University of Cincinnati

Date: 5/15/2015

I, Lisa L Tuttle-Huff, hereby submit this original work as part of the requirements for the degree of Doctor of Education in Urban Educational Leadership.

It is entitled:
Career Technical Education and Business Collaborating to Meet the Needs of the Economy in Southwest Ohio: Truth or Fallacy?

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Career Technical Education and Business Collaborating to Meet the Needs of the Economy in Southwest Ohio: Truth or Fallacy?

A dissertation submitted to the
Division of Research and Advanced Studies
Of the University of Cincinnati

In partial fulfillment of the
Requirements for the degree of

Doctorate of Education

In the Program of Urban Educational Leadership
Of the College of Education, Criminal Justice, and Human Services

2015

by

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Abstract

The purpose of this qualitative study was to describe how CTE superintendents garner information related to economic need; how business leaders recruit new employees; and what types of communication and practices CTE and business leaders employ to collaborate strategically concerning future economic trends. The attitudes, practices, and potential barriers related to CTE superintendents and business leaders meeting the local economic needs were examined. Participants in the study included seven CTE superintendents and four business leaders from three businesses from one county in southwest Ohio. The study found that superintendents believe that through advisory committee meetings, business meetings, and other political efforts, they are reaching out to business and industry to extract the information needed to add and delete programming based on local businesses needs. Business leaders continue to utilize traditional job postings and personal referrals in order to find new employees. Furthermore, more collaboration and communication between career centers and local businesses are needed so that career centers understand the needs for the their local businesses and the businesses become more of a resource for the career center. This study intended to ascertain the best practices that Ohio career technical centers employ to define and meet the needs of local business as well as collect the perceptions from business administrators concerning the effectiveness of career technical education.
Dedication

For my beautiful grandchildren, Korbin and Karmen: Anything that you dream of doing, you CAN do it!
Acknowledgements

I would like to thank my family and friends. Mom and Dad, thank you for working countless hours to support our family and teaching me the importance of working hard even when it was difficult. Thank you for stressing the importance of education and motivating me to achieve in school. To my dear husband and my son and his wife, without your unwavering support the dream of completing a doctorate would be merely that, a dream.

I am incredibly grateful to my advisors at the University of Cincinnati who nurtured my academic development. Dr. Carlee Escue-Simon, thank you for taking me in as a late addition to your advisees and for not giving up on me. Your guidance and encouragement through all the milestones and challenges of the program is very much appreciated. Dr. Sam Stringfield, thank you for your willingness always to keep your door open and answer the infinite questions I posed. I learned a great deal from those kick-start classes that helped me develop momentum to keep moving forward. Thank you, Dr. Michael Jones, for serving as a member of my committee. It was a different aspect that my research needed.

My friend Dr. Michelle Rammel, thank you for proofreading countless papers and consoling me when I doubted my abilities. You were essential in the dissertation writing process.
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CHAPTER 1. INTRODUCTION

Introduction to the Study

Business leaders are complaining that this generation’s young workers are not skilled or socially prepared to meet industry’s needs. Career technical education (CTE) superintendents assert that CTE is a premier educational opportunity that successfully prepares students for a career after graduation. In fact, higher education and career preparation are even more essential and necessary as high school graduates “navigate their way into a labor market that requires advanced training and specialized skills” (Bozich & MacAllum, 2002). This study investigated how CTE superintendents and business leaders interpret their interactions related to economic need and postulates suggestions to improve communication between the two entities.

Background of the Study

Today’s changing economy requires that education and businesses work closely together to develop career technical programming (Bray, Green, & Kay, 2011). Career technical education organizes itself to relate directly to the preparation and training of students in entry level to college educated careers. A critical goal of CTE teachers and administrators is to partner with local businesses to communicate local economic trends and needs. The purpose of this study is to determine how CTE superintendents and business leaders communicate local economic needs and provide suggestions to improve communication.
Statement of the Problem

Vocational education is changing its image and its structure. Initially, the emphasis of a joint vocational school was to teach low-skill occupational training with the goal of job placement (Daggett, 2002). In 2006, the term *vocational education* changed to *career technical education* (CTE) in the United States (Daggett, 2002).

Along with the name change, career technical education experienced several other changes. In addition to preparing students for the workforce, CTE prepares students to take college preparatory courses (Harris, 2007). Career technical education not only teaches production skills, but also a higher level of cognitive thinking to prepare students for higher education. Therefore, CTE students learn the skills necessary to be successful in college and career.

There is little research on the intersection of business need and career technical education. However, researchers Doolittle and Camp (1999) claimed, "the unifying theory underlying career and technical education in the United States in the first part of this century, as envisioned by David Snedden and effectuated by Charles Prosser, was the so-called social efficiency doctrine" (p. 2). Advocates of social efficiency asserted that public schools are "an arm of the social system; and, as such, they had an inherent mission to further the good of society by contributing to its efficiency" (p. 2). This mission specifically speaks to career technical education.

For Snedden and Prosser, career and technical education made up one of the premises of social efficiency, in that the preparation of a competent workforce was a sign of an efficient society (Wirth, 1972). However, there may be a disconnect between how CTE
superintendents believe they are preparing the future workforce and how business leaders perceive career technical education is training students for future economic trends.

Considering the aging workforce in Ohio and the United States, it is imperative that career technical education meets the needs of local businesses. Chambers of Commerce are complaining that this generation’s young workers are not skilled or socially prepared to meet the needs of business owners (Casner-Lotto, 2006; M. Van Sant, personal communication, September 25, 2014). According to Gordon (2014), career technical education is the best educational opportunity to help those students who are academically less successful obtain employment after completing high school. According to the Association for Career and Technical Education [ACTE] (2007), CTE helps more students complete high school by “preparing them for postsecondary education and training that will be critical to future economic successes” (p. 3). This study examined how CTE superintendents and business leaders interpret their interactions related to economic need and how the two groups may cultivate better communications.

**Purpose of the Study**

The purpose of this study was to examine the communication between CTE superintendents and business leaders. More specifically, this study described how CTE superintendents garner information related to economic need; how business leaders recruit new employees; and what practices CTE and business leaders employ to collaborate strategically concerning future economic trends. This researcher examined the attitudes, practices, and potential barriers related to CTE superintendents and business leaders meeting the local economic needs.
Theoretical Framework

Constructivism is a theory about learning that puts the student at the center of the learning experience (Henson, 2003). Chaillé (2008) defined constructivism as a theory of learning in which students construct new knowledge based on previous knowledge. In other words, students play an active role in learning rather than passively receiving information (Biggs, 1999; O’Connor, 2009; Stage, Muller, Kinzie, & Simmons, 1998). A student-centered classroom supports the constructivist approach to learning (Rushton, 2005). Learning is more meaningful when students can process information and relate it to their experiences (O’Connor, 2009).

Students tend to be more motivated in their career technical class than in their academic courses since the curriculum and its delivery is unique (Rammel, 2012). Information in career technical classes is presented in a hands-on approach, requiring students’ active participation (Rammel, 2012). Students are taught the concepts in a classroom setting before actively applying the new knowledge while completing lab assignments, activities, and projects. For example, cosmetology students do not begin with cutting clients’ hair. The students must first learn the basic haircuts before practicing the cuts on mannequins. Lastly, students use their new knowledge to cut clients’ hair.

While this study sought to examine how CTE superintendents and business leaders interpret their interactions related to economic need, an emphasis was placed on the communication between the two entities. This qualitative case study analyzed the discrepancies that exist in how CTE superintendents and business leaders each believe CTE meets the needs of local businesses by preparing students for current jobs and for jobs not yet created.
With respect to communication, constructivism is a theory that explicates individual differences in the ability to communicate proficiently (Burleson, 2007). The constructivist approach to human communication is “interested in understanding how people’s interpretations of the social world influenced their communicative behavior” (Burleson, 2007, p. 108). Constructivist theory continues to develop and be applied in new settings, leading to a better understanding of many communication events and behaviors, such as the communication processes in business, educational institutions, health care contexts, the mass media, and political settings.

Constructivism intends to provide descriptions and explanations of individual differences in communication skills. First, constructivism specifies the characteristics and qualities people must possess if they are to communicate skillfully. Second, constructivism explains the individual differences in the characteristics that lead some people to be more skillful communicators than others. Third, constructivism identifies what counts as skillful conduct with respect to several processes, including social perception, message production, and message reception.

Social perception refers to the process through which an individual makes sense of the human or social world (Burleson, 2007). Typically, other individuals’ actions and qualities are important; therefore, much mental energy and attention is focused on learning who they are, how they stand in relation to oneself, the type of situation they currently occupy, what they are doing, their intentions and motivations, and their personal qualities (Burleson, 2007). Social perception is “important for communication because people base their communicative behaviors on their perceptions of others’ conduct, qualities, roles, intentions, and dispositions” (Burleson, 2007, p. 109). Researchers have examined different social
perception processes, such as affect recognition, causal attribution, nonverbal decoding, impression formation, information integration, social evaluation, and social perspective taking. Each of these processes is an ‘input-oriented’ cognitive activity that individuals utilize to define and understand social situations and the qualities, thoughts, and behaviors of others.

Some individuals possess more developed athletic skills than others, some have more developed mathematical skills, and some have more developed musical or artistic skills than others. Since people can engage in the above processes more or less well, social perception represents a set of skills on which people differ (Burleson, 2007). It must be noted that the term emotional intelligence has been used when referring to the abilities described by social perception skills (Goleman, 1995).

*Message production* is the process of generating verbal and nonverbal behaviors that are intended to obtain a desired response from those to whom they are directed (Burleson, 2007). When effective, this process allows individuals to smoothly and accomplish various personal and social goals. Message production is a complicated process; there are many different message production skills. For this research, the most important process is the ability to produce highly person-centered messages.

Some communication is simple everyday tasks, such as saying hello to someone and answering or asking everyday questions about the time or weather. When accomplishing these simple tasks, it is normal to not pay much attention to unique characteristics of the other person. It is common to depend on standard messages that pertain to the circumstance.

However, other communication tasks require more attention. Responses need to be more thought out by showing an “awareness of, and accommodation to, the particular
psychological characteristics of our specific target audience and features of the specific social situation” (Burleson, 2007, p. 113). Comforting someone who is upset about a recent loss or explaining how a machine works to someone with little background are examples of complicated tasks requiring careful consideration of the goals, feelings, traits, knowledge, and desires of the audience.

*Message reception* is the process of decoding others’ communicative behavior in the attempt to understand the meaning and implications of that behavior (Burleson, 2007). Message reception is a type of social perception process that “focuses on comprehending and contextualizing what we take to be the intentional communicative expressions of others” (Burleson, 2007, p. 118). Being successful in the process signifies that an individual understands another’s message and can go beyond the messages to more deeply understand the other’s intentions and motivations.

Message reception is a complex process comprised of several discernible components. When an individual receives and interprets a message from another, he or she seeks to understand the *meaning* of the other’s words, the *intention* associated with those words, and the *motive* (Burleson, 2007). In other words, what was the other person trying to say, what was the other person’s goal by saying what he or she said, and why was the other person trying to achieve what he or she was trying to do.

From the constructivist point-of-view, people are active participants in understanding their experiences. Furthermore, how they interpret their experiences is a major influence on their behavior. People differ in the complexity of their interpretative inferences for social perception skills, message production skills, and message reception skills (Burleson, 2007). Generally, people with advanced levels of interpersonal cognitive complexity possess more
advanced social perception and communication skills, but the connections between cognitive complexity and assorted skills can be intricate. Researchers have learned much about childhood socialization factors that influence the development of cognitive complexity and associated communication skills. Career technical education was developed upon a constructivist point-of-view where students are active participants in understanding their educational career tech experiences.

**Research Questions**

The purpose of this study was to examine how Ohio career-technical education (CTE) superintendents and business leaders in southwest Ohio perceive the communication between the two entities. In addition, this study examined the success of practices used by career technical centers to address economic trends and business needs. The intent of this study was to ascertain the best practices that Ohio career-technical centers utilize to meet the needs of local business. In addition, this multi-site case study gathered the perceptions from business leaders concerning the effectiveness of career technical education as well as the CTE superintendents’ views.

This qualitative study will examine the following questions:

*R_1*  
How do business leaders and CTE superintendents garner information related to local economic need?

*R_2*  
How do business leaders recruit newly trained CTE graduates?

*R_3*  
What practices can CTE and business leaders employ to collaborate strategically concerning future economic trends?
Significance of the Study

The information presented in this study will assist CTE superintendents and business leaders to develop and implement initiatives that promote, and ultimately increase, CTE programming to meet the needs of the local economy. The study was needed because there is a disconnect between what CTE superintendents state they are doing to meet economic need and how business leaders perceive the collaboration between CTE superintendents and business leaders to meet the economic need. The study served to close the gap and connect the entities in a more productive manner.

