2021

Educational Practices That Prepare Career and Technical Education Students With Industry-Ready Skills

Melissa Webb
Walden University

Walden University

College of Education

This is to certify that the doctoral dissertation by

Melissa Shaye Webb

has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

Review Committee
Dr. Kathleen Kingston, Committee Chairperson, Education Faculty
Dr. Donald Wattam, Committee Member, Education Faculty
Dr. Alice Eichholz, University Reviewer, Education Faculty

Chief Academic Officer and Provost
Sue Subocz, Ph.D.

Walden University
2021

Abstract

Educational Practices That Prepare Career and Technical Education Students With Industry-Ready Skills

by

Melissa Shaye Webb

MPhil, Walden University, 2020

MEd, Boise State University, 2009

BA, Boise State University, 2002

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Education Policy, Leadership, and Management

Walden University

February 2021

Abstract

The mission of high school career and technical education (CTE) programs is to prepare high school graduates for a career. This study provides insight into the educational practices that support students with the skills necessary for workplace success, as not all CTE program graduates are prepared for the workplace with industry-ready skills. The purpose of this basic qualitative study was to explore the perspectives of CTE and business/industry leaders about which educational practices in CTE programs can support the preparation of students with industry-ready skills. The conceptual framework that guided this study was the 2018 ACTE Quality CTE Program of Study Framework and was used as a source to make logical connections between the data from the study and the emerging themes derived from the data analysis. The research questions addressed what educational practices support the preparation of students with industry-ready skills, and how they can be applied in CTE programs. The interviews of six CTE administrators and six business/industry leaders used in this study aimed to identify how CTE stakeholders make sense of what educational practices prepare students to be successful in the workplace. The thematic analysis of data verified the necessity of knowledgeable CTE instructors, curriculum designed based on current business/industry standards, and providing an opportunity for workplace experience to better understand the workplace prior to graduation. CTE programs will benefit from this study as it contributes to social change by identifying the educational practices that support CTE students with industry-ready skills, closing the identified gap between education and the workforce, and thereby helping the state stay competitive in the global market and economy.

Educational Practices That Prepare Career and Technical Education Students With Industry-Ready Skills

by

Melissa Shaye Webb

MPhil, Walden University, 2020

MEd, Boise State University, 2009

BA, Boise State University, 2002

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Education Policy, Leadership, and Management

Walden University

February 2021

Dedication

For my son-Ethan, my husband-Ben, and my stepson-Aiden. For life is richer and fuller with you by my side. You have given me the understanding that no dream should go unfulfilled. For my students that I found myself in and a desire to continue in the pursuit of education. Finally, for my brothers, Alexander, and Mathew, without you the purpose of this dissertation would never have become a realization. This is for you.

Acknowledgments

I would like to express the deepest appreciation to Dr. Kathleen Kingston, my committee chair, for the endless hours of revisions, support, and guidance. I would like to extend my appreciation to Dr. Donald Wattam, my committee member, for your assistance and encouraging words. I offer my sincerity in thankfulness to each of you.

My completion of my dissertation could not have been accomplished without the support of my family and friends. To dear friend and colleague, Dr. Eric Eschen- thank you for acknowledging the time and dedication that it takes to attend a doctoral program and write a dissertation. The hours spent away from my family, friends, and career will forever be a reminder of your love and support in my journey, and for that I am eternally grateful.

I acknowledge the deep loyalty of my husband, who was my constant cheerleader and sounding board. I am extremely appreciative of you and all that you have done to protect, guide, and set an example for our family.

Table of Contents

List of Tables v

List of Figures vi

Chapter 1: Introduction to the Study 1

Introduction 1

Background 1

Problem Statement 8

Purpose of Study 9

Research Questions 9

Conceptual Framework 9

Nature of the Study 11

Definitions 11

Assumptions 12

Scope and Delimitations 13

Limitations 14

Significance 15

Summary 16

Chapter 2: Literature Review 17

Introduction 17

Literature Search Strategy 18

Conceptual Framework 19

Literature Review 23

CTE History 23
Carl V. Perkins Act 25
Quality Principles of CTE Programs 28
State's Response to CTE Programs 31
Educational Practices 33
Business/Industry Partnerships 42
Summary and Conclusion 47
Chapter 3: Research Method 50
Introduction 50
Research Design and Rationale 50
Role of the Researcher 53
Methodology 54
Participant Selection Logic 54
Instrumentation 56
Procedures for Recruitment, Participation, and Data Collection 57
Data Analysis Plan 60
Issues of Trustworthiness 62
Credibility 62
Transferability 63
Dependability 64
Confirmability 64
Ethical Procedures 65

Summary 67
Chapter 4: Results 68
Introduction 68
Study Setting 68
Demographics 69
Data Collection 70
Data Analysis 72
Evidence of Trustworthiness 74
Results 76
Research Question 1 76
Research Question 2 82
Summary 87
Chapter 5: Discussion, Conclusions, and Recommendations 89
Introduction 89
Interpretation of Findings 90
Confirming Knowledge in the Discipline 92
Interpreting the Findings in the Context of the Conceptual Framework 98
Limitations of Study 101
Recommendations 102
Implications 105
Conclusion 106
References 108

Appendix: Interview Protocol 121

List of Tables

Table 1. Participant Information 70

Table 2. Codes, Categories, and Themes 73

List of Figures

Figure 1. Instructional Practices in CTE Programs 79

Figure 2. Curriculum in CTE Programs..... 82

Figure 3. Application of Skills in CTE Programs..... 87

Figure 4. Educational Practices That Prepare Career and Technical Education Students With Industry-Ready Skills..... 88

Figure 5. CTE Program Guiding Quality Principles..... 94

Chapter 1: Introduction to the Study

Introduction

The topic for this study was career and technical education (CTE) programs and what educational practices within the program should be used to prepare CTE students with industry-ready skills. In this study, I explored the perspectives of CTE stakeholders, educators, and business/industry leaders and what they believe are the satisfactory uses of educational practices that ensure student readiness for the workforce. The potential implication for social change related to this study is closing the identified gap between education and the workforce, thereby helping the United States stay competitive in the global market and economy. The major sections of this chapter include the background, problem statement, purpose, research questions, conceptual framework, nature of the study, definitions, assumptions, scope and delimitations, limitations, and the significance of the study.

Background

CTE was once known as vocational education. The 1990 Perkins Act defined *vocational education* as "organized educational programs offering a sequence of courses dedicated to the preparation of individuals in paid or unpaid employment in emerging occupations requiring other than a baccalaureate or advanced degree" (National Center for Education Statistics, 2020, Key Questions section, para.1). Originally supported in the 1900s by the Smith-Hughes Act of 1917, the foundational pieces of the educational programs are still intact today.

Although the intent of CTE programs remain like the past vocational education courses, CTE program leaders still must find a delicate balance of academia and industry standards (Stern, 2016). The preparation of students depends on state and school leaders to determine the best way to consistently prepare high school students for careers following high school graduation in a way that supports the needs of business/industry. Today, educational professionals and employers are confronted with determining the best way to prepare high school students with academic skills and technical knowledge, because a misalignment exists between education and the U.S. workforce (Blozveren & Voytek, 2015; Fleming, 2012; Keily, 2019; McPhail, 2018).

A misalignment exists between the type of talent that is in demand and the type of talent that is in supply, as determined by Koller (2018), a senior strategist for capacity building at Social Policy Research Associates, an organization that focuses on services in evaluation, organizational development, and facilitation. Koller argued to meet the needs of employers; CTE programs need to create relevant and rigorous learning opportunities for students that focus on specific workplace needs. Gray et al. (2018) reported that a U.S. Department of Education 2016-2017 survey's findings suggested that CTE programs in public school districts face many barriers when developing high-quality CTE programs. Fletcher and Tyson (2017), from a southeastern university, further supported the need for educational practice frameworks that support high-quality programs that include collaboration between industry and CTE program stakeholders. Fletcher and Tyson (2017) also found that CTE teachers were committed to teaching industry-related standards, but they often lacked the background knowledge to adequately equip their

students with the skills that employers deemed necessary. In a quasi-experimental study, Avsec and Jamsek (2018) concluded that students who were immersed in a career-oriented high school education program that served students through a curriculum that was founded on procedural knowledge within a specific career skill set were more likely to engage in that career after high school. Although the research demonstrated that a need exists for more adequate CTE programs, insufficient research outlines specific educational practices within CTE programs that support both the future of the student and employer needs (Imperatore & Hyslop, 2017). CTE and business/industry leaders should work together to develop programs using educational practices to build students' skills that ensure student readiness for the workplace, thereby maintaining a vital role in preparing high school graduates for the workforce (Rosendin & Gielczyk, 2018).

In a mixed-methods case study, 15,362 high school students in both public and private schools were interviewed, and little evidence was found that linked students who were immersed in CTE courses in high school and their employability after graduation (Bozick et al., 2017). Findings indicated that current courses and the resulting skills are not necessarily rewarded by employers, which indicated a growing need for policy makers to identify the most efficient ways to prepare all students for careers in science, technology, engineering, and math (STEM). This provides insight into the misalignment between the CTE program coursework and workforce skills needed after program completion.

Using surveys of 1,134 high school students that were collected at the beginning of class as a warm-up, DeFeo's (2015) study revealed poor alignment between CTE

coursework and stated career objectives that were characterized by the students. DeFeo identified five areas of need: a knowledge base for teaching and learning, curricula and program planning, delivery methods, accountability, and program relevance and effectiveness that would better help students on their career path initiatives, which is directly relational to the development of structured and sequenced program of study.

A qualitative study used the narratives of 70 students and four teachers from career academies and high schools along with 27 industry leaders from Florida, which led to the conclusion that employers played a small role in in the development of curricula associated with CTE programs specific to business and industry (Fletcher & Tyson, 2017). Based on workforce stakeholder information, this study contributes to the primary benefit of a dynamic programming framework for additional CTE programs.

Interviews from students at a Vo-Tech high school and data set reviews, Demarest and Gehrt (2015) found that the Vo-Tech high schools were incubators of tomorrow's workforce. Schools that were completely founded on the principles of CTE yielded large returns for students and state economies in which the schools are located. For example, in the 40 years that New Castle Country Vo-Tech School District has used the full immersion model for CTE, the high schools have developed relationships with more than 300 companies that routinely provide co-op placements for students as the company leaders are intertwined with CTE program development. From the interviews, Demarest and Gehrt proved that the educational practice of providing high-quality, rigorous programs of study creates an environment for students to thrive and, therefore, provides

evidence of one successful educational practice for CTE programs is the full immersion model.

Subsequently, a data set review of the U.S. Department of Education's Office of Career and Technical and Adult Education revealed the limited research on record of effective CTE programs (Passarella, 2018). Although more than 7.4 million students participate in CTE programs, little remains to be understood as to which CTE program in the United States best prepares students for the workforce. One lesson learned from the data set review is that CTE programs need to be diversified and tailored to meet community needs rather than a "one-sized fit all." For example, Passarella's review of Dougherty's quasi-experimental longitudinal analysis on the delivery of CTE in Massachusetts revealed that the state had two ways of delivering CTE. Still, one delivery method was more effective than the other. The evidence collected and reviewed in this policy brief provides another foundational piece of this study as the programs that were considered in this study have the potential to be used as models that will help to reduce the skills gap that employers are seeing.

In a qualitative study using semi structured interviews, student focus groups, classroom observations, document review, graduate surveys, and data analysis that were coded using Atlas.ti software for analysis, researchers Liberman et al. (2017) determined success factors associated with successful CTE programs. The basic five success factors that emerged from the analysis were learning environment and community, focused student support, engagement through real-world context, and a culture of

professionalism. This study helps to establish a foundation for successful CTE program frameworks.

The latest step in establishing high-quality CTE programs is Hyslop and Imperatore's (2018) research, resulting in the key finding of a pilot study that helped to identify 12 elements of a high-quality CTE program. Based on an analysis of nation-wide quality frameworks for CTE programs, Hyslop and Imperatore's current findings are an extension of their research that aims to identify comprehensive and quality-CTE frameworks. Their analysis determined that a lack of clarity exists among the best practices in high-quality CTE. The information provided in their most recent pilot study lays the foundation for further studies to determine which program of study frameworks are best suited for state-wide CTE program implementation.

Since the economic recession of 2008, it has become a critical time for educators to recognize that employers need employees that possess skills that may not be associated with a typical 4-year college degree (McPhail, 2018). Sixty percent of U.S. employers believe that a lack of preparation exists among entry-level employees, because they need highly trained employees with skills that are specific to an industry (Fleming, 2012; Laboissiere & Mourshed, 2017). Although this percentage is composed of both youth entering the workforce and midcareer learners, concerns are growing that the United States can and should be doing better at preparing students for the ever-changing economic realities through school programs, but it will require policy change and action on many fronts (Laboissiere & Mourshed, 2017). From an employer's perspective, CTE

program graduates lack industry-ready skills that are required for employment (Fleming, 2012; Laboissiere & Mourshed, 2017; McPhail, 2018).

In recent years, U.S. high schools have shifted their CTE program practices to meet new federal guidelines (Heyward, 2019). With the shift, Congress reauthorized the Carl D. Perkins Act, which is supported by President Trump, who signed it into law. This Act is the principal source of funding for the improvement of secondary CTE programs. It has since been amended to The Strengthening Career and Technical Education for the 21st Century Act. The amended Act launched many new initiatives and a new generation of various practices that are meant to prepare CTE students more fully for the workforce (Heyward, 2019; Perkins Collaborative Resource Network, 2019b) and, therefore, an inherent need exists to understand what educational practices in CTE programs prepare students for the workforce.

In any classroom setting, it is most advantageous to determine what works best to prepare students for their next steps in life. A CTE program is no different. However, with limited time before CTE graduates enter the workforce, determining which educational practices should be used to prepare students for employment that match employer needs is crucial (Almarode et al., 2016; Jackson, 2014; King, 2016). The educational practices teachers' use in the classroom matter to the education of the student. CTE educators continuously try to refine their own skills based on various practices (Kosloski & Ritz, 2016) but, with many different practices in education, it is often difficult to determine which educational practices prepare students with needed industry-ready skills. In Hattie's (2009) seminal work, it was found that teachers who

teach in deliberate and visible ways are more likely to produce students that succeed beyond their classroom. Based on their perspective, this can be accomplished by CTE and business/industry leaders by identifying research-based practices in education that define high-quality CTE programs that are associated with industry-standard skills (Batterman, 2019; Blozveren & Voytek, 2015; Fletcher et al., 2014; Hyslop, 2019; Jackson, 2014; King, 2016). My study was needed so that CTE programs within a northwestern state are equipped with a framework for CTE programs that ensure student readiness for the workforce based on what CTE leaders of the northwestern state believe is best suited for their communities.

Problem Statement

The problem that I addressed in this study was that not all CTE program graduates are prepared for the workplace with industry-ready skills. The gap in research is that insufficient research discusses educational practices that prepare CTE students with industry-ready skills (Bozick et al., 2017; Fleming, 2012; Imperatore & Hyslop, 2017; Kamin, 2018; Keily, 2019; McPhail, 2018; U.S. Department of Education, 2014).

Evidence of not having enough skilled workers in a northwestern state (Governor's Workforce Task Force, 2017) provided justification that northwestern states' leaders need to think boldly about how research-based educational practices can be implemented in high school CTE programs across the state. I collected the data of this study from CTE stakeholders and through thematic analysis, through this basic qualitative study, I contributed to the understanding of which educational practices

should be used in the northwestern states' CTE programs to prepare students with skills required by employers.

Purpose of Study

The purpose of this basic qualitative study was to explore the perspectives of CTE and business/industry leaders about which educational practices in CTE programs can adequately support the preparation of students with industry-ready skills.

Research Questions

RQ1 (Qualitative): What are the educational practices that CTE and business/industry leaders think support industry-ready skills preparation in a CTE program?

RQ2 (Qualitative): How can educational practices be applied in CTE programs to prepare students with industry-ready skills needed for employment in the workforce?

Conceptual Framework

The conceptual basis for this study was the 2018 ACTE Quality CTE Program of Study Framework. The underpinnings of the conceptual framework indicate that in this study, as in all conceptually based studies, research is constructed and not found (Maxwell, 2005). The framework of this study incorporated practices used in education, identified by CTE and business/industry leaders that directly prepare the CTE program student with industry-ready skills required for employment.

Traditional frameworks for educational programs provide clear and specific learning intentions with comprehensible expectations that affect student learning (Perkins Collaborative Resource Network, 2019a; West Ada School District, 2019). The ACTE

Program of Study Framework supports sustainable best practices in high-quality CTE, thereby serving as a baseline for possible policy development. The findings of the framework are grounded in the literature focused on identifying a comprehensive, research-based quality program of study framework that is used to develop programs and evaluate the strength of the program based on student success (Imperatore & Hyslop, 2015).

In this study, Hyslop and Imperatore's 2018 ACTE Quality CTE Program of Study Framework provided an understanding and synthesis of what CTE and business/industry leaders believe is necessary for program development in a specific industry. Hyslop and Imperatore's (2018, 2019) recent research findings provide an outline of what educational practices can be used to provide students with a quality CTE program. The outline includes educational and workplace practices such as self-evaluation, key components of program development, and collaboration goals. As a result of the framework, the goal is to help better prepare the CTE program graduates with industry-ready skills that are needed to be successful in the workforce.

The research questions I designed were informed by the conceptual framework to gain an understanding of what a northwestern state's CTE and business/industry leaders determined to be high-quality educational practices that support and prepare students with industry-ready skills. The results of this study were supported by the conceptual framework in determining which educational practices support high-quality CTE programs in a northwestern state that prepare CTE students with industry-ready skills ensuring that they are ready for the workforce. Based on the concept of the ACTE

Quality CTE Program of Study Framework, data collected from the perspectives of CTE, and business/industry leaders suggested the educational practices that should be applied in a northwestern state's CTE program design, creation, and evaluation, thus preparing CTE students for the workforce (Brodersen et al., 2016; Imperatore & Hyslop, 2018; Perkins Collaborative Resource Network, 2019a and b).

Nature of the Study

This basic qualitative study was specific to the perspectives of CTE and business/industry leaders, which was best identified through their individual constructed experiences. According to Merriam (2015), qualitative research is based on social constructivism. Additionally, when performing a qualitative research study, it is important to select a design that correlates with the research questions (Merriam, 2015). The research questions in this study were derived from eliciting the perspectives of a northwestern states' CTE and business/industry leaders constructed understanding of educational practices that support the preparation of CTE students with industry-ready skills. Because the data collected were from CTE and business/industry leaders evidencing what they believed to be high-quality educational practices that support the preparation of CTE students with industry-ready skills, a qualitative study was most appropriate. In this basic qualitative study, a synthesis of the constructed perspectives was the influence of the nature of the study.

Definitions

The following terms are directly associated with the purpose of this study and are most used to characterize CTE.

Career and technical education are associated with a sequence of educational programs that teach academic and technical skills to students to help prepare them for college and career in current or emerging professions (Gray et al., 2018). The programs associated with this study are specific to high school.

Educational practices involve the strategies used in the classroom to be the most effective for students where *instructional strategies* are defined as relevant content standards and learning objectives (Knight, 2013). Educational practices are used by professionals and develop the skills and knowledge of students.

Industry-specific skills are defined as the ability and skills to perform a particular job (Alic, 2018) and are associated with domain-specific knowledge. Industry-specific skills are taught in CTE programs that use individual careers and/or professions.

Assumptions

I assumed that business/industry leaders are familiar with CTE programs that are taught at the high school within the community that is a part of this study. Because the community's economy is supported by business/industry that hire local high school graduates, another assumption is that the business/industry leaders would know what skills should be taught in the high school CTE programs to prepare students for the workforce of the community. These assumptions were necessary to the context of the study, as the business/industry leaders need to be familiar with the CTE programs at the community high schools as to understand what skills students should be taught to benefit their future career endeavors.

