likely to pursue postsecondary opportunities (Loera et al., 2013). In a report entitled, "The Silent Epidemic: Perspectives of High School Dropouts," the research focused on the student voice behind the dropout epidemic (Bridgeland et al., 2006). Within the report, students identified reasons they chose to drop out of school even when they knew their futures would be negatively impacted (Bridgeland et al., 2006). While there were numerous reasons stated by students, the

majority of the reasons related to the supports the school offered, such as caring adults, rigorous

and relevant curriculum, and opportunities for student choice (Bridgeland et al., 2006). A student

who was interviewed said,

> If they related to me more and understand that at that point in time, my life was…what I
>
> was going through, where I lived, where I came from. Who knows? That book might
>
> have been in my book bag. I might have bought a book bag and done some work.
>
> (Bridgeland et al., 2006, p. 12)

The report indicated that students did not feel motivated or inspired by their teachers to work

hard, and they felt as if the teachers were unengaged in their own teaching (Bridgeland et al.,

2006). As seen in Figure 4 below, the majority of students indicated what teachers are already

doing to keep students engaged and motivated to stay in school.

Figure 4

What Teachers Do to Keep Student Engaged and Motivated
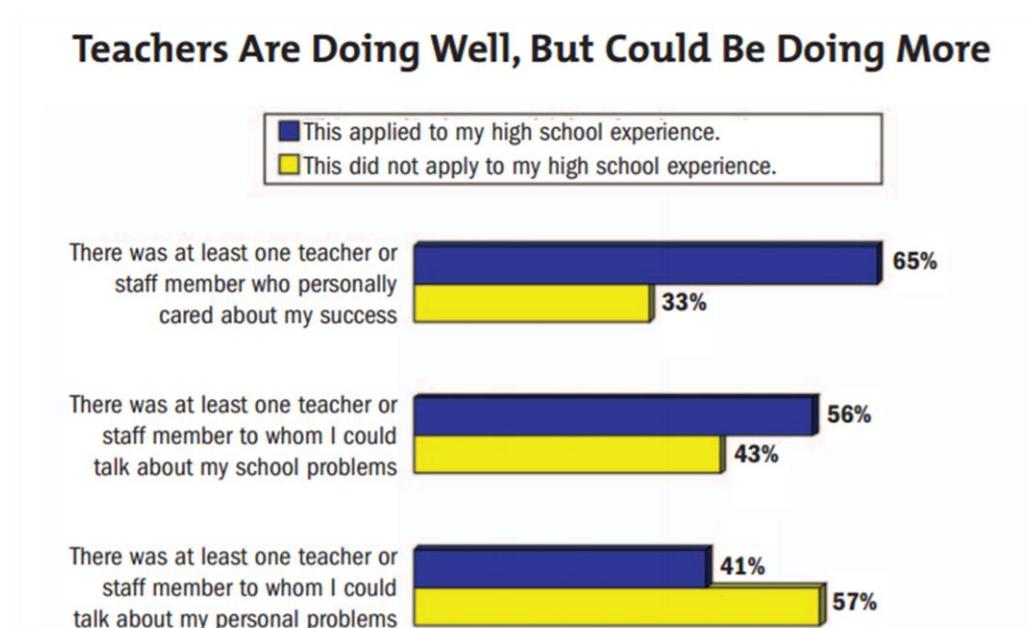
Teachers Are Doing Well, But Could Be Doing More

■ This applied to my high school experience.
□ This did not apply to my high school experience.

There was at least one teacher or staff member who personally cared about my success
- 65%
- 33%

There was at least one teacher or staff member to whom I could talk about my school problems
- 56%
- 43%

There was at least one teacher or staff member to whom I could talk about my personal problems
- 41%
- 57%

Note. Reproduced by permission from *The Silent Epidemic: Perspectives of High School Dropouts*, by J. M. Bridgeland, J. J. Dilulio, and K. B. Morison, 2006, p. 5, Washington, DC: Civic Enterprises (see Appendix E).

In addition to feeling a belongingness with school, teachers, and their peers, students also want curriculum that is relevant to their own interests and will help them transition into the workforce or become college ready. Figure 5 shows what students believed schools could do differently to prevent dropping out. Overwhelmingly (81%), students believed offering courses that were relevant with teachers who kept them engaged in the content area would have kept them in school rather than dropping out.

Figure 5

What Schools Can Do to Reduce Students From Becoming Dropouts

What Dropouts Believe Would Improve Students' Chances
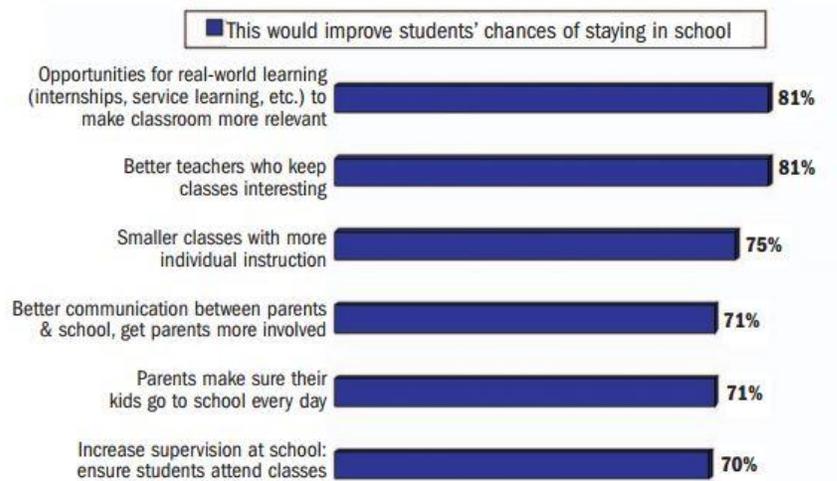
■This would improve students' chances of staying in school

Opportunities for real-world learning (internships, service learning, etc.) to make classroom more relevant	81%
Better teachers who keep classes interesting	81%
Smaller classes with more individual instruction	75%
Better communication between parents & school, get parents more involved	71%
Parents make sure their kids go to school every day	71%
Increase supervision at school: ensure students attend classes	70%

Note. Reproduced by permission from *The Silent Epidemic: Perspectives of High School Dropouts*, by J. M. Bridgeland, J. J. Dilulio, and K. B. Morison, 2006, p. 13, Washington, DC: Civic Enterprises (see Appendix E).

Student Engagement

Prior research has viewed the act of dropping out as the culminating event caused by disengagement of the educational system (Alexander, Entwisle, & Kabbani, 2001; Eastman, 2016; Finn, 1989). Finn (1989) offered two perspectives as to why students drop out of school. The first model was called "frustration–self-esteem." In this model, students dropped out because they were not performing well based on the criteria of the school, and they began to question their own competency ability, leading to disengagement and ultimately feeling like they had little choice but to drop out (Finn, 1989). The second model is called "participation–identification." In this model, students felt like they belonged to the school and had positive relationships, which in turn strengthened their connection toward school and they remained engaged and motivated to finish (Finn, 1989). In another study, Alexander, Entwisle, and Kabbani (2001) wrote,

Affective detachment from school is the immediate impetus to dropout, but whether

children's school attachment is strong or weak develops over time as a result of their

cumulative experience there. Are they fitting in comfortably and realizing success or are

they struggling and not measuring up academically? (p. 763)

Gorard and See (2011) found that schools that offered student choice (work at their own pace,

provide input into lessons, freely choose their courses) reported a higher level of student

enjoyment, which led to increased attendance, a higher rate of graduation, and a lower rate of

dropouts. Tennant et al. (2014) also found that students who felt *cared about* and were given

choices were more likely to have higher student achievement scores and less likely to drop out of

school. In a qualitative study, with a parent sample of 17,563 from K–12 schools throughout the

United States, it was reported that parents chose to homeschool their children because they were

concerned about the lack of relationships cultivated and the overall environment of the school

not being conducive for learning (Basch, 2011). Carver and Kosloski (2015) found that student–

teacher dialogue is an important component in developing a system of trust and community,

which correlates with increased student self-efficacy and motivation to learn. When students

have a higher level of positive interaction with their teachers, and perceive their teachers care

about them, they are more successful as measured through better grades and increased graduation

rates (Carver & Kosloski, 2015; Kosterelioglu & Kosterelioglu, 2015).

Influences such as positive interaction with teachers and environments built on safety and

trust are a part of every school district regardless of region or population demographics. Schools

need to cultivate relationships with their parents and community to keep students enrolled; the

school must also do what it can within its own culture to engage and motivate students to stay in

school. This dissertation is centered on student perceptions in relation to CTE programs and non-

CTE programs, with specific emphasis on the areas of student engagement, mind-set, support of peers and teachers, and school climate.

As mentioned earlier in this review, there exist many outside factors schools are unable to control that impact a student's ability to engage. However, schools can minimize negative influences by offering a curriculum that is rigorous, relevant, and supportive, with opportunities for students to pursue their goals in both core academics and career readiness (Carver & Kosloski, 2015; Gentry et al., 2007; Kostereliglu & Kostereliglu, 2015). Yearly studies using the high school survey of student engagement model consistently report students want to feel cared about, want to engage in school, and need to feel as if they are a part of the school culture and environment (Yazzie-Mintz, 2007). This survey also found, again on a consistent basis, students who were in poverty were less likely to be engaged than those students who were more affluent (Yazzie-Mintz, 2007). Students who participated in career academies were found to, "substantially increase their attendance, academic course-taking, credits earned toward graduation, and on-time graduation rates" (Neild, Boccanfuso, & Byrnes, 2015, p. 31).

Blending Career Technical Education and Core Academics

The Carl D. Perkins Career and Technical Education Improvement Act of 2006 requires CTE courses to include essential academic skills (Bottoms & Young, 2008). In addition, the newly enacted ESSA included CTE in the definition of a well-rounded education (U.S. Department of Education, 2016). Further studies have shown that creating a balance between core academics and CTE programs will help students to stay focused, motivated, and less likely to drop out (Handy & Braley, 2013; Hardy-Fortin, 2013; Pearson, 2015; Yazzie-Mintz, 2007). However, there are still perceptions held by teachers, counselors, and administrators that the worlds of academia and vocations are separate and thereby cannot see the benefits of how the

integration of the two programs can help in creating whole-school systems for students (Handy & Braley, 2013). These perceptions can have a negative impact on the school and cause reduced rates of engagement, as well as increased rates of students dropping out (Handy & Braley, 2013). These perceptions are yet another barrier to blending academics and CTE (Handy & Braley, 2013). Pearson (2015) concluded that students in schools where CTE and academics were blended have higher rates of achievement, higher reading and comprehension scores, and students are better prepared to transition from high school to postsecondary education and the workforce. Applying practice to knowledge allows students to see the relevance of the work, which keeps engagement and motivation high (Pearson, 2015).

Integration of CTE and core academics includes changing a mind-set and bringing together two areas that in the past have been mutually exclusive. Handy and Braley (2013) cited the need for flexibility, adaption, and willingness to work together across the content areas for this reform to take place effectively. This researcher believed that with the adoption of common core state standards, the blending of CTE and core academics is even more important. The overall objective of common core state standards is to prepare students for the world of work upon graduation (Pearson, 2015; Richner, 2014). Through integration of academic elements with the hands-on experience of CTE coursework, students can see how the two disciplines work together in a relevant and meaningful manner (Pearson, 2015; Richner, 2014). Integrating CTE courses with core academics has shown a positive impact on student motivation to stay in school and graduate (Bottoms & Young, 2008; Pearson, 2015; Richner, 2014). The Southern Regional Education Board and the Council of Chief State School Officers agreed that integrating core academic concepts into existing quality CTE programs will increase the number of students who will graduate prepared for postsecondary studies and careers (Bottoms & Young, 2008).

However, for this to occur, schools must blend academics and CTE, and the group challenged states to address the following in the process of blending academic and CTE content:

- Align new and existing CTE programs with college- and career-readiness standards.

- Create a flexible system of multiple programs of study to prepare students for college and careers.

- Create a policy framework to develop CTE and academic programs that link high school to college and a career, blend academic and technical studies, and connect students to a goal.

- Assess the contributions of CTE in improving academic and technical achievement.

- Prepare and support CTE instructors to teach essential academic skills through authentic problems, projects, and activities (p. iii)

Bottoms and Young (2008) argued that this integration of CTE and academics as a key strategy in preparing students for a successful transition to postsecondary education and careers. CTE programs embed real-world experiences along with academics, which creates authentic learning and aligns with common core standards (Pearson, 2015).

Preparing students for the 21st-century workplace will take the integration of core academics and CTE. Teachers need to be armed with strategies for this blending of programs (Bloomfield, Foster, Hodes, Konopnicki, & Pritz, 2013; Sturko & Gregson, 2009). Sturko and Gregson (2009) studied two methods on how to integrate and blend academics with CTE. Both models offered teachers strategies and gave them opportunities to try the strategies in a controlled setting prior to implementing them in the classroom. The outcome was clear that, regardless of which model was used, professional development cannot be a one-time delivery and teachers must have time to collaborate on a regular basis (Sturko & Gregson, 2009). Gentry,

Rizza, Peters, and Hu (2005) studied a CTE center to which students traveled from neighboring high schools. The research showed this center was exemplary due to the following characteristics: rigor of the classwork, integration of core academics with CTE courses, students' freedom to make choices based on their interests, and hands-on training. Gentry et al. (2005) reported higher achievement scores from students at the career center, when compared to their peers in traditional high schools.

The National Center for Career and Technical Education reported that even a low ratio of one CTE class to every two core academic classes can have a dramatic impact on reducing the likelihood of dropping out of school, due to CTE courses offering pathways students find relevant (Plank et al., 2005). A study conducted by Manpower Demonstration Research Corporation found that students involved in CTE programs had a dropout rate one-third less than non-CTE programs (Kemple & Snipes, 2000). CTE has a distinct advantage in integrating common core standards because at the core of CTE is authentic learning through real-world experiences, with academics embedded within those experiences (Asunda et al., 2015; Pearson, 2015). When students have the added benefit of core and CTE teachers collaborating and incorporating subject areas into their own curriculum, they see increased achievement and relevancy (Asunda et al., 2015; Pearson, 2015). An area of focus which is gaining in popularity with students is science, technology, engineering, and math (STEM). STEM brings together the CTE world of technology and engineering into the academic world of math and science and, in turn, creates a natural partnership between academic and CTE teachers (Asunda et al., 2015). Students who are dual-concentrators—taking both academic and CTE pathways—have increased achievement rates as well as an increase in enrollment in postsecondary education (Neild et al., 2015).

Another component of CTE programs shown to have positive effects on engaging students is the career and technical student organizations (CTSO) (Stone, Alfeld, & Pearson, 2008). These programs are extracurricular opportunities where students compete in areas such as leadership, project design, and public speaking (Stone et al., 2008). According to Stone, Alfeld, and Pearson (2008), "CTSO activities positively affect students' academic engagement, and the stronger the student's involvement, the better the results." CTE teachers are typically the advisors for these programs and provide a positive adult relationship, which has shown to be a contributing factor to student engagement, motivation, and staying in school (Stone et al., 2008).

Career Technical Education: Preparing for College and Workforce Readiness

NCLB, common core state standards, state standardized testing, and most recently, ESSA, have changed the fabric of education (ACTE, 2016; Adelman & Taylor, 2011; U.S. Department of Education, 2012). There is a concerted effort to prepare students for college and workforce readiness. CTE programs have workforce–practicum elements embedded in the curriculum, which makes CTE programs the perfect conduit between academics and postsecondary preparedness (ACTE, 2016; Pearson, 2015). CTE programs offer the academic and career components needed to ensure students have a balanced educational experience (ACTE, 2016; Pearson, 2015; Richner, 2014). CTE programs bring postsecondary course work to the high school level, which allows students to leave high school with college credits and, in some programs, industry certifications and associate's degrees (Johyun, 2014). CTE continues to align with academics, and with the passing of ESSA, has now been included in the definition of a well-rounded education system (ACTE, 2016). Within the act are measures that integrate academics into the CTE classroom to ensure students are college and career ready (Coppes,

2016). The Act goes one step further by requiring academic standards also align with state standards in CTE (Coppes, 2016).

In 2005, the chairman of Microsoft, Bill Gates, challenged state governors to increase the rigor and relevance of high schools to keep students engaged in school, reduce the dropout rate, and prepare students for a successful transition from high school to postsecondary education and the workplace (National Governor's Association, 2005). This challenge was taken up by many governors that resulted in innovative programs to meet the outcomes (National Governor's Association, 2005). For example, states aligned their standards with college expectations and began increasing the number of college-level course opportunities students can take while still in high school (National Governor's Association, 2005).

In a longitudinal study conducted in Philadelphia from 1996–2004, school-to-career education was examined to determine the impact of such programs in the area of graduation, dropout rates, enrollment in postsecondary institutions, and future employment (Furstenberg & Neumark, 2006). Their findings, as cited by the Education Commission of the States (2017), included the following high school outcomes:

- Participation in a school-to-career program results in a decline in dropping out of high school by five or six percentage points.
- Increased exposure to school-to-career programs is associated with a lower rate of dropouts.
- There is a strong association between participation in school-to-career programs and positive academic outcomes.
- The percentage of students who graduate from high school is significant and sizably greater among students who participated in school-to-career programs.