Definition of Terms

There are some common terms related to career technical education that are important to understanding this qualitative study. It is necessary that readers have a working knowledge of these terms. The following definitions were taken from the Ohio Career Technical Education Dictionary (Ohio Department of Education & Ohio Association for Career and Technical Education, 2014):

Advisory committee. Volunteers authorized by boards of education to advise workforce development programs in such areas as new and emerging careers, curriculum, assessment, work-based learning, facilities and equipment; and to engage educators to improve and expand programs. Members may include former students, parents of current students and representatives of postsecondary institutions, professional associations, government, the community and business/industry.

Apprenticeship. Registered comprehensive training program for gainfully employed adults engaged in a career identified by the U.S. Department of Labor,
Bureau of Apprenticeship and Training, as a craft or trade that requires a wide and diverse range of skills and knowledge. The training program must be registered with the U.S. Department of Labor and consist of planned day-to-day activities that meet prescribed competencies. The successful completion of a registered apprenticeship training program leads to “master craftsperson” or “journeyperson” status. Pre-Apprenticeship Training Program helps potential entrants to the apprenticeship system develop their job skills and trade readiness so that they will be prepared to find work as apprentices.

*Articulation.* Prescribed curriculum sequence that allows credit transfers from one area to another, such as between grade levels, between career-technical and academic education and between secondary (high school) and postsecondary (higher) education. This term is most commonly used when referring to adult workforce or high school program credits that transfer to a two- or four-year college program.

*Associate school district.* Any member school district (sometimes called “home school” or “feeder school”) of a joint vocational school district or a contracting district that does not serve as the fiscal agent for the Career-Technical Planning District (CTPD).

*Association for Career and Technical Education (ACTE).* The largest national education association dedicated to the advancement of education that prepares youth and adults for careers.

*Career based intervention (CBI).* Work-based learning and academic intervention programs for students (ages 12-21) with barriers to career and academic success.
**Career fields.** Organizing curricular tool. Each career field includes multiple occupations and broad industries that share a fundamental base of knowledge and skills that are required for success in pursuing employment and further study. The Office of Career-Technical Education organizes curriculum into 16 career fields that are based on the States’ National Cluster initiative.

**Career technical planning district (CTPD).** Local education agency configuration (comprehensive district, compact/contract district or joint vocational school district) that meets the minimum requirements of law and subsequent standards to offer state sanctioned career-technical programming. There are 91 such districts in Ohio.

**Career technical education (CTE).** Education methodology and strategies to prepare students for careers, as well as continued education. Within career tech are foundation classes and workforce development programs (including Work and Family Studies).

**Career technical student organization (CTSO).** Intracurricular component of career-technical programs having activities designed to support instructional objectives and attainment of technical competencies while helping student members develop interpersonal, citizenship and leadership skills.

**College Tech Prep.** Combination of college preparatory academics and advanced career-technical education with the objective of a seamless, non-duplicative transition from high school to postsecondary education. All Ohio secondary career-technical education programs are Tech Prep.

**Community School.** Independent school district that is part of Ohio’s program of education. Community school career-tech programs operate within a career-technical planning district.

**Compact/Contract District.** One form of a career-technical planning district, or legal entity through which career-tech programs are delivered. It is an area in which a number of school districts enter into a contract of operation to provide career-technical education.

**Comprehensive district.** One form of a career-technical planning district, or legal entity through which career-tech programs are delivered. It is one that has 1,500 or more students and offers career-technical education in career centers and/or at existing high schools in the district.

**Education Management Information System (EMIS).** A statewide data collection system of Ohio’s primary and secondary education, including demographic information, attendance, course information, financial data and test results.

**Full-time equivalency (FTE).** That portion of the school year a student was educated, as determined by the number of either days or hours of instruction provided to a student during a school year divided by its annual membership units. A student who enters at the beginning of a school year and is instructed for the total annual membership units would generate an FTE of 1.0.
Joint vocational school district (JVSD). One form of a career-technical planning district, or legal entity through which career-technical programs are delivered. Serving at least two adjacent school districts, it is governed by a joint vocational school board consisting of representatives from the participating districts.

Ohio Association for Career and Technical Education. Advocate for career-technical education (CTE) in Ohio that offers educators the information, representation and resources they need to provide outstanding educational opportunities for students of all ages and abilities.

Ohio Career-Technical Administrators (OCTA). An organization of career-technical administrators. The association provides professional development and networking opportunities.

Ohio Career-Technical Competency Assessment (OCTCA). State developed tests, which are part of the technical assessment system. These tests are administered electronically through a Web-based application. In 2014, all OCTCA tests are developed and administered by The Ohio State University through WebXam.

Ohio Department of Education (ODE). State agency that has administrative oversight for grades K-12.

Program of Study. A pathway of secondary and postsecondary non-duplicative course sequences that culminates in a diploma, credential(s), and/or degree(s).

Vocational education. See Career technical education.
Assumptions

Several assumptions were present in this qualitative study. First, it was assumed that CTE superintendents and business leaders who participate would answer the survey and interview questions honestly. Participants were informed that all material will remain confidential, no repercussions can occur from the information they present, and all participants have signed a Letter of Consent. This study was dependent on candid and straightforward answers. Second, it was assumed that all study participants have been involved with CTE or business in some manner. Lastly, it was assumed that case study procedures, such as surveys, interviews, and existing documents provide enough in-depth information to generate data in order to identify themes for analysis.

Biases

The researcher has worked in career technical education for a total of 11 years. For nine years, she worked at one career technical high school at various levels, namely as a counselor, satellite supervisor, assistant principal, and principal. Currently, she is in her second year as superintendent at another career technical high school located in Southwest Ohio. This experience may have caused some bias during the study.

Limitations

Although eight CTE superintendents were invited to participate, this qualitative study included data from seven career technical superintendents in Ohio. One limitation of this study was that the group of participants was a stratified purposeful sample. Participants were
selected due to their relationship to a particular subgroup, such as location and relationship to CTE and/or the business community (Hatch, 2002).

A second limitation dealt with the ability to generalize the results. This study took place with seven Ohio career-technical superintendents and four business leaders from three businesses in one county located in Southwest Ohio. This limited the diversity of the population as well as the ability to generalize the findings to comprehensive high schools or career technical centers in other states.

Lastly, data collection may have been limited by the participants’ willingness to contribute to the study and their honesty when answering questions. Surveys with CTE superintendents and interviews with business leaders served as the primary data collection methods. The survey was based on the participants’ opinions and not necessarily on experiential data. The conclusions and recommendations from this study were limited to the generalizations collected from participants’ responses. These limitations were carefully considered while discussing the findings and implications of the study.

**Organization of the Remainder of the Study**

This study is organized into five chapters. Chapter 1 provided an introduction to the problem, background of the study, statement of the problem, purpose of the study, rationale for the study, research questions, significance of the study, definitions of key terms, assumptions and limitations, and nature of the study. Chapter 2 contains a review of the literature about career technical education and economic trends. Chapter 3 provides a detailed description of the research methodology used to examine the practices career technical superintendents utilize to strategically partner with businesses to ensure workforce
development to meet economic trends. One purpose of this study is to garner the perceptions of business administrators on the effectiveness of these practices. Furthermore, this chapter discusses the data collection procedures and data analysis. Chapter 4 provides the results of the data analyses. Chapter 5 presents the conclusion of the study and provides a discussion of the findings and recommendations for further research.
CHAPTER 2. LITERATURE REVIEW

Introduction

During a meeting with approximately 20 Mifflin High School students at the Huntington National Bank Business Service Center, Ohio’s Governor John Kasich stated, Here’s…what my dream would be…for all of you to come here once a week for like four or five hours, like on a Friday…. You would hang around people that are successful. And you would learn from them, you know, the way they dress, the way they talk, the way you walk in the hall, that’s important. And then you’d also learn a little bit about what they do (Vardon, 2012).

There is more to Kasich’s vision. He wants more students to receive the education necessary for the job they wish to pursue. Kasich stated that the education could be from “a four-year college, a community college, or a vocational school” (Vardon, 2012).

This would require students to have a better understanding of what job they want to hold after high school so that the students can begin the proper training. Governor Kasich wants students as young as first grade to be introduced to possible career choices, with the exposure increasing and becoming more in-depth as the students get older (Vardon, 2012).

Career technical education (CTE) affords students “opportunities for career awareness and preparation by providing them with the academic and technical knowledge and work related skills necessary to be successful in postsecondary education, training, and employment” (U.S. Department of Education, 2012, para. 7). CTE students receive technical training every day in order to prepare for lucrative careers. This training is structured in such a way that each student is prepared to enter the workforce after high school and/or further his or her education by attending a technical school, two-year college, or four-year college. Not
only does CTE provide challenging academic and technical content for its students, but it also has strong relationships with business/industry and higher education (Bray, Green, & Kay, 2011).

CTE has significant success in the United States. The national freshman graduation rate is 74.9%; however, the average high school graduation rate for students concentrating in CTE programs is 90.18% (ACTE, n.d.b). Eighty-one percent of high school dropouts said that the opportunity for relevant, real-world learning would have kept them in high school (ACTE, n.d.b). Approximately 70% of secondary CTE concentrators pursued postsecondary education after high school (ACTE, n.d.b).

CTE has a remarkable success rate in Ohio. Nearly 98% of Ohio’s CTE students graduate from high school (Ohio Department of Education, 2014b). Sixty percent of those graduates obtain further education, and more than 50% of CTE students are employed within nine months of graduation (Ohio Department of Education, 2014b).

Harris (2007) found that student achievement increased significantly when CTE courses incorporated more academic rigor. In fact, during the 2004-2005 school year, a volunteer group of CTE teachers participated in a study (Stone, Alfeld, & Pearson, 2008). The teachers were assigned to either an experimental or control group. The experimental CTE teachers worked with math teachers to examine the CTE curricula and determine embedded mathematical concepts. The researchers found that although the students performance in their CTE program did not change, pupils who participated in the math-enhanced lessons performed significantly better than control students on the ACCUPLACER and TerraNova, which are two standardized test of math ability (Stone, Alfeld, & Pearson, 2008).
Career technical education is available to all students in Ohio. Every public school district and community school in Ohio belongs to a Career-Technical Planning District (CTPD), which provides CTE programming to students. There are a total of 91 CTPDs in Ohio. Approximately half of CTE students take courses in a career tech center; the other half take courses in the student’s high school (Ohio Department of Education, 2014b). In 2012, there were approximately 120,357 career tech students in Ohio, meaning 22% of Ohio’s grade 9-12 students are career tech students.

This review of the literature begins by offering a basic history of career technical education in the world and the United States as well as in Ohio. Next, funding, the performance report card, career fields, student assessment, and alternative teacher licensure are discussed as related to career technical education. Lastly, CTE is considered in relation to various economic and business and industry needs within one county in Southwest Ohio, to the Cincinnati region, and the state of Ohio as a whole.

**History of Career Technical Education**

**Federal**

Shoemaker and Parks (2007) asserted that vocational education started with the beginning of man as parents passed skills and knowledge down to their children (2007). Over the millennia, subsequent generations added more information to the total skills and knowledge. The more modern version of vocational education began in Europe in the 19th century due to the increase in demand for workers with skills in industrialized professions (“Vocational”, 2013).

The birth of formal vocational education was influenced by the European elites, whose
children received a traditional education, as well as certifications in skills. The elites wanted their children to gain access to positions in law and theology; however, the middle-class parents wanted their children to attain basic educational credentials and skills to help them enter careers in the civil service or managerial positions (Benavot, 1983).

Thomas Jefferson, a member of America’s early wealthy class, was a proponent of public schools for all children. Jefferson believed that citizens must be educated in order to make informed choices. He advocated for a system of education that provided basic levels of education for all citizens. This idea of education for all, and as a means to address inequalities, has never died, and is a core premise of CTE education (Oakes, 2005).

Prior to the industrial revolution, the United States was predominantly an agrarian society. Yesterday’s school structure looked much different than it does today. A change began around 1820, the time of the Industrial Revolution in the United States, setting the stage for a more formalized vocational education system (ACTE, 2014).

In 1876, Dr. John D. Runkle, president of the Massachusetts Institute of Technology, visited the Imperial Technical School of Moscow’s Russian exhibit. During the visit, he viewed instruction based on the construction of models from plans designed and drawn by students (Wirth, 1972). The system was essentially a laboratory method of teaching. Observing this type of instruction led Runkle to develop an educational method that integrated academics with vocational education in the United States (Goble, 2004).

As factories grew, industry realized the need to provide training for its workers (Barlow, 1976). In the early 19th century, employers and the public education system began to collaborate in order to create a continuous flow of workers for a variety of jobs. Schools
specializing in training students to enter a certain area of the workforce were created, and the basic framework for career and technical education evolved (Barlow, 1976; ACTE, 2014)

In 1906, the National Society for the Promotion of Industrial Education (NSPIE) led a national movement encouraging states to incorporate a full vocational program into their educational systems. According to NSPIE, in 1910, 29 out of the then 46 states offered at least some form of vocational education in their public schools (Gordon, 2008).