An additional assumption of this study was that all CTE directors and/or educators should have valid teacher certificates, have attended a teacher preparatory program, and are familiar with educational practices that support the students in their classroom. This assumption is a critical aspect of this study because it pertained to the best practices of education that can build a framework for CTE programs that supports the preparation of students with industry-ready skills.

Scope and Delimitations

The scope of this study was to explore the perspectives of CTE stakeholders, educators, and business/industry leaders and what educational practices prepare CTE students with industry-ready skills. I chose this focus because a disconnect exists between CTE student graduates and the preparation for the workforce. Based on the scope of this study, I only selected CTE educators from one northwest state's public high schools. Additionally, only business/industry leaders who were directly connected to programs facilitated in a high school participated. Therefore, no educators from private schools, colleges, and universities were used in this study, as were business/industry leaders who were not associated with CTE programs. With their inclusion in the study, the analysis could have been affected therefore, affecting the transferability of the study.

To address the potential transferability of this study, it is to be understood that this study brings awareness to high school CTE programs. The results of this study highlight the educational practices that are used in a northwestern state to prepare high school CTE program graduates with the skills that are necessary to be successful in the workplace.

Based on the results of this study, a framework for other CTE programs can be constructed as to help prepare additional employees for the workplace.

Limitations

When conducting this study, limitations needed to be considered. The first limitation of this study was related to the practicality of interviewing participants. Because this study encompassed an entire state, it was not feasible to conduct face-to-face interviews with the participants. To address this limitation, I used virtual interviewing. Ravitch and Carl (2016) described virtual interviewing as a method of interviewing that is conducted without the interviewer and participant being in the same room. To accomplish this, I used Zoom or a similar technology that allowed me to conduct the interviews where the geographical distance would not allow for an in-person interview.

In this study, little room existed for bias. However, to mitigate the occurrence of researcher bias, I remained neutral when conducting the interviews and carefully worded the interview questions during the interview to reduce habituation, participant fatigue, leading questions, and to eliminate confirmation bias. By asking quality questions during the interviews, I remained focused and reduced researcher bias, which enabled the truest participant perspective.

When considering the limitations and bias of this study, the ability to conduct face-to-face interviews, and poor-quality research questions reasonable measures were taken to address the limitations. By using virtual interviewing and quality-focused interview questions, little weakness and bias existed in this study.

Significance

Business and industry leaders are finding that high school graduates lack the basic industry-ready skills needed to transition directly from high school into the current labor market (Critchfield, 2019b; Keily, 2019; Koller, 2018; Stone, 2014; U.S. Chamber of Commerce, 2017). The findings of this study, which were based on the perspectives of CTE and business/industry leaders, redounded the benefit of CTE programs, considering that the programs are meant to be a gateway to the preparation of skillful employees. As the business/industry world increases in size, more substantial demand exists for skilled employees (Critchfield, 2019a; Fleming, 2012). More effective CTE programs are justified in schools that are aligned with educational practices and state-specific business/industry needs (Demarest & Gehrt, 2015). CTE leaders need to know how educational practices support high-quality CTE programs can be applied every day in the CTE classroom, ensuring that graduating students are properly prepared for the workplace. My research will provide support for high-quality CTE programs that are based on educational practices and align with industry-ready skills that are identified as necessary by business/industry leaders.

As a result of this study, CTE leaders will explore educational practices in CTE programs and determine how those practices can be applied to provide students with the learning opportunities that develop industry-ready skills needed to be successful in the workforce. Equipped with industry skill competence, high school graduates of CTE programs will use their acquired skills to connect their education to the needs of employers. The findings of this study will lead to social change by identifying

educational practices that support CTE students and industry-ready skills, closing the identified gap between education and the workforce, thereby helping the United States stay competitive in the global market and economy.

Summary

In this chapter, I introduced the study by explaining the background of the study as well as the problem and the purpose. This chapter concluded by describing the limitations, barriers, and challenges of the study. The foundational element of this study was to explore the perspectives of CTE stakeholders and the importance of preparing CTE students with industry-ready skills that ensure success in the workplace. Further evidence of the importance of this study is detailed in Chapter 2 through the literature associated with this study and the foundational framework of the study.

Chapter 2: Literature Review

Introduction

CTE programs were designed to give graduates a head starts in preparing for a career, provide a pathway for students through secondary education, create a bridge to meaningful postsecondary education, and provide long-term financial benefits to graduates of CTE programs (Molina & Rosen, 2019). However, implications of a widening skills gap of employees and an insufficient supply of skilled workers exist. The problem is that not all CTE program graduates are prepared for the workplace with industry-ready skills (Bozick et al., 2017; Fleming, 2012; Imperatore & Hyslop, 2017; Kamin, 2018; Keily, 2019; McPhail, 2018; U.S. Department of Education, 2014). Fleming (2012) and McPhail (2018) suggested that it has become a crucial time for CTE stakeholders and state leaders to recognize that employers need employees that have skills that are not associated with a typical 4-year college degree. The purpose of this basic qualitative study was to explore the perspectives of CTE and business/industry leaders about which educational practices in CTE programs can adequately support the preparation of students with industry-ready skills.

When speaking about the notion of preparing students with industry-ready skills, state leaders need to think boldly about how to implement high school CTE programs that can affect a broader population than in recent years and adopt or extend programs based on standards set by business/industry leaders (Batterman, 2019; Fletcher et al., 2014; Hyslop, 2019). In the review of the literature, there was an absence of research that addressed specific standards that best prepared CTE program graduates. Instead, there

were many CTE programs of study, frameworks, and academies dedicated to CTE that had their own ideas about which educational practices should be implemented or refined to support the preparation of CTE students. The educational practices were loosely tied to what business/industry leaders saw, as need skills for success in the workforce. However, the literature review revealed the following consistent themes: (a) business/industry and community partnerships; (b) program articulation (curriculum, instruction, and evaluation); (c) knowledgeable and prepared staff; and (d) career development.

The goal of the literature review was to summarize the best educational practices used in CTE programs that, when applied, can provide high school CTE program graduates with industry-ready skills that are needed for the workforce. The sections of Chapter 2 address the history of CTE, the quality principles of CTE programs, educational practices, and how business/industry partnerships will demonstrate the importance of industry-ready skills and how they can be addressed using educational practices.

Literature Search Strategy

The search strategy for this study began with identifying the key concepts that supported the research questions that I asked during the study. The research questions were based on the problem statement. In the literature search, the keywords included, but were not limited to, *career and technical education, frameworks, business/industry partnerships, programs of study,* and *best practices in education.* I searched *ERIC*, Education Sources, SAGE Journals. As leverage, I used Google Scholar to determine other sources of literature. The sources of information were published in the last 5 years

and included documents that were peer-reviewed or from government sites and conference proceedings within a northwestern state.

When addressing the concern of lack of literature, I used the seminal works of Conley (2015), Hattie (2009), and Knight (2013). Conley is a recognized educational leader that emphasizes college and career readiness. Conley's most recent work explained what practices prepare students for college and career. Next, I address Hattie, a researcher in education who is credited with making teaching and learning more visible for students and teachers. Finally, Knight, a research associate, recommended and described the delivery of content within the classroom. I consulted the seminal works of these three researchers for germane scholarship.

Conceptual Framework

Traditional frameworks for educational programs provide clear and specific learning intentions with comprehensible expectations that affect student learning (Perkins Collaborative Resource Network, 2019b; West Ada School District, 2019). The conceptual framework that I used in this qualitative study, as in most qualitative studies, was based on research that is constructed by people's beliefs, experiences, attitudes, and perspectives (Maxwell, 2005). The fundamental underpinning of CTE is for students to learn skills associated with a career or technical field that will help them gain and maintain employment. The perspectives of CTE and business/industry leaders are critical because they understand what skills and abilities students need to have to be successful in the workplace. The conceptual framework of this study was based on Hyslop and Imperatore's Quality CTE Programs of Study (2018).

Not all scholars agree that a theory or framework exists that best suits CTE (Schmidtke, 2017). Much of the current CTE research is narrow, because CTE is unique and evolving. The findings of Schmidtke's (2017) research yielded that 76 different theories were used as the theoretical or conceptual framework of CTE research, and many carried similar nuances. Schmidtke concluded with the overall similarity of the theoretical or conceptual frameworks of research was that those involved in CTE want to improve their lives and that of others, contribute to achieving positive learning outcomes, have consideration of others' abilities and interests, allow for self-regulated learning, be reflective in the learning process, and find value in the observation and construction of new concepts and behaviors.

CTE programs are held accountable to state and federal standards as indicated in Brodersen et al. (2016) study. Although the accountability system that each state may have in place provides information on student outcomes, the system lacks a basis for identifying high and low performing CTE programs. Brodersen et al. concluded that the accountability system does not provide necessary information that adequately identifies best practice frameworks that can be replicated to help other define their own CTE program standards. In the absence of one formal way to identify best practice frameworks, each U.S. state is left to create its own practices, implementation, and evaluative tools. As a result, inconsistent nationwide practices occur within CTE programs.

CTE programs are subject to rigorous state and federal guidelines. But a lack of understanding exists regarding how and which superior CTE programs can be replicated

to produce a high-quality CTE education for students (Imperatore & Hyslop, 2015). In 2015, Hyslop and Imperatore recognized that no single source of information identified what made any state CTE program superior when compared with another, because stakeholders emphasized different elements of the programs. CTE programs have gained popularity; consequently, the term *high-quality* has become diluted, meaning that "high-quality" CTE programs are ambiguous because each state program can identify its own criteria for what it interprets as "high-quality." CTE program leaders recognize that the term *high-quality* needs to be defined allowing to compare one program's success, failures, and standards with other high school CTE programs.

During their document analysis of state CTE program guidance and policies as well as national program frameworks, Brodersen et al. (2016) identified the key components that the CTE programs focused on course content, course delivery, guidance and counseling, stakeholder partnerships, student leadership, student assessment, program outcomes, administrative program guidance, and administrative guidance for CTE teacher recruitment and training. Although differences existed in the way that each state perceived the policies, stakeholder involvement, and partnerships, the course content and delivery, student assessment, and career guidance and counseling were similar. To summarize, Brodersen et al.'s analysis demonstrated that states had few similar polices, resulting in identifying that key elements associated with high-quality of CTE program components is a necessity. Key elements can help states to structure their programs for the benefit of the students.

In response to CTE leaders' needs, Hyslop and Imperatore (2015) embarked on finding a conceptual framework based on research-based standards associated with many different CTE programs. The objective of their research was to identify and evaluate the specific characteristics of CTE programs and determine the most critical attributes of a CTE program that would endorse the claim of being superior. Their research would lead to the identification of the 12 key elements that can serves as a foundation for all CTE programs. To create an abridged version of what the voices of CTE and business/industry leaders thought to be high-quality CTE program framework, Imperatore and Hyslop (2017a) used the key elements to create a research-based conceptual framework that met the needs of those involved in high school CTE programs. To create the framework, Hyslop and Imperatore (2017b) conducted an in-depth review of existing programs that proved to be of quality based on companion documents, state policy documents, and previous analysis. Imperatore and Hyslop's (2017a) released their most current findings associated with high-quality CTE programs. Their conceptual framework includes key elements to provide clarity for CTE leaders regarding evaluative measures, restructuring of courses and successful elements of CTE programs. The elements are to provide a foundation for states to build high-quality CTE programs and can be adapted to meet the needs of each state. While the framework still allows for autonomy within each states' CTE programs, Imperatore and Hyslop (2017a) express that it is a tool that CTE leaders can use for continuity within the CTE programs. This study will benefit from the conceptual framework from this conceptual framework because it addresses all needs of a CTE program that supports the preparation of students with industry-ready skills.

Literature Review

The Literature Review of this study includes the history of CTE, a summary of the Carl V. Perkins Act that funds majority of the CTE programs in U.S. high schools, quality principles of CTE programs and how states respond to CTE programs. In addition to this literature, I include a review of how business and industry partner with high school CTE programs and the economic effect that CTE programs have on the community.

CTE History

Quality CTE programs propel America's future global competitiveness by meeting the needs of both employers and the economy (Drage, 2009, p.32). U.S. public education emphasizes the development of intellectual knowledge through curriculum standards and promotes a "College for All" philosophy but is college really for everyone? While research indicates that college enrollment is higher than ten years ago, but the total amount number of college degrees awarded to graduates remains steady (National Center for Educaiton Statistics, 2017), implying that more students attempt college but not complete the program. In other words, America is "witnessing more and more college students finding themselves graduated, strapped with high debt, and struggling to find well-paying employment opportunities that are aligned to their training" (Pengilly, 2018, p.2). Ultimately, if students are given more prospective career avenues earlier in their schooling through CTE programs, then students can take ownership in their choice of career. Students who choose a career path feel empowered and see their future as a contributing member of the workforce, in turn helping our economy to flourish.

Some form of career education has been a part of the U.S. school system since the 1900's. CTE programs gave students the opportunity for a hands-on experience that prepared them for the workforce. The passage of the Smith-Hughes Act of 1917 began the federal investment in secondary vocational education. At first, the focus of the vocational programs was agriculture, industrialized careers, and homemaking as a response to defending the nation (Boettcher, 2017). Emphasis was placed on providing students with training that aligned skills necessary for factory jobs and through time CTE programs have adapted to meet the needs of business/industry (Boettcher, 2017). As the global economy evolves, so does CTE (Crowder & McCaskey, 2015; Imperatore & Hyslop, 2017b). From the Industrial Revolution to the IT revolution, federal policies that fund and govern CTE programming have responded to the evolution of the workforce. Boettcher emphasizes that many jobs are still unfilled, even with recent developments in CTE. Today's economy demand workers that can fill middle-skill jobs that require certifications, technical training, STEM-based knowledge, and in some cases, a college degree (Boettcher, 2017).

As it was in the past and as it is today, CTE recognizes that student, business, and industry needs can be met through the development of CTE programs that keep pace with the ever-changing economy (Boettcher, 2017; Crowder & McCaskey, 2015; Imperatore & Hyslop, 2017b). Knowing that CTE programs were created to support an industrialized nation, it is worthy to call attention to the evolution of the needs of business/industry. In the beginning schools created manufacturing programs that provided skill-based training to students who would later work in factories. When the economy shifts in response to

the global demands in business/industry CTE programs shift their focus as well. For example, there is no longer a need for programs that provide training for work in a factory but there is a need for computer training to help atomize factories. While CTE programs once offered an education based on industrialized careers, they now offer training in computer sciences and engineering. Liao et al. (2017) presented information based on their understanding of the development of an industrialized nation. They focused on the main areas of growth within industry and outlined industrial progression from water and steam-powered manufacturing to electrically powered mass production, then electronics and informational technology that support automation. CTE programs strive to align their programs with the needs of industry/career and subsequently have progressed to address the development in industry outlined by Liao et al. (2017). Appropriately designed CTE programs that are supported by the federal government can strengthen an adequately prepared business/industry workforce (Saeger, 2017). By adapting to meet the demands of the ever-evolving business/industry workforce, Saeger implied that CTE can equip students with core academics, employability skills, and technical job specific skills.

Carl V. Perkins Act

Dating back to the 20th century, several legislative Acts have celebrated the need for a stronger workforce. For example, the Smith-Hughes Act of 1917 provided federal support for vocational programs to strengthen national security by reducing unemployment (Webb, 2019). In 1946 the George-Barden Act funded a broader range of vocational programs that were beyond the scope of agriculture, industry, trade, and home

economics (Bragg, 2018). The passing of additional legislative Acts continued to add to vocational funding programs, but the most significant Act passed was the Vocational Education Act of 1963, later renamed the Carl D. Perkins Act of 1984 (Webb, 2019). This Act increased the opportunities for students to gain employment experiences through work-study programs, apprenticeships, and hands-on technical education (Bragg, 2018). The Act improved program accessibility for populations such as individuals with disabilities, single parents, incarcerated populations, and low-income individuals (Bragg, 2018). Through amendments in 1990, "the Tech-Prep program was established to better coordinate secondary and post-secondary vocational education while changes were also made to require states to create and utilize performance standards to identify program success and student learning" (Bragg, 2018, p.3).

In 2018, the Carl D. Perkins Act was reauthorized as The Strengthening Career and Technical Education for the 21st Century Act which allocated $1.2 billion for CTE education (The Strengthening Career and Technical Education for the 21st Century Act, 2018). Also referred to as Perkins V, the newly reauthorized Act funds the development and improvement of CTE programs. Funds are distributed to states by an allocation formula based on population and per capita income factors. States then distribute funds to local CTE providers at the secondary and post-secondary education levels according to within-state allocation formulas specified in the statute (Granovskiy, 2018). Changes to the most recent draft of the Act include fund allocation, recipients of funding to enrich their programs through various activities associated with CTE leadership, accountability framework, and new programs that replace archaic programs (Granovskiy, 2018).

With the reauthorization of the Carl D. Perkins Act, Ferguson (2018) described that the dark age of CTE has passed. Researchers seem to agree that there is value in both an academic and career preparatory education (Fleming, 2012; Imperatore & Hyslop, 2017a). The newly reauthorized Act helps states and districts embrace quality CTE programs. As Ferguson reported, the new guidelines follow the same foundation as Every Student Succeeds Act (ESSA). The new guidelines delegated power to the states and limit the federal role. As a result, the states can set their own goals and indicators for CTE programs. Ferguson claimed that both business/industry and CTE program stakeholders seem to be pleased with the new guidelines. Some are concerned that too much power and freedom has been given to the states and districts and there will be a lack of accountability within CTE programs. For example, 41 states have indicated that they will use the funds to increase dual-enrollment classes, early college programs and increase the spending on work-based programs (Jacobsen, 2020). Jacobsen's report comes as more states are creating pathways to programs that prepare students with career skills and "sometimes industry-ready" credentials but no evidence of standardized programs within U.S. schools.

The overarching goal of the Strengthening Career and Technical Education for the 21st Century Act is to prepare more high school graduates that have industry-standard skills and improve their chances of workplace employment and success. Perkins V outlines eligibility standards in a more transparent style and does not allow for much interpretation. This set up each district and state with guidelines that must be adhered to for funding (Granovskiy, 2018). This created consistency in how sates receive funding to

implement CTE programs. Additionally, with the reauthorization, business/industry will benefit based on their partnerships and collaboration enforced by most states and districts. To conclude, the purpose of the Strengthening Career and Technical Education for the 21st Century Act is to increase a graduates' knowledge when entering the workforce and provide the graduate with the necessary tools to be successful in their respected career.

Quality Principles of CTE Programs

In today's workforce, it has been reported that high school graduates lack the skills necessary for general employment. Employers say that both industry-related and soft skills are not adequate. The increased need for employees that are workforce ready has led to an upward enrollment of students in CTE programs (Blozveren & Voytek, 2015; Bozick et al., 2017; Fleming, 2012; Hernandez et al., 2018; Imperatore & Hyslop, 2017b; Kamin, 2018; Keily, 2019; McPhail, 2018). However, research shows that CTE programs are still not equipping students with the industry-ready skills seen as necessary by employers (Bozick et al., 2017; Fleming, 2012; Imperatore & Hyslop, 2017b; Kamin, 2018; Keily, 2019; McPhail, 2018; U.S. Department of Education, 2014). Therefore, a fundamental piece of CTE programming to consider is how CTE can provide an industry skill-based knowledge to a broad student population (Hyslop, 2019). Research conducted by the CTE community indicates that many of the principles of a quality CTE program are embedded in substantial career development opportunities such as work-based learning opportunities, career pathways, and programs of study (Brodersen et al., 2016;

Hyslop, 2019; Rojewski & Hill, 2017; Stone, 2017). It is through the quality principles that the CTE community makes clear the success of the CTE program graduate.