- School-to-career program participants fare better than nonparticipants in other

  indicators of high school success, such as grade progression, absences from school,

  skipped classes, and receipt of academic and nonacademic high school awards.

- School-to-career participation reduces the probability of failing to progress and

  increases the probability of receiving high school awards (p. 1).

In the same study, as cited in the Education Commission of the States (2017), Furstenberg and

Neumark (2006) also found the following outcomes for post-high school:

- School-to-career participants are much more likely to continue to postsecondary

  education.

- It appears that participation in school-to-career programs galvanizes student ambitions

  to complete college. Looking at students with the most exposure to school-to-career

  programs, the high school dropout rate is under 10% and the graduation rates near

  80%.

- Participants in school-to-career programs learn about careers, are exposed to tools to

  make decisions about further education and careers, and gain from a culture where

  teachers and peers value postsecondary education.

- Students who did not participate in school-to-career programs appeared to be less able

  to gather the resources to successfully navigate the pathway to a college education.

- Programs appear to have the largest effect on college attendance for those with low

  math scores and the greatest impact on reducing the dropout rate for students with low

  aspirations for college (p. 1)

CTE programs can be a key factor in helping re-engage students; however, it requires more than

just CTE programs to accomplish this feat (Loera et al., 2013). To have the biggest impact, CTE

programs need to be integrated into the mainstream of academics (Loera et al., 2013; Pearson, 2015; Richner, 2014). Integration of CTE courses with core courses creates students who are better prepared for the workforce due to the teaching of math and reading concepts through problem-solving and project-based units within the CTE pathway (Pierce & Hernandez, 2014). Integrating CTE courses with core courses may also increase student motivation and achievement because it offers authentic problem-solving in areas of interest, such as science and math (Carver & Kosloski, 2015; Loera et al., 2013).

Conclusion

The review of the literature included evidence that CTE programs increase student achievement, raise graduation rates, reduce the dropout rate, and prepare students for the transition from high school to postsecondary education or the workforce, particularly when core academics are embedded within the curriculum (Alfeld, Hansen, Aragon, & Stone; Barge & Loges, 2003; Boser & Rosenthal, 2012; Castellano et al., 2012; Ehrenreich et al., 2012; Fletcher & Zirkle, 2009; Gorard & See, 2011; Handy & Braley, 2012; Pearson, 2015; Plank et al., 2005; Richner, 2014; Yoder, 2014; You et al., 2011).

The first theme that emerged from the literature review was the dropout rate for the United States is reaching epidemic proportions with over 7,000 students dropping out daily (McNeal, 2012). The costs of dropping out of school not only impact the students and their future, but the economic future of the United States as well to the tune of over $3 trillion in lost revenue and taxes (Haveman et al., 2001). Beyond the economic costs, dropping out of school lowers life expectancy, increases health costs, and adds to the criminal justice system (Haveman et al., 2001). However, there are ways in which education can begin to stem the tide of dropouts and reverse this trend. Schools need to meet students where they are and begin to listen to the

reasons behind the dropout trend. The literature review included studies that support student voice, how schools can begin to change their mind-set, and how they operate to keep students engaged, motivated, and in school (Pearson, 2015; Richner, 2014; Yazzie-Mintz, 2007).

Student engagement as it pertains to dropouts, achievement, and motivation emerged as a theme throughout the literature review (Alexander et al., 2001, Allen, 2010; Bennett, 2007; Berliner, 2009; Bloomfield et al., 2013; Bowers et al., 2012, Castellano et al., 2012; Chase, Hilliard, Geldhof, Warren, & Lerner, 2014). A theoretical framework showed how CTE and non-CTE teachers need to work together within the six domains of student engagement to increase that relationship (Allen, 2010). Students in poverty are more likely to be disengaged and are the highest population of dropouts (Hardy-Fortin, 2013; Khalkhali et al., 2013; Kosterelioglu & Kosterelioglu, 2015; Kroll, 2014; Ronica, 2013; Yazzie-Mintz, 2007).

Another emerging theme from the literature review was how CTE programs, formerly known as vocational education, have gone through several transformations since their inception into the public education system (Wonacott, 2003). Today's CTE programs go beyond the traditional program offerings of agriculture, mechanics, and consumer economics (Wonacott, 2003). Today's offerings include 21st-century technology programs, such as engineering, information technology, robotics, and STEM (Wonacott, 2003). The most current reauthorization of the Carl D. Perkins federal grant emphasizes the integration of CTE courses with core academics (Wonacott, 2003).

In conclusion, this literature review offered a foundation that helped guide this study to find the answers to the research questions. CTE programs offer a wide array of options for students and include many embedded, performance-based tasks that test the mastery of the

student's ability in relevant and meaningful ways. Combining CTE with core academics

completes the learning circle because it offers the best of both worlds.

Chapter III

Design and Methodology

Introduction

Keeping students engaged in their education so they finish high school and graduate is a

challenge every school faces (Chase et al., 2014; Chung-Do et al., 2013). CTE meets this

challenge by offering high-quality, academically rigorous and relevant programs that give

students the skills set necessary for success upon graduation (ACTE, 2007; Pearson, 2015;

Richner, 2014).

Role of the Researcher

A tenet of qualitative research, and by extension, mixed methods research, is that the role

of the researcher is the instrument through which the data are gathered, analyzed, and

synthesized (Marshall & Rossman, 2016). In addition, it is the responsibility of the researcher to

conduct the study with integrity, ethics, and trustworthiness (Marshall & Rossman, 2016).

The researcher has devoted her career to education and more specifically in the creation,

formation, and sustainability of CTE programming. As a former CTE instructor and program

director with 20-plus years in education and currently a director of CTE, the researcher has seen

firsthand the positive impact CTE has had on students, teachers, and community. She brought to

this study not only her passion for education, CTE, and students, but also the experience in

creating successful and sustainable CTE programs.

It is the philosophy of the researcher that school systems need to provide opportunities

that prepare students to be successful in postsecondary educational systems and the world of

work. The integration of CTE and academics provides real-world relevance and skills necessary

for students to successfully compete in today's 21st-century global workforce. Due to the passion

and advocacy for CTE programs and bridging them with academics, there is the potential for the researcher's biases to be present.

Research Design

This study examined student perceptions of engagement within CTE and non-CTE courses. What keeps students engaged in school and learning was the focus of the study. The literature review showed students engaged in school and their course work have a higher sense of belonging, have established positive adult relationships, and are more apt to stay in school and even seek postsecondary education opportunities (Chung-Do et al., 2013; Gentry et al., 2007; Hoeker, 2014). According to the literature review, students in CTE programs tend to be more inclined to see the relevance of how their work in school will help them in their future careers (Plank et al., 2005; Rojewski & Hill, 2014; Schultz & Stern, 2013).

The impact CTE course work and pathways have when it comes to graduation rates is important because college readiness and workforce skill sets will evolve throughout the 21st century (Adelman & Taylor, 2011; Aliaga, Kotamraju, & Stone, 2014; Asunda et al., 2015; US Department of Education, 2012). Understanding what students are experiencing regarding their education can help shed light on the increasing problem of disengagement and, ultimately, dropping out of school (Aliaga et al., 2014; U.S. Department of Education, 2012).

Lewis and Cheng (2006) coined the term *new vocationalism*, where curriculum changes by creating a model that brings CTE course work closer to the academic mainstream in hopes of changing the mind-set that CTE courses are only for those students who are not college bound. In another study, Hubbard and McDonald (2014) found that academic readiness is enhanced for students who are enrolled in courses that combine both academics and CTE. In addition, Hubbard and McDonald (2014) found that student engagement was also increased for students in

CTE courses due to project-based and hands-on approaches used within CTE pathways. Therefore, the research questions that guided this study were the following:

1. Do CTE programs have an impact on student engagement?

2. What are students' perceptions of engagement in CTE and non-CTE classes?

For the purpose of the study, a mixed-methods design was used. Mixed-methods research design combines both qualitative and quantitative research for a deeper, richer, and more robust topic (Venkatesh, Brown, & Sullivan, 2016). A student perception survey was used for the quantitative portion of the study, while a focus-group method was used to gather the qualitative data.

Creswell (2013) wrote that a mixed-methods research design allows the collaborating of both quantitative and qualitative research within a single study in order to understand the research problem. A mixed-methods research design was chosen for this study because the research questions required a qualitative data set to help further understand the quantitative data. This researcher was very interested in the *voice* behind the numbers and using a mixed-methods research design model allows for this voice to be heard and analyzed in relation to the overall outcomes of the study. The sequence of this study was based on Creswell's (2013) explanatory sequential design, which identifies the progressive series of steps taken when designing a mixed-methods study. These steps in order of progression are the following:

1. Collect and analyze quantitative data

2. Analyze quantitative results

3. Report quantitative results

4. Collect and analyze qualitative data

5. Report qualitative results

6. Explain how the qualitative data explains the quantitative results

Quantitative design: Student perception survey. The quantitative portion of the study was used to answer research question 1: Do CTE programs have an impact on student engagement?

From this data set, the focus was on analyzing perceptions of CTE and non-CTE students regarding their high school classroom experience. CTE students were identified as those who were currently enrolled in CTE classes, and non-CTE students were those who answered the survey in general academic classes.

The design method utilized to answer research question 1 was derived from the Tripod 7Cs Student Perception Survey—Version 2016, and focused on the following three areas:

- Content knowledge and meaningful curriculum

- Pedagogy and course relevance

- Relationships and environment

The purpose of the survey was to learn what factors students perceive exist or do not exist that kept them in school, as well as any meaningful and relevant course work that kept them engaged, increased their sense of belongingness, and prepared them for college or career after graduation. Previous research has shown students who feel they are supported by their teachers and directly engaged with their educational choices are better suited to make more informed decisions about their future education and career (Loera et al., 2013). Research has also shown that students in CTE courses or pathways create relationships with their teachers and peers, which gives them a sense of belonging and therefore a purpose for coming to school and engaging in the course work (Alfeld et al., 2006; Bozick & Dalton, 2013; Castellano, Stringfield, & Stone, 2003; Choi et al., 2015).

The use of perception surveys allowed the researcher to find out more than just what was taught in the classroom, but also how the students perceived the curriculum based on their needs and desires to learn. From such a survey, perceptions about the culture of the school, as well as the attitudes within the classroom held by teachers and students, were revealed. In a study done by Hanover Research (2013) entitled, "Student Perception Surveys and Teacher Assessments," it was found that student perception surveys have a high reliability for predicting student achievement gains (p. 5). School districts have begun to use such surveys for purposes of identifying teacher effectiveness based on student response and perception (Hanover Research, 2013). Student perception surveys also have many advantages, which include cost effectiveness and minimal training needs for administrators. Surveys can be administered in as little as 30 minutes, yet still provide reliable, credible, and valid data for schools to use (Hanover Research, 2013; Wallace, Kelcey, & Ruzek, 2016). Other studies have reported that the results from students' responses on such surveys were as reliable and accurate in determining achievement for students as other summative ratings that typically are gathered from teachers, administration, and other school personnel (Hanover Research, 2013; Tripod Education Partners, 2015; Wallace et al., 2016).

The lived experiences of the students were the foundation for this study, and therefore, it was vital to utilize a tool with high-content reliability and predictive validity. The developers of the survey used within this study demonstrated reliability and validity through previous administrations of the tool (Tripod Education Partners, 2016). The questions used for this survey came directly from the Tripod 7Cs Student Perception Survey—Version 2016, which has been proven to be viable in predicting student achievement gains and reporting student perceptions of school experiences in terms of teaching, learning, and environment (Hanover Research, 2013). A

teacher from New York who participated in one such study commented about student perception surveys: "They're the ones in the room. As many walkthroughs [by administrators] as you have, the students are the ones who see it all" (Hanover Research, 2013, p. 11). While data gathered pertaining to dropout rates, graduation rates, GPA, attendance, discipline and other student demographics can tell us who and how many, it cannot tell us the "why." In order to get to the why, those who are impacted the most—the students—must be given the opportunity to be heard. Student perception surveys such as the Tripod 7Cs offer the tools to get to the why with reliability and validity (Wallace et al., 2016).

Students are the major stakeholders in the educational system, and therefore, finding out what works or doesn't work for them is vital in order to create a system of school improvement. Classrooms are meant to be participatory, and through this participation, students form their opinions of the teacher, course work, and environment of the classroom (Wallace et al., 2016). Student perception surveys offer a method by which to measure these opinions. In addition, student perception surveys allow for information to be collected that is not assessed by standardized testing (Bill and Melinda Gates Foundation, 2012). The following is a list of benefits to administering student perception surveys:

- Feedback. Results point to strengths and areas for improvement.

- Face validity. Items reflect what teachers value.

- Predictive validity. Results predict student outcomes.

- Reliability. Results demonstrate relative consistency.

- Low cost. Expense of administration is minimal (p. 4).

In addition, other research has found that student input via perception surveys yields a higher correlation rate for predicting student achievement than walk-throughs by administration or teacher ratings (Bill and Melinda Gates Foundation, 2012).

Instrumentation: Tripod 7Cs Student Perception Survey—Version 2016. What began as a research project by Dr. Ronald F. Ferguson in 2001, the Tripod 7Cs Student Perception survey has now become the leader in K–12 classroom level surveys across the nation. Spanning over a decade, Tripod has surveyed more than 300,000 students across the United States, as well as internationally in countries such as China and Canada (Hanover Research, 2013; Tripod Education Partners, 2016). Ferguson explained that the survey's 7 Cs are, "grounded upon a great deal of educational research," and, "capture much of what researchers have suggested is important in determining how well teachers teach and how much students learn" (Hanover Research, 2013, p. 8). The research-based framework from which Tripod created the survey is shown in Figure 6.
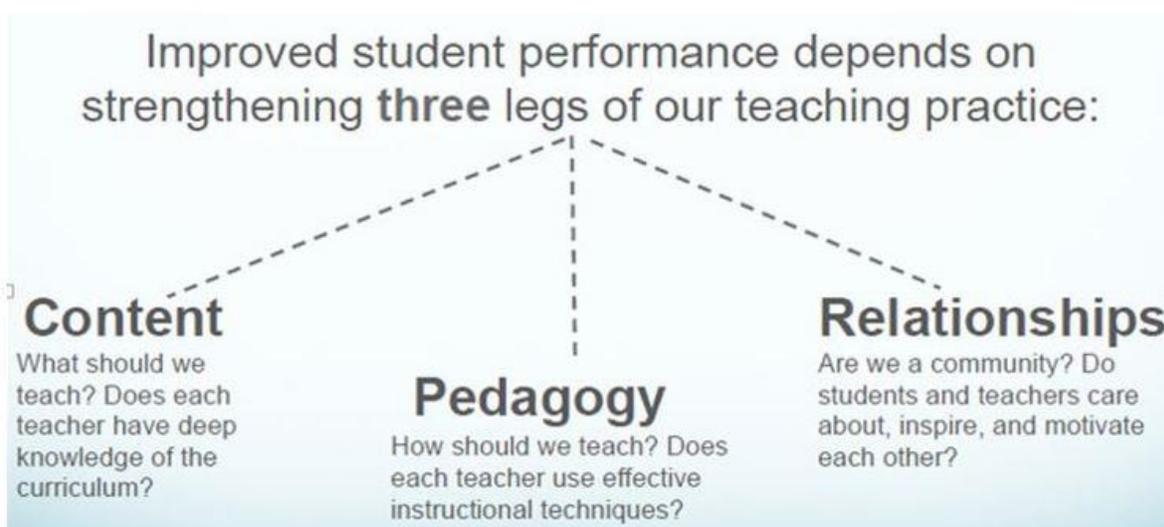
Figure 6

The Tripod Framework

Note. Reproduced with permission from "Tripod's 7Cs Framework of Effective Teaching: Technical Manual," by Tripod Education Partners, 2015, Cambridge, MA (see Appendix F).

Three (tri) main components made up the basis for the framework. One leg consisted of content: what teachers teach and teachers' knowledge base within their content. The second leg

is the art of teaching, or pedagogy. What types of strategies do teachers use to teach their content

in a manner students can learn? The third leg is relationships. As was mentioned in the literature

review earlier, the relationship between teacher and student is vital to the overall success of the

student. Based on these three components, Ferguson developed the survey as seen in Figure 7.

Figure 7

The Three Legs of Tripod Framework

Note. Reproduced with permission from "Tripod's 7Cs Framework of Effective teaching: A
Practical Guide for Improving Teaching and Learning," by Tripod Education Partners, 2015,
Cambridge, MA. (see Appendix F).

Through the development of the survey, the following guiding beliefs were used as the

foundation for the survey:

- Students are good observers.

- We should trust and value student voice.

- Multiple measure, multiple times, over multiple years improve quality of feedback for

  teachers.

- By understanding more about what students experience, teachers can improve. (Tripod Education Partners, 2015)

As Ferguson developed the survey and its components, he had a vision where student input generated the basis for teachers to understand how students were feeling about their education within the seven components. The data that came from student input, allowed teachers to reflect upon their teaching and participate in common professional development purposefully created to drive the instructional system that would lead to increased student learning. Figure 8 illustrates Ferguson's vision of this process (Tripod Education Partners, 2015).