The Smith-Hughes Act of 1917 fundamentally enhanced the way vocational education was funded in the United States and created the Federal Board for Vocational Education. It gave federal control over state programs and provided annual appropriations for vocational education expenses. Broad acceptance of career and technical education came after World War I and programming spread in the years that followed (Barlow, 1976; ACTE, 2014).

Over time, career and technical education expanded to include adult education and training citizens to re-enter the workforce. World War II increased the need for career and technical education because technical skills were needed for defense industries (Barlow, 1976; ACTE, 2014).

Rapid economic development at the beginning of the 20th century created a need for clerical workers and workers who could handle skilled craft jobs. Public schools saw this as an opportunity and began adding courses such as typing, stenography, and bookkeeping to the public school course offerings (Gordon, 2008).

President John F. Kennedy spoke to Congress in February 1961 and requested a review and evaluation of the National Vocational Acts. He asked an advisory board comprised of politicians, educators, and laypersons to give him recommendations for improving and redirecting the program. The panel found that vocational education was not
available in enough public high schools and that the then current number of programs needed to be expanded (Barlow, 1976; ACTE, 2014).

In December 1963, President Lyndon B. Johnson signed the Vocational Education Act of 1963 into law, which required that the President appoint an Advisory Council on Vocational Education. Five years later, after a report concerning the state of vocational education was released, both the House and Senate proposed bills to increase funding for vocational education (Barlow, 1976; ACTE, 2014).

The concept of career education began with U.S. Commissioner of Education Sidney P. Marland, Jr.

The first attitude that [we] should change,…, is our own…. We must purge ourselves of academic snobbery. For education’s most serious failing is its self-induced, voluntary, fragmentation, the strong tendency of education’s several parts to separate from one another, to divide the entire enterprise against itself. The most grievous example is… the false dichotomy between things academic and things vocational. As a first step, I suggest we dispose of the term vocational education and adopt the term career education. Every young person in school belongs to that category at some point, whether engaged in preparing to be a surgeon, a bricklayer, a mother, or a secretary” (Marland, 1972, p.188, emphasis in original).

The American Vocational Education Association began to hold special meetings to formulate its concept of career education (Barlow, 1976; ACTE, 2014). In December 1998, the American Vocational Association changed its name to the
Association for Career and Technical Education (ACTE). This new name was chosen to reflect changes that had been occurring in the field during the past two decades of the 20th century (ACTE, 2002).

**Articulation Agreements.** An articulation agreement is a predetermined curriculum sequence that allows credit to transfer between secondary and postsecondary institutions or between community colleges and four-year colleges.

**Career Clusters.** There are 16 Career Clusters in the National Career Clusters Framework, which represent more than 79 Career Pathways (National Association of State Directors of Career Technical Education Consortium, 2014). Career Clusters provide the essential knowledge and skills for the Career Clusters and Pathways as well as functions as an effective guide in developing programs of study that align secondary and postsecondary curriculum. Career Clusters also aid in the development of individual student plans of study allowing for a complete range of career options. Furthermore, Career Clusters helps students discover their passions allowing them to select the most appropriate educational pathway for their particular interests, which in turn can lead to success in high school, college, and career (National Association of State Directors of Career Technical Education Consortium, 2014).

Each of the 16 Career Clusters is described below.

**Agriculture, food & natural resources.** This Career Cluster focuses on the production, processing, financing, and development of agricultural commodities and resources including food, fiber, wood products, natural resources, horticulture, and other plant and animal products/resources. This Career Cluster includes the following Pathways: Agribusiness Systems Career Pathway, Animal Systems Career Pathway, Environmental Science Systems Career Pathway, Food Products & Processing Systems Career Pathway,

**Architecture & construction.** This Cluster involves careers in designing, planning, managing, building and maintaining the built environment. This Career Cluster includes the following Pathways: Design/Pre-Construction Pathway, Construction Pathway, and Maintenance/Operations Pathways.

**Arts, A/V technology & Communications.** The designing, producing, exhibiting, performing, writing, and publishing multimedia content including visual and performing arts and design, journalism, and entertainment services are included in this Career Cluster. This Career Cluster includes the following Pathways: A/V Technology & Film Career Pathway, Printing Technology Career Pathway, Visual Arts Career Pathway, Performing Arts Career Pathway, Journalism & Broadcasting Career Pathway, and Telecommunications Career Pathway.

**Business management & administration.** Careers in planning, organizing, directing and evaluating business functions essential to efficient and productive business operations are a part of this Cluster. The following Pathways are included in this Career Cluster: General Management Pathway, Business Information Management Pathway, Human Resources Management Pathway, Operations Management Pathway, and Administrative Support Pathway.

**Education & training.** This Cluster focuses on the planning, managing and providing education and training services, and related learning support services. This Career Cluster includes the following Pathways: Administrative & Administrative Support Pathway, Professional Support Services Pathway, Teaching/Training Pathway.
**Finance.** This Career Cluster involves careers in planning, services for financial and investment planning, banking, insurance, and business financial management. The following Pathways are included in this Career Cluster: Securities & Investments Pathway, Business Finance Pathway, Accounting Pathway, Insurance Pathway, and Banking Services Pathway.

**Government & public administration.** Careers in planning and performing government functions at the local, state, and federal levels, including governance, national security, foreign service, planning, revenue and taxation, and regulations comprise this Career Cluster. This Career Cluster includes the following Pathways: Governance Pathway, National Security Pathway, Foreign Service Pathway, Planning Pathway, Revenue & Taxation, Regulation Pathway, and Public Management & Administration Pathway.

**Health science.** This Career Cluster includes careers in planning, managing and providing therapeutic services, diagnostic services, health informatics, support services, and biotechnology research and development. The following Pathways are included in this Career Cluster: Therapeutic Pathway, Diagnostic Services Pathway, Health Informatics Pathway, Support Services Pathway, and Biotechnology Research & Development Pathway.

**Hospitality & tourism.** This Career Cluster consists of the management, marketing, and operations of restaurants and other food-services, lodging, attractions, recreation events and travel related services. This Career Cluster includes the following Pathways: Restaurants & Food/Beverage Services Pathway, Lodging Pathway, Travel & Tourism Pathway, and Recreation, Amusement & Attractions Pathway.

**Human services.** This Cluster prepares individuals for employment in career pathways that relate to families and human needs such as counseling and mental health services, family and community services, personal care, and consumer services. The
Pathways included in this Cluster are: Early Childhood Development & Services Pathway, Counseling & Mental Health Services Pathway, Family & Community Services Pathway, and Consumer Services Pathway.

**Information technology.** Students learn to build linkages in IT occupations for entry level, technical and professional careers related to the design, development, support and management of hardware, software, multimedia and systems integration services. Network Systems Pathway, Information Support & Services Pathway, Web & Digital Communications Pathway, and Programming & Software Development Pathway are all Pathways listed under the Information Technology Career Cluster.

**Law, public safety, corrections & security.** This Cluster involves careers in planning, managing, and providing legal, public safety, protective services and homeland security, including professional and technical support services. Pathways listed under this Cluster include: Correction Services Pathway, Emergency & Fire Management Services Pathway, Law Enforcement Services Pathway, Legal Services Pathway, and Security & Protective Services Pathway.

**Manufacturing.** This Cluster includes careers in planning, managing and performing the processing materials into intermediate or final products and related professional and technical support activities such as production planning and control, maintenance and manufacturing/process engineering. This Cluster contains the following: Production Pathway, Manufacturing Production Process Development Pathway, Maintenance, Installation & Repair Pathway, Quality Assurance Pathway, Logistics & Inventory Control Pathway, and Health, Safety & Environmental Assurance Pathway.
Marketing. Careers in planning, managing and performing marketing activities to reach organizational objectives are incorporated into this Career Cluster. Marketing Management Pathway, Professional Sales Pathway, Merchandising Pathway, Marketing Communications Pathway, and Marketing Research Pathway are all listed under the Marketing Career Cluster.

Science, technology, engineering & mathematics. This Career Cluster focuses on the planning, managing and providing scientific research and professional and technical services, including laboratory and testing services, and research and development services. The two Pathways that comprise this Career Cluster are Engineering & Technology Pathway and Science & Mathematics Pathway.

Transportation, distribution & logistics. This Career Cluster consists of the planning, management, and movement of people, materials, and goods by road, pipeline, air, rail and water and related professional support services such as transportation infrastructure planning and management, logistics services, mobile equipment and facility maintenance. The Pathways included are: Transportation Operations Pathway, Logistics Planning & Management Services Pathway, Warehousing & Distribution Center Operations Pathway, Facility & Mobile Equipment Maintenance Pathway, Transportation Systems/Infrastructure Planning, Management & Regulation Pathway, Health, Safety & Environmental Management Pathway, and Sales & Service Pathway.

Funding. In the United States, federal funding for career and technical education originated with the passing of the Smith-Hughes Act in 1917. Over the next 65 years and four modifications to the act in 1947, 1958, 1963 and 1968, career technical education increased
funding and expanded programs to improve in the areas of science, math, and foreign language.

In 1984, the Vocational Education Act was renamed the Carl D. Perkins Vocational Education Act (Perkins I, P.L. 98-524, 1984). Federal support for vocational education helped establish programs emphasizing the attainment of job skills through both vocational and technical education. The Carl D. Perkins Vocational and Applied Technology Education Act Amendments of 1990 made several revisions to the 1984 Act. This act created the Tech Prep programs designed to coordinate secondary and postsecondary vocational education courses into a coherent sequence (Perkins II, P.L. 101-392, 1990).

On March 10, 2005, the Senate unanimously passed the Carl D. Perkins Career and Technical Education Improvement Act of 2005, which reauthorized the Perkins Vocational Education program (Enzi, 2005). Subsequently, the House passed H.R. 366, the Vocational and Technical Education for the Future Act (U.S. Department of Education, 2007). The Perkins Act Reauthorization allowed minor changes to the reservations and the federal-to-state distribution allotment (ACTE, 2006). The bill reduced the percent of funds that were out-sourced to areas, such as Guam, American Samoa, etc.; updated the transition provisions that existed under the 1998 law; and revised the “hold harmless” provision. In the revised “hold harmless” provision, no state must receive an allotment less than that received under the Basic States Grants and Tech-Prep in FY2005. This was true unless the total federal allocation was reduced. If this happened, each state lost a proportionate amount of funding.

Funding within the Perkins Act is solely for career technical education. Funds are distributed by the state to the local eligible recipients at a state allocation up to 88%. State administrative costs in the Perkins Act changed from 5% of the total state allocation to 2%
resulting in a 60% funding reduction for administrative activities at the state level. There was a concern that this reduction in allowable state administrative spending also reduced the quality and quantity of services that states provide (U.S. Department of Education, 2007).


Career technical education provides organized courses in a variety of career fields that directly relate to preparing students for employment in current or emerging occupations requiring skills and knowledge aside from those given in a baccalaureate or advanced degree. These programs include competency-based applied learning that teaches higher-level reasoning, academic knowledge, problem-solving skills, and the occupational-specific skills critical to the economic needs and individuals being productive members of society.

Today, rigorous career and technical education prepares youth and adults for a broad range of high-wage, high-skill, and high-demand careers. Perkins IV was authorized through FY2012 and ended on September 30, 2012. The authorization was extended through FY2013 under the General Education Provisions Act. The U.S. Department of Education issued its blueprint for reauthorization in April 2012 (U.S. Department of Education, 2012). The original reauthorization period for the Carl D. Perkins Career and Technical Education Act ended on June 30, 2013; however, until reauthorized, the program will continue with Congressional funding (ACTE, 2014).

In terms of funding, before these Perkins funds are allocated, states must make available at least the same amount of funding for Tech Prep activities. If the state receives
reduced Basic State Grant funding, then Tech Prep funding is reduced. The reserve fund is only maintained if the law allows funding at the present time. Ten percent of funds can be utilized in rural areas with high numbers or high percentages of vocational students. The Senate bill increases the coordination among required local uses of funds, Tech Prep, and the Basic State Grant and offers states the option of a unified plan. The policy targets career guidance and academic counseling and includes new policies geared towards the recruitment and retention of career and technical education professionals.

**Programs of Study.** A program of study (POS) is a requirement of the federal Carl D. Perkins Career and Technical Education Act of 2006 (Ohio Department of Education, 2013d). The main purpose of a POS is to better align secondary and postsecondary curricula by providing “a more coherent pathway for youth as they move toward adulthood” (Ohio Department of Education, 2013d). A POS demonstrates what courses are recommended for a student in a particular career field starting in the 9th grade and continuing through the associate degree. In addition, a POS includes the academic courses, career-technical or required college technical courses, recommended electives and credit-based courses. In Ohio, all Workforce Development (WFD) Program applications require three items: the CTE-26, Program of Study, and a Signed Program of Study Assurances (Ohio Department of Education, 2014a).