No one-quality principle guarantees absolute success for the CTE graduate and their gainful employment after graduation (Venkatraman et al., 2018; Hyslop, 2019). Still, certain principles can provide more academic and workplace opportunities for graduates. Many of the similar principles are incorporated into the Perkins V outline of required quality principles and are a necessary component of CTE programs for the appropriation of funding. Such principles are:

1. career exploration and career development activities
2. readily available career and labor market information
3. programs and activities that are related to career plans and development
4. career guidance
5. advancement of knowledge of career opportunities
6. providing students with substantial experience in, and comprehensive understanding of, all aspects of the industry (Perkins Collaborative Resource Network, 2019a).

When the economy changes, so does the focus of CTE (Dougherty & Lombardi, 2016). Economists encourage change in CTE standards. These changes can be seen throughout the last century, as the CTE programs have been revitalized (Dougherty & Lombardi, 2016). The federal government has provided most of the funding to promote and implement the CTE programs to meet workforce and labor market needs. The federal government will continue to do so as employers and educators alike see the role of

education as "an engine of economic growth and a mechanism to equalize individual opportunity" (Dougherty & Lombardi, 2016, p.327). While the federal government mostly funds CTE programming, the states can dictate the specifics of the programs, and therefore, each state can respond differently to the use of the funds.

CTE programs must incorporate elements of high-quality curriculum, effective pedagogy, and authentic assessment. According to Conley (2015), there are four critical criteria for the success of students that are career (and college) ready: Think, Know, Act, and Go. Conley's success criteria align with quality principles that are necessary components of CTE programs. Conley believed that these criteria, when facilitated within a high-quality program would develop academic learners that have the cognitive ability to understand the content of the curriculum which leads to the techniques and skills necessary to be career ready. Conley's research indicated that students must have cognitive abilities that allow them to learn the material at a deeper level to make connections from course to course and to their career, have content knowledge that allows them to develop their conceptual understanding of subject material, take ownership of their learning through specific techniques such as study skills, goal setting, and self-regulation, and must have the knowledge, skills, and ability to secure the necessary resources that will help them to transition to post-secondary education or career.

Committing to these principles is necessary for a CTE program to foster student clarity and independence and is indicative of how a CTE program can contribute to a student's success in a career. CTE programs that provide an environment that promotes

work readiness through a combination of required superior principles such as high-quality curriculum, effective pedagogy, and authentic assessment lead to valued life transitions.

State's Response to CTE Programs

During the 2016-17 school year, 98 percent of schools in the U.S. had some form of a program that helped to prepare students with career skills (Gray et al., 2018). Hess and Martin (2019) examined why there is a heightened interest in CTE programs, as they report, since 1998 the number of CTE programs have steadily increased. Hess and Martin provided three takeaways from their data analysis. (a) It was clear that the for the previous two decades there had been more interest in programs that prepare students for the workforce, but it was not known why. (b) CTE advocates assume that it is time for career-centric education. 3. The rise in interest of CTE programs coincides with other education reforms. Regardless of the reasons for the increase in CTE programs within U.S. public school systems, each state seems to tailor their instructional practices, curriculum, and application to fit their needs.

The State of Idaho has three goals for its CTE programs: connect students to careers, provide a talent pipeline for Idaho industry, and make education meaningful through the applied application of skills acquired in the CTE programs (Idaho Career and Technical Education, 2020). The mission and vision of the Idaho Career and Technical Education (2020) is to prepare students with skills for in-demand careers, to the statewide economy. Through educational system alignment, educational attainment, and workforce readiness, Idaho CTE programs are committed to the future workforce of the state.

The Idaho CTE Strategic Plan FY2020-2024 outlines the goals, objectives, and performance measures to ensure that students are ready with the skills needed to be successful for in-demand careers. For students to be career-ready, the vision for Idaho CTE is that all programs incorporate educational opportunities that align with the Idaho workforce needs. Idaho CTE programs strive to meet the needs of Idaho employers through program standards alignment, advanced opportunities, provision of an environment for students that builds their understanding of practical and theoretical knowledge. The plan also outlines the way in which school should promote an effective and efficient program that meets the needs of CTE leaders and students. In conclusion, Idaho's CTE programs in agriculture, business and marketing, engineering and technology, family and consumer sciences, health professions and public safety, and trades and industry strive to engage students in a meaningful curriculum that connects students to real careers.

Another progressive example of how states have responded to the need for an industry-ready workforce is the legislative initiative Florida Career and Professional Education (CAPE). CAPE was enacted in 2007 and continues to strengthen the pipeline for CTE graduates in the Florida workforce (Fletcher & Tyson, 2017). The State of Florida focuses on high school programs and middle school programs. CAPE's main objective is to establish industry partnerships with businesses that had a high demand for employees. From these partnerships, career-themed courses were created to yield an industry certification or college credit for students that were involved in the courses (Fletcher & Tyson, 2017).

In an executive summary prepared by Glennie, et al. (2017) for the U.S. Department of Education, it was noted that CAPE had a positive influence on developing students for life after graduation, whether it was a career or post-secondary technical schooling. The data analysis proved that earning the certifications from a CAPE program helped students get jobs or earn additional credits towards an associate degree. The number of certifications increased dramatically from CAPE's inaugural year to the 2010-11 school year. This evidence proves that Florida's response to CTE programs was valuable and beneficial for students.

The State of California had one of the most extensive apprenticeship programs in the U.S. The large number of apprenticeships is in response to the state's economic growth and access points of work-based learning programs (Koller, 2018). Koller provided information that California's apprenticeship model is derived from a longtime quest for an adaptable school-to-work pathway for students. Currently, there is a proposed California Education to Employment Model that lays the foundation for dual path systems that maintains a student's academics but adds a paid work-based education. However, implementing a statewide program at the magnitude that California requires is difficult. Even if difficult for other states, California's apprenticeship programs have demonstrated that when educators and business/industry work together, both the student and future employers' benefit (Koller, 2018).

Educational Practices

Educational practices are continually evolving. The recommended delivery of content seems to be endless (Hattie, 2009). As the literature is rich with what teachers

should do in the classroom and how to apply instructional methods in the classroom. It is often daunting for teachers to determine which practices best meet the needs of their students and the needs of a community (Frazier & Stiffler, 2016). The seminal work of educational researchers, Conley (2015), Hattie (2009) and Knight (2013) recommend that educational practices should be based on the principles of instruction, curriculum, and application.

Instruction

When teachers reflect critically on the student thinking and use learning strategies to address the needs of the student, students are more likely to be engaged in the learning (Hattie, 2009). In his meta-analysis, Hattie concluded that when a teacher emphasizes the engagement level of the student and can articulate strategies of instruction that reflect the level of engagement, the instructional piece of the classroom is more apt to be successful. Education through instruction is more than teaching someone to think. It is teaching someone that some things are worth learning. Instruction that is deemed "good," is never about merely injecting more ways of thinking about the curriculum but rather, deciding which type of instruction best benefits the student's way of thinking and using that to help students make sense of the curriculum (Hattie, 2009).

It is presumed that students have different styles of learning, when instruction aligns with each style; the achievement is enhanced (Hattie, 2009). However, meeting the need for every learner is often tricky. When one method of instruction is not working, a teacher must determine which learning style best fits the student. Hattie encouraged teachers to become learners themselves to monitor their instructional practices. During

the teacher being the learner, the learning itself becomes visible in such a way that the teacher can "see" the type of instruction that a student need. Hattie reviewed the instructional practices of teachers in the United States and found that teachers who were active and involved had the most influence in a classroom. Based on the learning outcome of the students, this method of instruction minimized misconceptions of the curriculum. For this evidence, it is understood that when a teacher is actively involved in helping the student construct his or her knowledge instead then directing the student to knowledge, a student is more likely to be successful.

Instruction in a CTE program that is skill-based and hands-on seems to be the most beneficial method for student learning (Imperatore, 2019b). Crowder and McCaskey (2015) reported that since the Smith–Hughes Act of 1917, CTE instructional theory had been centered on behaviorism. Still, many scholars believed that this was not indicative of a program that required students to use their kinesthetic ability to learn. Therefore, a better approach to CTE instruction in the learner-centered classroom is constructivism. In the end, this shift in pedagogy has led CTE teachers to reflect on their style of teaching and how it best benefits the student.

The CTE classroom presents an opportunity for students to be immersed in real-world scenarios, which contributes to an authentic learning environment. Knight (2013) explained that authentic learning engages students because learning becomes more relevant to their interests. Knight further justified authentic learning citing that it must include students having a voice in what they are learning. If the student is part of defining the project that helps to solve a problem, students deepen their understanding of the

content. According to Knight it is important for students to see how learning is related to the solution of the problem. In this constructivist learning environment students make connections between the classroom and real-world skills that contribute to their career.

Educator quality is not a new facet of education (Myers, 2015). Having a knowledgeable and prepared staff is an essential component of a successful CTE program. Teachers need to have both content and pedagogical knowledge to ensure that students receive an effective and equitable education (Bowen et al., 2019). However, not all CTE teachers are credentialed as many of them are placed in their position due to their experience within the industry, having not attended a teacher preparatory program (Bowen, et al., 2019). With new Perkins legislation as well as accountability and quality standards, the call for knowledgeable, prepared, and credentialed staff is being emphasized across CTE (Bowen et al., 2019; Myers, 2015). To build a credible CTE program it is more important than ever to have qualified and effective teachers (Bowen et al., 2019; Myers, 2015). Myers' reports that as CTE programs emphasized the need for students to gain industry knowledge and skills, it is important for teachers to model the behaviors associated with each specific industry and therefore be held to the same credentialing standard that students could be accountable for in their future career. Myers' conclusion signaled a plea for CTE leaders to take action in having CTE teachers earn teaching credentials for the benefit of the CTE community and the students.

To summarize, research implied that CTE program students best develop the knowledge and skills in a non-passive environment and should be immersed in a classroom-based on constructivism (Crowder & McCaskey, 2015). Instruction that is

delivered through real-world scenarios is essential to a CTE education, as is the instruction that incorporates tools that support learning (Imperatore, 2019a; Kukovec, 2018). Instruction should be relevant and differentiated to meet the needs of the students in the classroom. One key consideration for CTE educators is to emphasize the connection between academics and technical knowledge, building on the skill-based knowledge that is required by employers (Imperatore, 2019a). It is necessary to instruct using industry-specific skills that are relevant to the work that will be performed in the workplace. By modeling industry-ready skills in the CTE classroom, students learn to use their skills effectively as they are directly tied to what employers require for success in the workforce.

Curriculum

Learning to use the skills required by employers is a fundamental part of a CTE program's curriculum. Saeger (2017) reported that many students are not prepared for either college or career and placed emphasis on the need for high schools to prepare all students with academic knowledge, and employable job-specific skills. The preparation of students can be accomplished by developing a CTE curriculum that better aligns with standards viewed as career ready. In Saeger's review of CTE needs, it is mentioned that CTE programs can advance the skills and knowledge of students that are required by employers by creating a comprehensive curriculum within CTE. Saeger concluded that with further development of standards-aligned to curriculum, CTE program students will be provided with the skills required by employers to be successful in today's globally competitive high-skills/high-demand workforce.

Developing CTE graduates' employable skills is the foundation of the curriculum (Rowe & Zegwaard, 2017; Saeger, 2017). For example, Rowe and Zegwaard (2017) bring attention to the scaffolding of curriculum. Scaffolding curriculum is the equivalent of developing conceptual understanding through previous knowledge. That is, in a CTE classroom it is essential to bring meaning to the skills students are learning and how the skills are developed to meet the needs of the workforce. Each knew skill building on the previously learned skill. In other words, a holistic approach to teaching the curriculum development is a practical pedagogical approach.

A recent study depicted a comprehensive view of state practice in policy requirements of CTE programs that examined several quality indicators and guided the development of CTE programs (Xing et al., 2017). Xing et al. found through deductive content analysis 14 quality elements of CTE programs. The results of the study indicated that of the 14 quality elements, state placed emphasis on correcting aligning curriculum to meet employer needs. Standards aligned to the curriculum was highly valued by 34 of the 50 states. In fact, these states instituted policy that required CTE programs to align curriculum based on the needs of students' potential employers (Xing et al., 2017). The state policy requirement of a standards-aligned curriculum demonstrates the effectiveness of a quality curriculum that aligns with standards of importance to the workforce.

Skills needed in the workforce that are aligned with high-quality curriculum create equitable CTE programs. Olson (2018) found that high-quality curriculum materials matter in student learning. When the curriculum reflects a state's needs, students are more adequately equipped with the knowledge need for placement in the

workforce. To ensure equity within a CTE program the curriculum must be applied correctly and consistently used. Every CTE student must have the same access to high quality materials so that they have a better opportunity for employment.

Aligning state CTE programs with industry needs is a "non-negotiable" priority (Suffren & Mezera, 2019). Through Suffren and Mezera's CTE program audit and discussions with policymakers, they found that CTE course standards must accurately represent the academic, and technical employability skills that students must master before entering the workforce. Regardless of what approach policymakers use to create standards-aligned curriculum, the curriculum must be of high quality and meet the needs of the state industry.

The Perkins V Act outlined articulation agreements so that students are immersed in aligned coursework that is scaffold from one class to the next (Perkins Collaborative Resource Network, 2019a). The articulation agreements are written agreements between secondary and post-secondary schools to help facilitate a seamless transition for students if they choose to continue their education in a CTE program after high school graduation (Adams & Just, 1997). As stated in Adams and Just (1997), there are many formats to developing articulation agreements in CTE programs, but the most beneficial format is when school administration, teachers, and employers collaborate to outline skill-oriented pathways that build on student knowledge.

Curriculum sequencing and alignment are crucial to any program, but as Wijngaards-de Meij and Merx (2018) pointed out, even when a student is convinced that they have background knowledge, often they do not. To optimize student learning,

curriculum alignment is essential, that is, the cohesiveness between what is taught and what is learned must be visible to both the learner and the teacher and build from one course to the next (Wijngaards-de Meij & Merx, 2018). Students must be able to articulate what they have learned, what they will learn, and what they did learn. The students' articulation can help to further curriculum alignment, making learning more visible.

In conclusion, the curriculum for CTE programs should begin with a specific career focus and be structured to fit the skills needed for entry and advancement in a career (Stone, 2017). The curriculum should encompass employability and technical skills referred to as industry-ready skills and be scaffolded to build a knowledge base for students. By doing so students have a deep understanding of what is required to be employable in the career of their choosing.

Application

The application of skills should be met with enthusiasm and curiosity (Kukovec, 2018). It is through the practical use of skills that the teacher can determine if the students have mastered a skill. Research indicates that if students are more enthusiastic and curious about what they are learning, then they will develop a deeper understanding of what is being taught (Conley, 2015; Hattie, 2009; Knight, 2013; Kukovec, 2018). In CTE schools, it is vital to create an engaging environment so that the students can gain the knowledge that they need to learn the skills that they will apply to business/industry (Kukovec, 2018). Kukovec (2018) found that if teachers make the classroom more interesting and allow students to actively participate in the actual process of teaching by

applying the skills that they learned through means of reciprocation, the students gained more interest in the profession in which they were preparing for. In the classroom environment, when peer learning is reinforced, Kukovec (2018) determined that students could explain things in a "student-friendly" way, therefore students could relate more effectively to what skills were being taught in the classroom and how they apply to the experiences of the real world.

Engaging students through inquiry is another way to identify if students can apply the skills, they learn to what employers are expecting them to be able to do. In a CTE program, there should be different levels of inquiry (Schwartz, 2017). There are four types of inquiry. The first type of inquiry is structured inquiry. In a structured inquiry, the teacher poses a question and students are guided to a predetermined outcome. The second type of inquiry is confirmation inquiry where students are provided with a question and the method for how to answer the question. Like structured inquiry, there is a predetermined outcome. Confirmation inquiry is useful for emphasizing material that has already been covered. Using these two approaches in a CTE classroom CTE educators can correct any misconceptions while students demonstrate that they can apply the skills needed for the workforce (Schwartz, 2017). Guided and open inquiries are the last two levels of inquiry. They are advanced levels of inquiry and require a higher-level application and thinking skills. Both types of advanced inquiry give the student the responsibility of learning the content and demonstrating how to apply the skills they have learned while finding a solution to a problem. CTE educators can use any of the inquiry methods to determine if the students can think profoundly while applying industry skills,

and then question how they have applied the skills required by the workforce. Using any of the levels of inquiry, CTE teachers can determine if students can apply their skills in their career.

Business/Industry Partnerships

Business and industry partnerships are foundational in CTE programs (Imperatore & Hyslop, 2017a). As outlined in this section, there are many ways that CTE programs can be connect to potential careers for students. A further explanation of industry-specific skills and how CTE program can positively affect the economy is also highlighted in the following section, thus demonstrating the importance of business/industry partnerships in CTE.

Connecting School Programs to Career

When examining current CTE programs in the U.S., Stone (2017) found that when compared to CTE programs of other industrialized nations, the U.S. lacked formalized structured program. The Perkins V Act outlined an overview for how CTE programs should be structured and loosely interprets how each state should facilitate their CTE programs (Stone, 2017). As each state is given the freedom to determine how to structure their CTE programs, inconsistent practices in CTE programs are created.

CTE programs have relaxed partnerships with the business/industry resulting in a lack of industry-recognized skills (Stone, 2017). But Stone found that CTE do programs have the potential to teach students industry-ready skills that will contribute to the students' appeal to employers. There is criticism among prominent companies that K-12 education emphasizes college readiness and excludes career readiness. By focusing on

college readiness, traditional schools do not equip students with all the skills necessary to be successful in the workplace (Fletcher & Tyson, 2017). A connection between business/industry and CTE programs becomes an essential component of CTE programs as the partnership can equip students with the skills that are recognized by business/industry, which would provide a pathway from graduation to career. Fletcher and Tyson (2017) and Passarella (2018) indicated that one way to provide students with a career pathway is through a career academy. A career academy ties students directly to a career. A career academy is a more supportive environment for students. It is based on academic and occupation-related coursework. Career academies are known for establishing partnerships with local employers to better understand what students need to be successful in the workforce (Kemple, et al., 2000). Passarella's (2018) research review revealed that career academies had a positive effect on employment and high school achievement. Through early connections with employers, students are given more opportunities to leave a lasting impression on the business/industry community.

Research has shown that the lack of connection between education and employment can be mitigated is through apprenticeships or internships (Jackson et al., 2016). While employers are more apt to hire students with work experience (Jackson et al., 2016), apprenticeships or internships that are supervised by leaders within CTE programs can give the hands-on-skills that employers see as beneficial, thus giving the student the experience that an employer make be looking for. The advantages of apprenticeships or internships are widely documented as they place students in a hands-on learning environment that can be engaging for the student. Additionally,

apprenticeships or internships allow employers to observe future employees (Jackson et al., 2016). To summarize, apprenticeships, and internships that promote real-world experiences support students learning skills that are required to be successful in the workforce.

Industry-Specific Skills

Employers complain that there is a large skills gap in the graduates from CTE programs (Alic, 2018; Critchfield, 2019b; Jackson et al., 2016; Keily, 2019; Koller, 2018; Stone, 2014; U.S. Chamber of Commerce, 2017). Alic reported that the skills gap would foster automation, meaning that companies that cannot find suitably skilled employees will turn to artificial intelligence systems, thus eliminating the human worker. Therefore, CTE programs must provide industry-specific skills and training to students. Employers refer to industry-skills as the ability to perform a particular task or job. However, the exact type of skills that employers are looking for vary widely (Alic, 2018). Through collaborative relationship CTE and business/industry leaders, can determine the skills student need to help fill the gap of unskilled employees.