Figure 8

The Vision of Tripod Surveys
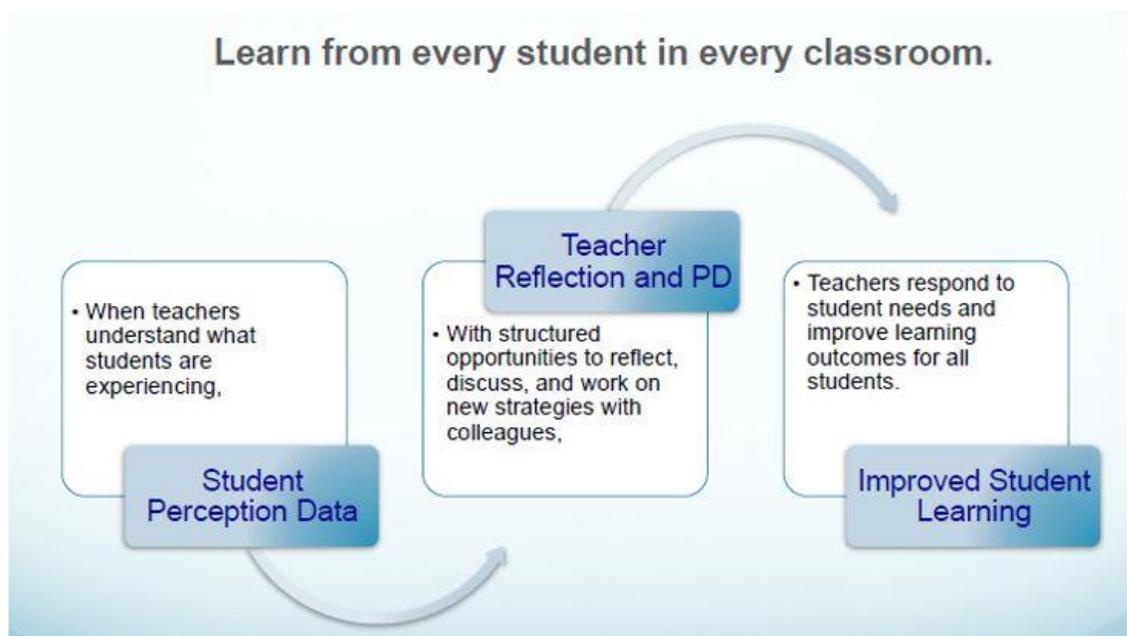
Note. Reproduced with permission from "Tripod's 7Cs Framework of Effective Teaching: A Practical Guide for Improving Teaching and Learning," by Tripod Education Partners, 2015, Cambridge, MA. (see Appendix F).

The Tripod student perception survey is overseen by Cambridge Education and has been administered to more than 300,000 students in the United States, as well as in other countries,

such as China and Canada (Hanover Research, 2013; Tripod Education Partners, 2015). While

the main intent of the survey is to determine teacher effectiveness, the Tripod survey has also

been shown to be a reliable predictor of student achievement (Hanover Research, 2013; Tripod

Education Partners, 2015). The survey consists of *core constructs* where the seven Cs are

developed and item statements formulated. The survey utilizes a 5-point Likert scale, asking

students to choose one of the five responses to the questions asked: (1) *unfavorable*, (2)

unfavorable, (3) *neutral*, (4) *favorable*, and (5) *favorable*. The full battery survey consists of 80

questions; however, for the purposes of this study, only 34 essential questions were asked of the

selected sample of students.

Each component asked students to respond to 3-9 item statements within each

component. The components captivate, clarify, and classroom management had negatively

worded item statements that were reverse coded during analysis of data. Responses in Table 4

show the number of item statements asked within each component.

Table 4

Number of Questions Within Each Category of Tripod Student Perception Survey

Category	Number
Care	3
Confer	3
Captivate	4
Clarify	9
Consolidate	3
Challenge	5
Classroom Management	7

Reliability and validity of Tripod student perception surveys. The most used method to determine reliability is Cronbach's Alpha, which measures the internal consistency of the scale (Lard Statistics, 2015). Tripod uses a multilevel approach when calculating for reliability and validity. This multileveled system was developed by Professor Stephen Raudenbush of the University of Chicago and consists of testing for not only for internal consistency, but also for inter-rater reliability, number of raters, and number of scale items which gives a higher reliability rate than just testing for internal consistency (Tripod Education Partners, 2015).

To determine the internal consistency (reliability) for this administration of the survey tool, a Cronbach's Alpha test was performed for all item statements within the survey, as well as within each component. Results of these tests were discussed in Chapter IV Results.

Qualitative design: Focus groups. Focus groups were the research method used to answer research question 2: What are the students' perceptions of engagement in CTE and non-CTE classes?

The qualitative portion of this study was to hear the voice of the student and further examine the survey results from the quantitative portion of the study. Focus groups are the preferred method by which to gather this type of information when the outcome is to determine the perceptions of participants (Milena, Dainora, & Alin, 2008). Focus groups are a valuable tool to efficiently gather valid and reliable qualitative data from a group of participants (Dilshad & Latif, 2013; Onwuegbuzie, Dickinson, Leech, & Zoran, 2009). Focus groups also allow for spontaneous responses from those participating that produces authentic feedback about the topic and in turn adds authenticity to the research (Onwuegbuzie et al., 2009). Focus groups offer a method to find out the beliefs and perceptions in a manner that is personal and offers a deeper interpretation of those beliefs that cannot be gleaned from surveys or questionnaires (Dilshad &

Latif, 2013). Focus groups also allow for the chance to understand experiences and beliefs surrounding a specific topic (Dilshad & Latif, 2013).

The qualitative data drawn from the survey results were used to determine if students enrolled in CTE programs have the following outcomes when compared with non-CTE students:

- Higher sense of belonging

- Stronger adult role models and mentor relationships

- More engagement in their learning

- More relevant and coherent learning as it pertained to their own goals

Participants

Participants in this study were students from four comprehensive high schools with an average enrollment of 1,100 students in grades 9–12. The study included two groups: (a) students currently enrolled in CTE courses, and (b) students currently enrolled in core academic courses. The CTE student group were enrolled in a CTE course, while the student sample in the non-CTE group were students enrolled in core academic courses in the areas of math, social sciences, and English language arts. The grade levels for each sample group were 11 and 12.

Locations of the Study

The locations for this study were a large urban school district and a smaller rural district in the Pacific Northwest region of the United States. The urban district's student population was 15,000 with 4,000 students at the 9–12 level. The rural district's student population was 5,800 with 1,900 students at the 9–12 level. While the student populations varied, both districts supported CTE programs with one-third of the student population participating in at least one CTE course or pathway. Four different high schools were represented in the data collection.

Data Collection

Two research questions were investigated in this study, each one requiring the use of different research design methods. The quantitative portion of the study answered research question 1 using the Tripod 7Cs Student Perception Survey—Version 2016 as the method to collect data. Research question 2 was qualitative in nature, and focus groups were used to collect the data.

Approval to conduct the research study was granted from the Human Research Review Committee at Northwest Nazarene University prior to any collection of data (see Appendix G). Permission to conduct the research study was also obtained from the superintendents of the participating school districts (see Appendices H and I). The researcher worked with the CTE directors, building administration, and classroom teachers from each school district to administer the survey to students who agreed to participate and had signed consent and assent forms to participate on file. Students who were under the age of 18 also had signed consent and assent forms to participate from their parents or guardian. The consent and assent form to participate explained the purpose of the survey and how the data would be used (see Appendix J). Parents who agreed to have their student participate returned the form, and only those students with signed consent forms were administered the survey. Students whose parents did not return a signed consent and assent form or students that declined to participate, were excluded from the research with no judgment. The consent and assent form indicated that participation was on a volunteer basis, and at any time students could opt out of the survey. The teacher administering the survey served as the contact person between the researcher and the students participating. Of the 220 students who volunteered to participate, 220 students started and finished the survey for a participation rate of 100%.

Assumption of risk. The risk to participants was low due to the anonymous process in which students accessed the survey. Although the survey asked for some demographic information, such as gender, grade, and ethnicity, it did not ask for students to input their names; rather, they were given random log-in cards with unique numbers to access the survey. At no time did the researcher know which students were associated with survey responses. The survey was administered through a secure Internet URL provided by the vendor, and all data were collected and housed on secure servers with the vendor. The use of Tripod as the administrator and collector of the survey data minimized the risk of violating student privacy. The researcher was not able to ascertain the personal identity of any of the students. All data returned to the researcher were provided in a data file that was completely anonymous and forwarded to the researcher via a secure hosting site.

Analytical Methods

Quantitative—Tripod 7Cs Student Perception Survey—Version 2016. Research question 1. The researcher entered into a contract with Tripod Education Partners in March of 2015. The terms of the contract are listed in Appendix K**.** Pursuant to the contract, Tripod provided the researcher with permission to administer the Tripod 7Cs Student Perception Survey—Version 2016, to 10 classrooms as detailed below. All data were collected via a secure server housed by Tripod, with data sent to the researcher once all surveys were completed. Tripod provided both classroom analysis and reports as well as the raw data files. Reliability and validity of the survey have been verified by Tripod; however, a Cronbach's Alpha test was conducted on all item statements within each component for verification of reliability for this study. For each of the survey item statements and components, descriptive statistics were included and the research questions had been addressed.

Analysis of the data was done using IBM's statistical package for the social sciences (SPSS), version 24. The answer to research question 1 was measured on a 5-point Likert scale and were converted into scale scores provided by the vendor as composite scores. The vendor, Tripod, supplied the researcher with classroom reports in pdf form, providing a composite score for each of the seven components within the survey by classroom. In addition, line-item analysis was done for each question within the seven components surveyed. Tripod also provided the researcher with the raw data file in which other analysis of the data could be conducted.

Two other analytical tests were performed by the researcher:

- Independent sample *t* test to determine any statistical significance of the overall composite score as well as within each of the seven components

- Descriptive statistics to summarize the data in a meaningful manner and identify any trends or patterns within the data

The survey window ran from October 1, 2016, to November 18, 2016. The survey was administered under the direction of the classroom teacher, who was given a specific script to read to students prior to the administration of the survey (see Appendix L). The average time for the survey was 25 minutes. Students were given log-in cards with secure URL address to access the digital survey along with a unique identification number and password (see sample in Appendix M). There were no student names on the log-in cards to ensure student answers were anonymous. Upon finishing the survey, log-in cards were collected and then destroyed by the classroom teacher. All data were reported online directly to the vendor, and upon receiving all surveys, the data were configured and forwarded to the researcher via a secure hosting site. The researcher had access to the raw data as well as classroom reports and item analysis by classrooms collated by Tripod per the contract requirements.

Qualitative—focus groups. **Research question 2.** The use of focus groups, much like interviews, in a mixed-methods research study allows for the researcher to probe deeper into data through the use of anecdotal responses. Marshall and Rossman (2016) wrote,

> Interviews have particular strengths. Interviews yields data in quantity quickly. When more than one person participates, the process takes in a wider variety of information than if there were fewer participants—the familiar trade-off between breadth and depth. Immediate follow-up and clarification are possible. Combined with observation, interviews allow the researcher to understand the meaning that everyday activities held for the people. (pp. 101–102)

The focus groups were conducted by the researcher in an informal session with the students. The length of each focus group was approximately 35 minutes, although there was no set time limit established. The researcher conducted each focus group and took notes during the sessions. In addition, each session was audio recorded for later transcription. The questions asked in the focus groups were consistent between both groups, however, not verbatim. The questions that guided the focus groups were based on results from the student perception survey (see Appendix N).

During the focus groups, the only personal information taken was the first name of the students, their grade, and how many CTE courses they had taken while in high school. All transcriptions of the focus groups have been kept confidential, and the recordings were erased once transcription was verified as accurate and completed. Students were reminded that at no time did they have to respond to any questions and that they could opt out of the focus group at any time. Four students volunteered to participate in the CTE focus group, while three students volunteered to be in the non-CTE focus group.

Upon conclusion of the focus groups, recordings were transcribed into written format for further analysis. The researcher reviewed each transcript, looking for patterns and trends, and developed a frequency analysis of how many times each content area identified was referenced with each session. A system of color coding reoccurring themes was developed, and each theme was then placed in categories based on Marshall and Rossman's (2016) seven phases of analytical procedures techniques. While the interpretation of the focus groups was personal, putting the trends into categories allowed for the correlations to be more credible. Factor analysis was utilized to cluster the trends obtained from the transcripts of the focus groups to create specific groupings of ideas and voices.

The researcher conducted focus groups using the survey the item statements within each component to probe deeper to find out more about the responses based upon the quantitative data results. While each group was asked the same questions based on the outcome of the data analysis, each group took on their own identity as the process evolved. The intent of the focus-group portion of the study was meant to elicit specific examples of student perceptions in each of the three component areas, which showed significant differences: *care, captivate, and clarify*. However, the other four components of the survey were also discussed as the groups delved into the process. Student voices added another layer of understanding to the overall perception of the responses that were given on the survey. Students shared, in their own words, how their experiences at school shaped their current feelings and perceptions of their education.

Limitations and Barriers

As in any research, there are limitations that cannot be controlled by the researcher (Marshall & Rossman, 2016). Participants of this study were from only two school districts in

the Pacific Northwest and may not have represented the overall student population of those

states, much less states throughout the nation.

Distance from the researcher to one of the school districts surveyed was a barrier.

Because of the distance, it was difficult to manage parent permissions and give access

immediately to those students who agreed to participate. The lag time in the delivery and receipt

of materials, may have led to a smaller sample size. However, the use of technology helped

minimize this barrier.

Size of the sample was a limitation. There was a total of 220 students who participated in

the survey. The breakdown was 101 CTE students and 119 non-CTE students who took the

survey. While the potential sample size, based on the enrollment of the high schools

participating, was over 5,000 students, the reality of that was far beyond the scope of resources

for this study. Therefore, the sample size may not be representative of the population in other

like environments.

Another limitation was the focus-group process in which the researcher was the

interviewer. This was a limitation because the researcher was a former CTE teacher and is a

current CTE director with strong biases toward the merits of CTE programs. While the questions

were constructed to be nonbiased, probing questions may have led students to answer one way or

the other depending upon what control group they were in. The size of the focus groups was also

small. There were four students who participated in the CTE focus group and three in the non-

CTE focus group. The preferred size of the focus group was five to six students per group;

however, due to schedules and other barriers, both focus groups were smaller, which may have

had implications on the richness of the conversations. Due to scheduling issues and weather, the

non-CTE focus group was comprised of all females. Having only one gender represented in the group may have limited the depth of the conversation.

Though not a limitation, time was a barrier to the research. Coordinating schedules of students, schools, and the researcher was a struggle. Access to students for focus groups could only happen during specific times of the day and on days where the researcher was physically able to be present.

Conclusion

This mixed-methods study was done to answer the following research questions:

1. Do CTE programs have an impact on student engagement?

2. What are students' perceptions of engagement in CTE and non-CTE classes?

The quantitative portion of the study was the administration of the Tripod 7Cs Student Perception Survey—Version 2016, which contained item statements in the following components: (a) care, (b) confer, (c) captivate, (d) clarify, (e) consolidate, (f) challenge, and (g) classroom management.

The qualitative approach used focus groups comprised of students who volunteered to participate from each identified subset (CTE and non-CTE). The results of each method were then analyzed, and the findings were formulated.

Analysis of the data from the quantitative (student perception survey) and qualitative (focus groups) was gathered from four comprehensive high schools in two districts in the Pacific Northwest. Results from the data were analyzed and synthesized into meaningful conclusions. Chapter IV reports the data and Chapter V reports the conclusions from the data and recommendations for further research.

Chapter IV

Results

Introduction

In order to combat the dropout rate, increase graduation rates, and prepare students for a successful transition into postsecondary education or the workforce, schools must create environments that are supportive and give students a sense of belonging (Bilge et al., 2014; Bowers et al., 2013; Branson et al., 2013). The course work needs to be relevant, rigorous, and allow students be active participants of their educational careers (Bilge et al., 2014; Bowers et al., 2013; Branson et al., 2013).

At the foundation of CTE programs is academically rigorous course work that is relevant, hands-on, and prepares students to successfully transition from high school to postsecondary education or the workforce (ACTE, 2016; Blasik et al., 2003). On December 10, 2015, the Obama administration signed the ESSA into law the, which was a complete overhaul of education since NCLB was enacted in 2001 (Coppes, 2016). As part of this legislation, CTE became a foundational component in education as "a core component of a well-rounded education" (Coppes, 2016, p. 25).

The purpose of this study was to capture student perceptions of engagement as it pertains to both CTE and non-CTE environments. Chapter IV examines the findings of this study. The researcher used a mixed-methods design approach to answer the two research questions:

1. Do CTE programs have an impact on student engagement?
2. What are students' perceptions of engagement in CTE and non-CTE classes?

Chapter IV offers the results relevant to the research questions, utilizing data that were gathered from a student perception survey and two focus groups.

Chapter III discussed the methods by which data were collected for this study. The focus of Chapter IV is the data that answered the research questions. Those methods were the following:

- Tripod 7Cs Student Perception Survey—Version 2016. The survey was administered to 220 students in ten classrooms from two school districts in the Pacific Northwest. The purpose of the survey was to determine if student perceptions differed significantly between CTE classes and non-CTE classes.

- Two focus groups to hear the student voice of those who participated in the survey. The groups focused on their educational experiences based on the content area in which they participated. The CTE focus group included four students, while the non-CTE focus group included three students.