Several major national associations, organizations, and states worked collaboratively to create a “career and technical programs of study design framework” (U.S. Department of Education, n.d.). These entities identified ten components that combined “support the development and implementation of effective programs of study” (U.S. Department of Education, n.d.). All components are important, not independent of one another, and do not
have equal priority. The components are: legislation and policies, partnerships, professional
developments, accountability and evaluation systems, college and career readiness standards,
course sequences, credit transfer agreements, guidance counseling and academic advisement,
teaching and learning strategies, and technical skills assessments.

It is vital that Programs of Study are included in the discussions between CTE
administrators and business leaders. CTE administrators are challenged to meet the needs of
business through these fundamental pathways. Without communication, CTE may move in
the wrong direction, but through effective communication and working collaboratively, CTE
administrators and business leaders will successfully educate skilled workers for workforce
requirements.

Ohio

In *A History of Vocational and Career Technical Education in Ohio*, Byrl Shoemaker
and Darrell Parks (2007) detailed the history from the beginning of vocational education in
1828 until the turn of the millennium. They found that career technical and adult education in
Ohio has been a work in progress since the onset and has been one of the most significant
educational reform movements in the 20th century.

In 1975, Shoemaker became the first Director of Vocational Education for the Ohio
State Department of Education and wrote a *Philosophy for Vocational Education* to use as a
guidepost for growing a community of vocational schools (Shoemaker & Parks, 2007). The
purpose of this new educational programming was to prepare students for the emerging
technological workforce needs. Education was beginning to focus on the productivity of
people and preparing them for the modern workplace (Shoemaker & Parks, 2007). Economic
trends require qualified skilled workers due to the increasing rate of job change and the continually changing nature of most jobs (Morrison et al., 2011).

The final section of Shoemaker’s philosophy summarized the reason vocational education became popular. Programs were occupationally based and were designed to meet the needs of individuals, as well as society. Shoemaker and Parks (2007) stated that vocational education starts with the job and ends with the student successfully employed. The purpose of a joint vocational school was to provide relatively low-skill occupational training or production training with the goal of job placement (Daggett, 2002). Attending a vocational high school meant that college was not in the student’s future (Ohio ACTE, 2013).

In 1985, the first Carl D. Perkins Vocational Education Act stressed Congress’ aspiration that vocational school graduates have marketable skills (Shoemaker & Parks, 2007). This federal law, which affects Ohio CTE funding, began to examine and offer assistance to help both men and women enter a broad range of traditional and non-traditional occupations. The CTE programs lead to employment in high-skill, high-wage, high-demand occupations (ACTE, n.d.a).

Another significant educational innovation in vocational education during the 1980’s was the emphasis on the integration of academic skills into the vocational curriculum. This model assured that students graduating from career technical programs were competent in the core academic subject areas, so that they were able to cope with a rapidly changing and increasingly sophisticated workforce (Shoemaker & Parks, 2007). This practice was known as applied academics.

Following the applied academics movement, federal vocational education legislation amended the Carl D. Perkins Act of 1984 to the Carl D. Perkins Vocational and Applied
Technology Act of Amendments of 1990 (Shoemaker & Parks, 2007). One requirement that came from the Act was Tech Prep, which is a competency-based education and career oriented program (Shoemaker & Parks, 2007). Tech Prep was the first major initiative to encourage articulation agreements between secondary and postsecondary instruction (Lewis & Kosine, 2008). The agreement determines the instruction that will be delivered at the secondary and postsecondary levels. This agreement also states “the criteria that students must meet to receive postsecondary credit for the skills and knowledge acquired in high school” (Lewis & Kosine, 2008, p. 6). Tech Prep began a fundamental change in how vocational education operates.

The 2006 reauthorization of the Perkins legislation changed the name from vocational education to career technical education (Shoemaker & Parks, 2007). Career and technical education was distinguished from vocational education by its emphasis on employability and adaptability skills applicable to all occupations. This contrasts vocational education, which was primarily concerned with occupational skill training for specific occupations.

Today, in Ohio, career technical students are required to meet the same graduation requirements as students in comprehensive schools, as well as complete the additional coursework in the career field of their choice. Further, more than half of CTE students take college preparatory courses along with the traditional high school coursework and career field coursework (Harris, 2007). According to the Ohio Department of Education, 60% to 70% of Ohio CTE students continue on to college after high school graduation (Ohio ACTE, 2013).

**Funding.** The Ohio Association for Career and Technical Education (Ohio ACTE) also touched on Weighted Funding, which is critical to the CTE delivery model. Industry-specific equipment and materials required for CTE is more expensive than the types of
materials and books required in traditional classrooms. Instruction in the areas of manufacturing, robotics, and aviation maintenance comes with a cost because they require hands-on instruction using expensive, up-to-date equipment. Most of the companies in Ohio engage in new technologies in order to remain competitive. The cost of education increases as schools make use of state-of-the-art equipment that addresses the ever-changing technology.

From FY2000 through FY2009, Ohio’s CTE funding was based on a weighted student full-time equivalency (FTE), which represents the amount of time each student spends in approved CTE programming. The funding described above are state awarded allocations based the cost of running individual CTE programming. Comprehensive school districts received their per-pupil funding in addition to the weighted funding for students enrolled in CTE programs. For FY11, CTE programs received a small inflationary increase of 0.75%. For FY13, CTE programs saw no increase in funding levels from the previous year.

CTE state funding changed in FY14 with the onset of H.B. 59 (Ohio Department of Education Center for School Finance Policy and Payment Services Unit, 2013). The funding formula returned to a formula similar to the one used in FY09. Supplemental CTE funding moved from two to five categories and from weights to amounts. In traditional school districts, state share indexes apply; however, with CTE funding, state share percentage is applied.

The five funding categories are distributed according to career fields. Agricultural and environmental systems, construction technologies, engineering and science technologies, finance, health sciences, information technology, and manufacturing technologies career
fields receive the largest funding amounts. In FY14, CTE institutions received $4,750 for each student in one of these programming areas. This amount increased to $4,800 in FY15.

The second highest funded career fields include business and administration, hospitality and tourism, human services, law and public safety, transportation systems, and arts and communications. In FY14, these fields were funded at $4,500 per FTE. In FY15, this amount is increased by $50 per student.

Funding category three only includes career based intervention (CBI) programming, which is work-based learning and academic intervention programs for students ages 12-21 with barriers to career and academic success. CBI will be funded at $1,650 in FY14 and $1,660 in FY15. Category four includes education and training, marketing, workforce development academics, public administration, and career development programming. This category is funded at $1,400 in FY14 and increases to $1,410 in FY15.

The lowest funding level is category five. Family and consumer sciences (FCS) make up this category. Career technical centers receive $1,200 per FTE in FY14 and $1,210 in FY15.

Other types of CTE funding were included in this bill. For example, career technical centers receive $500 for each CTE student that earns a journeyman certificate, which verifies that the holder of the certificate has met certain standards and learned the skills of the trade (SAIT Polytechnic, n.d.). In addition, GED test cost reimbursement in excess of $40 per student, $3.1 million for High Schools That Work, and $2.6 million for CTE at correctional institutions are other types of funding included in CTE funding (R. Soto, personal communication, June 18, 2014). Additional CTE funding includes Tech Prep expansion
grants, Tech Prep consortium funding, Ohio Pro Start Restaurant Association funding, and additional funding for agricultural programming.

An associate school district, which is member school district of a joint vocational school district (JVSD) and does not serve as the fiscal agent for the Career technical Planning District (CTPD), will receive $225 for each CTE FTE in FY14 and $227 in FY15. CTE state funding is sent directly from the state to each CTE school district without deductions or transfers from associate school districts.

The following table summarizes the funding amounts for each of the 16 Career Fields in Ohio for FY 14 and FY15. The years prior to FY14 are not included in the table since funding was calculated using weights, not by amounts.

Table 1. Funding for FY14 and FY15 by Career Field

<table>
<thead>
<tr>
<th>Career Field</th>
<th>FY14</th>
<th>FY15</th>
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<tbody>
<tr>
<td>Agricultural and environmental systems</td>
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<td>$4750</td>
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<tr>
<td>Construction technologies</td>
<td></td>
<td>$4800</td>
</tr>
<tr>
<td>Engineering and science technologies</td>
<td></td>
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<tr>
<td>Finance</td>
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<tr>
<td>Health sciences</td>
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<td>Information technology</td>
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<tr>
<td>Manufacturing technologies</td>
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<tr>
<td>Business and administration</td>
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<td>$4500</td>
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<tr>
<td>Hospitality and tourism</td>
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<tr>
<td>Human services</td>
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<tr>
<td>Law and public safety</td>
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<tr>
<td>Transportation systems</td>
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<tr>
<td>Arts and communications</td>
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<td></td>
</tr>
<tr>
<td>Career Based Intervention (CBI)</td>
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<td>$1660</td>
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<tr>
<td>Education and training</td>
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<td>$1410</td>
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<tr>
<td>Marketing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Workforce development academics</td>
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<tr>
<td>Public administration</td>
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<tr>
<td>Career development programming</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family and Consumer Science (FCS)</td>
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<td>$1210</td>
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</table>
**Career Fields.** Currently, there are 16 career fields supported by CTE funding in Ohio. However, Career-Based Intervention (CBI) and Family Consumer Sciences (FCS) are also listed, which brings the total to 18 career fields. Standards for each cluster are divided into middle school, which include grades 7 and 8, and high school, which include grades 9 to 12. Each career field is divided into pathways, and each pathway is broken down further into courses. At the beginning of the 2013-2014 school year, seven career fields had been changed over to the new course-based technical content standards. During the summer of 2014, five more career fields will switch to the new course-based technical content standards. Those career fields are Marketing, Finance, Business and Administrative Services, Arts and Communication, and Agriculture and Environmental Systems.

The standards will demonstrate three major changes. First, and the biggest change, is the move to courses. Courses allow for “more flexibility in design, tighter alignment to postsecondary content, better support of the teacher evaluation system and closer connectivity to assessment with students taking end-of-course exams instead of end-of-program exams” (Ohio Department of Education, 2013b).

The second significant change is “competencies are worded in industry language” (Ohio Department of Education, 2013b). These new competencies reflect what students should know and do to be successful in the workforce and college, not what they know they should do, such as concepts and theory. Industry credentials are reflected in the content, and, for the most part, “replace the end-of-program exams in a higher quality, more industry-recognizable way” (Ohio Department of Education, 2013b).

Lastly, the new standards include “Business Operations and 21st Century Skills” instead of topics such as employability traits, safety, and business processes. This new
section emphasizes critical thinking, problem-solving, research, communication and technology more than in previous versions.

**Agricultural and Environmental Systems.** The Agricultural and Environmental Systems Cluster for high school is comprised of seven pathways. They are: Agribusiness & Production Systems; Agricultural & Industrial Power Technology; Animal Science & Management; Biotechnology for Food, Plant and Animal Science; Food Science & Technology; Horticulture; and Natural Resource Management.

**Arts and Communication.** The Arts and Communication Career field prepares students for careers in Media Arts, Performing Arts, and Visual Design. Media Arts prepares students for careers in communication fields, such as journalism, film, and commercial photography. Performing Arts prepares students for careers in theater, music, and dance. Lastly, Visual Design prepares students for occupations in graphic design, Web technology, and print production.

**Business Administration.** This cluster is comprised of four pathways, which include Administrative and Professional Support; Legal Management and Support; Medical Management and Support; and Business Management.

**Career-Based Intervention.** This is a career technical program for students ages 12-21 in grades 7-12 who are identified as disadvantaged either academically or economically or both. In addition, students in career-based intervention also typically have barriers to achieving academic and career success.

**Construction Technologies.** This cluster leads to technical and professional level careers in designing, planning, managing, building and maintaining built environments. The
three possible pathways are Construction Technologies, Mechanical, Electrical and Plumbing, and Construction Design and Management.

**Education and Training.** Education and Training Career Field has not yet been broken into courses. The courses and new standards are expected in 2015. Students studying in this field are preparing for technical and professional level careers in planning, managing and providing education and training services and related learning support services.

**Engineering and Science Technologies.** Students studying in the Engineering and Science Technologies Career field and pathway are preparing for careers in biomedical scientific research and laboratory, testing, research and development services and in services related to electrical and industrial engineering, materials science, fuel cell technology and robotics.

**Family and Consumer Sciences.** The new Family and Consumer Sciences (FCS) courses are to be released later in 2014. There are a variety of disciplines in FCS: education, business, social, economic, cultural, technological, geographic, and political. The purpose for the diversity of this career field is to afford students the opportunity to achieve optimal and sustainable living for individuals, families and communities.

**Finance.** This career field contains careers in accounting, financial and investment planning, banking, insurance, real estate and business financial management.

**Government and Public Administration.** Students studying in this career field are preparing for careers in national defense, foreign service, governance, revenue and taxation, regulation and public administration at the local, state and federal levels.

**Health Science.** The Health Science field has four pathways: Exercise Science and Sports Medicine, Allied Health and Nursing, Medical Bioscience, and Health Information
Management. Students train for careers in planning, managing and providing therapeutic services, diagnostic services, health informatics, support services and biotechnology research and development.