Research supported a collaborative relationship between CTE and business/industry leaders (Jackson, 2014; King, 2016). The relationship formed a strong school-to-work pipeline where each has input on the skills that are taught to the students. For example, the construction industry flourishes with each economic boom and the need for skilled construction workers increase. CTE programs can use their course in construction to increase the number of skilled employees. When the CTE programs align with local employment opportunities, the economy can be influenced positively because,

potentially, there will be more skilled workers available for hire (King, 2016). Imperatore (2019a) further supports the need for CTE and business/industry collaboration that focuses on industry-skill development and encourages sustainable partnerships. The most impactful partnerships are the ones in which CTE, and business/industry leaders work together bridge the gap between graduation and career. By having a CTE program align with the requirements of local business/industry, the in-demand skills required for future employment can be imparted through curriculum and instructional strategies and prepare students more satisfactorily for the workforce (Imperatore, 2019b; Jackson, 2014; King, 2016).

Economic Effects

To meet the demands of the 21st century, CTE programs have been overhauled to benefit the student and the workforce (Fletcher et al., 2014). The overhaul has an economic benefit to society. Stone (2017) explained that CTE programs could help students to become productive community members that earn wages that are supportive of a family. Stone made it clear that the U.S. cannot compete with labor costs associated with less-developed nations. Through CTE programs, students can learn the skills necessary to help the U.S. with the quality of the goods and services thereby helping the U.S. be economically competitive with other nations.

Education is an economical essential for individuals and societies. "Human capital refers to the intrinsic productive capabilities of human beings" (Eide, & Showalter, 2010, p.282). The productivity of humans can be increased through investments such as education. One empirical estimate of education indicates that for every year of post-

secondary education, there is a 10 percent rate of return monetarily (Eide, & Showalter, 2010). If a person makes more money, they will spend more money, growing the economy of our nation. The importance of knowledge has been recognized since the beginning of time. Not only does education influence individuals economically, but society is influenced as well. Education helps people succeed in the labor market as it increases their ability to solve problems rationally, communicate effectively, and helps to provide needed personal and social skills (Eide, & Showalter, 2010).

Human capital can also be defined as the investment in education or on-the-job training (professional development) for the betterment of society. It is viewed as an asset that generates a flow of services that is measured by how much someone earns (Eide, & Showalter, 2010). Patrinos and Psacharopoulos (2018) summarized the economic realities of education by indicating that education has the power to reduce poverty and sets the foundation for sustained economic growth. Investment in human capital can lead to social change and positively affect the economy. If the economic realities of society need adjusting, then investment in human capital through educational means demonstrates the influential factors of education for social change.

The Bureau of Labor Statistics (BLS) employment projections for the 10-year period (2016-2026) specify that there will be 11.5 million new job opportunities for citizens in the U.S (Passarella, 2018). Of the 15 fastest growing occupations, only 7 required a bachelor's degree or further education thus lending more credence to the claim that skills acquired in a CTE program is a valuable alternative to a traditional educational path. While there is some speculation that automation will displace some of the

workforces, their opposition is that automation will create more jobs (Passarella, 2018). No matter what the thought may be, the need for industry-skilled employees should be understood and agreed upon that the projected new jobs could be supported by industry-ready skills acquired within a CTE program (Passarella, 2018).

The underpinnings of the economic effects of CTE programs are most evident in the support that the programs offer to the students that have been potentially "priced out" of 4-year college institutions. Dougherty (2018) noted that CTE programs often provide a pathway for secondary students who may not attend post-secondary schools and that students who participate in a CTE program earn a premium wage over similar students that do not participate in the programs. Through the analysis of data sets related to students that dropout and their socioeconomic status, Dougherty argued for a causal relationship. However, students who were involved in a CTE program were more likely to continue in school as they saw how and how CTE can affect a students' earning potential in the workforce. Involvement and graduation from a CTE program have a positive economic effect. There is validity in how a high school CTE program can provide long-term financial benefits to employees and employers. CTE programs allow students to capitalize on their future by creating opportunities to learn skills needed for success in the workplace. To conclude, a CTE program's economic effect is powerful as it creates more significant human capital.

Summary and Conclusion

Vocational education that has evolved into the current CTE programs of today show evidence that CTE has progressed to meet the needs of today's society (Dougherty,

2018). Policymakers, educators, and business/industry leaders have adjusted the CTE programs based on the prioritization of the economy and community. The adjustments made have typically been associated with in-demand careers (Dougherty, 2018). Even with the modifications that have been made, business/industry leaders still indicate that not all CTE program graduates are prepared for the workplace with industry-ready skills (Bozick et al., 2017; Fleming, 2012; Imperatore & Hyslop, 2017a; Kamin, 2018; Keily, 2019; McPhail, 2018; U.S. Department of Education, 2014). If the CTE programs are structured appropriately through instruction, curriculum, and application, then CTE can provide a clear pathway for students to workplace employment (Saeger, 2017) leading to social change by empowering students to engage in a career and take part in advancing the nation's global economy.

The development of high-quality CTE programs is a critical factor in providing business/industry with employees that have skills that are associated with industry-ready standards. To adequately prepare CTE students, CTE and business/industry leaders must identify curriculum that targets industry-ready skills that contribute to the students' professional learning development as well as teaching strategies that engage the students. Through engaging instruction and detailed curriculum and appropriate application students become familiar with how to apply industry skills needed to increase their chances of workplace employment. Grounded in Conley (2015), Hattie (2009), and Knight's (2013) seminal work, programs that use best practices in education are successful in preparing students for the next step in their life. Based on the perspectives

of CTE and business/industry leaders, this study addressed the need for best practices in CTE that supports industry-ready skills.

In the next chapter, I presented information for the methodology that was used for my qualitative study. The methodology chapter contains the following subsections: Research Design and Rationale; Role of the Researcher; Methodology; Issue of Trustworthiness; and Summary.

Chapter 3: Research Method

Introduction

The purpose of this basic qualitative study was to explore the perspectives of CTE and business/industry leaders about which educational practices in CTE programs can adequately support the preparation of students with industry-ready skills (DeFeo, 2015; Imperatore & Hyslop, 2018; Liberman et al., 2017; Passarella, 2018). In this chapter, I outline and justify the selection of the qualitative approach and the rationale for the qualitative design of my study. This chapter also includes the issues of trustworthiness and the ethical procedures used when recruiting the participants of the study as well as the ethical considerations related to the data collection. I conclude the chapter with a summary of the main points of the chapter and a brief overview of Chapter 4.

Research Design and Rationale

This was a basic qualitative study. The rationale for this traditional research was based on Denzin and Lincoln (2011), Merriam (2015), and Bogdan et al.'s (2015) analytic understanding that qualitative research is oriented toward understanding the natural world. This study was based on the descriptive data derived from understanding people and their perspectives. I designed the study to identify how CTE educators and business/industry leaders make sense of what educational practices prepare students to be successful in the workplace. The research questions asked in this study were as follows:

RQ1. What are the educational practices that CTE and business/industry leaders think support industry-ready skills preparation in a CTE program?

RQ2. How can educational practices be applied in CTE programs to prepare students with industry-ready skills needed for employment in the workforce?

Qualitative research can be described as a tradition, shedding light on the nature of emergent construction, influences from the researcher's position, and is a complex product that densely reflects the phenomenon under analysis (Denzin & Lincoln, 2011). In addition to Denzin and Lincoln's (2011) description of the qualitative research tradition, Merriam (2015) and Bogdan et al. (2015) added that qualitative research must be inductive, where several examples are used to make conclusions, moving from specific observations to broad generalization and finally forming a theory; therefore, the basic qualitative research tradition was best used in this study because it focused on a variety of perspectives from CTE stakeholders.

Qualitative research is described as "qualitative research draws heavily from a constructivist worldview where what is important is how people construct the meaning or understanding of the phenomenon" (Merriam, 2015, p. 126). Many reasons exist to use a basic qualitative method of study. In this study, the first rationale for the use of the qualitative tradition was that the study was derived from the nature of the research questions that I designed to find a certain relationship among the variable of the phenomenon of the study (Clark Plano et al., 2007; Merriam, 2015). The second rationale was to seek to understand the theoretical interpretation that not all CTE program graduates are prepared with industry-ready skills leading to success in the workforce. I posed the research questions for this study to gain a deeper understanding of the central phenomena of the study (Merriam, 2015). The third rationale for the use of qualitative

tradition was that basic qualitative methods emphasize the researcher's role as an active learner instead of judging the research participant's perspectives (Bogdan et al., 2015; Clark Plano et al., 2007). In other words, as researcher, my goal was to synthesize the information presented by the participants to better understand what industry-ready skills, when facilitated through CTE programs, prepare students for the workforce.

Qualitative research inductively builds theory from the observations of social phenomena and yields descriptive data based on the experiences of people (Bogdan et al., 2015; Merriam, 2015). By being curious and using techniques associated with inquiry learning, qualitative researchers try to make sense of the world around them. In this study, the primary research questions were as follows:

RQ1. What educational practices support the preparation of students with industry-ready skills, in a CTE program?

RQ2. How can educational practices be applied in CTE programs to prepare students with the industry-ready skills needed for employment in the workforce? The research questions helped identify and explain the phenomena of the study and adhere to the philosophical vision of qualitative research that is to describe life. I wrote additional sub questions to assure that the primary research questions were adequate. Thus, in this study, qualitative research was based on the perspectives of others to help us understand the nature of the CTE and how it can support students with industry-ready skills (Bogdan et al., 2015; Denzin & Lincoln, 2011).

Role of the Researcher

Research is not a linear process, as pointed out by Ravitch and Carl (2016). Research takes time, is different for each researcher, and is based on the role that the researcher plays. The roles of the researcher can vary from providing descriptive analysis, an objective viewpoint, or simple journaling (Bogdan et al., 2015; Karagiozis, 2018). For the past 20 years, I have been an educator. As an educator, I have served on several committees to strengthen middle-level and STEM education. I am a leader in teacher and student clarity as well as inquiry-based learning. In my career, I have been asked to research and implement programs in schools, which provide evidence to the use my analytical skills to find solutions to problems within an educational setting and to act in implementing the solution for the benefit of an educational program. As a researcher, I always ask probing questions, listen, think, and ask additional questions to gain a deeper understanding of the data being collected. Research is much like a machine, where all the parts work together in a systematic way to produce new knowledge or deepen the understanding of a topic. In qualitative research, the researcher must remain flexible in thought and the study (Bogdan et al., 2015).

In qualitative educational research, implications exist for how the researcher perceives the ideas of the study participants (Karagiozis, 2018). I had no personal or professional relationships in this study that interfered with the research, because my educational role is a middle school science teacher and I do not work in the school of the participants. My role as the researcher included remaining neutral, because I used unbiased summarizations to cultivate the interpretation of each participant's perspective

and how their experiences led them to interpret what is needed to prepare students for the workforce. As explained by Karagiozis, many complexities of research exist, and the bias of the data based on the researcher's opinion is one of the complexities. To mitigate any ethical issues that may have arose from my role as the researcher, it was necessary to correctly interpret the participant's story that was based on the outcome of the construction of knowledge gained in the interviews (Karagiozis, 2018).

Methodology

Guaranteeing that high school graduates are prepared for the workforce through a CTE program requires the involvement of CTE stakeholders. Identifying the practices in education that when used in CTE programs will ensure the students are equipped with necessary industry-ready skills to be successful in the workplace. In the methodology section of this study, I describe the action that I took to investigate what educational practices CTE, and business/industry leaders think support industry-ready skills preparation in a CTE programs and how these educational practices can be applied to prepare students with industry-ready skills needed for employment in the workforce.

Participant Selection Logic

A northwest state provides CTE to 83,000 students (U.S. Department of Education Office of Career, Technical and Adult Education, 2018) and is guided by 21 CTE administrators. This state has six educational regions. The educational regions are divided by the states' geography and each educational region was represented in this study. I used purposive sampling. Purposive sampling is the deliberate selection of participants based on their characteristics (Bullard, 2019). To conduct this study in a

northwest state, approval from the administrator of the state's CTE department was granted. The northwest state's CTE office is responsible for secondary, postsecondary, and adult and career technical education programs that are delivered in the public high schools and technical colleges. Approval was granted after I sent the administrator of the CTE office a letter asking for approval to conduct the study in the state. In the letter, I asked the state administrator to provide me with a list of the CTE high school administrators and business/industry leaders affiliated with the states' CTE programs. This list contained potential participants for the study. Prior to my formal request, I had verbal approval from the state's CTE state administrator to conduct the study in the state. I completed the Walden University IRB application for approval to conduct the study and was granted approval by Walden University to conduct the study, and I recruited the participants for the study.

To obtain study participants, the recruiting strategies included identifying CTE stakeholders recognized by the state's Board of Education CTE department which included school district's CTE program directors or administrators that associated with the northwestern states' CTE. Business and industry leaders were identified through the CTE program leaders. The participants of the study were recruited through letters of invitation sent via email. The participants of the study included six CTE stakeholders with educational backgrounds and six business/industry leaders associated with CTE programs; therefore, there were 12 participants of this study. The sample size was selected based on the number of educational regions in the state and was related to saturation because the participant pool represented each of the six educational regions of

the northwestern states' high school CTE programs. Merriam (2015) recommended that a researcher set criteria for selecting participants. The participants verified their relatedness to the study prior to the interview. To conclude, purposive sampling was used to provide a comprehensive and in-depth view of the educational practices used in all six educational regions that support industry-ready skills in a northwestern state' CTE programs.

CTE Program Administrator Participants

CTE program administrators of this study are currently involved in a public high school that has a CTE program, currently be certified by the State Board of Education and hold valid teaching certificates. The CTE program directors have had active roles in CTE for at least three years.

Business/Industry Participants

Participant criteria for those representing business and industry leaders included being affiliated with the industry in which the high school offers a similar program and some awareness of current CTE practices. The business/industry leaders were identified by CTE administrators. The business/industry leader participants have had active roles in CTE for at least three years.

Instrumentation

Interviewing is the most popular choice of data collection in a basic qualitative study (Merriam, 2015). Therefore, the primary source of data in this study was collected through semi-structured, open-ended interviews. To make certain that the interviews were connected to the purpose of the study, three experts that were not associated with the

study reviewed the interview protocol. The experts had terminal degrees in education and provided feedback on the content of the interview protocol. The interview protocol was researcher-developed, informed by the purpose of the study, and utilized the research literature to form the questions. The interview protocol (Appendix) consisted of interview questions aligned with the research question, the construction of inquiry-based questions, and sub-questions associated with the research purpose. To ensure the sufficiency of data, the open-ended, semi-structured interview was used to compare the perspectives of CTE stakeholders by uncovering factual and meaningful data (Patton, 2015), resulting in the significance of educational practices used in CTE programs to prepare students with industry-ready skills.

Procedures for Recruitment, Participation, and Data Collection

Based on the established criteria of this study, I selected participants for this study. I approached the selection of the participants purposefully. My main objective was to understand what CTE stakeholders feel are necessary educational practices that should be used to prepare students for the workforce and therefore I selected participants that helped to provide data that developed the central phenomena of this study, fitting the theory that there are educational practices that when used appropriately prepare students for success in the workplace.

I recruited the participants of the study using the CTE High School administrators and business/industry leader list that was provided by the state CTE administrator. The recruitment of participants was completed through invitations sent to potential study participants. The invitations were sent through email and included basic information

such as the nature of the study, what to expect in the study, criteria for study participants and how their privacy will be protected. There was no expectation for the potential participant to be involved in the study. Had the recruitment strategy resulted in too few participants, I would have contacted the state administrator of CTE for additional participant ideas. This mitigated by sending 21 initial invitations to both CTE administrators and business/industry leaders for participation, from which I was able to obtain the 12 participants needed for my study.

Participation

The participants of the study were purposefully selected from CTE administrators and business/industry leaders that accepted the invitation to participate in the study. When the participant accepted the invitation, I sent the Letter of Consent to be signed by the participant. The Letter of Consent consisted of: (a) background information and purpose of the study, (b) voluntary nature of the study, (c) risks and benefits of being in the study, (d) privacy information detailing how the data collected in the study will be protected as well as the confidentiality of the participant, (e) contact information for myself and Walden University, and (d) how to give consent to be a part of the study. When the participant agreed to participate in the study, they signed the Letter of Consent that was established by Walden University. Letters of Consent requesting final acceptance to be a part of the study were emailed to the participants prior to the study to inform the participants of the final details of the study. When I received the signed Letter of Consent, I contacted the participants to schedule an interview. The participants were released from the study once they have reviewed the transcripts of the study. A thank you

letter was sent to the participants, making them aware of my appreciation and release from the study.

Data Collection

For the data collection of this study, I used the interview protocol (Appendix) that consisted of sub-questions that supported the two primary research questions, which were used to reflect an increased understanding of the problem and purpose of the study. The sub-questions were used as probes to deepen my understanding of what educational practices, when used in a CTE program, support a student with industry-ready skills and how the educational practices should be applied in a CTE program.

To complete the 12 interviews of this study, I used teleconferencing. Since the objective of this study is to gain an understanding of the perspectives of CTE and business/industry leaders and what educational practices prepare students with industry-ready skills, the context of this study was based on the interview responses from CTE leaders. The interviews lasted no more than 45 minutes. Digital recordings that used my computer's memo recording software and verbatim transcription using software that transcribed directly from the application, formed the database for the analysis of data gained during the interview. The interview recordings and transcriptions are stored and protected by passwords.

During the interview, I kept a field journal, it helped to tell the story of the interview. After the interview was complete and I transcribed the interview, I sent a thank you email with the interview transcripts to the study participants. I asked each participant to review the transcript for accuracy and make any changes to the transcripts that they

saw necessary. This was done through email. The review of transcripts took longer than 20 minutes. If changes needed to be made, I made the changes to the original transcript and asked for a second approval from the participant. This was done through email and took no longer than 10 minutes. Only three participants made changes to the transcript. Asking the participants to review the transcripts provided clarity of data and assured the accuracy and content validity of the interview. Patton (2015) recognized the importance of saturation and recommended that the researchers continue to add to the data of the study until saturation has been met. In this study, I used an interview script and continued to probe until no new information was uncovered. This satisfied the relationship between the sample size and data saturation.

Data Analysis Plan

The final analysis of data is what shapes the entire study (Merriam, 2015). A systematic way to code data is critical to the analysis of the data (Ravitch & Carl, 2016). I used a data analysis plan to move inductively from coded units of data that are based on transcript analysis to thematic representations of the overall data. The final analysis of data included themes that were relevant to the overall findings of the data. To help define the themes, this study was grounded in the conceptual framework, and it was used as a source to make logical connections between the data from the study and the emerging themes derived from the data analysis.

From Merriam's (2015) summary of qualitative methodology indicating that the interpretation of data collected during the interviews of a study provides evidence for future change, I identified themes of the data collected during the study, which were

developed through analysis, as they were revealed during interviews with each of the study participants. To complete the data analysis, I reviewed the field notes from the interviews and determine the general topics associated with the data. Next, I used transcripts and created an Excel spreadsheet using headings that consisted of reoccurring words used by the participants from the original coded units of data. Then, I analyzed the coded data for categories of educational practices in CTE programs by comparing the data with the conceptual framework and literature review of the study. Organizing the data and defining the importance of which educational practices adequately prepare students with industry-ready skills from the perspective of CTE educators and business leaders led to emergence of themes. To conclude the data analysis, I elaborated upon each of the educational practices that were supported by the literature and identified by CTE and business/industry leaders that strengthen the preparation of high school CTE graduates with industry-ready skills and gainful employment in the workplace. As an agent of change, I concluded this study by making recommendations for changes to CTE programming and practices that will benefit students and their future employment.

To conclude the data analysis, I summarized each of the educational practices that were supported by the literature and identified by CTE and business/industry leaders that strengthen the preparation of high school CTE graduates with industry-ready skills and gainful employment in the workplace. By identifying a comprehensive, research-based quality program of study framework developed through the data collected in the study and grounded by 2018 ACTE Quality CTE Program of Study Framework, future CTE

programs can modify current educational practices that equip students with industry skill competence and utilize their acquired skills as future employees.