Characteristics of Participants

Participants of this study were students from four comprehensive high schools with an average enrollment of 1,100 students in grades 9–12. The study included two groups: (a) CTE group in which students surveyed were currently enrolled in CTE courses, and (b) non-CTE group in which students were currently enrolled in non-CTE classes in the areas of math, science, social sciences, and English language arts.

There was a total of 220 students that participated in the survey. The CTE sample consisted of 101 students (52 in 11th grade, 49 in 12th grade), while the sample size for non-CTE students was 119 (52 in 11th grade and 67 in 12th grade). In a further breakdown of gender, the CTE student sample was comprised of 39% females ($n = 39$) and 61% male ($n = 62$) subjects. The non-CTE sample group was comprised of 40% female ($n = 48$) and 60% male ($n = 71$) subjects. The ethnicity of the student sample (220) was represented by the following groups:

71% White ($n = 157$), 27% Hispanic/Latino ($n = 59$), 8% Native American ($n = 17$), 5% Asian ($n = 10$), 4% Pacific Islander ($n = 8$), and 3% Other ($n = 7$). The sum of the numbers is more than the sample size due to some students claiming ethnicity in multiple categories. Chi-square tests were performed to determine similarities or differences of grades, gender, and ethnicity within the sample groups. Table 5 below shows the results of the chi-square test for gender, grade, and ethnicity.

Table 5

Chi-square test for Gender, Grade, and Ethnicity

Category	Chi-square test results
Gender	$x^2(1) = 0.0678$, $p = .795492$, $\alpha > .05$
Grade	$x^2(1) = 1.3293$, $p = .248934$, $\alpha > .05$
Ethnicity	$x^2(1) = 1.303$, $p = .521$, $\alpha > .05$

Accordingly, there were no significant differences between the CTE group and non-CTE groups based on gender, grade or race, minimizing these attributes as confounding factors in the analysis.

The rate of return was 73%, with 220 students out of a possible of 300 students surveyed across both districts. All 220 students who started the survey finished the survey. The participation rate from the large urban school was higher with 136 (61.8%) students participating versus 84 (38.2%) from the smaller rural school. There were five CTE classes surveyed and five non-CTE classrooms surveyed for a total of ten classrooms.

Research question 1. Student perception surveys have been shown to be a reliable method to measure and predict student achievement (Bill and Melinda Gates Foundation, 2012;

Hanover Research, 2013; Wallace et al., 2016). The Tripod 7Cs Student Perception Survey—

Version 2016 was the measurement tool used for this quantitative portion of the study. This tool

measured student perceptions in seven core components that have shown to have an impact on

effective and quality teaching as well as student learning environments (Bill and Melinda Gates

Foundation, 2012; Hanover Research, 2013; Tripod Education Partners, 2015). These seven core

components were (a) care, (b) confer, (c) captivate, (d) clarify, (e) consolidate, (f) challenge, and

(g) classroom management. For each component, students were asked to respond to item

statements ranging from three to nine questions. Within the components of captivate, clarify, and

classroom management, there were negatively worded item statements that were reverse coded

when results were analyzed.

Ten classrooms were surveyed, five of which were CTE-based and five of which were

non-CTE-based. The overall sample size was 220 students in grades 11 and 12 from two school

districts in the Pacific Northwest. Proctors in each classroom administered the online survey,

which took 25–30 minutes per survey and consisted of 34 questions.

Survey reliability was tested using a Cronbach's alpha test. Cronbach's alpha test is the

most widely used statistical test used to determine reliability (Field, 2013). For this test, an

acceptable level of reliability of .7 is preferred (Field, 2013). All seven components and the

overall composite rating exceeded the acceptable value of $\alpha > .7$, demonstrating strong

reliability (see Table 6).

Table 6

Reliability Levels of Survey Components

Component	*N* of items	Cronbach's Alpha Rating
Composite (all responses)	34	.951
Care	3	.750
Confer	3	.807
Captivate*	4	.813
Clarify*	9	.887
Consolidate	3	.766
Challenge	5	.816
Classroom Management*	7	.772

Note. * denotes reverse coding due to negatively worded statements

Results for question 1: Do CTE programs have an impact on student engagement? The first phase of the study based on Creswell's (2013) explanatory sequential process was the collection of quantitative data and the analysis of the data. The Tripod 7Cs Student Perception Survey—Version 2016 was used to collect this data. The results were sent to the researcher by the vendor who provided composite scores for the overall survey within each sampling group as well as for each of the seven components. Line item analyses at the classroom level were provided, as well as the raw data file.

Composite scores indicated student perceptions across classrooms at the time the survey was administered. Composite scores were calculated by the vendor using the following process (Tripod Education Partners, 2015):

Student responses to each item are averaged by classroom and standardized around the

classroom mean. Next, the standardized items associated with each component are

averaged by classroom, so long as students responded to at least two items per

component (or one in the case of a single item component). These constructs are then re-

standardized around the class mean. The 7Cs composite is the classroom average of the

standardized constructs. (p. 21)

The overall composite score index for CTE classes was 294, while the mean for the non-CTE

classes was 270, which indicates CTE students responded more favorably to the overall item

statements than students in non-CTE classes. In an independent *t* test, the composite score

showed significance ($p = .000$, $\alpha < .05$). (See Table 7 for complete test results)

Table 7

Mean Statistics for the Seven Component Areas

Component	Sig.	CTE Mean	Non-CTE Mean	CTE Std. Error Diff.	Non-CTE Std. Error Diff.
Care	.000*	3.91	3.06	.10639	.10390
Confer	.260	3.56	3.43	.11977	.11717
Captivate	.018*	3.45	3.66	.08850	.08525
Clarify	.000*	3.75	3.40	.08732	.08534
Consolidate	.226	3.76	3.61	.11957	.11647
Challenge	.184	3.76	3.62	.10474	.10269
Classroom Management	.410	2.88	2.93	.05447	.05609
Composite	.000*	3.80	3.45	.0499	.068

Note. *denotes categories that show statistical significance, $\alpha < .05$, $n = 101$ (CTE); $n = 119$ (non-CTE)

An independent *t* test is appropriate to determine if a significant statistical difference exists between two independent groups (Laerd Statistics, 2015). For this study, in order to see if a significant difference existed between the two sample groups, CTE and non-CTE, within each of the seven components, an independent *t* test was performed. Three of the seven components showed significant differences: (a) care ($p = .000$, $\alpha < 05$), (b) clarify ($p = .000$, $\alpha < 05$), and (c) captivate ($p = .000$, $\alpha < 05$). The composite component also showed significance ($p = .000$, $\alpha < .05$). Because there was a significant statistical difference between the means ($\alpha < .05$) of CTE students and non-CTE students in the components of care, captivate, and clarify, the null hypothesis was rejected and the alternative hypothesis was supported. In the areas of confer,

consolidate, challenge, and classroom management, where $p > .05$, the null hypothesis was retained. The overall composite score also showed statistical significance ($p = .000$, $\alpha < 05$).

Homogeneity of variance was tested in all seven component areas, as well as in the composite area, as assessed by Levene's test for $\alpha < .05$. Table 8 provides the data showing the variances for each component area.

Table 8

Significance Level of Levene's Test for Variance Within Seven Components

Category	Significance level
Care	.014
Confer	.011
Captivate	.000
Clarify	.002
Consolidate	.004
Challenge	.018
Classroom Management	.001
Composite	.000

Care. For the purposes of this study, *care* is defined as the "extent to which teachers demonstrate warmth and emotional support" (Tripod Education Partners, 2015, p. 5). Care relates directly to the relationship the teacher has with students, has been shown to be a predictor of engagement and achievement of students, and falls into the area of personal support (Tripod Education Partners, 2015). The three item statements students responded to in this component were:

- My teacher in this class makes me feel that she/he really cares about me.

- My teacher seems to know if something is bothering me.

- My teacher really tried to understand how students feel about things.

In a comparison analysis of student perceptions in the component of care, 69% of CTE students reported favorable scores of 5 (33%) and 4 (36%), indicating CTE teachers cared and were able to show that caring to their students. In contrast, non-CTE students reported favorable scores of 5 (9%) and 4 (28%). CTE students also perceived teachers knew if something was bothering them with a favorable rating of 5 (16%) as compared to 4% reported by non-CTE students. Table 9 show the three item statements broken down by group and overall in the component of care.

Table 9
CTE and Non-CTE Responses to Item Statements in the Component of Care

Favorability	5		4		3		2		1	
	n	%	*n*	%	*n*	%	*n*	%	*n*	%
My teacher in this class makes me feel that she/he really cares for me.										
CTE	0	0%	2	2%	9	9%	30	30%	60	59%
Non-CTE	10	8%	4	6%	42	35%	43	36%	17	14%
My teacher seems to know if something is bothering me.										
CTE	7	7%	12	12%	39	39%	27	27%	16	16%
Non-CTE	26	22%	26	22%	38	32%	24	20%	5	4%
My teacher really tries to understand how students feel about things.										
CTE	0	0%	4	4%	21	21%	52	51%	24	24%
Non-CTE	12	10%	13	11%	51	43%	33	28%	10	8%
Overall Component Score										
CTE		2%		6%		23%		36%		33%
Non-CTE		13%		13%		37%		28%		9%

Note. CTE (*n* = 101) student responses; non-CTE (*n* = 119) student responses

The area of care encompasses how teachers feel about their students and how those feelings are demonstrated. The results of the survey show that in the component of care, CTE students perceived their teachers to be more caring.

Captivate. Tripod defines *captivate* as the "extent to which teachers spark and maintain student interest in learning" (Tripod Education Partners, 2015, p. 7). Captivate is the component most closely related to student engagement. A high score in this component indicates the extent to which teachers make their content relevant and students can see where this fits into the bigger picture beyond the classroom (Tripod Education Partners, 2015). There were four item statements students responded to in the area of captivate, which made up 12% of the survey responses. Those statements were the following:

- I like the ways we learn in this class.

- My teacher makes lessons interesting.

- My teacher makes learning enjoyable.

- This class does not keep my attention—I get bored. (negatively worded question) (p. 5).

Analysis of the item statements showed that CTE classes are more interesting (65%) than non-CTE classes (54%). Students' perceptions of their learning in CTE classes were also higher, with 76% of students reporting a favorable rating of 4 and 5, as compared to non-CTE students, who reported a 56% rating of favorable 4 and 5. The biggest difference in student perceptions was the reaction to the item statement pertaining to the class keeping student attention and students not getting bored. Seventy-three percent of CTE students perceived their classes as engaging and not boring, as compared to 0% of non-CTE students. Table 10 examines student responses in the component of captivate broken down by item statements.

Table 10

CTE and Non-CTE Responses to Item Statements in the Component of Captivate

Favorability	5		4		3		2		1	
	n	%	*n*	%	*n*	%	*n*	%	*n*	%
I like the ways we learn in this class.										
CTE	1	1%	6	6%	24	24%	38	38%	32	32%
Non-CTE	13	11%	7	6%	30	25%	45	38%	24	20%
My teacher makes lessons interesting.										
CTE	1	1%	5	5%	30	30%	40	40%	25	25%
Non-CTE	13	11%	6	5%	35	30%	41	35%	23	19%
My teacher makes learning enjoyable.**										
CTE	0	0%	4	4%	21	21%	44	44%	32	32%
Non-CTE	11	9%	6	5%	35	29%	43	36%	24	20%
This class does not keep my attention—I get bored.*										
CTE	31	31%	42	42%	25	25%	2	2%	1	1%
Non-CTE	0	0%	0	0%	19	16%	64	54%	36	30%
Overall Component Score										
CTE		8%		9%		25%		36%		22%
Non-CTE		8%		4%		25%		41%		22%

Note. n = 119 student responses
* denotes a negatively worded question
** denotes one participate did not respond to the item statement.

Captivate falls in the realm of curricular support. CTE students perceived their classes to be more engaging, the lessons to be enjoyable and interesting, and they didn't get bored. Teachers in CTE classes also were perceived to deliver their content in ways that students related to, and therefore students were more engaged in the content being taught.

Clarify. For the purpose of this survey, *clarify* was defined as the "extent to which teachers explain clearly, check for understanding, and resolve confusion" (Tripod Education Partners, 2015, p. 9). Clarify aligns most closely to the motivation for students to continue their

learning. Clarify was addressed in a total of nine item statements for 26% of the total responses.

The nine questions were the following:

- My teacher checks to make sure we understand what she/he is teaching us.

- When she/he is teaching us, my teacher thinks we understand even when we don't. (negatively worded)

- My teacher knows when the class understands and when we do not.

- My teacher explains difficult things clearly.

- We get helpful comments to let us know what we did wrong on assignments.

- My teacher has several good ways to explain each topic that we cover in this class.

- The comments that I get on my work in this class help me understand how to improve.

- If you don't understand something, my teacher explains it another way.

- In this class, we learn to correct our mistakes (p. 9).

Comparisons of item statements between CTE and non-CTE classes indicated that 70% (*favorable*—4, 50%; *favorable*—5, 20%) of CTE teachers knew when the class understood or did not understand the content being taught versus non-CTE teachers at 60% (*favorable*—4, 49%; *favorable*—5, 12%). Teachers in CTE classes had a rating of 80% (*favorable*—4, 38; *favorable*—5, 42) more favorable when checking for understanding versus non-CTE teachers, which ranked at 63% (*favorable*—4, 39%; *favorable*—5, 24%). In terms of how teachers were able to explain difficult concepts, the two groups were similar; CTE teachers were rated at 76% (*favorable*—4, 51%; *favorable*—5, 27%) while non-CTE teachers were rated at 72% (*favorable*—4, 38%; *favorable*—5, 34%). When it came to students learning how to correct their mistakes in classes, there was a 26% difference between the two groups. CTE students rated their teachers at 83% (*favorable*—4, 40%; *favorable*—5, 43%) as compared to non-CTE students who

rated their teachers at 57% (*favorable*—4, 32%; *favorable*—5, 25%). Students perceived

feedback from their teachers as helpful, with a higher rate in CTE classes (59%) than non-CTE

classes (46%). Table 11 examines student responses to the item statements contained in the

component of clarify.

Table 11

CTE and Non-CTE Responses to Item Statements in the Component of Clarify

Favorability	5		4		3		2		1	
	n	%	*n*	%	*n*	%	*n*	%	*n*	%
If you don't understand something, my teacher explains it another way.										
CTE	0	0%	6	6%	16	16%	52	51%	27	27%
Non-CTE	7	6%	6	5%	34	29%	38	32%	34	29%
When she/he is teaching us, my teacher thinks we understand even when we don't.*										
CTE	18	18%	53	52%	20	20%	9	9%	1	1%
Non-CTE	11	9%	50	42%	40	34%	9	8%	9	8%
In this class, we learn to correct our mistakes.										
CTE	0	0%	1	1%	17	17%	40	40%	43	43%
Non-CTE	8	7%	8	7%	34	29%	38	32%	30	25%
The comments that I get on my work in this class help me understand how to improve.										
CTE	1	1%	7	7%	25	25%	40	40%	27	27%
Non-CTE	14	12%	16	13%	39	33%	35	29%	16	13%
We get helpful comments to let us know what we did wrong on assignments.										
CTE	8	8%	10	10%	19	19%	35	35%	29	29%
Non-CTE	21	18%	13	11%	30	25%	38	32%	17	14%
My teacher checks to make sure we understand what she/he is teaching us.										
CTE	1	1%	4	4%	16	16%	38	38%	42	42%
Non-CTE	5	4%	9	8%	30	25%	46	39%	29	24%
My teacher explains difficult things clearly.										
CTE	1	1%	3	3%	26	26%	44	44%	27	27%
Non-CTE	9	8%	11	9%	35	29%	46	39%	17	14%

Table 11 continued

CTE and Non-CTE Responses to Item Statements in the Component of Clarify

Favorability	5		4		3		2		1	
	n	%	*n*	%	*n*	%	*n*	%	*n*	%
My teacher has several good ways to explain each topic that we cover in this class.										
CTE	1	1%	5	5%	21	21%	47	47%	27	27%
Non-CTE	5	4%	10	8%	32	27%	43	36%	28	24%
My teacher knows when the class understands and when we do not.										
CTE	0	0	10	10%	21	21%	50	50%	20	20%
Non-CTE	8	7%	8	7%	42	35%	49	41%	12	10%
Overall Component Score										
CTE		3%		12%		20%		39%		27%
Non-CTE		8%		12%		30%		32%		18%

Note. n = 119 student responses
* denotes a negatively worded question

Within the component of clarify, students were asked questions that were specific to how well their teachers explained concepts, particularly those that were difficult. Item statements also covered feedback and how well the teacher was perceived in giving effective feedback. CTE students rated their teachers higher overall than non-CTE students, although there were some areas where the perceptions within each group were similar.

Conclusion: Survey

Independent *t* tests were conducted to determine significance at the component level as well as the overall composite level. Three of the seven components showed significant differences between the CTE and non-CTE groups: (a) care (p = .000, α < 05), (b) captivate (p = .000, α < 05), and (c) clarify (p = .000, α < 05). The overall composite score also showed

significance ($p = .000$, $\alpha < .05$). The results of the Cronbach alpha test for reliability showed each component exceeded the acceptable level of .7 with the overall composite score showing high reliability ($\alpha = .951$).