**Hospitality and Tourism.** This career cluster prepares students for career in the culinary arts, food service industry as well as lodging and travel services. The new courses and standards are expected to be available Fall 2015 and Spring 2015 respectively.

**Human Services.** The Human Services career field consists of cosmetology and barbering.

**Information Technology.** Networking, Information Support and Services, Interactive Media, Programming & Software Development are the pathways in the Information Technology Career Field. Careers deal with the design, development, support and management of hardware, software, multimedia and systems integration services.

**Law and Public Safety.** There are two pathways in Law and Public Safety: Firefighting and Emergency Medical Services Pathway and Criminal Justice Pathway. Careers involve judicial, legal, public administration, public safety and protective services and homeland security including public planning, emergency management planning, fire protection, emergency medical services and the criminal justice system.

**Manufacturing.** Manufacturing Operation Pathway is the only option in this career field. Students learn to plan, manage and perform the processing of materials into intermediate or final products and related professional and technical support activities.

**Marketing.** Students learn a variety of marketing activities, such as distribution, promotion, pricing, selling, financing, information management and product/service management to reach organizational objectives.
**Transportation Systems.** The Transportation Systems Career Field consists of two pathways: Ground Transportation Systems and Air Transportation Systems. Students learn to plan, manage, and move people, materials and goods by road, pipeline, air, rail, and water related services such as infrastructure planning and management, logistics services and mobile equipment and facility maintenance.

**Student Assessment.** Ohio's Career Technical Education (CTE) assessment system contains a combination of state developed exams and industry-related credentials. A third option, a portfolio assessment process, is in place for students in the Teaching Professions pathway. The CTE Technical Assessment System Matrix is “designed to help educators identify tests that are available and required for individual pathway programs” (Ohio Department of Education, 2013a).

The state-developed tests, or Ohio Career Technical Competency Assessments, were developed by The Ohio State University and are commonly called OCTCA tests. All OCTCA tests are given online through WebXam, which is a web-based online assessment delivery system created by The Ohio State University’s Center on Education and Training for Employment (CETE) (The Ohio State University, 2014). Some OCTCA exams are intended to be taken at the end of the program, while others are in a modularized format and can be given over the course of the program. These tests are designed to measure the proficiency of the material learned.

**Technical Skills Assessments.** All students enrolled in a career technical program are required to take the CTE technical assessment aligned to their pathway. All required tests are reportable in Education Management Information System (EMIS) and can be used in the calculation of the state technical skill attainment indicator of performance (2S1) (Ohio
Department of Education, 2013a). EMIS is a statewide data collection system of Ohio’s primary and secondary education. The following items are included within the EMIS system: demographic information, attendance, course information, financial data, and test results.

There are programs, which have no required test listed; therefore, no test is required to be reported in EMIS for technical skill attainment. Furthermore, students with disabilities are required to participate in CTE technical assessments. Students with disabilities are to receive the accommodations outlined in the individualized education program (IEP). Failing a CTE technical assessment does not exclude a student from graduation.

**Industry Credentials.** The Assessment Matrix posted in the Ohio Department of Education’s website includes technical assessments and those industry assessments and government licensure assessments that may be used in lieu of the State CTE assessment (Ohio Department of Education, 2013a). The industry assessments listed on the matrix have met minimum standards established by the CTE Office and can be reported in EMIS for the calculation of the technical skill attainment indicator of performance (2S1) (Ohio Department of Education, 2013a).

Student assessment and acquisition of industry credentials are a valid measure of CTE success. Business leaders are able to compare CTE student data and hire based on the most qualified individuals. A high school student completing a CTE Program of Study and gaining industry credentials may be better prepared to meet business and economic needs than a student completing general requirements at a comprehensive high school. Focused Programs of Study prepare students for specific fields and affords students the opportunity to enter the workforce or attend college.
CTE Meets Economic Needs

It is important that career technical education understands the economic needs of the community it serves when adding, revising or eliminating programming. The essential purpose of CTE in an increasingly global market requires skilled workers that are trained to fill positions in local economies. Economic needs will be examined at the national, state, and local levels.

**United States Economy**

The labor force in the United States of America is composed of those who are employed, either part-time or full-time, and those who are unemployed but have been actively looking for work in the last four weeks. There are various elements that affect the size and demographic elements of the labor force of any state or nation. The population of employable people is dependent on several demographic data, which include the birth rate, migrations, and death rate in any state.

In any population group, the proportion of individuals engaging in gainful employment or looking for work determines the final size of the labor force. The above proportion is known as the labor force participation rate. The rate indicates significant variations according to the age and sex of the members that make up the population. For instance, the participation rate among the young and old is lower than the rate of the people that are in their middle years. The main reason behind this trend is the fact that the majority of the young people are in school and the old people have retired from employment (Bumgardner, Graham, Goebel & Romig, 2011).

More than 80 percent of respondents in the 2005 National Association of Manufacturers’ Skills Gap Report specified that they were experiencing a shortage of
qualified workers (National Association of Manufacturers and Deloitte Consulting LLP, 2005). According to the ManpowerGroup (2012), the top three jobs employers were having trouble filling were skilled trade workers, engineering, and IT staff. In 2014, the top four jobs employers are having trouble filling are skilled trade workers, restaurant and hotel staff, sales representatives, and teachers (ManpowerGroup, 2014). CTE plays a vital role in helping American business close the gap by training workers in the needed areas and building a competitive workforce for the 21st century.

The level of education needed by those entering the workforce is changing. According to the Georgetown University Center on Education and the Workforce (2010), at least 4.7 million new workers with postsecondary certificates will be need in the United States by 2018. Furthermore, 43 percent of young workers with licenses and certificates earn more than those with an associate degree, while 27 percent of young workers with licenses and certificates earn more than those with a bachelor’s degree, and 31 percent of young workers with an associate degrees earn more than those with a bachelor’s degree (ACTE, n.d.b). Individuals with a CTE-related associate degree or credential will earn an average of $4,000 or more per year than a person with an associate degree in humanities and individuals with credentials in high-demand fields such as healthcare can average almost $20,000 more per year (Jacobson & Mokher, 2009).

**Ohio Economy**

According to Ohio ACTE (n.d.), career technical programs are the most cost effective way for students to acquire the skills needed to compete in today’s challenging workforce as well as get a head start on their post-secondary education. The relationships between CTE programs and local business and industry benefits Ohio economically (Ohio ACTE, n.d.).
The customized training programs offered through CTE create partnerships between industry and educators that benefit the area employers and students. As more business comes to Ohio, more career opportunities exist to allow future generations of Ohioans to remain in the state.

Ohio has a competitive advantage because it is one of two states in the United States with a comprehensive CTE system (Ohio ACTE, n.d.). Ohio began CTE in the 1940s with vocational schools across the state to help prepare and educate the workforce. Today, the modern CTE system in Ohio is highly advanced, with 21st century curriculum, which allows high school and adult students to obtain highly technical and specialized skills.

CTE is competitive and pays attention to local economic and student needs. Even though CTE is part of public education, it is a choice for students and parents. CTE responds to the needs of business and industry partners because it has the ability to place students into high-demand occupations. Frequently, business and industry helps design the classes and provides the instructors.

The projections of the economic outlook in Ohio are a reflection of how the economy of the entire nation will be in that time. The obvious element is that the future of the economic performance of any region and the nation as a whole are uncertain (Yu & Beck, 2009). However, despite the fact that the future is uncertain, the past indicators may act as cues for the future prospects in Ohio and specifically Cincinnati (Horner, 2013). The past state economic trends have indicated that the unemployment rate for the state has been considerably higher than that of the entire nation. Prior to 2003, the Ohio unemployment rates were generally lower than the rates of the rest of the states (Horner, 2013). Since 2003, the rate of unemployment in Ohio has been higher than the rates posted by many other states.
The following graph (Figure 1) was constructed and downloaded from the Federal Reserve Economic Data (FRED). The graph compares the unemployment rate in Ohio and the national civilian unemployment rate.

Figure 1. *Unemployment Rate in Ohio vs. National Unemployment Rate*

![Graph showing unemployment rate comparison between Ohio and the national civilian rate](image)

The projections for the employment figures in Ohio indicate a less than desirable picture since economic forecasters place the population and income growth rate of the industry to be at a lower level compared to national levels. According to the economic forecasts made for 2008 through 2018, the lower the rate of income growth, the lower the prospects of employment, which leads to a trickle-down effect. Job creation in Ohio is not as promising as the other parts of the nation since the new jobs creation in the state is predicted to be 250,000 jobs per year. The majority of job being created in the nation and Ohio are in the services sector (The New York Times Company, 2013).
The recession that started in December 2007 and ended in the middle of 2009 had a particularly hard impact on the labor market in Ohio. The average rate of unemployment in the state was higher than it had been since 1995 (Horner, 2013). From 2003, the rate of unemployment evident in Ohio had been higher than the national level of unemployment (Horner, 2013). The situation continues to change since the gap between the unemployment rates in Ohio and the nation fluctuates frequently (St. Louis Federal Reserve, 2014).

The other aspect that has affected employment in the state has been the fluctuation in the employment in the motor vehicle and motor vehicle parts manufacturing. According to the statistics of production and employment distribution per industry in the state of Ohio, the level of employment in manufacturing was higher than the national average ranging at 36 percent (Bumgardner, Graham, Goebel & Romig, 2011). The concentration of employment in the motor vehicle manufacturing and spare parts manufacturing was 274% and 338% respectively above the national average.

**Cincinnati Area Economy**

The city of Cincinnati has a diversified economic base that is comprised of manufacturing, wholesale and retailing trade, insurance, government, education, health, and transportation. Cincinnati Metropolitan Statistical Area (MSA) region is headquarters for various national and international companies such as: American Financial Corporation, Duke Energy, The Kroger Company, Omnicare, Cincinnati Milacron, Procter & Gamble Company, Western-Southern Insurance, and more. The city is a world leader in production of machine tools, playing cards, soaps and detergents (Cincinnati Convention and Visitor’s Bureau, 2014). Cincinnati is a major player in the production of building materials, cans, chemicals, clothing, cosmetics, electronic equipment, jet engines and valves. Cincinnati’s largest
economic base comes from trade, transportation, utilities, and manufacturing, followed by health and education services (Cincinnati Convention and Visitor’s Bureau, 2014).

The city has a high ranking with respect to the value of shipments being imported and exported from the city. The Cincinnati MSA increased its exports 7%, or $1.2 billion, from 2011 to 2012 (Cincinnati Business Courier, 2013). Nine Fortune 500 companies and 14 Fortune 1000 companies are headquartered in the Cincinnati area. The region ranks in the nation's Top 10 markets for number of Fortune 500 headquarters per million residents. This is higher than New York, Boston, Chicago or Los Angeles. More than 360 Fortune 500 companies maintain operations in Cincinnati (Cincinnati Convention and Visitor’s Bureau, 2014). The income generated from the retail sales in the city amount to an average of $2.8 billion per year (Bumgardner, Graham, Goebel, & Romig, 2011). Over 1,000 local firms have been instrumental in the placement of Cincinnati in the international market (Yu & Beck, 2009). The firms have been capable of generating sales worth over six billion dollars annually to markets located outside the United States. The city also enjoys significant flow of foreign investment with over 300 firms in the area being owned by foreigners.

The pattern of the economic performance depicted by Cincinnati reflects a lower unemployment rate than is displayed by the rest of the state. The rebound in the automotive sector has helped to bolster the Cincinnati region. According to James Ritchie, a contributor for the Cincinnati Business Courier, the city’s manufacturing roots are on a rebound as the auto industry is making a significant impact on the local economy (April 18, 2014). In the first few months of 2014, several auto parts firms had announced major investments in the region.
Employment Projections

United States

The labor force is projected to grow 0.5 percent each year from 2012 to 2022 (U.S. Bureau of Labor Statistics, 2013). This forecast is a decrease from 2002-2012, which had an annual growth rate of 0.7 percent. In 2022, over one-quarter of the labor force is expected to be comprised of workers ages 55 and older due to the aging of the baby-boomer generation. Slower labor force growth is expected to limit potential economic growth. The gross domestic product (GDP) is projected to increase by 2.6 percent annually from 2012 to 2022. This compares to the three percent or higher rate that was posted from the mid-1990s through mid-2000s.

**Industry employment.** During 2012-2022, the total employment is projected to increase 10.8 percent, or 15.6 million. Of this amount, the majority is expected to be in the service-providing industries (U.S. Bureau of Labor Statistics, 2013). Positions in healthcare and industries related to healthcare are expected to add the most new jobs between 2012 and 2022 at a rate of 2.6 percent or 5 million jobs, which equates to one-third of the projected total. Healthcare workers are needed to help care for an aging population.

Another sector expected to have a large growth rate is construction. It is expected to increase 2.6 percent annually, or 1.6 million new jobs (U.S. Bureau of Labor Statistics, 2013). Even though fast growth is expected, construction sector employment in 2022 is projected to be below the peak level, which was 7.7 million in 2006.