Issues of Trustworthiness

In qualitative research, the researcher is immersed in the research but maintains perspective by suspending and setting aside their personal beliefs (Bogdan et al., 2015). Bogdan et al. (2015) explained the role of the researcher as being more than a "data-gatherer" and more of an empathetic scholar that identifies with the participants of the study to understand how the participants see things. Researchers are concerned with the viewpoints of others and how to describe the trends within the data without bias accurately. Adherence to credibility, transferability, dependability, and conformability increases the validity of the consistency and accuracy of the study.

Credibility

In qualitative research, the assurance of who participates in the study and the accuracy of the data collected gives credit to the study. Creating respectful relationships with the study participants, data triangulation, and transcript review are ways that the researcher can ensure the creditability of the study. Ravitch and Carl (2016) indicated that any measure that the researcher takes to ensure the creditability of the study is a foundational aspect of the study. In this study, remaining faithful to the participant's experiences was critical. To maintain the credibility of the study, I established meaningful relationships with the study participants built on the desire to ensure student success in the workplace. I maintained contact with the participants throughout the study and had them review their transcripts prior to publication. Ensuring the internal validity

of this study through continued contact with the participants, remaining faithful to the participants' perspectives, and completing transcript reviews increased transferability of the study.

Transferability

The goal of qualitative research is not to be able to apply the same results from one study to another, but rather make suggestions based on a study's findings (Ravitch & Carl, 2016). For example, in this study, the goal was to determine what educational practices prepare students with industry-ready skills. Based on the findings of this study, the juxtaposed educational practices can be used in various CTE programs across the northwestern states CTE programs fitting the needs of the individual communities in which the CTE programs serve. In addition to the juxtaposition of the educational practices, using thick descriptions of the participant's perspectives will give more meaning to the educational practices for future CTE educators and business/industry leaders. Transferability lends itself to detailed descriptions of the participant's perspectives to use to make comparisons from one CTE program's needs to another CTE program and transfer aspects of the study's findings to many other CTE programs (Ravitch & Carl, 2016). In this study, I made sure that each of the northwestern state's educational regions is represented and that the thick descriptions of educational practices that are identified by CTE leaders so that the findings of this study can be transferred from one CTE program to another, ensuring transferability.

Dependability

A dependable study is consistent, withstands time, and the data that are collected during the study are uniform with the research questions (Ravitch & Carl, 2016). To ensure dependability in this study, I used multiple interviews to triangulate the perspectives of which this study was based on. Triangulation is the collection of data from a range of participants (Ravitch & Carl, 2016). In this study, two sets of perspectives were collected, perspectives from CTE educators, and perspectives from business/industry leaders. The goal of triangulation is to seek a range of nuances, complexities or disagreements, and general tensions from the participants so that stable interpretations can emerge from the collected perspectives (Ravitch & Carl, 2016). The variety of perspectives that were collected demonstrated the authenticity of the data and contributed to the understanding of what educational practices can be implemented in a CTE program and how these educational practices ensure workplace readiness with industry-standard skills.

Confirmability

A goal of confirmability is to acknowledge and explore how a researcher's biases and prejudices effect the interpretations of the data collected during a study (Ravitch & Carl, 2016). A researcher's position is important to the study; however, to mitigate the prejudicial factors that limit the validity of the researcher nuances must be considered. In this study, I used a reflexive approach to establish confirmability. To start, as I interviewed the participants, I kept a field journal containing notes from the interviews. Next, all the interviews were recorded and then transcribed using a transcription service.

Ravitch and Carl advise that researchers systematically and critically engage with their biases, interpretations, processes, and reflections, as these reflexivity processes are vitally important to the confirmability of a study. I consistently used the field notes and transcriptions to reflect on each aspect of the study. Ravitch and Carl explain that if the researcher does not use a reflexive approach, the data will be undermined. Therefore, in my study, a reflexive approach to the study was used to guarantee confirmability.

Ethical Procedures

Just as professionals are guided by ethical practices, so is research. Research design and considerations for ethics should be at the forefront of qualitative data collection. Following ethical principles throughout the entire study is crucial to avoid potential issues of ethicality. When the Walden University Research Review (URR) process was completed I contacted the State's CTE administrator to gain written approval to conduct the study. Upon receiving permission to conduct this study from Walden University IRB (**08-05-20-0954428)** I contacted the potential participants. I asked permission to contact CTE administrators using the Letter to Request Approval to Conduct the Study in a Northwestern State sent to the States' Department of CTE administrator; with this letter, I asked for access to a list of qualified interview participants and permission to interview the participants. Throughout the invitations, letters of consent, the interview and follow-up, I treated the participants with respect and consideration for their time and involvement in the study. I provided each participant with a consent form, explanation of the procedures of the study, and reminded them that they were free to decide not to participate at any time during the research. Recruitment,

consent, and data collection was articulated to the participants clearly, and all dealings with the participants were ethical and respectful.

There are four issues associated with ethics in research: voluntary participation, no harm to subjects, anonymity versus confidentiality, and data integrity (Babbie, 2017). This study had minimal risks other than issues of a possible confidentiality and data breach. Data collected in this study had Walden University's IRB approval. In this study, to avoid confidentiality breach, I safeguarded the data collected and built a relationship of trust and mutual respect with the research participants so that the information was shared in a risk-free environment. All data has remained confidential. I have stored the data in a password-protected computer and will continue to do so for up to 5 years. When the time arises, any documents and data will be destroyed. It is vital to act like a professional when conducting research so that the study is credible. In this study, to protect the participants, the ethical principles included written consent assuring that participants are well informed of the study, what information will be collected during the interview, how this data will be stored using password protection, and participant transcription review. Conducting transparent research in a respectful environment is a crucial component of ethical research.

A well-designed study mitigates potential threats. I designed this study by taking precautions to protect the participants and our relationship, as this has alleviated any non-ethical issues within the study. Considering the nature of the qualitative study, a relationship between the researcher and the participants can pose a threat to the validity of the study. As the primary researcher, I was personally involved in all stages of the

study. I protected the anonymity of the participants by not using any names or identifying characteristics, and therefore the validity of the study will remain intact.

Summary

The methodology of a study is the systematical way in which a study is conducted that includes assurances that the study is conducted in an ethical way that protects the participants of the study and addresses the two research questions. As determined by the rationale of the study and the active role of the researcher, this study is methodically designed to ensure an ethical and purposeful study. This basic qualitative study is designed to explore the perspectives of CTE and business/industry leaders. This chapter summarized the details of the methodology of my basic qualitative study through the explanation of the rationale of the study, the role of the researcher, data collection, and issues of trustworthiness. In the next chapter, the results of the study will be described.

Chapter 4: Results

Introduction

The purpose of this basic qualitative study was to explore the perspectives of CTE educators and business/industry leaders about which educational practices in CTE programs can adequately support the preparation of students with industry-ready skills. Educational practices are clear and common focused goals that are based on the fundamental belief that all students can learn and improve their performance. As appropriate educational practices are consistently used in the classroom distinguished students emerge (Hattie, 2009). To accomplish the purpose of this study, I conducted 12 interviews to determine which educational practices, when applied in a CTE program, prepare CTE students for workforce success. The RQs for this study were:

RQ1. What are the educational practices that CTE and business/industry leaders think support industry-ready skills preparation in a CTE program?

RQ2. How can educational practices be applied in CTE programs to prepare students with industry-ready skills needed for employment in the workforce?

Chapter 4 is organized into five major sections covering aspects of this study that include data collection, data analysis, evidence of trustworthiness, and results.

Study Setting

The setting of this study was in a northwest state. The state provides CTE to 83,000 students (U.S. Department of Education Office of Career, Technical and Adult Education, 2018) and is guided by 21 CTE administrators and numerous business and industry leaders. Each high school is diverse in its CTE programs. The state's CTE

program's main areas of focus are (a) agriculture, (b) food and natural sciences, (c) business and marketing, (d) engineering and technology, (e) family and consumer sciences, (f) human services, (g) health professions and public safety, and (h) trades and industry.

In this study, I focused on interviewing CTE administrators, many of whom oversee programs at high schools that are solely dedicated to CTE. I focused on interviewing business/industry leaders from various backgrounds, making this study diverse in data. A significant factor that affected this study was COVID-19. COVID-19 shut down the schools within the northwest state in March of 2020. The 2020-2021 school year was delayed due to COVID-19. Therefore, many participants were unavailable to be interviewed upon the first invitation because they were not back in their schools. Additionally, many of the business/industry leaders were left without students to complete their workplace training at the end of the 2019-2020 school year and therefore, were not immersed in CTE programs for the entire time they had been promised for the school year. However, although COVID-19 affected this study's promptness, it did not affect the data because this study's data were based on the reflections and perspectives of CTE administrators and business/industry leaders and their connections with CTE programs for the previous years.

Demographics

I elected the 12 participants of this study based on their location within the northwest state's educational regions. In this study, the participants represented each of the state's six educational regions. The CTE administrators hold valid teaching

certificates and each of the participants is currently affiliated with CTE programs in local area high schools. The business and industry leaders represented the following areas: automotive technology, diesel mechanics, hospitality, and service, agriculture, and health professions.

Table 1

Participant Information

Participant	Title	Region	Program Affiliation
CTE Administrator 1	Technical Education Campus Consortium Director	1	High School CTE
CTE Administrator 2	Director of Student Services	2	High School CTE
CTE Administrator 3	Technical Center Consortium Coordinator	3	High School CTE
CTE Administrator 4	Co-Op School Service Agency Consortium Director/Principal	4	High School CTE
CTE Administrator 5	Technical Charter School Consortium Administrator	5	High School CTE
CTE Administrator 6	Technical Careers High School Principal	6	High School CTE
Business/Industry Leader 1	Resident Manager	1	Hospitality/Service
Business/Industry Leader 2	General Manager and Instructor	2	Hospitality/Service
Business/Industry Leader 3	General Manager and Department Chair	3	Diesel Mechanics and Technology
Business/Industry Leader 4	Finished Products Maintenance Superintendent	4	Agriculture
Business/Industry Leader 5	Chief Nursing Officer	5	Nursing and Emergency Medicine
Business/Industry Leader 6	Owner/Operator	6	Automotive Technology

Data Collection

I collected data using semi structured, open-ended interviews. I used the interviews to understand the perspectives of 12 participants and identified themes

associated with educational practices when used in CTE programs that prepare students for the workforce. The state's CTE state administrator identified the six CTE administrators who participated in this study. The state CTE administrator and the CTE program administrators identified the six business/industry leaders. The questions that I used in the interview deepened my understanding of what educational practices are used in a CTE program, how the educational practices support students with industry-ready skills, and how the educational practices should be applied in CTE programs.

The study's context was based on the interview responses from 12 CTE affiliated participants from a northwest state. Because in-person interviews were not feasible, teleconferencing was used to conduct the 12 interviews in this study. Each interview lasted no more than 45 minutes. I recorded the interviews with my computer software during the teleconference. I transcribed the interviews using a speech to text application. After the transcription was complete, the participants reviewed the transcripts to review accuracy of interpretation of their perspectives. During the interviews, I used a field journal to highlight relevant responses from each participant as they described their thoughts related to each of the interview questions. All data collected are stored and protected by passwords. No variations occurred in data collection from the plan identified in Chapter 3. I encountered no unusual circumstances in data collection. In summary, this study's data collection did not deviate from what was outlined in Chapter 3, and I maintained the confidentiality and fidelity of the participants and their perspectives.

Data Analysis

The strategy that I used for data analysis, as outlined in Chapter 3, was iterative. I used a systematic process to code the data of this study. With consideration of the seminal works of Conley (2015), Hattie (2009), and Knight (2013), coding took place at three levels. I used a spreadsheet to organize my data. I moved inductively from coded units of data to more extensive data categories and finally determined the themes associated with each research question.

First, I coded the units of data based on the transcript analysis and I selected reoccurring words used by the participants in the interviews. Compared with my field journal, the notes and transcripts highlighted areas that the participants emphasized. I cross-referenced the words of importance used in my field journal and transcripts and these words became the units of data. Then, I aligned each unit of data with a category that was relational to key concepts and strategies as identified throughout the literature review of this study. As a result, the categories aligned with the main ideas of the conceptual framework used in this study.

This study's conceptual framework incorporated practices used in education, as identified by CTE and business/industry leaders that directly prepare the CTE program students with industry-ready skills so that the student is knowledgeable in a specific business/industry area and ready for the workplace. After reviewing the conceptual framework, it was apparent that the emergent themes based on the perspectives of the CTE, and business/industry leaders were supported by the conceptual framework. It was evident that the study participants believed certain educational practices that prepare

students for the workplace when applied in CTE programs are more effective than others. I was able to deduce that CTE and business/industry leaders in a northwest state strongly believe that for students to be prepared for the world of work, the curriculum and instruction for a CTE program must be designed facilitated and applied through real-life experiences.

Table 2

Codes, Categories, and Themes

RQ1		
Instruction		
Units of Data	Categories	Themes
Working with experts, industry guidance, industry certifications, knowledgeable instructors, Business/Industry, and program relationships	Guidance and Support for Students, Knowledgeable Instructors, Fostered by Business/Industry Relationships	Support Systems for CTE
Curriculum		
Units of Data	Categories	Themes
Real life experiences, technical and professional skills, communication, written and verbal expression, technical writing, skill stacks, skills associated with trade	Teaching of Fundamentals, Ensure Workplace Readiness, Adhere to Industry Standards, Soft Skills	Preparing for the World of Work
RQ 2		
Application		
Units of Data	Categories	Themes
Real time experience, demonstrates, skill stacks, work ethics, skills associated with trade, internships, externships, apprenticeships, job shadowing	Real Time Experiences, Considerate of the Real World, Use of Knowledgeable Instructors, Safety Standards, Classroom Design Mimics Real World	Connections to the World of Work
Working alongside experts, industry guidance, supervised by experts, mutually beneficial, same vision, open communication, guidance, partnerships, safety	Advocacy and Support from Business/Industry, Guidance from Experts, Strong Alliances	Advocacy and Alliances

In Chapter 3, I outlined my data analysis plan. During the actual analysis of data, I determined that scrutinizing the categories prior to clarifying the themes was necessary because the codes were succinct basic analytical units associated with the participants actual words used in their interview. Categorization of the participants words was necessary due to the value of the study participants' responses and the interrelatedness among the words used. While coding the data and referencing the excerpts from the study participants, I further investigated the data to identify the common themes associated with educational practices. I compared participants' responses to discover the similarities in perspectives from both CTE and business/industry leaders. Finally, I completed the last analysis of the coded data and identified the themes associated with each research question. I found no discrepant cases in the data, and no new information could have been generated from the data; therefore, I believed that saturation had been met.

Evidence of Trustworthiness

As the only researcher in this study, I can affirm that I maintained trustworthiness throughout data collection and analysis. I upheld the credibility of the study during the data collection process by creating a respectful relationship with each of the study participants. From the moment that I initiated communication with the study participants by inviting them to participate in the study, we had mutual respect. It was inherent that we had the same goal of determining what educational practices best support CTE students. However, I maintained impartiality during the interviews and remained faithful to the participants' perspectives. At the conclusion of data collection, I asked the participants to review their transcripts to verify that the transcript represented their

perspectives. The transcript ensured the exactitude of the data collected, supporting the accurate results of the study.

The findings of this study should be beneficial for other CTE programs. By focusing on an entire state and sampling from each educational region within the state, I ensured that CTE programs were well represented. Each educational region of the northwest state was represented and where the demographics were diverse, the study findings further support the transferability of the results. Since the data was inclusive of all types of CTE programs it is understood that the educational practices used in one CTE program may also be used in another CTE program.

The dependability of this study was supported by the data being uniform with the research questions used in this study. I collected data that was derived from two sets of perspectives: CTE administrators and business/industry leaders. Each participant, regardless of CTE program affiliation were asked the same set of research questions. This provided a variety of perspectives but were authentic to the individual and led to the best understanding of what educational practices should be implemented in a CTE program and how they can ensure that students are ready for the workplace.

In my study, I established confirmability by using a reflexive approach. As I interviewed participants, I noted key points that were considerate of the research questions. I then used speech to text to transcribe the interviews. I reviewed the transcripts and compared them to my notes contained in my field journal. This process allowed me to reflect on the perspectives of the participants' which mitigated any depreciation of evidence and ensured that the study could be confirmed by others.

Results

This study set out to explore CTE and business/industry leaders' perspectives about which educational practices best prepare CTE students for the workplace. The study was guided by the conceptual framework, 2018 ACTE Quality CTE Program of Study Framework, which outlined educational practices that can be used to provide students with a quality CTE program. I asked CTE and business/industry leaders to give their perspectives about educational practices in CTE programs that are most relevant and how those practices should be applied to provide students with the learning opportunities that develop industry-ready skills needed to be successful in the workforce. The results of the study were indicative of the seminal works of Conley (2015), Hattie (2009), and Knight (2013) who recommend that educational practices should be based on the principles of instruction, curriculum, and application.

Research Question 1

Research question one asked: What are the educational practices that CTE and business/industry leaders think support industry-ready skills preparation in a CTE program? CTE leaders described practices that teach fundamentals that are specific to each industry. The fundamentals would ensure that students are ready for the workplace by being equipped with industry-ready skills. These educational practices were identified as instructional strategies used by knowledgeable instructors and fostered through industry advocates' supportive community. For students to be prepared for the world of work, the curriculum for a CTE program must be designed and facilitated through real-life experiences. The curriculum delivered by knowledgeable instructors must be created

to support both the classroom and business/industry. Based on the responses to research question 1 and its sub-questions, the themes that emerged from the data analysis include:

- Support Systems for CTE
- Preparing for the World of Work

Theme 1. Support systems for CTE

The most common theme to emerge in the data was support systems for CTE programs. While there was not one specific unit of data that explicitly detailed one common type of support system for CTE, the perspectives of the CTE administrators and business/industry leaders revealed there were two necessary supports for a CTE program to effectively prepare students for the workplace.

First, several of the participants made it clear that supporting students during their CTE program career was the most important educational practice that successfully prepares a student for the workplace. For example, CTE Administrator 2 stated that:

> I think working alongside an industry partner literally on the floor with them and not just job shadowing, but the actual ability to get in an do a project with that expert who's in the field, right by your side is invaluable.

Business/Industry Leader 4 shared that students who are supported by industry during their high school CTE career are more likely to gain employment within that industry after high school graduation thus demonstrating that it is important to support students in their career ambitions by indicating that**, "**The goal is to be able to see anybody [high school students] that wants to enter into a CTE program can, and that we are able to give them opportunities to get a job in [the northwest state]. Keep them local." It is evident

that both CTE administrators and business/industry leaders agree that a strong support system comprised of CTE educators and business/industry leaders is a necessary educational practice in a CTE program that assures workplace readiness for students.

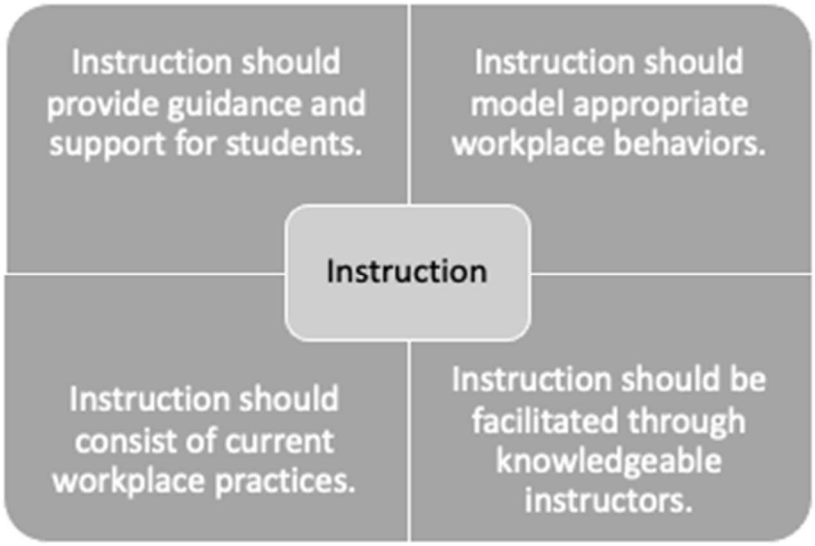
Second, support for CTE programs should be fostered by a business/industry partnership. Business/Industry Leader 2 discussed that showing support for CTE programs is vital to his operation. "It really is about those industry leaders and those industry partners who are looking for that true connection between education and career opportunity." If the CTE program is not inclusive of the practices required of the workplace then students will not see the connection between what they are learning in the CTE classroom and what is expected in the workplace. Therefore, business/industry leaders supporting CTE programs through being an active part of Technical Advisory Committees, participating in guest demonstrations, facilitating opportunities for students to engage in their workplace, and providing equipment and training is vital in the sustainability of a CTE program.