Research question 2. The use of mixed methods for research is acceptable to use when either the qualitative or quantitative data are not sufficient to completely understand the issue (Creswell, 2013). Analysis of the numeric data from the quantitative research is integrated with the narrative or the voice of the participants in mixed methods, which gives the study a holistic point of view that encompasses the scientific and the philosophic elements of the research topic (Creswell, 2015; Teddlie & Tashakkori, 2009). The qualitative portion of mixed methods research is used to confirm or justify the results of the quantitative portion of the study (Graff, 2014). Qualitative research methods, such as focus groups, have become more acceptable in the research world (Milena et al., 2008). Focus groups are used when the goal is to find out perceptions of those participating (Milena et al., 2008). To further understand the quantitative results of the survey, focus groups were conducted.

Focus groups were conducted to gather the qualitative data to answer research question 2. The focus group participants were drawn from the set of students who took the survey. The researcher took notes, as well as recorded the focus groups, to ensure accuracy of the statements made in the sessions. All notes and transcriptions of the focus groups were confidential, and the audio recordings were erased once transcription was completed. Students were reminded that at no time were they required to respond to any question and that they could opt out of the focus group at any time. Four students volunteered to participate in the CTE focus group, and three students volunteered to be in the non-CTE focus group. Names of the students were replaced

with pseudonyms, and students were referred to with those names throughout the chapter. Table 12 reports the demographic of the focus groups.

Table 12

Focus-Group Participant Synopsis

Pseudonym	Personal	Grade	Class Type
Tiffany	Female	12	CTE
Skylar	Female	12	CTE
Wade	Male	11	CTE
Travis	Male	11	CTE
Kay	Female	12	Non-CTE
Rachel	Female	12	Non-CTE
Ashlee	Female	12	Non-CTE

Results for question 2: What are students' perceptions of engagement in CTE and non-CTE classes? The focus groups were conducted by the researcher in an informal session with the students. The length of each focus group was approximately 35 minutes, although there was no set time limit established. The questions asked in the focus groups were consistent between both groups. However, each group differed in where each question took the discussion. The questions focused upon the three components from the Tripod 7Cs Student Perception Survey—Version 2016, which showed statistical significance based on the test performed of the raw data. Those three areas were care, captivate, and clarify. Students responded to item statements within each of the seven components. Table 13 shows the item statements within each of the three

components the discussions concentrated on during the focus group sessions. For a complete list

of the items statements within the seven components, see Appendix O.

Table 13

Item Statements on Survey

Component	Item Statement
Care	My teacher in this class makes me feel that she/he really care for me.
	My teacher seems to know if something is bothering me.
	My teacher really tries to understand how students feel about things.
Captivate	I like the ways we learn in this class.
	My teacher makes lessons interesting.
	My teacher makes learning enjoyable.
	This class does not keep my attention—I get bored. (negatively worded)
Clarify	My teacher checks to make sure we understand what she/he is teaching us.
	When she/he is teaching us, my teacher thinks we understand even when we don't. (negatively worded)
	My teacher knows when the class understands, and when we do not.
	My teacher explains difficult things clearly.
	We get helpful comments to let us know what we did wrong on assignments.
	My teacher has several good ways to explain each topic that we cover in this class.
	My teacher has several good ways to explain each topic that we cover in this class.
	The comments that I get on my work in this class help me understand how to improve.

Table 13 continued

Item Statements on Survey

Component	Item Statement
Clarify	If you don't understand something, my teacher explains it another way. In this class, we learn to correct our mistakes.

The composite score of the items analysis was also discussed as it showed statistical significance. While the other four components (confer, consolidate, challenge, and classroom management) were not found to have statistical significance, they were discussed in the focus groups due to their close relationship they had with the other components. Elements of the component challenge were discussed by the students when the discussion focused on care and clarify. Classroom management was discussed when the component captivate was discussed.

Upon conclusion of the focus groups, recordings were transcribed into written format for further analysis. The researcher reviewed each transcript, looking for patterns and trends, and developed a frequency analysis of how many times each content area identified was referenced with each session. Table 14 shows the four themes and their definitions as they were used by students participating in the focus groups.

Table 14

Emerging Themes and Definitions

Theme	Definition
Classroom Environment	Arrangement of classroom, how students felt when they entered the room, display of student work or lack of, overall "feel" of classroom
Teacher	Manner in which the teacher treated the student, helpfulness of teacher, ability to relate with the student, and the overall attitude towards the student as an individual as well as a class
Student Engagement	How the student interacted with the curriculum and content of the course, the interest level of the student with the content, the instructional methods used to keep the student's interest enough to learn and master the content
Content	The extent to which the lessons were interactive; relevant, rigor, and manner in which concepts were presented

Table 15 shows the frequency of the four major themes and how each was ranked with the CTE

and non-CTE focus groups.

Table 15

Focus Groups' Emerging Themes and Frequency

Emerging Theme	# of CTE Responses	% of Responses	# of Non-CTE Responses	% of Responses
Environment	3	7%	10	26%
Teacher	22	50%	18	47%
Student Engagement	7	16%	7	18%
Content	12	27%	3	8%

Note. n = 44 CTE total responses; *n* = 38 non-CTE total responses

During the focus groups, students were asked for their feedback and thoughts regarding their experiences in CTE and non-CTE classes in the areas of care, captivate, and clarify, based on the survey they had recently completed. While the focus group questions mainly addressed those three components, other components within the survey were also discussed as the sessions progressed. These components included classroom management, which included questions based on how orderly the class was, how respectful teachers and students were within the class, student behavior and how it was addressed or managed. Confer addressed the issue of how feedback was asked for in the class by the teacher and how open the teacher was to students' ideas and their explanation of ideas. Challenge was another component that was discussed along with the other components. Challenge related to the rigor and expectations of the teachers to press students to be critical thinkers and the effort of students to excel. Each focus group session was unique in its discussion and the researcher gave time for the students to explore other component areas, as many of them were related, and comments covered all components addressed in the survey.

Teacher. This theme had the highest frequency of responses from both groups, with 50% (22/44) from the CTE group and 47% (18/42) from the non-CTE group. The theme of teacher impacted all three components that were significant as well as a couple that were not. Students described ways in which teachers showed elements of the component *care*. These methods included teachers taking time to ask students how they were doing, noticing if something was wrong, and offering to help students with problems or issues. Students also saw care when teachers asked for input and students' thoughts on what changes could be made to the course work or activities they were doing in class. Students also commented that teachers would acknowledge them outside the classrooms in places, such as the hallways, library, or sporting events. Students reported their CTE teachers' expectations were higher than in their general

education classes, and teachers were more willing to take the extra time to help the student. Wade used the word "tough love" when he described the expectations of his CTE teachers. Students stated their general education teachers cared; however, because the content areas were so broad with a lot of material to cover, the teachers could not get to every student.

The component captivate was also referenced in the teacher theme. Captivate related to how the teacher engaged students in the course work through lessons that were stimulating and relevant. CTE students reported their teachers were there to guide them through their projects and assignments, as opposed to their general education teachers who seemed to use the stand-and-deliver method. CTE students reported their classes to be more student oriented because they were doing hands-on projects to learn the concepts instead of reading the text and answering the assigned questions. CTE students reported what they did in class was something they would be able to use in their career or postsecondary studies, and the students could see a connection to life beyond high school. CTE student Tiffany used the term "formal" when describing her general education classes but used the term "interactive" when describing her CTE classes.

One of the CTE classrooms surveyed was in the content area of finance. CTE students mentioned how they got more out of this class than their general education math because they were taught real-world financial concepts, such as how to balance checkbooks, calculate payments for credit cards, and manage money. While they would solve problems in their general education math courses, there was no personal connection to the problems and therefore students struggled to find relevance within those problems.

Teachers were also characterized as being enthusiastic when they were teaching, which made the students excited about being in the class and resulted in "making learning fun," according to senior student, Skylar. Students remarked about how their CTE teachers wanted to

make sure they understood the material and therefore took extra time to answer any questions and go over material again if needed. These comments all speak to the components care, captivate, and clarify.

The teacher played a significant role in the perceptions of these students in both focus groups. Students spoke to the caring of the teacher and the ability of their teachers to teach difficult concepts in a manner students could understand. While CTE teachers were reported to show a greater depth of caring, teachers from the non-CTE group were also reported to be able to relate to their students.

Content. The theme *content* dealt with the subject area being taught, the level of interaction of the material, and the rigor and relevance of the content. Content had the second-highest frequency of the four themes in the CTE group with 27% (12/44), while in the non-CTE group it ranked fourth with a frequency of 8% (3/38).

In this area, CTE students talked about the relevance of the subject and how it pertained to their own interests. CTE students said they gravitated toward CTE classes in which they were interested as a possible career, making the class automatically more relevant. Even when the work was hard, such as designing a project that used the 3-D printer in their engineering class, they stuck with it because the class was interactive and relevant. This relates directly to the component of captivate. The word the students used most to describe these classes was interactive (eight times). Examples of the term interactive ranged from the teacher including the student in the planning of future activities to hands-on activities, such as in photography where students were not only taught the basics of photography but were given the camera and told to *go take pictures*. They would then come back and analyze the pictures based on the concepts being discussed at the time. Throughout the focus groups, students kept coming back to how the

content in their CTE course was interesting to them, and it made them want to stay in the class to learn a new skill or concept. CTE students also commented on their CTE classes being more relevant, and they could see where they could use the skills learned beyond high school. Personal finance class content was very relevant to the students as well as rigorous. Students learned how to manage and balance their money, as well as track financial transactions, such as credit card purchases. Students also commented that the information they were getting was specific and not general as in their non-CTE classes. Travis talked about his experience with one of his CTE classes, and he commented that his teachers "want to actually have you understand it and take the time to explain it" to show mastery, unlike in his general education courses where teachers wanted the student to give the answer and not worry about how it was derived. Several of the CTE students agreed with Travis' statement. Students also commented on how they could take their learning in CTE courses and use it right away, which was something they didn't experience in their general education classes. Upon further probing into this area of relevance, Tiffany stated that her general education courses were "very formal," while her CTE courses allowed for more student interaction and feedback. Skylar finished her thought by saying, "I feel like CTE classes are more interactive." The rigor of the CTE classes was also mentioned during focus groups.

The non-CTE group rated the theme content as low because the classes they were in were required in order to graduate. Even if they liked the topic, very few of the classes had an interactive element where students walked out with a specific skill set or something they had made. The non-CTE students spoke to the overwhelming amount of material that was covered in their general education classes, which they remembered long enough to take the test and then forgot. There was a consensus that their general education classes simply fulfilled a requirement and didn't have much added value in how the content would impact their future goals.

Both groups did agree that there was a level of rigor in both CTE and general education classes, but for general education classes, that did not come until their junior and senior years. CTE students who were in the second and third year of a CTE pathway commented on how the rigor of the content built upon their previous classes, and they were able to apply previous knowledge to current learning. This speaks directly to the component captivate.

Clarify was also talked about in the theme of content. Teachers from both CTE and general education classes used several methods to clarify the material presented to the students. The CTE teachers clarified in a more individualized manner and based on the individual project each student was doing at the time, while the general education teachers spoke to the entire class as one entity. Non-CTE students remarked that teachers were not able to spend the time needed with each student to make sure they understood the material. They did not blame the teacher or think he or she didn't care though. Rather, they blamed the lack of individual attention on the amount of material general education teachers had to cover in the class, and that it was too much to take time to personalize student learning. On the other hand, CTE students perceived their teachers to be more responsive to each student and to spend the time to make sure students understood. For the most part, the CTE classes worked on projects that were student-centered with the teacher acting as a coach or facilitator. Even in the personal finance class, the learning was personalized because the CTE teacher had students bring in their own financial information to use as the concepts were being taught.

Student engagement. Student engagement, for the purpose of this study, was defined as how the teacher was able to keep the students interacting with the curriculum. Both groups were similar in the frequency of student engagement topics. The CTE group's frequency was 16%

(7/44), and the non-CTE group was 18% (7/38). Both groups ranked the student engagement theme at three out of the four themes identified.

Student engagement encompassed all three components of the study. CTE students admitted they already had an interest in the topic, which is why they chose to take the class and made staying engaged in the class easier. The non-CTE students reiterated that their general education classes were required and it didn't matter if they had an interest or not; they still had to take the class in order to graduate.

Part of student engagement for both groups included the teacher's ability to make the content understandable as well as relevant. These elements fall under the components of clarify and captivate. As was mentioned earlier, CTE student perceptions were that their teachers explained difficult concepts in multiple ways so all students were able to understand. CTE students also rated their teachers high (76%) when it came to lessons that were enjoyable and learning that was interesting. Non-CTE students rated this area at 56%.

One of the most striking results of the survey in the area of student engagement occurred in the component of captivate. One of the item statements asked students to respond to this statement: "This class does not keep my attention—I get bored." CTE students overwhelming disagreed with this statement (73%), while 0% of the non-CTE students disagreed with the statement. During the focus groups, this question was addressed. Both groups confirmed the result. The CTE students said their classes were engaging and kept their interest because the class topic interested them, the teacher made the lessons enjoyable, and they could see relevance to what they were learning. This applied learning was not recognized in the non-CTE groups. In fact, because they did not choose the class, they felt they didn't have much say on how it impacted their learning. The content was all the same and not customized to individualized

learning. Upon further probing, students perceived that the class was taught the same to all the students, and therefore there was no differentiation of teaching based on student interest. Once again, the word "formal" came up when discussing general education classes.

Environment. The final theme was *environment*, which spoke to how the classroom was arranged and how the students felt about being in the classroom. The frequency for this theme ranked second for the non-CTE students, while the CTE students ranked environment fourth. The components that associated most with environment were captivate and care; however, elements of classroom management also were discussed within this theme.

Both groups had strong feelings about classrooms and how they were arranged and decorated. Students in the CTE group were used to seeing student work displayed, which showed them the teacher cared about what the students were producing as well as being able to showcase completed projects. They also saw the environment as a way to keep students engaged because they could see what they were going to do in the classroom since student work was prominently displayed throughout the room. Because of this expectation, the classroom environment was not a focus of CTE students, which may have accounted for the lower ranking.

The CTE and non-CTE students talked about the lack of student work displayed in their non-CTE classrooms. Both groups talked about general education classrooms being boring and bare. Both groups also said they could tell how the teacher was going to be based on how their room was arranged and decorated. If the room had student work displayed and relevant content about the course displayed, then the teacher was going to "fun" and "interesting." If the room was bare and didn't have anything on the walls, then the teacher was going to be "boring." The CTE student group took it a step further and said rooms without any student work displayed or

were devoid of decorations was a "stressful" environment, and they immediately had a mind-set that the class was not going to keep their attention.

Classroom management was not found to have a significant difference between the two groups in the survey; however, during the focus groups, classroom management elements emerged. Both groups talked about the way teachers addressed unacceptable behavior in the classroom. The CTE group did not see a lot of misbehavior and credited that to engaging and relevant content and a welcoming classroom environment. Non-CTE student perception of classroom management differed because the environment was not always welcoming and not all the students were engaged in the content. There was not the "buzz' in general education classrooms that were present in CTE classrooms.

Conclusion: **Focus Groups**

The focus groups served as a tool to gather information that addressed the qualitative portion of the research. Analysis of the focus groups' themes answered research question 2: What are students' perceptions of engagement in CTE and non-CTE classes? The data for the formulation of questions asked during the focus groups came from the analysis of the student perception survey students had taken previously. The three main areas of focus were care, captivate, and clarify; however, elements of classroom management and challenge were also discussed.

Four themes emerged from the focus groups. In order of frequency, the CTE group results were (1) teacher, (2) content, (3) student engagement, and (4) environment. The non-CTE group themes in order of frequency were: (1) teacher, (2) environment, (3) student engagement, and (4) content.

The discussions within both groups brought out a number of interesting perceptions from the students. In the theme of teachers, CTE students spoke about their teachers caring about their learning and making the classes enjoyable and fun. They also remarked how teachers were aware of student problems and issues and offered their help. Content was seen as interactive and relevant and keeping their interest and attention. Student engagement was high in the CTE group because they had an interest in the content, and their teachers taught in a manner that was individualized. The environment in CTE classes was described as inviting and welcoming with a lot of student work on display.

In contrast, the non-CTE group discussed general education teachers as being "formal" and just going through the lessons the same way for all their classes. They did not see much interaction nor did they feel their teachers had the time to really get to know their students. The content did not interest all of the students, which led to classroom management issues and students being disengaged. For many the environment was not inviting as it did not contain a lot of student work or relevant information on the walls or within the classroom. Student engagement was dependent upon the topic; however, for the most part the work was mundane and did not keep the attention of the students.

While there were many differences between the focus groups; there were also some areas that both groups agreed upon. One area of agreement was the need for students to invest their own time and energy into the class in order to learn. Both groups reported that while the teachers were the experts and were there to teach the concepts of the subject area, students had a certain responsibility to their own learning. However, CTE students did say that learning was more enjoyable because they already had an interest in the topic, and the teacher worked with them and encouraged them, while still pushing them to succeed. The expectations of success were

much higher with the CTE group than the non-CTE group. The CTE group agreed that the

teacher was there to push and encourage until the student was successful.

Conclusion

A summary of the findings from this mixed-methods study was presented in Chapter IV.