Five industry sectors are projected to experience employment decreases (U.S. Bureau of Labor Statistics, 2013). Manufacturing is expected to decrease by almost 550,000 or about 0.5 percent annually. It is expected that the federal government will see a decrease of over
405,000 labor force workers or 1.6 percent annually. Agriculture, forestry, fishing, and hunting will experience a reduction in labor force by almost 225,000, which is a little over one percent each year. Information will decrease by approximately 0.2 percent annually or 65,000 workers and utilities will decrease by about 1.1 percent each year equating to 56,400 workers. Figure 2, which was recreated from Ohio Department of Job and Family Services (2013), shows the annual growth rate by major industry sector from 2012 to 2022.

Figure 2. Annual growth rate by major industry sector 2012-2022

**Occupational employment.** When industry employment is broken down into occupations, over half are projected to have the largest percentage increase between 2012 and 2022 (U.S. Bureau of Labor Statistics, 2013). More specifically, of the 30 occupations, 14 are related to healthcare and five are related to construction. Furthermore, the 30 occupations with
the largest projected increase in employment from 2012 to 2022 will account for 7.4 million new jobs, which is about half of the total projected employment growth.

There are four major occupational groups that are expected to grow more than 20 percent each from 2012 to 2022. They are: health care support occupations (28.1 percent), healthcare practitioners and technical occupations (21.5 percent), construction and extraction occupations (21.4 percent), and personal care and service occupations (20.9 percent). The only occupational group that is not projected to gain jobs between 2012 and 2022 is farming, fishing, and forestry occupations. Figure 3, which was recreated from Ohio Department of Job and Family Services (2013), shows the occupational employment from 2012 to 2022.

Figure 3. Occupational Employment, 2012 to 2022

**Education and training.** Nineteen of the 30 occupations expected to grow fastest from 2012 to 2022 generally require some form of postsecondary education for entry (U.S. Bureau of Labor Statistics, 2013). In contrast, approximately 20 of the 30 occupations with
the largest overall projected employment increase from 2012 to 2022 generally do not require postsecondary education for entry. Occupations that usually require postsecondary education for entry had higher median wages ($57,770) in 2012 and are projected to grow faster, at 14 percent, between 2012 and 2022 than occupations that normally require a high school diploma or less ($27,670 and 9.1 percent).

Between 2012 and 2022, those occupations that usually do not require postsecondary education are expected to add 8.8 million jobs and accounted for almost two-thirds of workers in 2012. The fastest growth, 22.2 percent, will be in occupations that generally require an apprenticeship. The education and training percent change from 2012 to 2022 is shown in Figure 4, which was recreated from Ohio Department of Job and Family Services (2013).

**Figure 4. Education and training percent change, 2012-2022**

![Bar chart showing education and training percent change from 2012 to 2022](image)

**Replacement needs.** Not all job openings are from employment growth; some job openings are a result of replacing workers who retire or choose, for whatever reason, to leave
an occupation permanently. Openings of this type are expected in all occupations, even those projected to have declining employment.

There are an expected 50.6 million total job openings over the 2012-22 decade. Of the total job openings, a little over two-thirds (67.2 percent) are projected to come from replacement needs with the remaining one-third to be a result of growth. Moreover, in approximately 80 percent of occupations, replacement-type openings are expected to surpass growth openings. Almost two-thirds of all job openings are expected to be in occupations in which postsecondary education is not necessary for entry.

**Ohio**

Ohio is projected to create 498,100 new jobs from 2010 to 2020 (Ohio Department of Job and Family Services, 2013). This equates to a 9.3 percent increase.

**Industry employment.** Ohio job growth is expected to be the highest in service-providing industries. Service-providing industries include wholesale and retail trade, transportation and utilities, information, financial activities, professional and business services, educational and health services, leisure and hospitality, other services, and government (Ohio Department of Job and Family Services, 2013).

In 2012, service-providing industries accounted for nearly 78 percent of employment. By 2020, the projection for service-providing jobs is to add an additional 471,000 jobs, an increase of 11.3 percent. Of the 471,000 jobs, nearly 200,000, or 24.4 percent, are expected in the educational and health services sector. The professional and business sector is projected to add 115,220 jobs, an 18.5 percent increase, while the wholesale and retail trade sector is projected to add 51,780 jobs, an increase of 6.7 percent (Ohio Department of Job and Family Services, 2013).
Goods-producing industries are expected to add more than 34,000 jobs by 2020, increasing 3.9 percent. Goods-producing industries include: natural resources, including agriculture and mining, construction, and manufacturing. Of these industries, only construction is anticipated to add approximately 39,000 jobs, which would be about a 23 percent increase. The other two sectors, natural resources and manufacturing, are predicted to see small employment losses by 2020.

Figure 5, which was recreated from Ohio Department of Job and Family Services (2013), shows the change in employment by industry sector for 2010-2020.

**Figure 5. Employment Change by Industry Sector, 2010-2020**

**Occupational employment.** Professional and related occupations and service occupations are the largest in both current employment levels and projected growth (Ohio Department of Job and Family Services, 2013). Each of the two groups is projected tog row
approximately 13 percent. Construction and extraction occupations and transportation and material moving occupations are each expected to grow 12.6 percent and 10.3 percent, respectively. It should be noted that professional and related occupations, service occupations, construction and extraction occupations, and transportation and material moving occupations all have expected growth rates higher than the statewide average of 9.3 percent. Farming, fishing and forestry occupations are the only group expected to decline. Figure 6 was recreated from Ohio Department of Job and Family Services and shows the projected employment change by intermediate occupational group (2013).

Figure 6. *Projected Employment Change by Intermediate Occupational Group*

**Education and training.** Every occupation has a “typical” education level associated with it (Ohio Department of Job and Family Services, 2013). Some occupations have explicit requirements related to licensure or certification; while other occupations have a range of
educational experience. It can be helpful to know typical educational levels, as well as requirements for licenses or certifications, when looking for a new job.

In 2012, almost 70 percent of all jobs required a high school diploma or less. Approximately 30 percent of jobs needed some form of post-secondary education. Needing a bachelor’s degree or higher accounted for less than 20 percent of all jobs. Figure 7, which was recreated from Ohio Department of Job and Family Services (2013), summarizes the typical educational levels by jobs in 2010.

Figure 7. 2010 Employment by Typical Education Levels

From 2010 to 2020, the majority of job decline, over 75 percent or more than 22,000 jobs, is expected in occupations with a typical education level of a high school diploma or equivalent (Ohio Department of Job and Family Services, 2013). Occupations that normally require some college, master’s degree, or a doctoral or professional degree are not expected to see job declines. According to Ohio Department of Job and Family Services (2013), there is a
shift toward occupations typically associated with post-secondary education. Figure 8 was recreated from Ohio Department of Job and Family Services (2013) and shows the projected job decline by education level.

**Figure 8. Projected Job Decline by Education Level**

<table>
<thead>
<tr>
<th>Education Level</th>
<th>Number of Jobs Decline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than high school</td>
<td>0</td>
</tr>
<tr>
<td>High school diploma or equivalent</td>
<td>20,000</td>
</tr>
<tr>
<td>Some college, no degree</td>
<td>5,000</td>
</tr>
<tr>
<td>Postsecondary non-degree award</td>
<td>3,000</td>
</tr>
<tr>
<td>Associate's degree</td>
<td>2,000</td>
</tr>
<tr>
<td>Bachelor's degree</td>
<td>1,000</td>
</tr>
<tr>
<td>Master's degree</td>
<td>500</td>
</tr>
<tr>
<td>Doctoral or professional degree</td>
<td>0</td>
</tr>
</tbody>
</table>

**Replacement needs.** From 2010 to 2020, Ohio is expected to add 498,100 jobs and expected to have 178,000 job openings each year (Ohio Department of Job and Family Services, 2013). Of the 178,000 annual job openings, approximately 30 percent will be due to the creation of new jobs. The remaining 70 percent of annual job openings will result from having to replace workers, who retire, decide to switch occupations, or leave the labor force for some other reason.

**Southwest Ohio Region**
The total employment in the Cincinnati region is projected to be better than seven of its peer regions (Strive partnership et al., n.d.). Of the 12 regions, only Minneapolis, Denver, St. Louis, and Pittsburgh are projected to have more total jobs. Figure 9 shows the total jobs for each of the 12 regions (Strive partnership et al., n.d.).

Figure 9. Total Jobs by Region, 2020

Occupations related to health care, community and social services, and computer and mathematical science are projected to grow the fastest. However, office and administrative and sales occupations are expected to have the greatest number of jobs in 2020 (Strive partnership et al., n.d.). Protective services; physical and social sciences; management; architecture and engineering; and farming, fishing and forestry are anticipated to lose jobs. Some occupational groups are not expected to regain 2005 pre-recession employment levels
by 2020 (Strive partnership et al., n.d.). Those groups are production; construction and extraction; transportation and material moving; management; and architecture and engineering. Figure 9 summarizes the annual median wage from 2010, the 10-year growth rate, and the total number of jobs expected in 2020 for the southwest region of Ohio.

Table 2 was adapted from Strive partnership et al. (n.d.). The table summarizes the annual median wage for various occupational groups in 2010. Also, the 10-year growth rate and the total jobs in 2020 are given.

Table 2. Where will the jobs be in Ohio’s southwest region?

<table>
<thead>
<tr>
<th>Occupational Group, Ranked by Number of Jobs in 2020</th>
<th>Annual Median Wage, 2010</th>
<th>10-year Growth Rate</th>
<th>Total Jobs, 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALL OCCUPATIONS</td>
<td>$33,130</td>
<td>11.0%</td>
<td>1,069,405</td>
</tr>
<tr>
<td>Office &amp; Administrative</td>
<td>$30,820</td>
<td>12.8%</td>
<td>195,906</td>
</tr>
<tr>
<td>Sales &amp; Related</td>
<td>$25,710</td>
<td>17.2%</td>
<td>120,725</td>
</tr>
<tr>
<td>Food preparation &amp; Serving</td>
<td>$18,290</td>
<td>3.1%</td>
<td>94,163</td>
</tr>
<tr>
<td>Healthcare Practitioners &amp; Technical</td>
<td>$57,130</td>
<td>29.5%</td>
<td>76,646</td>
</tr>
<tr>
<td>Transportation &amp; Material Moving</td>
<td>$26,840</td>
<td>3.3%</td>
<td>74,355</td>
</tr>
<tr>
<td>Production</td>
<td>$32,930</td>
<td>2.9%</td>
<td>72,537</td>
</tr>
<tr>
<td>Education, Training &amp; Library</td>
<td>$42,780</td>
<td>13.1%</td>
<td>62,947</td>
</tr>
<tr>
<td>Business &amp; Financial</td>
<td>$56,710</td>
<td>5.0%</td>
<td>50,672</td>
</tr>
<tr>
<td>Healthcare &amp; Support</td>
<td>$25,320</td>
<td>54.5%</td>
<td>49,811</td>
</tr>
<tr>
<td>Installation, Maintenance &amp; Repair</td>
<td>$40,150</td>
<td>5.0%</td>
<td>37,520</td>
</tr>
<tr>
<td>Management</td>
<td>$92,960</td>
<td>-9.1%</td>
<td>36,705</td>
</tr>
<tr>
<td>Computer &amp; Mathematical Science</td>
<td>$68,010</td>
<td>26.5%</td>
<td>33,378</td>
</tr>
<tr>
<td>Construction &amp; Extraction</td>
<td>$40,990</td>
<td>2.2%</td>
<td>31,590</td>
</tr>
<tr>
<td>Building, Grounds, Cleaning &amp; Maintenance</td>
<td>$22,840</td>
<td>6.9%</td>
<td>30,395</td>
</tr>
<tr>
<td>Personal Care &amp; Service</td>
<td>$20,350</td>
<td>6.8%</td>
<td>24,628</td>
</tr>
<tr>
<td>Protective Service</td>
<td>$34,150</td>
<td>-3.7%</td>
<td>19,211</td>
</tr>
<tr>
<td>Community &amp; Social Services</td>
<td>$37,630</td>
<td>36.7%</td>
<td>16,866</td>
</tr>
<tr>
<td>Architecture &amp; Engineering</td>
<td>$68,160</td>
<td>-9.6%</td>
<td>14,419</td>
</tr>
<tr>
<td>Arts, Design, Entertainment, &amp; Sports Media</td>
<td>$37,360</td>
<td>11.7%</td>
<td>12,665</td>
</tr>
<tr>
<td>Legal</td>
<td>$67,260</td>
<td>25.8%</td>
<td>7,888</td>
</tr>
<tr>
<td>Life, Physical, &amp; Social Science</td>
<td>$53,670</td>
<td>-4.5%</td>
<td>5,816</td>
</tr>
<tr>
<td>Farming, Fishing, Forestry</td>
<td>$22,090</td>
<td>-14.8%</td>
<td>563</td>
</tr>
</tbody>
</table>
CTE Emphasizes on the Job Training

Career Technical Education (CTE) exists to help prepare students for jobs or career training during or after high school. Today, many CTE programs are aligned with rigorous academic and industry standards, as well as teach employability and technical skills that lead students directly to college or the workforce.