Guidance and support that is derived from industry knowledge and facilitated through teaching the fundamentals specific to industry, prepares students with needed skills for workplace readiness. Knowledgeable instructors, cohesive relationships with business/industry leaders and providing opportunities for students to work with experts aid in the achievement of the necessary guidance and support that is required for students to attain industry-ready skills. All 12 participants in the study believed that CTE teachers and the business/industry leaders should be supportive of the student's career endeavors whether it was the CTE teacher modeling workplace skills, providing a safe environment

for the students to learn, being passionate about the curriculum, or simply fostering a relationship between future employers and the student. CTE Administrator 2 summed up the support for CTE programs as, "students should see a seamless transition from learning to actually doing," where everyone works together to provide support for CTE programs and its students so that the student is ready for the workforce immediately following high school graduation. As represented in the graphic below (see Figure 1) it is clear the educational practice of providing a support system for the CTE program and its students through instructional strategies is the foundation of a promising CTE program.

Figure 1

Instructional Practices in CTE Programs



Theme 2. Preparing for the World of Work

Students must be prepared for the world of work. In the northwest state where the study took place, the knowledge of the students that are associated with each CTE trade is

assessed using a skill stack. A skill stack is a micro certification that is a recognized credential that confirms the knowledge and skills of the student. This knowledge is derived from the understanding of the curriculum being taught in each CTE course and then applied during a student's experience in an apprenticeship, externship, or internship. According to CTE Administrator 6, "the best way to prepare a student for the world of work is to emulate the real world." The CTE administrators concurred that the curriculum in a CTE program needs to focus on technical and professional skills and the business/industry leaders added that communication, written and verbal expression, and technical writing was important so that when in an apprenticeship, externship, or internship, students can demonstrate both soft skills and industry specific associated with the trade.

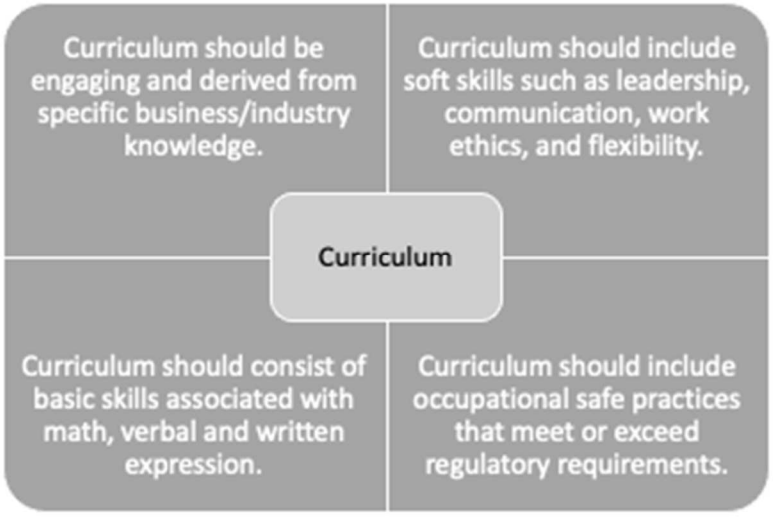
Students need basic skills that are associated with specific trades and personal attributes that are needed for success in the workplace. CTE Administrator 1 encourages the CTE teachers to consistently model industry specific, and soft skills such as verbal communication and time management. The skills should be modeled every day that the student is in the classroom and conform to current workplace practices. CTE Administrators 2, 5, 6 and Business/Industry Leader 9 agreed that when students have a model to follow that they are more prepared for the world of work because they will better understand the expectations of the actual workplace.

As communicated by the participants, students need skills associated with personal responsibility. Business/Industry Leader 1 discussed the knowledge and skills students need to succeed in a career by saying, "I think first and foremost, it may not be so much

of a knowledge issue although that's very important. The most important thing would be just a level of maturity, a level of personal responsibility." The personal responsibility that Business/Industry Leader 1 referred to was echoed throughout the other participants responses as well. Business/Industry Leader 3 believed that students need to be able to follow instructions and have respect for authority. CTE Administrator 3 disclosed that business/industry leaders are "begging for students to have those soft skills, being on time, ready to work, having a good attitude, willing to pivot and take on whatever assignment is given to them, those kinds of things." Not only do students need specific business/industry related skills, but students also need to be equipped with soft skills such as ethics, people, and social skills so that they are prepared to work with other employees. In conclusion, preparing CTE students for the world of work involves the totality of student experiences that occur in the educational process which incorporates the curriculum that aligns with industry standards and facilitated by a knowledgeable instructor (see Figure 2).

Figure 2

Curriculum in CTE Programs



Research Question 2

Research question two asked: How can educational practices be applied in CTE programs to prepare students with industry-ready skills needed for employment in the workforce? CTE leaders identified strategies of implementation. To properly apply what is learned in the CTE classroom to the workplace, the CTE program and its affiliates must have a strong alliance and be advocates of preparing students with the necessary skills to be successful in their selected business/industry path. The curriculum must be applied and modeled daily in the classroom, which should emulate the real world. Based on the responses to research question two and sub-questions, the themes that emerged from the data analysis include:

- Connections to the World of Work
- Advocacy and Alliances

Theme 3. Connections to the World of Work

The mission statement of a school in the northwest is, "Connect and Build on Success." While the school was not part of the study, their mission statement is indicative of how the educational practice of connecting students to their paths of success acts as a framework for their life-long goals. Supporting students in acquiring specific knowledge and industry-ready skills is best when facilitated through real world exposure. Business/Industry Leader 6 believed that "any time you can give your students real time exposure and experience it is a win for those of us that are looking for new blood in our business", thus demonstrating that it is crucial to help students make connections with their future employers. Introducing students to the world of work ensures opportunities for CTE students to make meaningful connections and cultivate future employment.

The CTE classroom design should be considerate of the real world in its layout, industry equipment and machinery. According to Business/Industry Leader 4, the lab [classroom] should mirror what students are going to see in the business or industry as far as layout and equipment. The educational practice of modeling does not only apply to knowledgeable instructors practicing what they teach but to the classroom design as well. Immersing students in a simulated environment prior to opportunities to practice in the real world, will make the connection to the real world more authentic. All the participants confirmed that the CTE classroom should be structured to mimic what students will see outside of a brick-and-mortar school. The CTE classroom needs to be as authentic as

possible. Therefore, when the instructors are modeling the practices of the real world, it is no different than what the students will be immersed in when they are in the actual workplace.

Theme 4. Advocacy and Alliances

There were two different types of alliances and advocacy that were reveled in the study. Alliances and advocacy for CTE program students and alliances and advocacy for CTE program instructors.

First, for students to properly apply what is learned in the CTE classroom to the real world, the CTE program and its affiliates must have a strong alliance and be advocates of preparing students with the necessary skills to be successful in their selected business/industry path. When students can work alongside business/industry experts' students are able to make connections. Business/Industry Leader 2 affirmed that, "If there is that connection there, there is a stronger chance for an alliance." An alliance between a student and business/industry expert is mutually beneficial. For example, the student is being given the opportunity to apply their skills that they learned in the CTE classroom with guidance from the expert and the expert is potentially securing a well-trained and workplace ready employee.

For students to demonstrate mastery, they must be able to apply learned skills visibly. This provides an opportunity for the action of application in the workplace. Hence, working alongside and being supervised by business/industry experts is the final theme that emerged from this study. The participants of this study shared the same vision regarding the educational practice of advocacy and alliances within CTE programs, citing

that being an advocate of students working alongside experts, helps students create an alliance with that experts that allows for mastery of skills.

Next, an alliance between the CTE instructor and business/industry leader must be established so that there can be a cooperative effort to ensure the information and skills translated to the students are necessary and applicable to the workplace. CTE Administrator 3 believed that, “it is important for teachers to stay abreast of what’s happening in business and industry”, this practice provides the knowledge and understanding of what skills are needed in the real world that can be taught in the classroom so that the student can make a smooth transition from school to work. An established relationship between CTE and business/industry provides a bridge between CTE instructor and business/industry. As acknowledged by CTE Administrator 3, its critical for CTE instructors to understand what current workplace practice is. Business/Industry can help secure this knowledge for CTE instructors by coming into the CTE classroom and assisting during instruction or demonstrating how to use equipment that they donated to the CTE program. CTE Administrator 6 gave the example that “the relationship is a two-way street.” The alliance between CTE instructor and business/industry is a practice where both contingents benefit, the CTE instructor is more knowledgeable in workplace practices thus teaching the students what is needed in business/industry making them a more viable employee.

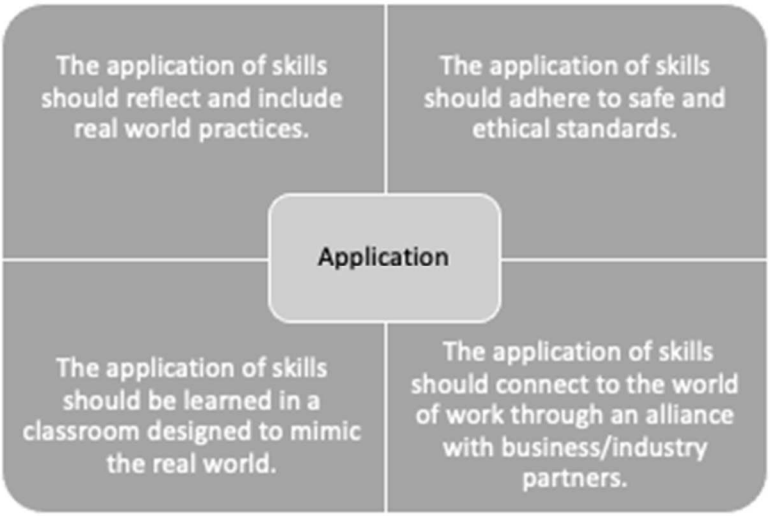
Meaningful connections between CTE programs and business/industry that are built on trust and respect between CTE instructors, and the leaders of business/industry are the gateway to strong alliances. Through the alliance, Business/Industry Leader 2

implied that "a strong connection to your industry should help drive the educational aspects of your program for all styles of leaders and possibly fulfill many different needs for multiple industry options," suggesting that with the CTE instructor and business/industry leader alliances, student advocacy is deep-seated, resulting in the successful placement of students in a career.

To conclude, Theme 4 emerged from the participants regard for the need for advocacy and alliances within a CTE program. business/industry leaders emphasized the importance of CTE teachers supporting students by understanding the most current practices within a career and designing their classroom based on the most current standards so that students can demonstrate their understanding of the skills required of the career. CTE administrators stressed the significance of students working alongside business/industry leaders so that they have an opportunity to visibly apply what they learned in the CTE classroom. The image below (see Figure 3) captures the educational practice of fostering advocacy and building alliances so that the CTE teacher can stay current in their practices and the student can apply what they learned in their CTE program and thrive in their career.

Figure 3

Application of Skills in CTE Programs



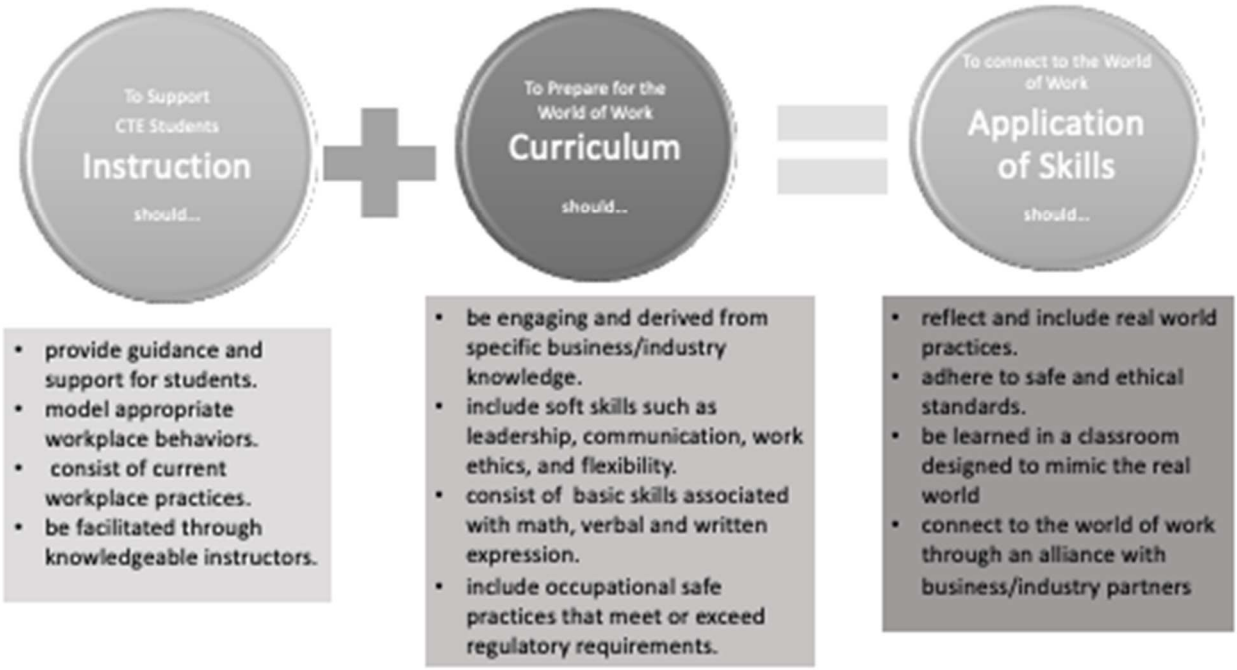
Summary

The purpose of this study was to explore the perspectives of CTE educators and business/industry leaders about which educational practices in CTE programs adequately support the preparation of students with industry-ready skills. This study was conducted using a basic qualitative research design that explored to the perspectives of CTE and business/industry leaders. The research questions elicited the perspectives of a northwestern states' CTE and business/industry leaders' perspectives of educational practices that support the preparation of CTE students with industry-ready skills. The responses to RQ1 helped to identify educational practices associated with curriculum and instruction that when used in the CTE classroom provide support for CTE students and prepare them for the world of work (see Figure 4). The responses to RQ2 further

identified how these educational practices should be applied to the world of work through advocacy for CTE programs and strong alliances with business/industry (see Figure 4).

Figure 4

Educational Practices That Prepare Career and Technical Education Students with Industry-Ready Skills



In the next chapter, I interpreted the findings of this study, discuss the limitations of the study, provide recommendations for further research, and address the potential effect of this study for the benefit of positive social change.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

The purpose of this basic qualitative study was to explore the perspectives of CTE and business/industry leaders about which educational practices in CTE programs can adequately support the preparation of students with industry-ready skills. This study's influence was a synthesis of the constructed perspectives from CTE administrators and business/industry leaders in a northwestern state. Evidence of not having enough skilled workers in a northwestern state (Governor's Workforce Task Force, 2017) justified that northwestern states' leaders need to think boldly about how research-based educational practices can be implemented in high school CTE programs across the states. Because there is insufficient research addresses educational practices that prepare CTE students with industry-ready skills (Bozick et al., 2017; Fleming, 2012; Imperatore & Hyslop, 2017a; Kamin, 2018; Keily, 2019; McPhail, 2018; U.S. Department of Education, 2014), I conducted this study.

Through thematic analysis, this basic qualitative study contributed to the understanding of which educational practices should be used in the northwestern states' CTE programs to prepare students with skills required by employers. The intended audience was CTE leaders, policy makers, and practitioners, and the goal of this study was to identify educational practices that, when implemented, ensure CTE student success in the workplace. The key findings of this study were indicative of the educational practices used by both the CTE educators and business and industry leaders that support CTE students through visible instruction, preparation of the CTE student for

the workplace through engaging and industry-specific curriculum, and helping students connect to the world of work advocacy and alliances.

Interpretation of Findings

This study's findings confirm and extend the knowledge of the educational practices associated with CTE programs related to the literature and the conceptual framework, as I presented in Chapter 2. The study's findings suggest common practices in education that align with the philosophies presented by Conley (2015), Hattie (2009), and Knight (2013). Interpreting what prepares students for their future career was determined by analyzing the most significant opportunities available to students and how to use the opportunities to create an environment conducive to workplace expectations. Conley suggested four key areas for career and college readiness: the ability to process and present information, strong foundational knowledge, ownership of learning opportunities, and knowledge of processes that prepare for jobs. Hattie determined that the key to making a difference in a student's educational career was making teaching and learning visible. Knight recommended that to the results of effective educational practices, small changes to educational practices can make all the difference. This study's findings revealed four themes that described educational practices used in CTE programs and build upon the philosophical foundation of opportunities created through career readiness and visible teaching and learning.

A student's ability to make a successful transition to life after high school hinges on how educational and personal experiences have equipped them (Conley, 2015). As I interpreted the findings concerning the common educational practices used in the

northwestern state's CTE programs, I found evidence that the CTE programs in a northwest state are emerging per the state's needs. In the northwest state, CTE programs are designed to support students in learning skills associated with future careers, prepare students for the workplace, help students make meaningful connections to the world of work, and build alliances with business/industry. Conley's notion of success in a career being enhanced for students who possess the knowledge and skills that enable them to thrive in life after high school graduation demonstrates the need for all CTE programs to design and implement educational practices that are clearly articulated and effectuated per their own state needs.

Furthermore, the findings emphasize the type of instruction and curriculum that is necessary for a quality CTE program and how student skills should be demonstrated in the CTE program. For CTE students to be prepared for the world of work, the curriculum for a CTE program must be designed and facilitated through real-life experiences. The curriculum must be created to support both the CTE classroom and business/industry. Therefore, the curriculum should be designed by CTE program educators and business/industry leaders and facilitated by knowledgeable instructors. To properly apply what is learned in the CTE classroom to the actual workplace, the CTE program and its affiliates must have a strong alliance and be advocates of preparing students with the necessary skills to be successful in their selected career path. The curriculum must be applied and modeled daily in the classroom, which is synonymous to the real world. By delivering content-specific curriculum that is dispensed by instructors through best

teaching practices and providing opportunities for CTE students to practice their skills, CTE students will develop their talents and serve their communities.

Confirming Knowledge in the Discipline

According to the literature, a CTE program should embed work-based learning opportunities (Brodersen et al., 2016). Work-based learning principles are the principles seen in students' daily practices outside of the classroom when taught in the CTE classroom. The literature revealed quality principles of CTE programs and how states respond to implementing CTE programs' principles. In this study, the participants' responses generated by the sub questions in the interviews aligned with the need for a workforce ready with industry-related and soft skills. Guiding principles are ideas that influence people when making decisions or considering a matter and, therefore, can be used to design programs. When interpreting the results of this study, to prepare students for the world of work, quality principles should influence what the CTE curriculum consists of and how the curriculum is delivered to students in the CTE classroom.