The quantitative portion of the study (student perception survey) showed that CTE classes had an

impact on students in the areas of care, captivate, and clarify. Results from the survey were used

to direct the questions asked in the focus groups, addressing the qualitative portion of the study.

Four themes emerged (environment, student engagement, teacher, and content) as students

discussed their perceptions of CTE and non-CTE classes. Students reported teachers in CTE

classes were more caring, provided environments that were welcoming, and gave students a

sense of belonging. CTE content was also seen as more interactive and relevant, which kept

students engaged and motivated to stay in school. Chapter V discusses the implications and

recommendations from the results of this study.

Chapter V

Discussion

Introduction

This study explored elements that influence student engagement in the context of CTE classes (Hanover Research, 2013; Tripod Education Partners, 2015). A mixed-methods study design was used to fully explore perceptions of students in order to determine if there are significant differences between student perceptions in CTE and non-CTE courses. The quantitative data were gathered using a student perception survey. Student perception surveys have been recognized as reliable and valid methods of measuring teaching effectiveness, which correlates directly with student engagement and motivation (Hanover Research, 2013; Tripod Education Partners, 2015). Studies have also shown that a high level of student engagement increases the chance for students to stay in school and graduate on time (Plank et al., 2005; Neild et al., 2015; Rose & Akos, 2014; Schultz & Stern, 2013). For the qualitative portion of the study, focus groups were utilized to hear the student voice related to the research questions. Chapter V provides meaning from the data, implications of the study, and suggests further research possibilities.

Summary of the Results: Quantitative

The Tripod Student Perception Survey—Version 2016 was used to collect the quantitative data for research question 1: Do CTE programs have an impact on student engagement? Using a 5-point Likert scale, the online survey asked students to rate their opinions in seven areas that have shown to be highly effective in teaching (Hanover Research, 2013; Tripod Education Partners, 2015). The sample size was 220 students enrolled in CTE ($n = 101$) and non-CTE ($n = 119$) courses in grades 11 and 12. Four comprehensive high schools from two

school districts in the Pacific Northwest region of the United States agreed to participate in the study.

The survey consisted of 34 questions and took between 25–30 minutes to complete. The seven component areas were (a) care, (b) confer, (c) captivate, (d) clarify, (e) consolidate, (f) challenge, and (g) classroom management. Cronbach's alpha reliability tests were performed for each component, as well as the overall survey, and were found to exceed the accepted threshold of $\alpha > .7$. Results of independent t tests showed significant differences in the components of care ($p = .000$, $\alpha < .05$), captivate ($p = .000$, $\alpha < .05$), and clarify ($p = .000$, $\alpha < .05$), as well as the overall composite score ($p = .000$, $\alpha < .05$).

The component *care* showed significant differences in the responses by CTE students and non-CTE students ($p = .000$, $\alpha < .01$). Care falls into the personal support category where students' emotional and academic needs are met in an environment that is supportive and safe and teachers establish personal relationships with students (Tripod Education Partners, 2015). There were three item statements within this component. The overall item statement responses were higher for CTE students (33%) than non-CTE students (9%). Results showed that more students saw their CTE teachers showing care (59%) than non-CTE teachers (14%). Creating a sense of belonging for students is vital to keeping students engaged and motivated to stay in school (Joyce, 2015; Klem & Connell, 2004; Neely & Griffin-Williams, 2013; Plank et al., 2005; Ronica, 2013). CTE students perceived their teachers to understand their feelings and to know when something was bothering them, as evidenced by their favorable ratings within the three item statements that addressed those elements. CTE students responded with 88% favorable ratings when compared with non-CTE students' 60% favorable ratings.

Captivate showed significance based on the survey ($p = .000$, $\alpha < .01$). In the area of captivate, students are engaged in learning. Teachers prepare lessons that are interactive and relevant for the student (Tripod Education Partners, 2015). Students saw CTE classes more interactive and relevant (65%) over the non-CTE courses (54%). The element of keeping students engaged is the ability to keep the lesson interesting so students don't get bored. An item statement pertaining to keeping student interest was included on the survey. Students overwhelmingly responded that they did not get bored in CTE courses (73%), as compared to non-CTE courses (0%).

The third component that was found to be significant was *clarify*. Clarify speaks to the teacher's ability to help students understand the concepts using a variety of instructional strategies. Nine item statements in the survey measured student perceptions. CTE students responded with a higher favorable rating (27%) as compared with non-CTE student ratings (18%). The teacher's ability to explain the concepts in ways students could understand allowed the students to stay engaged. Clarify also addressed the area of feedback. Two item statements addressed this element, and CTE students responded with an average favorable rating of 33% versus a non-CTE student rating of 22%.

The overall survey also showed significant differences between CTE students and non-CTE students ($p = .000$, $\alpha < .01$). The survey is used to measure the essential elements of effective teaching and provide feedback to teachers that can be incorporated into their instructional practice (Tripod Education Partners, 2015). Although only three components showed significance, the overall composite score of the survey showed significance ($p = .000$, $\alpha < .01$). Even though four components did not show significance with this particular sample group (confer, consolidate, challenge, and classroom management), that does not mean they are not

integral to effective teaching. The seven components work together to address the social, emotional, and academic support needs of students (Tripod Education Partners, 2015). These components may not have shown significance based on the sample size and demographics of the sample. However, the overall composite score did show significance, which led this researcher to believe that, as a compilation of the components, there existed enough differences between student perceptions to show significance.

Implications of Quantitative Data

Students should be encouraged to participate in CTE courses. CTE courses not only have been shown to increase student achievement and engagement but they are particularly beneficial for students who are at-risk of dropping out or becoming disengaged (Castellano, Sundell, Overman, & Aliage, 2012; Loera et al., 2013; U.S. Department of Education, 2016). Teachers in general education courses could incorporate strategies used by CTE teachers in order to show caring to students—actions like taking the time to ask students how things are going, or offering help when they see a student is struggling. CTE strategies may assist general education teachers to enhance a sense of belonging and engagement of students. Professional development opportunities that address student engagement strategies and how teachers can portray caring to their students should be offered. Peer observations and cross-curricular planning opportunities between CTE and non-CTE teachers could also help teachers enhance caring and a sense of belonging.

CTE classes keep students engaged (captivate) through interactive lessons in areas that students already have an interest. General education courses should infuse components into their lesson that allow students to be more involved in finding solutions to intriguing problems and encouraging creativity. Integrating more personalized learning into the structure of the class

could raise the level of student engagement in general education courses. General education teachers could incorporate varied and proven engagement practices used by CTE teachers in their classes. Administrators should encourage general education and CTE teachers to collaborate with each other, as well as offer opportunities for peer observations. General education courses should offer more applied learning so students are able to see the relevance of the concepts being taught and how concepts can be applied in life beyond graduation.

Summary of the Results: Qualitative

Focus groups were utilized to gather the data for the qualitative portion of the study. Focus groups are an effective manner to gather data based on emotions, attitudes, and feelings (Dilshad & Latiff, 2013). Seven students who participated in the survey volunteered to participate in the focus groups. Two focus groups were conducted: CTE (four students) and non-CTE (three students). Each focus group was held separately and lasted for about 30 minutes. Audio recordings were made to ensure accuracy of student comments. Transcripts were generated from the audio recordings and analyzed for patterns and themes. The guiding questions for the focus groups were based on the results of the quantitative data from the student perception survey. The main questions asked in the focus groups related to the components that showed significance from the survey; however, further components were addressed by the students as the conversations evolved.

Four themes emerged from the analysis of the focus groups: (a) *teacher*, (b) *environment*, (c) *student engagement*, and (d) *content*. While the themes ranked differently within frequency of responses between each group, teacher had the highest response frequency of both groups (CTE, 50%; non-CTE, 47%). Content had the next highest frequency from the CTE group (27%), followed by student engagement (16%) and environment (7%). The non-CTE group saw the

second highest frequency in the theme of environment (26%), followed by student engagement (18%) and content (8%).

Theme 1: Teacher. *Teacher* had the highest frequency rate from both focus groups. The frequency rate in the CTE group was 50% while the rate was 47% for the non-CTE group. CTE students reported they knew their teachers cared for them by what they did and said during class. For example, CTE students talked about teachers taking time to ask them how they were doing and inquiring whether they needed any help. Another way teachers impacted students was when they would ask for input about the class and what could be done to improve the lessons or activities. To this point, Tiffany (CTE student) stated, "Mrs. A asked if there any improvements that we need to make for next time. And we all gave our input and then the next time we played Jeopardy, she added those things into the game."

The non-CTE group, however, said their teachers in general education classes were seen as more "formal" and intent on getting through the material, rather than getting to know the students and checking for understanding. Personal support by teachers in general education classrooms, while present, was not at the level of those in CTE classrooms. Ashlee, who participated in the non-CTE focus group but had taken a couple CTE classes, stated, "The teachers can go to some students and do that, but they can't always go to every single student, and you can do that more in a CTE class." Tiffany (CTE student) spoke about how teachers were the ones that made the class good or bad:

Right now, my English teacher is really energetic and always likes to do things like Jeopardy and do some activities like class discussions. And so, if there is a question, we all try to discuss it and try to answer it. But in years past, I've had English teachers that

like are completely different and are all about just doing the reading, doing the

homework, taking tests, and…being boring.

Kay (non-CTE student) also commented about how she felt when teachers did not take the time

to get to know students:

[S]ome teachers who are nice to you and actually care about your education makes me

want to go to school, and then there are other teachers who make you feel like you're not

good enough. To make you feel like you're not smart and so on.

CTE teachers' lessons and activities were seen as interactive and engaging, which kept

students interested in the class. There was an element of personalization in CTE classes that was

not seen in the non-CTE classes. Travis (CTE student) stated, "[I]f someone is interactive in a

class, it makes it a lot easier. So, I'm doing something I more or less enjoy, and it's helping me

learn at the same time and making it easier to learn." Results support that CTE classes are more

enjoyable as CTE students reported a favorable rating at 76% to a non-CTE rating of 56%.

General education classes were seen as more *formal* and *structured* (Travis, CTE student)

and did not allow for individualized learning styles or students to use their *creative juices* (Wade,

CTE student). Non-CTE student Kay remarked about one of her general education teachers when

she was struggling with a particular concept,

[E]very single time I would ask him a question, he would…look at me like I'm crazy and

why are you asking that question, like you should know this. But I learn differently than a

lot of his students, and he doesn't see that.…I'm a visual learner and he doesn't know

how to teach visual learners, so he made me feel I wasn't smart because he would look at

me like I was dumb.

Wade (CTE student) also said he learned more from lessons that were interactive and not so structured:

> [W]ell, at least for me…sitting down and taking notes on lessons for me doesn't really work, especially in classes like math. I can't…take the notes and listen at the same time. So, if someone is interactive in a class, it makes it a lot easier. So, I'm doing something I more or less enjoy, and it's helping me learn at the same time and making it easier, I suppose.

Non-CTE students expressed their thoughts about how teachers in their general education classes were not specific nor did they make learning relevant. They were just teaching the concepts, and because the topic was so large, they would not have time to check for student understanding. Rachel spoke to this point when she stated,

> I feel like math and English is just like Ashlee is saying. It's such a huge subject, and you can't really take the time to always go to each student and say, hey, are you understanding this and if not, what can we do?"

Implications for the theme of teacher. Teachers are a critical element to our education system (Ehrenreich et al., 2012; Gentry et al., 2007; Tennant et al., 2014). They bring the personal support to the classroom and are the ones to make the biggest differences in student learning. Teachers who are caring and take time to get to know their students are able to engage their students at a higher level. Students need a sense of belonging, and that is generated by how the teacher interacts with them. When students see this care and interest from a teacher, engagement levels go up, and students want to come to class. Professional development opportunities addressing how to incorporate this personal support into the classroom should be offered for all faculty and staff. Based on the student voice around the theme of teacher, it is

clear that when the teacher takes the time to create a relationship with the student, learners are more apt to be successful.

Theme 2: Environment. The *environment* of the classroom had an impact on student perceptions of how the class was going to be taught. Students saw an alignment between classroom environment and teachers. CTE environments were seen as welcoming and encouraging students to participate. Display of student work within the classroom showed teachers cared about their students and took pride in the work they produced. Student work gave the classroom a welcoming feel. Kay gave her view on how she saw the environment of her CTE classrooms: "Yeah, it's like a homey area. And then [with] other teachers it's all formal and perfectly organized and there's not a spot anywhere, and you are like, welcome to prison."

Student perceptions of general education classrooms that did not have student work displayed were seen as stressful. Students made the judgment that the teacher was not going to be a good teacher. Rachel commented, "Okay, so if their room is really straight and perfect and everything, it's almost a guarantee that the teacher is not a good teacher." Her statement, followed closely by Kay, who stated, "Or like really stressful to be in his class." Rachel followed up on her comment regarding her perception on teachers who do not display student work or make the room welcoming: "Yeah, if it's like blank walls and then completely straight tables and everything, you are like, this teacher is hard."

Classrooms that displayed student work created warm and welcoming environments, which gave a sense of belonging to CTE students. Classrooms that did not have student work displayed or were highly "organized" (Wade) made students feel like the teacher didn't care and created a stressful environment. Students equated the classroom environment to the personality of the teacher as well. Classrooms that had student work on display meant the teacher was going

to be "fun" (Skylar), as opposed to a classroom that was "perfectly organized" (Kay), leading to the perception that the teacher was going to be "mean" (Tiffany).

The environment in CTE classrooms was very interactive and allowed students to explore their own interests. CTE classrooms environments were project-based and gave students the opportunities to explore a variety of ways to solve a problem or design a project. This applied learning is what students enjoyed about their CTE courses. Travis talked about his digital photography class as being all hands-on: "Mrs. N. gave me the camera and told me to start taking pictures." Tiffany agreed with Travis and added that in her finance course, they created their own budgets based on specific criteria: "[W]e were given a certain amount of money, and we had to decide how we were going to spend it." Wade also commented how his CTE classrooms were *"fun because everyone was doing something and not just sitting listening to the teacher and taking notes."*

Implications for the theme of environment. Regardless of the content being taught, teachers should take the time to create an environment that is welcoming and inviting to students. When students walk into the room, they should be able to "feel" that the teacher cares and that the room is student-centered. Display of student work should be prominent in order to capture the students' attention when walking into the classroom. Classrooms need to match the content being taught so students are "seeing" what they are going to learn. Organization of the furniture should be arranged in a manner that allows students to feel a part of the class rather than in an environment that is made up of perfectly straight rows of desks and little or no student displayed work. The environments also need to be interactive for students so they can stay engaged with the topic. Students who are actively working on a project to learn the concepts are more engaged and focused. General education teachers may want to see how a CTE course operates when

students are using applied learning techniques, so they could apply the same type strategies in their own classrooms.

Theme 3: Student engagement. *Student engagement* had a frequency level of 16% for CTE students and 18% for non-CTE students. However, the reasons were varied. Student engagement was high in CTE classes because the work was relevant, but students did not fixate on that piece because they already had an interest in the topic. Upon further probing, CTE students said they knew their CTE classes would be engaging, and therefore they didn't think much of it when they talked about the class. On the other hand, student engagement from the non-CTE group was missing in those classes. Their general education classes were very traditional in nature, where the teacher gave a lecture and then assigned the students work to complete. Noteworthy though is that the non-CTE students did not necessarily blame their general education teachers for lack of student engagement but rather the breadth of material they had to cover made it hard for them to engage all students. Rachel summed up her feelings regarding content in general education classes to content in her CTE classes:

> I feel like math and English is just like Kay is saying; it's such a huge subject and you can't really…take the time to always go to each student and say, hey, are you understanding this and if not, what can we do? And I mean the teachers can go to some students and do that, but they can't always go to every single student, and I feel like you can do that more in a CTE class.

Implications for the theme of student engagement. Student engagement hinges upon how students see the course being relevant to their learning (Loera et al., 2013). Much like adults, students need to see the reason or purpose in order for them to be engaged and willing to learn. CTE classes are engaging because they use applied learning as a model. General education

courses could increase student engagement by allowing students to be active participants in the process. CTE teachers ask for input on how to make their classes better. During the CTE focus group session, students commented that when their teachers asked for input about the class and the activities, they felt they had a voice in the outcomes of the class. General education teachers could do the same and ask for student input in order to make the course more aligned to student needs. General education teachers could raise student expectations and work alongside the students to help ensure those expectations are met. Again, through professional opportunities and peer observations of CTE classes, general education class teachers could incorporate more opportunities to work alongside the student when teaching a concept, rather than use traditional methods of instructions such as lecture. . Much like CTE classes integrate academic elements into their courses, general education teachers could integrate CTE elements of applied learning into their courses. Future curricula could be infused with applied learning strategies that allow students to be more involved in their learning and increase the level of relevancy within the courses. Administrators should reduce barriers between CTE and non-CTE courses by providing opportunities for cross-sector collaboration between CTE and non-CTE programs.

Theme 4: Content. *Content* was a theme that emerged with a frequency of 27% in CTE classes and 8% in non-CTE classes. The difference based on student comments was the CTE content was specific. Non-CTE classes were more general and covered a wide array of material. CTE student Kay mentioned that her photography class was all about learning how to take pictures and the hands-on experience of learning how to operate the camera. She compared that with her history class where she was taught events that happened in history from medieval times to present day. She said there was so much material that it was hard to stay focused, yet photography, because it was centered on the proper ways to take pictures, was much more

engaging. The terms "formal" and "structured" kept coming up when students discussed general education content, while the terms "interactive" and "specific" were mentioned several times when discussing CTE content.