In CTE programs, students experience academic subjects and disciplines through investigation in specific career pathways. They “learn by doing” with practical applications, such as hands-on activities, project- and problem-based learning, laboratory and field work, simulations and internships (ACTE, 2014). Students practice teamwork and collaboration with group and class projects while competing against students from other schools in their career technical student organizations. CTE students use technology as a tool for productivity, communication and creativity. Incorporated throughout education, these hallmarks of CTE give students the opportunity to meet the future needs of industry.

CTE offers the concept of work-based learning. Work-based learning experiences connect school-based learning with the workplace to integrate core academic and career technical instruction. Through work based learning, CTE enhances the overall curriculum, increases learning, promotes rigor, and meets the educational needs of all students. Work-based learning experiences include apprenticeship, cooperative education, internship, and job shadowing. Examples of types of work-based learning are detailed below.

Apprenticeship

Apprenticeship is one of the oldest methods of job training. This method is an industry-driven education and career technical training program based on recognized industry standards. Apprenticeship is a means by which employers address current and projected
employment needs. This will be especially important for the replacement of highly skilled
unique industry jobs that are being vacated by baby boomers.

**Cooperative Education**

Cooperative education provides on-the-job training for students through a cooperative
agreement among the school, the employer, the parents/guardian, and the student.
Cooperative Education students receive content instruction related to their on-the-job training
experiences. In addition, the teacher and employer develop a training plan, which outlines the
classroom instruction and on-the-job training a student receives. This type of educational
experience will help meet the needs of industry, especially in retail and food industries.

**Internship**

Internships allow for additional development of career and technical competencies.
Internships are an essential way for today’s youth to experience the value of work, develop
pride in work, and mature personally. The major struggle with this model is the level of
maturity often equates to the educational benefit of the internships.

Many career centers have opportunities for students to intern in an industry.
Internships allow students to observe and participate in daily operations, develop direct
contact with employees, ask questions about the particular career, and perform certain job
tasks. Internships are exploratory in nature and allow the student to experience a number of
hands-on activities.

**Job Shadowing**

Very similar to internship is job shadowing. Job shadowing is an unpaid short-term
activity that exposes the student to the workplace. The student is allowed to observe an
experienced skilled worker in an actual work setting. Job shadowing heightens student
understanding of potential career opportunities and depicts a clear connection between the classroom and the workplace.

The duration of this activity could be a half-day or longer depending on the student’s needs and work place. This is very common in career centers with health technologies programming to job shadow at local hospitals in various departments, allowing the students to get a better understanding of how each department in a hospital runs.

Career Technical Education provides the vital link between economic needs and business and industry. It is important that business and industry continues to advise CTE on current and projected career and technology education employment and training needs; on the relevancy of the programs and courses offered in the educational system; and on the coordination of programs, services, and activities to meet the growing economic needs.

If CTE and economic development partners create a strong synergy they can be more responsive to the ever-changing needs of the community, the workforce, and the economy. CTE has helped the State of Ohio meet the challenges of economic development, student achievement, and global competiveness. CTE is organized by career clusters, which presents a range of career options to students and empowers them to choose an educational pathway that will meet the needs of society.

**Summary**

Although a rudimentary version of vocational education began with mankind with parents passing skills and knowledge to their children, a more modern version began in Europe in the 19th century. Over time, vocational education morphed into career education and eventually into career technical education, as it is known today.
Throughout history, comprehensive schools have readied all students for college whereas career technical education has always understood the need for skill development and college training. Career technical students have the opportunity to move directly into the workforce without remediation. In addition, today’s career technical student has been prepared for college as well. In Ohio, CTE students are required to complete the state graduation requirements for the core courses (Ohio Department of Education, n.d.). Students must have four units of English, four units of math, three units of science, three units of social studies, and a half unit each of health and physical education. Furthermore, Ohio’s high school students must have a minimum of five elective credits in order to be eligible for graduation. The elective credits can be any combination of foreign language, fine arts, business, career technical education, family and consumer sciences, technology, agricultural education, or any core course not otherwise required.

Career technical education has a long and vibrant history that supports and evolves with the needs of local economies. Career technical schools are charged with high accountability for academic and career technical achievement, which will prove its sustainability in current and future economic climates. Superintendents must be vigilant and willing to collaborate with local businesses to partner in the educational and work experiences for future members of their workforce.

Economic development depends on these students being prepared in the industries that are struggling to fill positions. Career technical education has traditionally reached out for business and industry advice as to which programs will best fit the need of the economy. This study will focus on whether or not business and industry and CTE are truly meeting one another’s needs.
CHAPTER 3. METHODOLOGY

Introduction

The purpose of this qualitative research study was to collect data through in-depth interviews with business leaders, open-ended online surveys from career technical education (CTE) superintendents, and documents, such as advisory meeting minutes. Through data obtained from the surveys, interviews, and documents, this researcher determined the types of communication and other practices career technical school superintendents say they are using to meet the needs of businesses and uncover the business leaders’ perceptions of how career technical education meets the economic needs with skilled workers.

The first instrument (see Appendix A) in this study was an open-ended online survey to collect information from eight CTE superintendents. The second instrument (see Appendix B) consisted of the interview questions used with local business leaders. In-depth interviews permitted the collection of detailed information related to career technical education and business relationships. Incorporating information from the completed superintendent surveys, interviews with business leaders, and documents, such as advisory meeting minutes, allowed for the triangulation of data.

Research Questions

The purpose of this study was to examine how Ohio career-technical education (CTE) superintendents and business leaders in southwest Ohio perceive the communication between business leaders and CTE superintendents. In addition, this study examined the success of practices used by career technical centers to address economic trends and business needs. The intent of this study was to ascertain the best practices that Ohio career technical centers utilize
to meet the needs of local business. In addition, this multi-site case study gathered the perceptions from business leaders concerning the effectiveness of career technical education as well as the CTE superintendents’ views.

This qualitative study will examine the following questions:

R1  How do business leaders and CTE superintendents garner information related to local economic need?

R2  How do business leaders recruit newly trained CTE graduates?

R3  What practices can CTE and business leaders employ to strategically collaborate concerning future economic trends?

Research Methodology

This study utilized a qualitative methodology to describe in depth the perceptions, experiences, and reactions of career technical superintendents and business leaders and how each believes they are reacting to local economic trends. Van Maanen (1979) defined qualitative research as a blanket term to describe a variety of techniques “which seek to describe, decode, translate, and otherwise come to terms with the meaning, not the frequency,” of phenomena (p. 13). A unique feature of qualitative research is that the phenomena are studied in their natural setting and are not controlled or manipulated (Denzin & Lincoln, 2005; Golafshani, 2003; Hatch, 2002; Key, 1997; Lauer, 2006; Leech & Onwuegbuzie, 2007; Merriam, 2009; Richards & Morse, 2007). The subject of the study, whether an organization or an individual, is not an isolated variable or hypothesis; instead, it is viewed as part of a whole (Bogdan & Taylor, 1975). Researchers utilize qualitative
methods to elicit a detailed understanding of an issue, not to test a hypothesis (Creswell, 2007; Poggenpoel & Myburgh, 2005).

According to Creswell (2008), qualitative research is a type of educational research that depends on the participants’ views. Therefore, the researcher asks general questions in order to collect data. Data are comprised mostly of participants’ spoken or written words and are analyzed for themes. Qualitative research produces descriptive data that cannot be obtained via statistical procedures or other means of quantification (Golafshani, 2003; Hatch, 2002; Strauss & Corbin, 1990). Qualitative research seeks to understand a problem from the perspectives of the people it affects (Hatch, 2002; Mack, Woodsong, MacQueen, Guest, & Namey, 2005).

Leech and Onwuegbuzie (2007) and Mack, et al. (2005) asserted that the type of questions that can be explored is an advantage of qualitative research. Questions in qualitative studies are “open-ended, evolving, and non-directional” and are apt to discover or explore a process, or describe experiences (Creswell, 1998, p. 99). Qualitative researchers may be persuaded to ask, “What is happening here?” and “What do these happenings mean to the people engaged in them?” (Hatch, 2002, p. 7). Researchers have the flexibility to further investigate participants’ initial responses by asking sub questions to draw out more information from the participants. Furthermore, participants are able to respond in their own words and are not forced to pick from a selection of pre-determined choices.

Qualitative research presents information about the “human” side of an issue by dealing with behaviors, beliefs, and opinions (Mack, et al., 2005). The integration of the questions, the data, and the data analysis are other strengths of qualitative inquiry (Richards & Morse, 2007). Another benefit of a qualitative methodology is the rich, thick descriptions
(Leech & Onwuegbuzie, 2007). Conversely, there are a few disadvantages to qualitative research. The range of qualitative research is limited due to the in-depth, comprehensive data collection approaches required (Key, 1997). Another disadvantage is avoiding or detecting researcher bias (Key, 1997). The subjectivity causes difficulties in establishing reliability and validity of the approaches as well as the information.

According to Hatch (2002), several characteristics distinguish qualitative research from other approaches. Those characteristics are: natural settings, participant perspectives, researcher as a data gathering instrument, extended firsthand engagement, centrality of meaning, wholeness and complexity, subjectivity, emergent design, inductive data analysis, and reflexivity. For a qualitative researcher, the objects of study are the real experiences of real people in real settings (Hatch, 2002). This study explored the practices career technical superintendents in Southwest Ohio say they are utilizing to meet the needs of businesses as well as reveal business leaders’ perceptions of how well CTE is meeting the economic needs by producing skilled workers. The study took place in the participants’ natural setting. Since the questions are the same for each participant and the interviewer will be the same, no variables were controlled or manipulated. Qualitative research seeks to comprehend the issue or problem from the participants’ point of view (Hatch, 2002). The participants’ perspectives were essential to this study. The researcher not only strived to determine what practices career technical superintendents utilize to meet the needs of businesses, but also what the business leaders think about the effectiveness of those practices.

Qualitative studies require the researcher to spend sufficient time with the participants in the field to fully “understand the meanings individuals construct in order to participate in their social lives” (Hatch, 2002, p. 9). The main sources of data were surveys from seven
Southwest Ohio CTE superintendents and interviews with three local business administrators. The researcher contacted more than 10 business administrators; however, only three agreed to participate in the study. Survey data provided a compilation of CTE practices, while interviews with business leaders offered data on the perceived success of those practices.

Although it was possible to collect data concerning business leaders’ perceptions from a questionnaire, more detailed information could be obtained from one-on-one interaction with the participants. In addition, when data are collected via surveys from a large number of participants, data are typically quantified resulting in a quantitative study. However, in this study, eight CTE superintendents in Southwest Ohio were asked to complete the survey instrument and seven returned the completed document. The surveys provided the researcher with practices utilized by career technical high schools to prepare students for career. This information was then used during the in-depth interviews with the business leaders to determine their perception of the efficacy of these practices. Consequently, a qualitative methodology was more suitable for this study because it allowed for descriptive, detailed explanations.

Qualitative methods assume that settings are unique, dynamic, and complex and examine the issue as a whole, not as parts of a whole (Hatch, 2002). As qualitative data are in forms of pictures or detailed descriptions that cannot be expressed as numbers, qualitative reports are generally detailed narratives that include the voices of the participants. This study offered a detailed account of the participants’ perceptions of practices utilized by career technical superintendents to prepare their students for work. The detail facilitated readers’ ability to feel as if they were included and directly involved in the research.
Qualitative studies tend to change as they are being implemented, making it difficult for qualitative researchers to state ahead of time specifically what they will do, the timeline for the study, and the questions that will be answered (Hatch, 2002). According to Hatch (2002), most qualitative researchers agree that research questions, methods, and other elements of design need to be modified as the study develops. The researcher was open to adaptations during this study; however, no adaptations were needed.

Qualitative research does not begin with a null hypothesis to verify or disprove. Instead, ample data are collected and analyzed for patterns. Bogdan and Bilken (2007) provide an excellent description: the researcher constructs a picture while collecting and examining the parts. For this study, the Ohio CTE superintendents’ responses supported the interview process by allowing the researcher to ask business leaders questions that derived from the data collected from the CTE superintendents. The participants’ responses from the interviews were used to create the generalizations.

Researchers are involved in the world they study; therefore, the ability “to keep track of one’s influence on a setting, to bracket one’s biases, and to monitor one’s emotional responses are the same capacities that allow researchers to get close enough to human action to understand what is going on” (Hatch, 2002, p. 10). Qualitative researchers use their own biases in order to understand the participants’ inherent motives and assumptions. Reflexivity is crucial to the reliability of qualitative research.