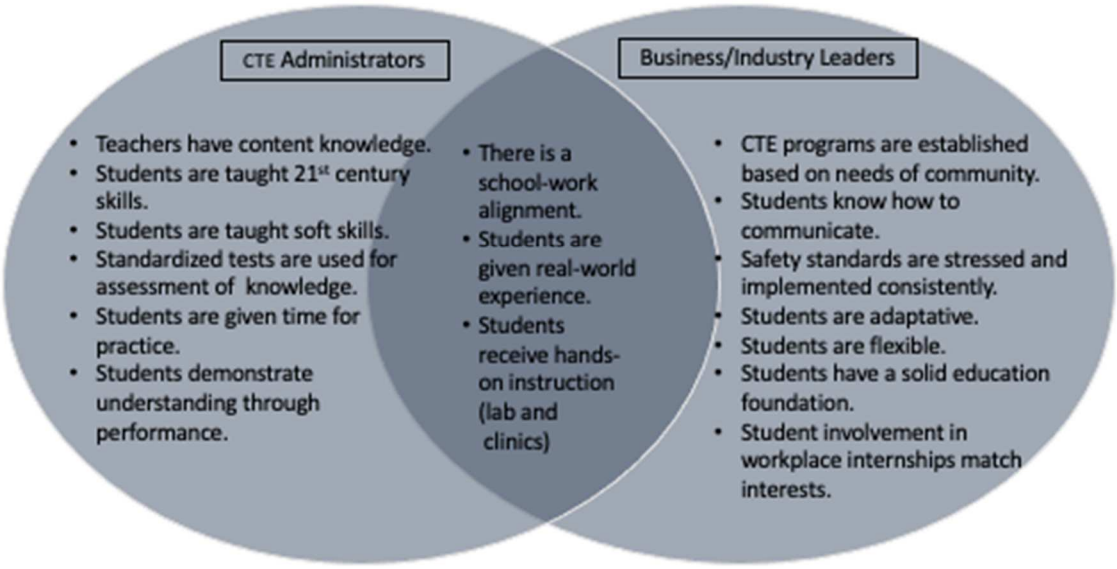
For any teacher to know whether learning is happening or not, and for students to know what to do and how to do what is being asked of them, learning needs to be visible (Hattie, 2009). Student learning is affected the most when teachers are passionate about helping their students learn and are clear about their expectations (Hattie, 2009). Teachers need to know their effect on student learning. In this study, many of the participants addressed the need for CTE teachers to be aware of current practices in business/industry. For example, CTE Administrator 1 indicated that the business/industry partners affiliated with his program require students to know how to work safely in the workplace.

Therefore, a significant quality principle of any CTE program should be safety and that is reinforced consistently. Although the study participants did not specifically name one quality principle that was the same, the participants named several different principles that they believed were the most important and would lead to gainful employment for CTE program graduates (see Figure 5). Understanding the effects associated with each principle increases the likelihood of student achievement and, therefore, manifests excellent future employees.

CTE programs need guiding quality principles. The guiding quality principles can provide an outline for preparing students for the world of work. Guiding quality principles should establish a CTE program framework to develop the employees that employers are searching for. The quality principles can be seen in Figure 5. These principles can aid in decision making regarding future CTE programs that seek to align with Conley's (2015) notion that students who have knowledge and skills are successful in their careers.

Figure 5

CTE Program Guiding Quality Principles



For students to thrive, they must be supported. Knight (2013) found that positive student relationships are fundamental to success. When students feel supported, they are more likely to engage in learning as positive relationships build motivation. Therefore, creating a support system is a critical educational practice for CTE programs. A support system for CTE should be structured to include the student, teacher, and future employers. Throughout the program, the students should witness how CTE instructors and administrators work collaboratively with business/industry leaders to ensure that they are prepared for a career or college after completing their CTE program. The student should consistently feel supported so that their career endeavors can become a realization.

Support systems within CTE programs should bridge the gap between CTE programs and business and industry. Many states have adjusted their CTE programs to align with business/industry needs (Fletcher & Tyson, 2017; Glennie, et al., 2017; Idaho Career and Technical Education, 2020). How states respond to the preparation of CTE students can affect a graduate's career considerably. In the northwest state, to gain funding through the Perkins Act, it is understood that each CTE program must have a Technical Advisory Committee (TAC). During the interviews, many participants spoke to the importance of working with experts and obtaining industry guidance. The CTE administrators and business/industry leaders saw this as building a path from high school to career. Therefore, the educational practice of collaboration is crucial in supporting students.

In this study, sub question two asked, "How should the relationship between CTE educators and business and industry leaders be fostered to support the delivery of work-based learning?" CTE Administrator 2 believed that when CTE programs respond to business/industry needs, it built a network for students, and they "see a seamless transition from learning to doing." CTE Administrator 2 Addressed TAC's, indicating that fostering a relationship supports both the student and business/industry by "strengthening the ties back to education." Cultivating a relationship between the two helps support work-based learning by keeping the CTE teachers current in their practices. According to CTE Administrator 4, "building those relationships, helps to stay current with what the industry has and also find out some of their needs." She concluded by explaining that supporting the industry leads to how a CTE program can change practices

within a program that better support work-based learning as needed by the industry. Therefore, advisory committees consisting of members from high schools and local business and industry is a critical element of CTE programs, as they help to determine which educational practices should be implemented to support CTE student success.

Relationships cannot be one-sided. Business/Industry Leader 1 highlighted that there must be a "natural or innate desire to support programs," when CTE programs respond to the state's needs, there must be a mutual need. Business/Industry Leader 1 began her relationship with CTE programs 15-20 years ago and has seen the CTE program flourish based on the needs of the state and articulated:

> Quite frankly, from that [referring to the support from CTE programs and their delivery of work-based learning], I was able to, you know, hire from that employment pool. So, it was kind of a match. It was a good mutual match of needs (2020).

As written in the literature, CTE programs in states such as Idaho and Florida strive to meet employers' needs through program standards (Fletcher & Tyson, 2017; Idaho Career and Technical Education, 2020). It was evident that the participants in this study believed that fostering relationships between CTE and business/industry created a gateway for students in their career. Therefore, by providing a gateway for students to gain professional job experience, students can feel successful in the workplace and begin building their career resume.

Human capital is needed for companies to achieve goals and remain vital to the economy. As specified in the literature review, Eide and Showalter (2010) explained that

investments such as education can increase human productivity. Since CTE programs are viewed as education, then it can be deduced that graduates from a CTE program are an investment. However, Business/Industry Leader 4 shared that honest communication without false expectation is best when determining a CTE program graduate's worth. Business/Industry Leader 4 shared that "the businesses and industries within a community are not always going to be able to place CTE program graduates in the workplace and therefore, schools and business/industry must work together to determine the needs of both students and employers," which only makes the CTE programs more functional and beneficial in the community. Business/Industry Leader 4 concluded by giving an example, "If we are looking at a millwork program that is affiliated with the local high school, data should be collected to make sure that the program is doing what it needs to be doing," hence, the conclusion drawn from the data collected should evidence or should result in the human capital expected.

Understanding the economic effect of education is crucial when making connections within CTE. Business/Industry Leader 2 believed that when partnering with CTE programs, it is imperative to make a genuine connection to the industry so that the community can gain skilled employees and revenue. Business/Industry Leader 2 explained that:

> 7/10 restaurants (pre-COVID) closed in their first year of business because they [owners and employees] didn't know how to read a PNL. They did not understand labor costs, and they did not understand any of the business structures needed for success. They were excellent at being a chef and replicating their grandma's

> cookie recipe, but they had no idea how the business side of running a restaurant worked (2020).

If CTE program students are taught and understand industry-related skills as determined by CTE and business/industry, then the CTE student will be prepared to enter the workplace recognize what is needed for a business to thrive. In turn, with exceptional employees as prepared by the CTE program, the chance of business failure, which negatively affect the economy, can be mitigated. In summary, as pointed out in the literature and by the study participants, by learning and understanding the aspects of what makes an employee successful in business/industry, CTE program students positively affect the economy of the community because of the long-term financial benefits secured by business/industry having established and well-equipped employees which provides a foundation for sustained economic growth (Patrinos & Psacharopoulos, 2018).

Interpreting the Findings in the Context of the Conceptual Framework

The interpretation of the findings of this study do not exceed the scope of the conceptual framework. The conceptual framework used in this study, the 2018 ACTE Quality CTE Program of Study Framework identifies 12 elements and 92 criteria of a comprehensive, research-based quality CTE program. Hyslop and Imperatore's (2018) framework was designed to be used in CTE programs for program improvement and self-evaluation. It was also created to encourage collaboration among secondary and postsecondary CTE programs. This framework highlights the necessary components of high-quality CTE that meet CTE students' needs and business/industry.

When creating the research questions for this study, the conceptual framework provided the structure of the questions. Research question one asked: What are the educational practices that CTE and business/industry leaders think support industry-ready skills preparation in a CTE program? This question was structured to represent the conceptual frameworks' identification of the necessary standards-aligned and integrated curriculum, sequencing, and articulation, engaging instruction, access and equity of programs, and data and program improvement. This study confirmed several educational practices and their relevance in CTE programs.

The conceptual framework supported the findings of this study, as it validated the responses of the participants. Hyslop and Imperatore's 2018 ACTE Quality CTE Program of Study Framework was developed to describe high-quality CTE education components. This study's findings are specific to a northwest state that is vastly geographically different, meaning that even within the same state, business/industry needs vary greatly. For example, the northern part of the state is smaller, and there is less opportunity for employment after a student completes a CTE program. Therefore, the student must make a meaningful connection with future employers before graduation and prove that their learned CTE program skills set them apart from other potential employees. This can be achieved by attending a high-quality CTE program with the attributes that Hyslop and Imperatore's (2018) framework possesses. The participants highlighted key elements of their CTE programs, which were like ACTE quality framework elements.

During the interviews, I asked sub-questions about which instructional strategies should support students in acquiring industry-ready skills. The participants identified

several strategies suggestive of Hyslop and Imperatore's (2018) recommended learning approach through engaging instruction. The development of practices that allow for flexible instruction to meet the CTE student needs and incorporate appropriate equipment, technology, and materials that support learning was highlighted. As the participants discussed how students should be given access to equipment, technology, and materials, it became clear that students must be immersed in the daily practices of work-related activities and functions. To summarize, the educational practice of managing the educational environment as outlined in Hyslop and Imperatore's ACTE Quality CTE Program of Study Framework was interpreted as an educational practice that fostered a learning culture and respect within the northwestern state CTE programs and ensured workplace readiness.

The second research question asked: How can educational practices be applied in CTE programs to prepare students with industry-ready skills needed for employment in the workforce? Related sub-questions were asked as well. Hyslop and Imperatore's (2018) relevance of work-based learning was conclusive of the data collected in this study. For example, one participant advised that CTE programs should "treat shops and labs as if they are industry, and the best practice is when we [CTE programs] emulate the real world." Throughout the study, the participants commented on the educational practice of having students experience the world of work through CTE classroom simulations and labs, then have the students practice their skills and apply their knowledge in a real-world setting. Therefore, providing learning experiences for CTE students in an environment congruent to the actual workplace intensifies the CTE student

experience and ensures that students are prepared for the real world with industry skills as required by future employers.

This study's findings confirmed that the educational practice of engaging students through instruction that is consistent with current workplace practices, which are guided and modeled by knowledgeable instructors, is a vital component of a high-quality CTE program. Hyslop and Imperatore's (2018) vision of an integrated curriculum was identified as an equally important educational practice that prepared students for the world of work. The integrated curriculum should be developed with employer input and should further students' education. The integrated curriculum should also be based on industry-validated standards and competencies. According to the study participants, to prepare CTE students for the world of work, CTE instructors must teach the industry's fundamentals and necessary skills associated with math, verbal, and written expression. CTE instructors must also teach safe and ethical behaviors and engage students through acquiring specific industry knowledge. CTE program instruction and curriculum must be presented to draw that develops industry-standard skills and competencies and keeps the CTE student excited about their future career endeavors.

Limitations of Study

In a research study, limitations to trustworthiness need to be considered. In this study, there were a few limitations. The first limitation of this study was the practicality of interviewing the participants, as they were located throughout an entire state. The second limitation of this study was the time of year in which the interviews were to be conducted. The study's limitations were mitigated with ease and did not cause an issue

with data collection. To begin, in March of 2020, the governor of the northwestern state issued a mandatory stay-at-home order due to the rising numbers of positive COVID-19 tests. In a normal circumstance, this would prove to be a major limitation of a study. This study helped facilitate the interviews because CTE administrators and business/industry leaders were more willing to commit to interviews using telecommunication. Therefore, all interviews were completed through telecommunication, which alleviated traveling throughout an entire state to conduct the study interviews. The study interviews were to be completed in the final week of August 2020. Still, with the lingering stay-at-home order, the northwestern state schools remained closed, and CTE administrators did not return to work at the anticipated time. To navigate this limitation, I continued to reach out to the CTE administrators until I secured the study's six interviews. While the timeline was extended, it did not prove to be a burden to the study. Finally, during the interviews, I eliminated any bias by asking questions until no new information was given. All reasonable measures were taken to eliminate the bias and weakness of the study.

Recommendations

Recommendations for future research that are grounded in the strengths and limitations of this study are as follows:

1. To further convey the importance of CTE teacher efficacy, mixed-methods research should be conducted to explore what talents and knowledge a CTE teacher should possess to be well-prepared and effective when teaching in a CTE program.

2. The definition of soft skills vary greatly in education; therefore, research should be conducted using a longitudinal study that seeks to understand what specific soft skills are needed to be taught in each CTE program nationwide that ensure workplace readiness.
3. To fully understand if a CTE program has met the needs of business/industry research should be conducted using a quantitative study designed to evaluate the accountability systems of CTE programs to determine which type of accountability system can best show if the objectives of the CTE programs are meeting the requests of business/industry.
4. Bridging the gap between CTE and business/industry will require a comprehensive relationship between the two advocates and therefore understanding how to maintain a collaborative connection is vital. The final recommendation in this study is for additional research in understanding how alliances and partnerships between CTE programs and business/industry leaders can best be supported and maintained.

The first recommendation should include research exploring what skills and knowledge a CTE teacher should possess to be well-prepared and effective when teaching in a CTE program. Fletcher and Tyson (2017) found that CTE teachers were committed to teaching industry-related standards but often lacked the background knowledge to adequately equip their students with the skills that employers deemed necessary. In this study, several of the participants expressed how CTE teachers needed to be enthusiastic about the content they are teaching and that they need to deliver the content by putting it into context for the students. However, the CTE teacher often has a difficult time being effective in this practice. Based on Fletcher and Tyson's (2017) evidence coupled with the study participants' perspectives, it is recommended that future

studies be conducted to determine what exact skills and knowledge a CTE teacher should possess to be effective in delivering content through context.

The second recommendation should include research in which soft skills are crucial to business/industry as it has been reported that that CTE programs are still not equipping students with the industry-ready skills seen as necessary by employers (Bozick et al., 2017; Fleming, 2012; Imperatore & Hyslop, 2017a; Kamin, 2018; Keily, 2019; McPhail, 2018; U.S. Department of Education, 2014). In this study, when addressing specific knowledge and industry-ready skills with the participants, they noted a lack of soft skills possessed by CTE program graduates in the northwest state. The participants are not alone in their perspectives as the literature review revealed that employers say that both industry-related and soft skills are not adequate. (Blozveren & Voytek, 2015; Bozick et al., 2017; Fleming, 2012; Hernandez et al., 2018; Imperatore & Hyslop, 2017a; Kamin, 2018; Keily, 2019; McPhail, 2018). Therefore, a recommendation for future research is to understand what soft skills are needed to be taught in CTE programs nationwide that ensure workplace readiness.

The third recommendation should be inclusive of all CTE programs and include an evaluative measure based on data collected from the workplace regarding the knowledge, abilities, and skills of graduates from high school CTE programs that have secured placement in a career that is aligned with their high school CTE program coursework. In this study, the participants were asked to identify the type of data that should be collected and reported on for evaluation and program improvement. The participants responses varied greatly which demonstrated the inconsistencies in data

collection. Passarella (2018) explained that CTE programs need to be diversified and designed to meet the needs of each community and therefore, the data that should be collected to interpret the alignment of skills taught in the CTE program to the workplace needs to be a common practice among all CTE programs. As indicated by the participants of this study, it is not a common practice. For that reason, it is a recommendation that research be conducted to identify which type of accountability system can best show if the objectives of the CTE programs are meeting the needs to business/industry.

The final recommendation is in relation to advocacy and alliances within CTE programs. Brodersen et al. (2016) and Imperatore and Hyslop (2017a) explained that a crucial element of CTE programs are the relationships established between CTE programs and business/industry. In this study the participants identified two different types of alliances and advocacies: alliances and advocacy for CTE program students and alliances and advocacy for CTE program instructors. Since an alliance between CTE programs and business/industry can help to ensure CTE programs provide students with skills and knowledge necessary for success in the workplace determining the best way to support and maintain alliances and partnerships between CTE programs and business/industry would benefit all CTE programs.

Implications

This study will contribute to positive social change. The purpose of this study was to explore the perspectives of CTE and business/industry leaders about which educational practices in CTE programs can adequately support the preparation of students with industry-ready skills. First, by identifying the educational practices that support CTE

students with industry-ready skills in a northwest state, I feel that the identified gap between education and the workforce can be closed, thereby helping our state stay competitive in the global market and economy. The economic effect of CTE programs that utilize educational practices identified in this study that ensure workplace readiness will benefit local communities. As students graduate from CTE programs that prepare them for well-paying jobs and rewarding careers within their community, it will improve the economic mobility of the state.

Next, suppose the educational practices that emerged from this study are used to prepare CTE students with industry-ready skills. In that case, as a business/industry employs a graduate from a northwestern state's CTE program, the employer is investing in their business/industry through human capital, which demonstrates the influential factors of CTE education for social change.

Finally, suppose CTE programs are structured appropriately through instruction, curriculum, and application, CTE programs can provide a clear pathway for students to workplace employment (Saeger, 2017), leading to social change by empowering students to engage in a career and take part in advancing the nation's global economy.

Conclusion

Being a high school graduate of a CTE program can provide a positive pathway for students' lives. This study aimed to synthesize the participants' information to understand better which educational practices, when facilitated through CTE programs, best prepare students for the workforce. This goal was met by confirming the necessity of knowledgeable CTE instructors, curriculum designed based on current business/industry

standards, providing an opportunity for workplace experience, and the educational practices to better understand the workplace. By delivering business/industry related curriculum through instruction that is supportive of CTE program students, students will have the opportunity to apply their skills when in a career of their choice. Furthermore, CTE program students will connect to the world of work and build the bridge between education and the workforce and support the states' competitive nature in the global market and economy.

References

Adams, D., & Just, D. (1997). The art of articulation: Connecting the dots. *New Directions for Community Colleges*, *1997*(97), 29-39. https://doi-org.ezp.waldenulibrary.org/10.1002/cc.9704

Alic, J. (2018). What we mean when we talk about workforce skills: Employers' complaints about skill shortages mask a deeper struggle to preserve and extend their leverage in the labor market. *Issues in Science and Technology*, *34*(3), 30. https://search-ebscohost.com.ezp.waldenulibrary.org/login.aspx?direct=true&db=edsgea&AN=edsgcl.53599622&site=eds-live&scope=site

Almarode, J., Lee, G., & Subotnik, R. (2016). What works: Lessons from a research study of specialized science high school graduates. *Gifted Child Today*, *39*(4), 185-190. https://doi.org/10.1177/1076217516662096

Avsec, S., & Jamsek, J. (2018). A path model of factors affecting secondary school students' technological literacy. *International Journal of Technology and Design Education*. *28*(1), 145-168. https://doi.org/10.1007/s10798-016-9382-z

Babbie, E. (2017). *Basics of social research* (7th ed.). Cengage Learning.