   Implications for the theme of content. *Content* needs to be structured so students can see the relevance of what they are being asked to learn (Loera et al., 2013; Rose, 2014). Students need to see how the content impacts their lives. Strategies that incorporate the student's background knowledge should be implemented. Part of content is the rigor of the material. CTE programs use applied learning that engages students in the work in meaningful ways. CTE programs require students to be critical thinkers and to look at a variety of ways to solve problems. General education courses could use the same applied learning in their classrooms to help students see the importance of learning the material. Applied learning brings intellectual rigor together with the application of the concepts for a deeper level of understanding (Rose, 2014). A critical part of the common core standards initiative is that students have to demonstrate their knowledge through performance tasks on state mandated assessments to comply with NCLB and ESSA (Richner, 2014). These performance tasks contain real-world situations that have a CTE basis (Richner, 2014). The ability of applying this learning to solve a real-life situation requires students to "do more critical thinking in a contextual setting, which really gets at many of the broad goals of the standards (Richner, 2014, p. 28). General education teachers could bring in the elements of applied learning to increase the critical thinking of students to enhance student learning.

Implications of Qualitative Results

   The four emerging themes, *teacher, environment, student engagement,* and *content*, impact students in the essential categories of effective teaching. Personal support is seen through

the *teacher* and *student engagement* factors, which describe how relationships are created. Curricular support is seen through *content* that is interactive and keeps students' interest. Academic support requires classroom conditions that are conducive to student leaning, which is seen through the *environment* created.

However, overall the teacher is the key for higher levels of student engagement and sense of belonging (Bridgeland et al., 2006; Hardy-Fortin, 2013; Khalkhali et al., 2013; Klem & Connell, 2004; Kosterelioglu & Kosterelioglu, 2015). Regardless of the subject area, teachers make an impact on student engagement and learning. When students feel a sense of belonging, they become open to learning. When learning becomes interactive, students become more engaged. When students are more engaged, their level of success and achievement rises. All of these elements working together will help reach the goal of a 90% graduation rate by 2020. But more importantly, it will also prepare students to be college and workforce ready (Kemple & Snipes, 2000; Mainhard, Wubbles, & Brekelmans, 2013).

Conclusions

This mixed methods study examined the following research questions:

1. Do CTE programs have an impact on student engagement?

2. What are students' perceptions of engagement in CTE and non-CTE classes?

Question 1. The Tripod 7Cs Student Perception Survey—Version 2016 was used to provide the quantitative data to answer question 1. The survey was administered to 220 students enrolled in CTE classes (*n* = 101) and students enrolled in non-CTE classes (*n* = 119). The students surveyed were in grades 11 and 12 from two school districts located in the Pacific Northwest region of the United States. IBM SPSS Statistical Software, Package 24, was used to conduct all statistical tests.

Independent *t* tests conducted showed significant differences in the components of care (*p* = .000, α < .05), captivate (*p* = .000, α < .05), and clarify (*p* = .000, α < .05). The overall composite score also showed significance (*p* = .000, α < .05).

In the areas of significance, students indicated that their CTE classes had an impact on their engagement. When students spoke of engagement, they talked about how the curriculum was challenging yet they could see how learning the material would help them in their future. Students also talked about staying in the class because their teachers showed more caring and worked with them to master the concepts. They also tended to have an emotional attachment to students and knew if something were bothering students. Results indicated CTE teachers were better at clarifying concepts being taught and took steps to make sure students are understanding the material. CTE teachers explained difficult concepts in ways students could understand. CTE classes were identified as being more interactive with lessons that were relevant and meaningful to students. CTE classes were more interesting and kept students from getting bored than non-CTE classes (73% CTE; 0% non-CTE).

Question 2. Focus groups were used to gather the data for the qualitative part of the study and were used to answer question 2. Two focus groups, (a) CTE and (b) non-CTE, were conducted. The CTE group consisted of four students, while the non-CTE group consisted of three students. The data revealed four themes: (a) *teacher,* (b) *environment*, (c) *content,* and (d) *student engagement*. The common perception of the students was that teacher, regardless of whether they were CTE or non-CTE, were the critical piece to student engagement. Students from both focus groups indicated that their teacher determined how the class was going to be perceived and whether the students were going to enjoy the class.

While *teacher* had the highest frequency of responses from both focus groups, the reasons varied between the two groups. CTE classes used applied learning, which allowed teachers to work more on a one-to-one basis with students, creating a sense of belonging for the students. CTE class content was more interactive, and students were allowed to use their own *creative juices* to show mastery of concepts. General education classes were grounded in theory and did not allow for much individualized learning of the concepts.

The other themes that emerged from the focus groups (*environment, content,* and *student engagement*) indicated that CTE programs offered a system where students put theory into practice. The lessons were such that allowed students to personalize their learning based on their interests. The classrooms were warm and welcoming and displayed student work, which was interpreted as the teachers caring about their students. Students involved in CTE programs were more engaged in their education because the course work was relevant and meaningful. Students were able to apply what they learned in CTE courses in real-world situations. CTE programs offered supportive adults who had a common interest in the content being taught.

Overall, CTE programs had an impact on students that was positive, based on the areas that were found to be significant and further supported by student comments that were made in the focus groups. CTE programs provided a way in which students saw their education as relevant and meaningful and provided supportive caring adults who took the time to make sure students were able to be successful. CTE programs provided students with skills and real-world experiences, getting them ready for college and the workforce.

Recommendations for Further Research

Our educational system continues to struggle with student engagement and motivation (Asunda et al., 2015; Bloomfield et al., 2013). CTE programs have been proven to keep students

engaged and on track to graduate (Bloomfield et al., 2013; Bozick & Dalton, 2013; Hardy-Fortin, 2013; Schultz & Stern, 2013). Although this study adds to the existing research regarding the impact CTE programs have on student engagement and motivation, further research is needed regarding how the strategies used in CTE courses could be incorporated in general education courses in order to increase student engagement and motivation.

This study showed that CTE programs have a significant difference in student engagement in three of seven areas of highly effective teaching. Further qualitative research is needed to hear the student voice as it pertains to engagement and motivation. This voice could strengthen the argument that CTE programs provide ways for students to stay engaged, which in turn lead to higher graduation rates and lower dropout rates.

A further research recommendation would be to explore the impact of CTE classes in specific demographic subgroups, such as gender and socioeconomic status. Such a study may reveal what effect CTE classes have within specific subgroups. The results could lead to implementing strategies specifically to address those groups to increase student engagement.

Implication for Professional Practice

There have been numerous studies regarding CTE and how it impacts student engagement and graduation rates (Asunda et al., 2015; Bloomfield et al., 2013; Bozick & Dalton, 2013; Castellano et al., 2003; Choi et al., 2015; Coppes, 2016; Hardy-Fortin, 2013; Schultz & Stern, 2013). Professional development opportunities could be designed to study those CTE components that have shown to have an impact on student engagement.

CTE programs offer a wide variety of ways in which academics are integrated into the curriculum, which could have implications on how core academics are taught in comprehensive high school settings. Cross-curricular courses, as well as partnering with postsecondary

institutions and industry, could allow schools to tap into resources they have not had in the past and allow students to have real-world experiences while still in high school. Many CTE courses meet academic standards but do it in a manner where students are actively involved. This applied learning allows students to see the relevancy of their work and know it is something they will be able to use in the future. Results of such studies could be important as educational systems work to increase student engagement, lower dropout numbers, and raise graduation rates.

Conclusion

During this mixed-methods study, students were asked their perceptions about their education. A student perception survey generated the data for the quantitative part of the study, while focus groups generated the data for the qualitative part of the study. Overall, CTE courses were seen to have a significant difference in student engagement levels in the areas of *care, captivate,* and *clarify*. CTE teachers were seen as more connected to their students (care) because they recognized when something was bothering their students and understood how students felt about things. They also expected their students to be persistent in their learning and motivated to be successful (captivate, care, and clarify). The content was more interactive and kept the students engaged in the course work (captivate). The environment of the classrooms was also more welcoming and conducive to learning (care and captivate). Expectations that students would not only know the material, but also understand the material was more evident in CTE courses than non-CTE courses (clarify and captivate). Skylar summed up the overall feeling about her CTE teachers and courses when she said,

> Ms. A, just like her being so upbeat and all, is really enjoyable, and she makes these
>
> funny faces sometimes, and you wouldn't think that for a junior or senior that wouldn't

really matter all that much because we've been in school for so long, but she just makes these funny faces, and she puts you in a better mood. And I feel like I want to learn.

CTE programs have undergone tremendous changes since their first inception into the educational system. What once was the placement for students where college was not the next step has now become an essential component in the definition of well-rounded education. Students stay in school when they are engaged in the course work and can see how courses they take prepare them to be successful in the world of college and work. Even as the graduation rate increases, there are still students who are opting to drop out. Educational reforms, such as ESSA, provide a blueprint of how to ensure our students receive the education needed in order to compete in a global society.

CTE programs provide a way for students to participate in a system that puts theory into practice. Through CTE programs, students actively participate in courses which provide skill sets and experiences that prepare them for college and the workforce. CTE programs offer students more than just the knowledge of the concepts. It also offers the chance to explore their own interests in environments that are student-centered with academically rigorous curriculum taught by caring adults who are there to facilitate individualized learning.

Today's educational system must have a shared understanding of how academic and career-technical courses work in tandem to produce students who are prepared to be successful in post-secondary education and the workforce (Fletcher, Lansonen, & Hernandez, 2014). CTE advocates have been purposeful in creating the shift to integrate academics into CTE coursework as a viable option to traditional general education courses that cover theory more than application (Fletcher, Lansonen, & Hernandez, 2014). Conversely, as this study suggests, many of the

attributes of CTE classes could be expanded into all coursework to create a more full educational

experience for students.

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Appendix A

Bureau of Labor Public Domain Disclaimer

All text, charts, and tables presented are in the public domain, and, with appropriate credit, may be reproduced without permission. Most photographs and illustrations are protected by copyright. Comments about the contents of this publication and suggestions for improving it are welcome. Address all comments to Chief, Division of Occupational Employment Projections, Office of Occupational Statistics and Employment Projections, Bureau of Labor Statistics, U.S. Department of Labor, 2 Massachusetts Ave. NE, Room 2135, Washington, DC 20212. Phone: (202) 691-5700. FAX: (202) 691-5745. Email: Contact us. Additional information is available at https://www.bls.gov/ooh/. Information in the *OOH* is available upon request to individuals with sensory impairments. Voice phone: **(202) 691-5200**; Federal Relay Service: **(800) 877-8339**.

Appendix B

Permission to Use Meta-Regression Model Statistics for Dropout Rate Analysis

Chappell Moots, Shanan   Jan 17 ⭐   ↩   ▼
to me ▾

Hi Kim,

Thanks for contacting me. As you know, that report was completed and published two years ago and was the product of several years' work. Since then, I have revised the study and have updated findings in a manuscript that is currently under review by the Journal of Education for Students Placed At Risk (JESPAR). In the updated version, we found a statistically significant effect size of 0.81 (alpha level of .01) for dropout prevention programs that employ career development/job training strategies. It is important to clarify that this is an effect size of this particular strategy specifically on dropout rates and not on engagement in learning or any other outcome.

As long as you cite my work appropriately, I approve your use of the findings in this study. I'm not sure when you expect to complete and defend your dissertation, but if you'd like to contact me just before you finish your final draft, I can advise you as to the status of my manuscript with JESPAR as the citation would be different if it is accepted for publication.

I wish you the best of luck in this final stage of your doctorate. It's a long and difficult journey but it appears you are nearing completion. ☺ Thanks, and take care!

Shanan Chappell Moots, Ph.D.
Associate Director for Quantitative Analytics
Research Assistant Professor
The Center for Educational Partnerships, Old Dominion University
Research Fellow
National Dropout Prevention Center, Clemson University
757-683-6957
schappel@odu.edu

Kim Eimers <kkeimers@nnu.edu>   📎 Jan 15 ⭐   ↩   ▼
to schappel ▾

Hello

My name is Kimberly Eimers and I am a doctoral student with Northwest Nazarene University. I am currently finishing my dissertation and came across your study about dropout prevention. I was hoping to use one of the tables within your study in my own study and am writing for permission to do so.

I have attached the document and am referring to the table that talks about effect size on page 12. The table fits right in with my topic that career development has a significant effect size on keeping students from dropping out and/or engaged in their own learning.

If you have any questions, please feel free to contact me at this email address or by phone at 208.919.5513.

Thank you in advance for your consideration of my request.

Kimberly Eimers

Appendix C

Permission to Use *Two-Model Component Framework for School Reform;*
Three-Model Component Framework for School Reform

Adelman, Howard   Jan 16
to me

Hi Kim,

You have our permission to use any of the graphics in the article.

Best wishes,

Howard Adelman, Ph.D.
Professor of Psychology &
Center Co-director
Dept. of Psychology, UCLA
Los Angeles, CA.   90095-1563
Ph: 310/825-1225
Email: adelman@psych.ucla.edu
http://smhp.psych.ucla.edu

Kim Eimers <kkeimers@nnu.edu>   Jan 15
to adelman

Hello

My name is Kimberly Eimers and I am a doctoral student with Northwest Nazarene
University. I am currently finishing my dissertation and came across your study about
dropout prevention. I was hoping to use one of the tables within your study in my own
study and am writing for permission to do so.

I have attached the document and am referring to the table that talks about effect size
on pages 26 & 20. The graphics fit into my topic as I talk about how schools must deal
with outside barriers on the inside and how schools need to add extra layers in order
to keep students from dropping out.

If you have any questions, please feel free to contact me at this email address or by
phone at 208.919.5513.

Thank you in advance for your consideration of my request.

Kimberly Eimers

Appendix D

Permission to Use *Comparative Points Between General Education and Vocational Education*

To   Eimers, Kimberly

Cc   Vesely, Carolyn

ⓘ You replied to this message on 3/14/2017 12:18 PM.

Bing Maps

Kim,

I see that you had asked for this permission in mid-February. Yes, it is OK to use the table. I would ask though that you credit CETE:

"Used with permission from the Center on Education and Training for Employment, College of Education and Human Ecology, The Ohio State University."

And cite the source.

Thanks, and best of luck with your dissertation!
Bob

THE OHIO STATE UNIVERSITY

Robert A. Mahlman, MA, PMP
Director
Center on Education and Training for Employment
1106, 1900 Kenny Road, Columbus, OH 43210
614-292-9072 Office
mahlman.1@osu.edu   cete.osu.edu

From: Eimers, Kimberly [mailto:KEimers@nkschools.org]
Sent: Monday, March 13, 2017 7:31 PM
To: Mahlman, Robert <mahlman.1@osu.edu>
Cc: Eimers, Kimberly <KEimers@nkschools.org>
Subject: PERMISSION TO USE TABLE
Importance: High

Hello

I'm currently working on my doctorate from Northwest Nazarene University and I would like permission to use a table that Michael Wonacott had in a book that you published.