Batterman, C. (2019). Strong community partnerships create dynamic, CTE public safety programs. *Techniques*, *94*(1), 52. http://digital.graphcompubs.com/publication/?i=549013&article_id=3257136&view=articleBrowser&ver=html5

Boettcher, T. (2017). CTE: Adapting to meet the demands of today's economy. *Techniques*, *91*(2), 41-43. http://digital.graphcompubs.com/article/CTE%3A_Adapting_To_Meet_The_Needs_Of_Today%E2%80%99s_Economy/2688698/377016/article.html

Bogdan, R., DeVault, M., & Taylor, S. (2015). *Introduction to qualitative research methods: A guidebook and resource*. John Wiley & Sons.

Bowen, B., Marx, A., Napoleon, L., & Williams, T. (2019). Teacher preparedness: A comparison of alternatively and traditionally certified technology and engineering education teachers. *Journal of Technology Education*, *30*(2), 75. https://doi.org/10.21061/jte.v30i2.a.5

Bozick, R., Gottfried, M., & Srinivasan, S. (2017). Do high school STEM courses prepare non-college bound youth for jobs in the STEM economy? *Education Economics, 25*(3), 234-250. doi.org/10.1080/09645292.2016.1234585

Bragg, L. (2018, November 15). History of the federal government's role in apprenticeships. *National Conference of State Legislatures*.

Brodersen, R., Hyslop, A., Imperatore, C., & Yanoski, D. (2016). *Toward the development of a program quality framework for career and technical education programs: A researcher-practitioner collaborative project*. *Society for research on educational effectiveness*. Society for Research on Educational Effectiveness.

Bullard, E. (2019). Purposive sampling. *Salem press encyclopedia*. Salem Press.

Carl D. Perkins Career and Technical Education Act of 2006 as Amended by The

Strengthening Career and Technical Education for the 21st Century Act, 115 U.S.C. No.2352 (2018). https://www.congress.gov/bill/115th-congress/house-bill/2353

Clark Plano, V. L., Creswell, J. W., Hanson, W. E., & Morales, A. (2007). Qualitative research designs: Selection and implementation. *The Counseling Psychologist*, *35*(2), 236-264. https://doi.org/10.1177/0011000006287390

Conley, D. (2015). A new era for educational assessment. *Education Policy Analysis Archives*, *23*(8).

Critchfield, D. (2019a, July 23). Career technical education: A top priority for Idaho. *Idaho Ed News*. https://www.idahoednews.org/voices/career-technical-education-a-top-priority-for-Idaho/

Critchfield, D. (2019b, October 28). It's "next steps" month in Idaho. *Idaho Ed News*. https://www.idahoednews.org/voices/october-is-next-steps-month-in-_idaho/

Crowder, C. L., & McCaskey, S. J. (2015). Reflection on one's own teaching style and learning strategy can affect the CTE classroom. *CTE Journal*, *3*(1), 2–12. https://www.thectejournal.com/uploads/1/0/6/8/10686931/mccaskey.pdf

DeFeo, D. J. (2015). Why are you here? CTE students' enrollment motivations and career aspirations. *Career and Technical Education Research*, *40*(2), 82-98. https://doi.org/10.5328/cter40.2.82

Demarest, K. K., & Gehrt, V. C. (2015). Get college-and career-ready at a vo-tech high school. *Phi Delta Kappan*, *96*(6), 22-26. https://doi.org/10.1177/0031721715575295

Denzin, N. K., & Lincoln, Y. S. (Eds.). (2011). *The Sage handbook of qualitative research*. Sage

Glennie, E., Lauff, E., & Ottem, R. (2017). Examining the Influence of the Florida" Career and Professional Education Act of 2007": Changes in Industry Certifications and Educational and Employment Outcomes. *Office of Career, Technical, and Adult Education, US Department of Education*.

Liao, Y., Deschamps, F., Loures, E. D. F. R., & Ramos, L. F. P. (2017). Past, present and future of Industry 4.0-a systematic literature review and research agenda proposal. *International journal of production research*, *55*(12), 3609-3629 https://doi.org/10.1080/00207543.2017.1308576

Dougherty, S. (2018). The effect of career and technical education on human capital accumulation: Causal evidence from Massachusetts. *Education Finance and Policy*, *13*(2), 119-148. https://doi.org/10.1162/edfp_a_00224

Dougherty, S., & Lombardi, A. (2016). From vocational education to career readiness: The ongoing work of linking education and the labor market. *Review of Research in Education*, *40*(1), 326–355. https://doi.org/10.3102/0091732x16678602

Drage, K. (2009). Modernizing career and technical education programs. *Techniques*, 32-34. https://files.eric.ed.gov/fulltext/EJ840448.pd

Eide, E., & Showalter, M. (2010). *Human Capital.* Bringham Young University. Elsevier.

Ferguson, M. (2018). Washington View: The past, present, and future of CTE. *PHI*

DELTA KAPPAN, *100*(2), 64–65. https://doi.org/10.1177/0031721718803575

Fleming, K. (2012). Success in the new economy: How prospective college students can gain a competitive advantage [Video]. https://kevinjfleming.com/videos%2C-books%2C-etc

Fletcher Jr, E. C., & Tyson, W. (2017). Bridging Technical Skills Gaps between High School Students and Local Employers. *Journal of Research in Technical Careers*, *1*(1), 20-31. https://doi.org/10.9741/2578-2118.1001

Fletcher Jr, E. C., Lasonen, J. L., & Hernandez, V. M. (2014). "We Don't Just Make Cookies": Practitioners' Perspectives on the Viability of Career and Technical Education in the United States. *Career and Technical Education Research*, *39*(1), 55-78. https://doi.org/10.5328/cter39.1.55

Governor's Workforce Development Task Force. (2017). Task force final report. https://labor.idaho.gov/publications/workforce_taskforce_final_report.pdf

Granovskiy, B. (2018). Reauthorization of the Perkins Act in the 115th Congress: The Strengthening Career and Technical Education for the 21st Century Act. CRS Report R45446, Version 2. Updated. *Congressional Research Service*.

Gray, L., & Lewis, L. (2018). Career and Technical Education Programs in Public School Districts: 2016-17. First Look. NCES 2018-028. *National Center for Education Statistics*.

Hattie, J. (2009). *Visible learning: A synthesis of over 800 meta-analyses relating to achievement*. New York, New York: Routledge

Hernandez-Gantes, V. M., Keighobadi, S., & Fletcher Jr, E. C. (2018). Building

community bonds, bridges, and linkages to promote the career readiness of high school students in the United States. *Journal of Education and Work*, *31*(2), 190-203. https://doi.org/10.1080/13639080.2018.1434871

Hess, F. M., & Martin, R. J. (2019). Is Career and Technical Education Just Enjoying Its 15 Minutes of Fame? https://vtechworks.lib.vt.edu/handle/10919/95069

Heyward, G. (2019). Schools Lead the Way but the System Must Change: Rethinking Career and Technical Education. *Center on Reinventing Public Education*.

Hyslop, A. (2019). Think boldly about career development in Perkins V. *Techniques, 30*(5).

Idaho Career and Technical Education. (2020). About. https://cte.idaho.gov/about/

Idaho State Board of Education. (2018). The facts about Idaho's public education system. https://boardofed.idaho.gov/resources/fact-book/

Idaho State Department of Education. (2019). School Choice. http://www.sde.idaho.gov/school-choice/

Imperatore, C. (2019a). Business & community partnerships. *Techniques*, (1), 12.

Imperatore, C. (2019b). Engaging instruction. *Techniques: Connecting Education & Careers*, *94*(4), 12–13.

Imperatore, C., & Hyslop, A. (2018). 2018 ACTE Quality CTE Program of Study Framework. *Association for Career and Technical Education (ACTE)*. https://www.acteonline.org/wp-content/uploads/2019/01/HighQualityCTEFramework2018.pdf

Imperatore, C., & Hyslop, A. (2017a). Defining high-quality CTE: Quality CTE program of study framework, version 4.0 (Beta). https://www.acteonline.org/wp-content/uploads/2018/02/ACTE-HighQualityCTEFramework-Draft4.0-Beta.pdf

Imperatore, C., & Hyslop, A. (2017). CTE policy past, present, and future: Driving forces behind the evolution of federal priorities. *Peabody Journal of Education*, *92*(2), 275-289. https://doi.org/10.1080/0161956X.2017.1302221

Imperatore, C., & Hyslop, A. (2015). Defining high-quality CTE: Contemporary perspectives on CTE quality. https://www.acteonline.org/wp-content/uploads/2018/03/ACTE_Contemporary_Perspectives_on_CTE_Quality_FINAL.pdf

Jacobsen, L. (2020). Report: States enact more than 200 CTE policies in 2019. *Education Dive. https://www.educationdive.com/news/report-states-enacted-more-than-200-cte-policies-in-2019/571357/*

Jackson, N. (2014). Joining hands: CTE programs partner with employers for success. *Techniques, 17*(19). https://www.acteonline.org/wp-content/uploads/2018/05/Techniques-January2014-CTEProgramsPartnerForSuccess.pdf

Jackson, K., Lower, C. L., & Rudman, W. J. (2016). The crossroads between workforces and education. *Perspectives in Health Information Management*, *13*(Spring).

Kamin, S. (2018). *Career and technical education issue brief: Current trends and results.* Retrieved March 19, 2019, from UCONN: Center for Education Policy Analysis. https://education.uconn.edu/2018/05/29/career-and-technical-education-issue-brief-current-trends-and-results/

Karagiozis, N. (2018). The complexities of the researcher's role in qualitative research: The power of reflexivity. *International Journal of Interdisciplinary Educational Studies*, *13*(1), 19-31. https://doi.org/10.18848/2327-011x/cgp/v13i01/19-31

Keily, T. (2019). *Career and Technical Education: What is the issue and why does it matter? Policy Snapshot*. *Education Commission of the States*. Education Commission of the States.

Kemple, J. J., & Snipes, J. C. (2000). Career academies: Impacts on students' engagement and performance in high school. *MDRC*. MDRC. https://www.mdrc.org/publication/career-academies-impacts-student-engagement-and-performance-high-school

King, A. (2016). Partnership: the role of industry-education partnerships in creating career pathways. *Techniques*, *3*(18). http://digital.graphcompubs.com/article/The+Role+Of+Industry-Education+Partnerships+In+Creating+Career+Pathways/2404215/291586/article.htm

Knight, J. (2013). *High-impact instruction: A framework for great teaching*. Thousand Oaks, CA: Corwin

Koller, V. (2018). *Closing the Gap: The future of apprenticeship in California*. *Jobs for*

the future. Jobs for the Future.

Kosloski, M., & Ritz, J. (2016). Research needs: Career and technical education. *Career and Technical Education Research*, *41*(2), 107-130. https://doi.org/10.5328/cter41.2.107

Kukovec, M. (2018). Innovative teaching - examples of good practice in vocational education. *Napredak*, *159*(4), 505–518.

Laboissiere, M., & Mourshed, M. (2017). Closing the skills gap: Creating workforce-development programs that work for everyone. *McKinsey & Company*. https://www.mckinsey.com/industries/social-sector/our-insights/closing-the-skills-gap-creating-workforce-development-programs-that-work-for-everyone

Liberman, D., Scully-Russ, E., & Thessin, R. (2017). Critical success factors in a high school healthcare education program. *Journal of Career and Technical Education, 32* (1). doi.org/10.21061/jcte.v32i1.1590

Maxwell, J. (2005). *Qualitative research design: An interactive approach*. Thousand Oaks, CA: SAGE Publications.

McPhail, M. (2018). Building the pipeline from classroom to career. *Techniques*, *1*(54).

Merriam, S. (2015). *Qualitative Research: Designing, implementing, and publishing a study*.

Suffren, Q., & Mezera, D. (2019). Aligning state career and technical education programs with industry needs and priorities.

https://www.excelined.org/wp-content/uploads/2019/01/ExcelinEd.CTEPlaybook5.AligningCTE.February2019.pdf

Molina, F., & Rosen, R. (2019). Practitioner perspectives on equity in career and technical education. In *MDRC*. MDRC.

Myers, L. (2015). Why professional credentials matter in CTE. *Techniques: Connecting Education & Careers*, *90*(1), 10–11.

National Center for Educaiton Statistics. (2020). Vocational education in the United States: The early 1990's. *Natioanl Ceter for Educational Statistics*. https://nces.ed.gov/pubs/web/95024-2.asp

National Center for Educaiton Statistics. (2017). Degrees/certificates conferred by postsecondary institutions, by control of institution and level of degree/certificate: 1970-71 through 2015-16. *National Center for Education Statistics*. https://nces.ed.gov/programs/digest/d17/tables/dt17_318.40.asp

Olson, L. (2018). High-quality curricula and team-based professional learning: A perfect partnership for equity. *Learning Forward*. https://learningforward.org/wp-content/uploads/2018/05/curriculaPLequity.pdf

Passarella, A. (2018). Policy brief: The necessary components of an effective career and technical education (CTE) program. Baltimore, MD: Johns Hopkins School of Education, Institute for Education Policy. https://edpolicy.education.jhu.edu/the- necessary-components-of-an-effective-career-and-technical-cte-program/

Patrinos, H. A., & Psacharopoulos, G. (2018). Returns to investment in education: a decennial review of the global literature. *Education Economics*, *26*(5), 445–458. https:// doi.org/10.1596/1813-9450-8402

Patton, M. Q. (2015). *Qualitative research & evaluation methods: Integrating theory and practice* (4th ed.). Thousand Oaks, CA: SAGE.

Pengilly, D. (2018). Educational impact of the health of the U.S. economy: How educators, students, and parents can make a difference. Meridian, Idaho: West Ada School District.

Perkins Collaborative Resource Network. (2019a). Career Pathways Systems. https://cte.ed.gov/initiatives/career-pathways-systems

Perkins Collaborative Resource Network. (2019b). Programs of Study. http://cte.ed.gov/initiatives/octaes-programs-of-study-design-framework

Ravitch, S., & Carl, N. (2016). *Qualitative research: Bridging the conceptual, theoretical, and methodological*. Thousand Oaks, CA: Sage Publications.

Rojewski, J. W., & Hill, R. B. (2017). A framework for 21st-century career-technical and workforce education curricula. *Peabody Journal of Education*, *92*(2), 180-191. https://doi.org/10.1080/0161956x.2017.1302211

Rosendin, N., & Gielczyk, A. (2018). Narrowing the skills gap to ensure the future of manufacturing: Boeing and CTE. *Techniques, 1*(20).

Rowe, A., & Zegwaard, K. (2017). Developing graduate employability skills and attributes: Curriculum enhancement through work-integrated learning. *Asia-Pacific Journal of Cooperative Education, 18*(2), 87-99.

Saeger, K. (2017). Career and technical education: The solution for preparing today's youth for college and career. *The CTE Journal*, *5*(2), 2-21. http://www.thectejournal.com/uploads/1/0/6/8/10686931/saegar.pdf

Schmidtke, C. (2017). Commonly used theories in CTE research: Toward a core theory base for CTE. *Career & Technical Education Research*, *42*(3), 193–217. doi.org/10.5328/cter42.3.193

Schwartz, J. (2017). Incorporating guided and open inquiry into the CTE classroom. *Techniques: Connecting Education & Careers*, *92*(6), 46-49.

Stern, D. (2016). Career-technical education and college readiness: Evolution of high school pathways in the United States. *University of California, Berkeley*.

Stiffler, D., & Frazier, M. (2016). An Online Resource for Improving Instructional Practice. *The Advocate*, *23*(3), 3. https://doi.org/10.4148/2637-4552.1024

Stone III, J. R. (2017). Introduction to pathways to a productive adulthood: The role of CTE in the American high school. https://doi.org/10.1080/0161956x.2017.1302207

Stone III, J. R. (2014). More than one way: The case for high-quality CTE. *American Educator*, *38*(3), 4-11.

U.S Department of Education. (2014). Best Practices. Retrieved from https://www2.ed.gov/rschstat/best-practices.html

U.S. Chamber of Commerce. (2017). Bridging the soft skills gap (Report). Washington, D.C.: Publisher. https://www.uschamberfoundation.org/reports/soft-skills-gap

U.S. Department of Education Career, Technical and Adult Education. (2018). Idaho

CTE fact sheet 2018.

Venkatraman, S., de Souza-Daw, T., & Kaspi, S. (2018). Improving employment outcomes of career and technical education students. *Higher Education, Skills and Work-based Learning*. https://doi-org.ezp.waldenulibrary.org/10.1108/HESWBL-01-2018-0003

Voytek, S., & Blosveren, K. (2015). CTE and employers: a perfect match. *Techniques*, *2*, 5. https://search-ebscohost-com.ezp.waldenulibrary.org/login.aspx?direct=true&db=edsgea&AN=edsgcl.404592984&site=eds-live&scope=site.

Webb, M. (2019). *Effective collaboration between business and industry Leaders and CTE stakeholders* [Unpublished manuscript]. Walden University.

West Ada School District. (2019). Instructional Model. https://www.westada.org/cms/lib/ID01904074/Centricity/Domain/7221/Instructional%20Model%202.pdf

Wijngaards-de Meij, L., & Merx, S. (2018). Improving curriculum alignment and achieving learning goals by making the curriculum visible. *International Journal for Academic Development*, *23*(3), 219-231. https://doi.org/10.1080/1360144x.2018.1462187

Xing, X., Shaw, S., & Gordon, H. R. (2017). Quality indicators guiding secondary career and technical education programs of study. *Journal of Research in Technical Careers*, *1*(2), 47. https://doi.org/10.9741/2578-2118.1012

Appendix: Interview Protocol

Introductory Statement: Thank you so much for participating in the interviews to help me collect data on the perspectives of CTE stakeholders; educators and business/industry leaders and what they feel are the most adequate uses of educational practices that ensure student readiness for the workforce for life after high school graduation. There are many ways that we can prepare CTE students for the workforce but finding what practices work best are not always clear. Therefore, the purpose of this basic qualitative study is to explore the perspectives of CTE and business/industry leaders about which educational practices in CTE programs can adequately support the preparation of students with industry-ready skills.

This is a voluntary interview and I appreciate you taking the time to address the questions as they are asked. At any point during the interview, you may stop the interview. With your permission I would like to record the dialogue of this interview for my records. I will then provide you with a transcription of the interview for you to review. I will remove any identifying characteristics from the interview as to protect your anonymity. Do you have any questions?

1) Interview Question One: Based on the opinions of CTE and business/industry leaders, what educational practices support the preparation of students with industry-ready skills, in a CTE program?

i) Sub-Question One: What instructional strategies such as apprenticeships, hands-on simulations do you feel support students acquiring specific knowledge and industry-ready skills should be used in the CTE classroom?

ii) Sub-Question Two: How should the relationship between CTE educators and business/industry leaders be fostered to support the delivery of work-based learning?

iii) Sub-Question Three: What is your recommendation for a sustained relationship between business/industry and a CTE program?

iv) Sub-Question Four: What data will be collected and reported upon for continuous evaluation and program improvement? How will this data be accessed?

v) Sub-Question Five: What do you see as necessary data that should be collected during a student's education so that you can feel more involved to make decisions for further improvements to CTE?

vi) Sub-Question Six: What knowledge and skills will students need to be successful in a career associated with your industry or career cluster? How would you recommend that this knowledge base be assessed?

1) Interview Question Two: Based on the opinions of CTE and business/industry leaders, how can educational practices be applied in CTE programs to prepare students with the industry-ready skills needed for employment in the workforce?

i) Sub Question One: What support should the CTE teacher and Business/Industry Leader give to students so that they can learn safely with the materials that are necessary for your industry?

ii) Sub Question Two: What CTE classroom design will maximize the appropriateness and safety of the components of the program that supports learning?

iii) Sub Question Three: How should a CTE program maximize student access to relevant facilities, equipment, technology, and materials?

Concluding Statement: Thank you for your time today. I appreciate your willingness to be a part of my study and give your perspective of what educational practices prepare students with industry-ready skills. Do you have any questions for me? Within the week I will provide you with a copy of the interview so that you can review the dialogue and make any changes that you feel are necessary. Thank you again.