Thank you

Kimberly

~~~~~~~~~~~~~~~~

Kimberly Eimers

Appendix E

Permission to Use *What Teachers Do to Keep Students Engaged and Motivated;
What Schools Can Do to Reduce Students From Becoming Dropouts*

Kathleen McMahon   Jan 30 ☆   ↰   ▾

to me ▾

Hi Kim,
You are welcome to use the graphics, but please make sure you cite the report on the slide or in
the narrative.

Best,
Kathleen

...

--
Kathleen McMahon
Chief Operating Officer and Chief of Staff
Civic Enterprises
1110 Vermont Avenue NW
Suite 950
Washington, DC 20005
Direct Line: 202-898-9387
Main Line: 202-898-0310
Mobile: 703-868-6981
Fax: 202-535-7801
kmcmahon@civicenterprises.net
www.civicenterprises.net

Kim Eimers <kkeimers@nnu.edu>   🔗 Jan 22 ☆   ↰   ▾

to kmcmahon ▾

Hello
I am a doctoral student at Northwest Nazarene University in Idaho. I am asking for
permission to use graphics that I found in one of your reports written by Bridgeland,
Dilulio, & Morison, 2006. The title is The Silent Epidemic: Perspectives of
high school dropouts. and was published in 2006. I have attached the article
for your reference.

I would like to use the graphics found on page 5 (Teachers Doing Well, But
Could Be Doing Better) and page 13 (What Dropouts Believe Would
Improve Students' Chances).

Thank you in advance for your consideration to this request. If you have any
questions, please contact me at this email or by phone at 208.919.5513.

Kimberly Eimers

Appendix F

Permission to Use *Tripod Framework; The Three Legs of Tripod Framework;* *The Vision of Tripod Surveys*

Ashley Southard   Feb 1 (12 days ago)

to me

Hi Kim,

You can cite our Technical Manual. Please use the following citation:

Tripod Education Partners. (2015). Tripod's 7Cs framework of effective teaching: Technical manual. Cambridge, MA.

Best,
Ashley

On Tue, Jan 17, 2017 at 6:17 AM, Ashley Southard <ashley@tripoded.com> wrote:

> Hi Kim,
>
> Thanks for reaching out again, and my apologies for not closing the loop on this. Our team has confirmed that you can use the graphics from the report. I did not ask about referencing the *Technical Manual* and will need to follow up on that piece.
>
> I will be in touch shortly.
>
> Best,
> Ashley
>
> On Sun, Jan 15, 2017 at 4:42 PM, Kim Eimers <kkeimers@nnu.edu> wrote:
>> At first glance, this report looks like I could use some of to explain why i choose the survey and it's relevance to the topic at hand. Am I okay to reference this document and the information, including graphics, within?

Appendix G

HRRC Approval to Conduct Research

Northwest Nazarene University hrrc@nnu.edu via email.submittable.com   6/8/16

to me

Dear Kimberly,

The HRRC has reviewed your protocol: Protocol #23042016 - THE INTEGRATION OF CAREER TECHNICAL EDUCATION WITH CORE ACADEMICS: A MODEL FOR 21ST CENTURY EDUCATION. You received "Full Approval". Congratulations, you may begin your research. If you have any questions, let me know.

Curtis Garner
Northwest Nazarene University
HRRC Member
623 S University Blvd
Nampa, ID 83686

You can go here to view the submission:
http://nnu.submittable.com/user/submissions/5562423

Appendix H

Request to Conduct Research
School District 1

November 23, 2015

Northwest Nazarene University
Attention: HRRC Committee
Helstrom Business Center 1st floor
623 S University Blvd Nampa ID
83686

RE: Research Proposal Site Access for Kimberly Eimers

Dear HRRC Members:

This letter is to inform the HRRC that Administration at ▉▉▉ School District has reviewed the proposed dissertation research plan including subjects, interventions, assessment procedures, proposed data and collection procedures, data analysis, and purpose of the study. Kimberly Eimers has permission to conduct her research in the district of and with students and staff of the ▉▉▉ School District. This authorization dates for this research are January 2016 – March 2017.

Respectfully,

▉▉▉▉▉▉

▉▉▉▉
Superintendent

Appendix I

Request to Conduct Research
School District 2

02 October 2015

Northwest Nazarene University
Attention: HRRC Committee
Helstrom Business Center 1st floor
623 S University Blvd
Nampa ID 83686

RE: Research Proposal Site Access for Kimberly Eimers

Dear HRRC Members:

This letter is to inform the HRRC that Administration at ▮▮▮▮▮ School District has reviewed the proposed dissertation research plan including subjects, interventions, assessment procedures, proposed data and collection procedures, data analysis, and purpose of the study. Kimberly Eimers has permission to conduct her research in the district of and with students and staff of the ▮▮▮▮▮ School District. This authorization dates for this research are January 2016 – March 2017.

Respectfully,

▮▮▮▮▮▮▮

▮▮▮▮▮▮
Superintendent

Appendix J

Qualitative Informed Consent

Purpose and Background

I am currently a doctorate student at Northwest Nazarene University, and I am conducting a research study related Career Technical Education (CTE) coursework and the perceptions of students who take CTE courses and students who do not participate in CTE coursework. The purpose of this study is to determine if the contribution of CTE programs in high have an impact of reducing dropout rates, increasing graduation rates, increasing student engagement, and student achievement scores.

Procedures

If you agree to be in the study, the following will occur:

- ❖ You will be asked to sign an Informed Consent Form, volunteering to participate in the study.
- ❖ You will be surveyed once via a secure on-line system. The survey window will be open from October 15, 2016 – October 31, 2016.   The survey is expected to take 25 – 35 minutes.
- ❖ After the surveys have been disseminated you may be asked to participate in a follow up interview.

Risks/Discomforts

There is minimal risk involved if you volunteer for this research. You will not be identified in the research, all interviews and responses will be kept confidential with all data being secured at all times.

If you are chosen to be interviewed, please note that some of the questions in the interview may make you uncomfortable, but you are free to decline to answer any questions you do not wish to answer or to stop participation at any time.

Benefits

There will be no direct benefit to you from participating in this study. However, the information you provide may help principal preparation programs and future K–12 administrators.

Payments

There are no payments for participating in this study.

Questions

If you have any questions or concerns about participation in this study, please feel free to contact the research investigator, Kimberly Eimers. She can be contacted at 22876 Carmella Road NW, Poulsbo, WA 98370, by phone at 208.919.5513 or via e-mail at

kkeimers@nnu.edu. You may also contact her Faculty Advisor, Dr. William Fritz via e-mail at wfrtiz@nnu.edu or via telephone at 253.282-9182.

Should you feel distressed due to participation in this study, you should contact your own health care provider.

Consent
You will be given a copy of this consent form to keep.

Participation in research is voluntary. You are free to decline to be in this study, or to withdraw from it at any point. This research study has been approved by the Northwest Nazarene University Human Research Review Committee June 8, 2016, approval #23042016.

I give my consent to participate in this study:

_____   _____
Signature of Study Participant   **Date**

_____   _____
Signature of Study Participant's Parent/Guardian   **Date**

If chosen for follow-up interview, I give my consent for the interview to be audio taped in this study:

_____   _____
Signature of Study Participant   **Date**

_____   _____
Signature of Study Participant's Parent/Guardian   **Date**

I give my consent for direct quotes to be used in this study. No person identifying information will be used in the report from this study:

_____   _____
Signature of Study Participant   **Date**

_____   _____
Signature of Study Participant's Parent/Guardian   **Date**

_____   _____
Signature of Person Obtaining Consent   **Date**

Appendix K

Tripod Contract to Use Student Perception Survey

MASTER SERVICES AGREEMENT

This Agreement, including any Attachments, Statements of Work or other documents expressly incorporated herein or made a part hereof (the "Agreement"), is by and between Tripod Education Partners, Inc., a Delaware corporation with a principal place of business at 101 Main Street, 14th Floor, Cambridge, MA 02142, (hereinafter "Tripod"), and Kim Eimers, a doctoral student, with her principal place of residence at 22876 Carmella Rd NW, Poulsbo, WA 98370 (hereinafter "Client"). This Agreement involves the provision of classroom survey instruments, data collection protocols, Tripod's analytic framework and scoring methodologies, survey reports and related consulting, training and support services, all as more fully described herein, and is effective on the last date signed by a party below (the "Effective Date").

This Agreement contains the following Attachments, which are incorporated herein and made a part hereof:

- Exhibit A – Statement Of Work (as it may be modified or supplemented by agreement of the parties from time to time) ("SOW")
- Exhibit B – Standard Terms and Conditions
- Exhibit C – Tripod Terms of Service

The parties may enter into additional SOWs which, if made a part hereof, are subject to the terms and conditions of this Agreement as if originally incorporated into it. Tripod will provide Client with the Services, related documentation and other Deliverables identified in each such SOW.

Signature Tripod Education Partners	Rob Ramsdell	CEO and Co-founder	**3/23/16** Date
Signature	Kim Eimers	Doctoral Student	3.23.16 Date

Exhibit A – Statement Of Work
SOW # 1
Dated: March 23, 2016 (the "Effective Date")

This document constitutes a Statement of Work (or SOW) under the Tripod Education Partners, Inc. Master Services Agreement, dated March 23, 2016 (the "**Agreement**").

SOW Number: 1

Client Name: Kim Eimers   Client Address: 22876 Carmella Rd NW
                                                                                    Poulsbo, WA 98370

This SOW is entered into as of the Effective Date by and between Tripod Education Partners, Inc., a Delaware corporation ("**Tripod**"), having a place of business at 101 Main Street, 14th Floor, Cambridge, MA 02142 and the entity identified above ("**Client**").

Client hereby engages Tripod as an independent contractor to perform the services ("**Services**") described herein in accordance with the Agreement, the Tripod Terms of Service, and this SOW, which is incorporated into the Agreement by reference. The relevant terms and conditions that apply to the Services are set forth in Exhibit B.

1. General Description of Project

Client engages Tripod to perform the following Services (the "**Project**"):

1.	Provide surveys for 10 online administrations for use during the 2016-17 school year. Surveys will be administered once during the year. For online administration, each classroom will have between ten and 30 students and no more than 45 students. Each classroom administration will survey only one section of students.
2.	Provide client support and services, including access to the help desk for individuals designated by Client to coordinate survey administration.
3.	Provide access to the Tripod administration guides, tips sheets, and teacher and school reports.
4.	Provide raw data file to Client, with student responses at the completion of data collection and scanning.

2. Project Contacts

For Tripod		For Client	
Name:	Ashley Southard	Name:	Kim Eimers
Address:	101 Main Street, 14th Floor Cambridge, MA 02142	Address:	22876 Carmella Rd NW Poulsbo, WA 98370
Telephone(s):	617-221-8885	Telephone(s):	208-919-5513
Email:	ashley@tripoded.com	Email:	kkeimers@nnu.edu

3. Estimate of Resources, Fees and Related Terms

3.1 Tripod Data Management, Platform, and Research Fees: end-to-end data management systems, data models, analytic framework, scoring engine, user management, reporting platform, and research fees

Tripod Survey Fees	$300.00
Client Service and Support Fee	$1,000.00
Tripod Costs Subtotal	$1,300.00

3.2 Total Costs (all amounts stated in U.S. Dollars): $1,300.00
     One-time Tripod Research and Development Grant: $1,300.00
     Total Costs for Client: $0

4. Schedule of Milestones and Deliverables

Roster template provided to Client. Upon receipt of completed roster file, Tripod and Client will communicate to resolve any questions. Surveys will be shipped to schools no later than four weeks after complete roster is received.	
Standard Teacher Reports *Please note that non-standard or custom reports may require additional time and fees.*	All teacher reports are accessed via our secure, online web platform. Client will inform Tripod if teacher reports are to be provided. The intent and typical timeframe for the delivery of results via the Tripod web platform is on the same day as the survey is closed and all reporting thresholds are met. In unusual circumstances, additional quality assurance steps may delay this timeframe.
Standard School Report *Please note that non-standard or custom reports may require additional time and fees.*	Client will inform Tripod if school reports are to be provided. The intent and typical timeframe for the delivery of results via the Tripod web platform is on the same day as all teacher surveys are closed and the School Report is requested and all reporting thresholds are met. In unusual circumstances, additional quality assurance steps may delay this timeframe.

5. Payment Timeline

Tripod Survey Costs	Due within 30 days of receiving invoice issued at the time of account set up

Appendix L

Survey Administration Script

Administration Script:

Today you are being asked to complete a survey about your experience as a student in this classroom. The purpose is to help us all understand what you are thinking and feeling about things that affect your learning and enjoyment in school. Some items are asked a few different ways. This is on purpose and helps to make sure the responses for the class are accurate.

There may be some items on the survey that you don't feel you can respond to. There may be some that don't feel relevant. You are NOT required to respond to any item. If you don't think you can provide an accurate response for an item, you should just skip that particular item. Also, you have the right to choose not to complete the survey at all.

I will be able to answer simple, clarifying questions. If you have a question that will require me to interpret or explain a survey item, I will not be able to answer this for you. There are no right or wrong answers. Please just respond based on what you think and feel.

No one from our school will see your individual responses to the survey after you have entered them on the online survey. Remember, the purpose of the survey is to help us all improve your learning experience, so please be honest.

Are there any questions? **(Answer questions.)**

Okay, now you can get started completing the survey.

- *Open a browser window and type in the URL, exactly as it appears on your login card.*
- *Then enter your student code, exactly as it appears on your login card.*

Remember to be honest and accurate in your responses. If you finish before everyone has finished, please complete an independent and silent activity.

(When all students have completed the survey.)

Thank you for completing the survey.

Appendix M

Sample Student Log-In Card

Access Your Tripod Survey: 2343.tripoded.com *Do not type "www" before the web address.* Your Student Code: x2n4rn Teacher: John Smith Section ID: 217 Grade: 7	Access Your Tripod Survey: 2343.tripoded.com *Do not type "www" before the web address.* Your Student Code: yxnhgk Teacher: John Smith Section ID: 217 Grade: 7	**URL**
Access Your Tripod Survey: 2343.tripoded.com *Do not type "www" before the web address.* Your Student Code: 86hvyq Teacher: John Smith Section ID: 217 Grade: 7	Access Your Tripod Survey: 2343.tripoded.com *Do not type "www" before the web address.* Your Student Code: ghsruu Teacher: John Smith Section ID: 217 Grade: 7	**Student Code**
Access Your Tripod Survey: 2343.tripoded.com *Do not type "www" before the web address.* Your Student Code: czvvac Teacher: John Smith Section ID: 217 Grade: 7	Access Your Tripod Survey: 2343.tripoded.com *Do not type "www" before the web address.* Your Student Code: 2mtpdj Teacher: John Smith Section ID: 217 Grade: 7	

Appendix N

Focus-Group Script

Dear Participant:

Thank you for agreeing to participate in this follow-up focus group. If at any time, you have any questions along the way, please feel free to ask. In addition, if at any time you feel uncomfortable, you have the right to stop the interview or request not to answer the question(s) I ask.

At this time you have already completed a comprehensive student perception survey. The purpose of this interview is to find out more about how students perceive their experiences within the classroom in which the survey is being taken. This is strictly your own perception. All answers are anonymous and confidential.

Do you have any questions?
        □ Yes

        □ No

The following questions are a deeper probing into the questions you were asked on the comprehensive student perception survey. All responses are kept confidential and at no time will your name be associated with any of the answers you have provided. The intent is to get a deeper understanding of areas that were surveyed. Your voice is very important to the outcome of the research and I appreciate your willingness to participate.

Question #1:   The results of the survey showed three areas that were significant. Those three areas were *care, captivate,* and *clarify*. *Care* is defined as the warmth and emotional support your teachers shows to students. Thinking back on the survey you took, what are your thoughts of the following statement in terms of the teacher in the classroom where you took the survey, "my teacher in this class makes me feel that she/he really care about".

Question #2:   Now let's focus on the area of *Captivate*. For the purpose of the survey, Captivate is demonstrated by how the teacher keeps students engaged and motivated to learn. A statement that you were asked to rank was, "My teacher makes lessons interesting." Please comment on how this statement relates to your teacher(s). Again, keeping in mind the class in which you took the survey.

Question #3:   *Clarify*, which means how your teacher is able to explain difficult concepts in a manner students can understand as well as check for understanding. Please comment on ow this statement relates to your teachers.

Question 4: The other components that were a part of the survey were: *Consolidate*, which means how key ideas are integrated into current knowledge and relevant to what you are studying. *Challenge* which means how much your teacher requires effort and critical thinking.

And finally, *classroom management* which goes to how orderly the classroom is and how students and teacher relate to each other. Would you like to comment on any of those components?

Question #5: Is there anything else you would like to tell me about your perceptions toward your teacher or school and how you see your experience within the school?

Closing: Thank you all for your time and insight to your perceptions. I appreciate you honesty and willingness to participate in both the survey and this focus group. If you have any questions or concerns, please feel free to contact me. Your teacher has my contact information.

(Notes were taken by researcher. The sessions were also recorded for accurate transcription of student comments.)

Appendix O

Tripod 7Cs Student Perception Survey Item Statements

The Tripod Survey - 7Cs Student Perception

1. **Care**. Students know they are cared for and have sense of belonging.
    1. I like the way my teacher treats me when I need help.
    2. My teacher is nice to me when I ask questions.
    3. My teacher in this class makes me feel that he/she really cares about me.
    4. If I am sad or angry, my teacher helps me feel better.
    5. My teacher in this class encourages me to do my best.
    6. My teacher seems to know if something is bothering me.
    7. My teacher gives us time to explain our ideas.

2. **Control**. Addresses issues of cooperation and support of peers:
    1. My classmates behave the way the teacher wants them to.
    2. Our class stays busy and does not waste time.
    3. Students behave so badly in this class that it slows down our learning.
    4. Everybody knows what they should be doing and learning in this class.

3. **Clarify**. Students know how to succeed or that it is possible to succeed.
    1. My teacher explains things in very orderly ways.
    2. In this class, we learn to correct our mistakes.
    3. My teacher explains difficult things clearly.
    4. My teacher has several good ways to explain each topic that we cover in this class.
    5. I understand what I'm supposed to be learning in class.
    6. My teacher knows when the class understands, and when we do not.
    7. This class is neat – everything has a place and things are easy to find.
    8. If you don't understand something, my teacher explains it another way.

4. **Challenge**. The class is relevant and rigorous and students know they can achieve.
    1. My teacher pushes us to think hard about the things we read.
    2. My teacher pushes everyone to work hard.
    3. In this class, we have to think about the writing we do.
    4. In this class, my teacher accepts nothing less than our full effort.

5. **Captivate**. Students are engaged and the material is relevant to their learning needs.
    1. School work is interesting.
    2. We have interesting homework.
    3. Homework helps me learn.
    4. School work is not very enjoyable. (Do you agree?)

6. **Confer**. Student ideas are heard in the classroom and students are encouraged to express their ideas.
   1. When he/she is teaching us, my teacher asks us whether we understand.
   2. My teacher asks questions to be sure we are following along when he/she is teaching.
   3. My teacher checks to make sure we understand what he/she is teaching us.
   4. My teacher tells us what we are learning and why.
   5. My teacher wants us to share our thoughts.
   6. Students speak up and share their ideas about class work.
   7. My teacher wants me to explain my answers – why I think what I think.

7. **Consolidate**. The ideas of the class are connected to the materials and the lessons taught.
   1. My teacher takes the time to summarize what we learn each day.
   2. When my teacher marks my work, he/she writes on my papers to help me understand.