**Research Design**

Case study is commonly used in law, medicine, psychology, and political science. However, case studies are becoming a more popular research design in educational studies.
(Siegle, 2002; Tellis, 1997). Case study analysis is an appropriate method for educational researchers seeking to investigate a topic in depth (Foster, 2002). Gall, Gall, and Borg (2007) asserted qualitative research concentrates on the study of cases instead of populations and samples; therefore, qualitative research is occasionally referred to as case study research. Case study was used to examine the practices career technical superintendents use to meet the needs of businesses and uncover the business leaders’ perceptions of how CTE is meeting the economic needs with skilled workers. Case study is defined as “a qualitative approach in which the researcher investigates a bounded system (case) or multiple bounded systems (cases) over time, through detailed, in-depth data collection involving multiple sources of information, and reports a case description and case-based themes” (Creswell, 2007, p. 73, emphasis in original).

Utilizing multiple sources of data, more specifically, CTE superintendent surveys, in-depth interviews with business leaders, and documents, such as advisory meeting minutes, allowed the validity of the study to be confirmed (Yin, 2009). Triangulation is one of the most well known strategies to confirm the validity of a study (Merriam, 2009). Triangulation can occur with data, investigators, theories, and even methodologies (Tellis, 1997).

According to Creswell (2007) and Merriam (2009), case study is an appropriate method to describe and analyze a bounded system. To be bounded, there must be a maximum number of people involved who can be interviewed or a limited time for observations (Merriam, 2009). This study’s participants represented a bounded system within the set of all career technical superintendents in Southwest Ohio as well as business leaders located in one county in Southwest Ohio.
Qualitative case studies are identified by the size of the bounded case or in terms of the intent of the case analysis (Creswell, 2007). An intrinsic case study is one in which the focus is on the case itself (Creswell, 2007; Stake, 1995). Furthermore, the researcher chose this case because there is a genuine interest in the topic. The effectiveness of CTE practices and if the practices are meeting the needs of businesses is of personal interest. By studying CTE practices through a number of career technical superintendents’ responses, the researcher wished to learn what methods, if any, are effective in preparing students for careers in local businesses.

Qualitative case studies provide several advantages. Case studies provide researchers access to information that otherwise is typically difficult to obtain (Flinders, 2003). The descriptive nature of case study reports allows readers to see “through the researcher’s eyes” (Flinders, 2003). Since the researcher has a particular interest in the case and writes the report, the description is rich and thick; therefore, readers feel as though they were involved in the research itself. The researcher’s bias becomes a way of seeing, instead of a liability. Another strength of the case study method is its use of multiple sources and techniques in the data collection process (Soy, 1997). Case study permits a researcher a way of exploring complex items with various important variables in order to understand the phenomenon (Merriam, 2009). Since the case is studied in its natural setting, the product is a rich and holistic description of the phenomenon (Merriam, 2009).

Just as there are benefits to case study, there are criticisms. A common criticism of case study methodology is the inability to generalize the conclusion (Merriam, 2009; Soy, 1997; Tellis, 1997). However, the purpose of case study research is to generalize theoretically, not to a population (Yin, 2009). Construct validity is also a criticism in case
study research (Tellis, 1997). Yin (2009) recommended three solutions: use multiple sources of evidence, establish a chain of evidence, and have a draft case study report review by key informants. The rich, thick description of qualitative case studies is normally a positive attribute; however, it may be a negative due to the time and money that may need to be invested to produce a laudable case study. Another advantage of qualitative research, that may also be a disadvantage, is that the researcher is the primary instrument for data collection and analysis (Merriam, 2009). Unfortunately, many researchers are not properly trained in the interview process. Another concern in case study research is an unethical researcher may omit data that contradicts his viewpoint (Merriam, 2009).

**Population and Sampling Procedures**

Samples for this study were drawn from two populations: business leaders in one county in Southwest Ohio and superintendents of career centers and joint vocational schools in Southwest Ohio. Surveys were not sent to superintendents of comprehensive, compact school districts or correctional institutions where career technical programming is offered. Ohio’s comprehensive school districts are defined as those with 1,500 or more students and career technical education is delivered within the district. Compact districts are those in which several school districts enter a contract of operation to provide career technical education. Career technical education programs are also offered in youth and adult correctional facilities in Ohio. However, this study was focused only on secondary career technical center programming, not adult career technical programming.

Purposeful sampling is the most common strategy used in qualitative research (Patton, 2002). This approach allows the researcher to select participants based on whether they
possess particular characteristics that facilitate understanding the problem and the research questions (Creswell, 2009; Merriam, 2009).

For this study, the superintendents were selected because of their location in Southwest Ohio and their affiliation with career technical or joint vocational high schools. Business leaders were chosen due to their type of business, location, and working relationship with the local career technical high school.

A stratified purposeful sampling method was used to select participants for the study. This method facilitated comparisons between groups since individuals were selected to represent particular subgroups of interest (Creswell, 2007; Creswell, 2009; Hatch, 2002; Merriam, 2009). At a local Chamber event, the researcher asked business leaders for their participation and for those business leaders showing interest, the researcher followed up with phone calls. This afforded business leaders an opportunity to ask any questions about participating in the study in a more private setting. It was expected that making personal contact with the business leaders would increase the participation rate of business leaders. Surprisingly, personal contact did not increase the business leaders’ participation rate. Over 10 business leaders’ were invited to participate in this research study, but only four leaders from three businesses agreed and followed through with the process.

Sources of Data

Since this study was conducted with the CTE superintendents in Southwest Ohio, the researcher did not need to obtain permission from the school to conduct the study since the superintendent is responsible for granting an individual permission to conduct a study in his or her school. If a superintendent did not wish to participate in the research, he or she only
simply did not need to complete and return the survey. All participants were required to sign and return a Letter of Consent approved by the University of Cincinnati Institutional Review Board before participating in the research study.

Data collection consisted of a survey; unstructured, open-ended, face-to-face interviews; and the examination of existing documents (Creswell, 2009; Merriam, 2009). The career technical superintendents’ surveys, business leaders’ interviews, and documents were important sources of data for this qualitative case study. These data collection methods provided insight into what practices CTE superintendents use to garner information related to local economic need as well as business leaders’ perceptions of how these practices help prepare students for work. The three sources of data permitted the triangulation of data.

The survey was comprised of questions to collect fundamental information about the superintendents’ schools, such as the approximate number of students and what programs are offered in each of the 18 career technical pathways. The surveys provided information about advisory committees, business partnerships, to what business organizations the superintendent or designee belong, and best practices used to address economic trends in the career technical planning district’s area.

The next step was to conduct unstructured, face-to-face, open-ended interviews with business leaders. The interviews were an important source of data because they afforded the opportunity to gain insight into the effectiveness of the best practices employed by career technical superintendents from the business leaders’ point-of-view. Interviews continued to the point of saturation, or until information was repeated. Face-to-face interviews created a more comfortable environment.
Existing documents, such as advisory meeting minutes, were examined as a third data source. The researcher asked superintendents and business leaders for items to support, or negate, the information brought forth by the open-ended surveys and in-depth interviews. The three sources of data, surveys, interviews, and existing documents, allowed for the triangulation of data.

After Institutional Review Board approval, the researcher emailed the survey to the eight superintendents of career technical or joint vocational high schools in Southwest Ohio. Data were analyzed upon receiving the completed surveys. Face-to-face, unstructured interviews with business leaders also occurred. The researcher had a set of pre-determined questions prepared for the interviews with business leaders. Moustakas (1994) stressed the importance of preparing guiding questions in advance. As Key (1997) recommends, a panel of experts reviewed the survey and interview questions to ensure validity of the instruments.

Each interview was somewhat different because the responses received elicited different clarifying questions. Creswell (2008) asserted that the answers to the interview questions should support the original research questions. Unstructured and face-to-face interviews allowed participants to feel more comfortable with the interviewer. Interviews were an excellent way to obtain participants’ perceptions of the effectiveness of the practices utilized by CTE superintendents to fulfill business needs and economic trends.

**Panel of Experts**

The survey instrument and interview questions were researcher created. Therefore, a panel of experts was used to check for errors and any obscure items. The Panel of Experts included five administrators, who are not superintendents, from three CTE districts. Each of
the five administrators has a minimum of 15 years of experience in education. Three of the five administrators each have more than 20 years in education with at least 10 years in career technical administration. The fourth administrator has 19 years in education including 10 years in CTE as a teacher and one year as a CTE administrator. The fifth administrator has 19 years in education, 12 years as an administrator in a comprehensive high school and one year as a CTE administrator. Each of these administrators understands the importance of preparing students for careers to meet local economic needs.

Credibility, Transferability, and Trustworthiness

In quantitative research, reliability and validity are evaluated separately. However, in qualitative research, these concepts are intertwined. Golafshani (2003) suggested that terms, such as credibility, transferability, and trustworthiness are used instead. Creswell (2009) offered several strategies to evaluate the accuracy of the research results. Member checking, peer debriefing, triangulation, and tape recording were strategies that were utilized during this study.

Member checking requires the researcher to take all or parts of the transcribed data back to the participants to verify the information. This allows the participants the opportunity to clarify any misinterpretations (Creswell, 2009). Peer debriefing adds transferability and trustworthiness (validity) to a qualitative study. A peer reviews the study and asks questions in order to clarify the researcher’s description. This process brings another individual’s analysis to the study as well as makes sure that the study resonates with people other than the researcher. Choosing someone not directly involved with the study, but familiar with CTE and the importance of business partnerships, was essential. Triangulation requires the
researcher to investigate multiple data sources (Creswell, 2009; Golafshani, 2003). If themes emerge from these data sources, then this process adds to the study’s trustworthiness (Creswell, 2009; Golafshani, 2003). A major concern in qualitative research is the “factual accuracy” of the researcher’s explanation (Maxwell, as cited in Huberman & Miles, 2002, p. 45). A researcher must be certain of the information reported. With participant’s permission, interviews were tape recorded and transcribed in order to avoid reporting inaccurate information. The four techniques described above ensured the reliability and validity of the data collected, and consequently, the results.

**Data Collection Procedures**

The survey instrument was designed to gather certain information from each of the eight superintendents, such as the approximate number of students in the school, what programs are offered in each of the 18 career technical pathways, information about the school’s advisory committees, business partnerships, to what business organizations the superintendent or designee belongs, and the school’s best practices used to address economic trends in the career technical planning district’s area. Completed surveys are stored in a locked cabinet in the researcher’s home. Only the researcher has access to the data.

The second part of the data collection process consisted of interviews with business leaders in one county in Southwest Ohio. Interviews with business leaders occurred simultaneously with the collection of the eight superintendents responses. Interviews took place in person in a private location at the participant’s business. Stratified purposeful sampling was used to collect data. Stratified purposeful sampling is a type of sampling where individuals are chosen to represent specific subgroups of interest (Creswell, 2009; Hatch,
This method was suitable in this study because participants belong to one of two categories: career technical or joint vocational superintendents or business leaders.

This study utilized semi-structured interviews. A semi-structured interview is much like a formal interview except that the interviewer develops and utilizes a list of predetermined questions that need to be covered during the conversation (Cohen & Crabtree, 2006). According to Merriam (2009), semi-structured interviews possess several characteristics. The interview guide includes questions that are both more and less structured. Usually specific data are required from all respondents. Although there is a predetermined list of questions, the questions may be asked in any order and the wording may be changed as needed. The interviewer had the flexibility to adjust the order of questions as well as the wording of the questions as he or she deemed necessary. However, the majority of the interview was guided by the list of questions.

According to Hatch (2002), researchers come to the interview with some guiding questions, but are free to react to the participants’ answers and ask more in-depth questions. A list of guiding questions were prepared and reviewed by a panel of experts prior to beginning the interviews. Questions were open-ended with the purpose of collecting information about the business leader’s perceptions of how effective career technical education prepares students for current and future economic needs. Using interviews as a means to gather data permitted the researcher to interact with the participants and ask for details to clarify any unclear information. Creswell (2009) stated two disadvantages of interviews: the researcher’s presence during an interview may bias the participant’s responses and not everyone is “equally articulate and perceptive” (p. 179). It must be noted that the
business leaders participating in the interviews are not directly related to the researcher’s educational site.

The recorded interviews were transcribed within three days of the interview and sent via email to each participant. Participants were asked to correct any errors. Final approval of each participant’s transcription was noted by returning the transcription to the researcher’s email address with the words: “I approve and verify the transcription of the interview.” The return email served as an electronic signature. The reply email confirmation became a saved image stored in a password protected computer file.

The researcher asked the seven Southwest Ohio CTE superintendent’s permission to examine advisory meeting minutes from last year. This documentation served two potential purposes. First, the existing documents should support the information obtained from superintendents’ survey responses. Second, the documentation may offer clarity to the superintendents’ survey responses as well as to the business leaders’ interview results.

**Data Analysis Procedures**

Hatch (2002) noted that many researchers struggle with when to start data analysis and how to know when the analysis is complete. Hatch believed that data analysis should begin at the start of the study and end when the research questions have been answered. However, Bogdan and Biklen (2007) believed the more formal analysis and interpretation should not take place until all data are collected. Without proper data analysis, the data collected becomes worthless and cannot be utilized to answer the research questions.

Typological analysis is the most common type of analysis for qualitative data (Leech & Onwueguzie, 2007). This style of analysis requires the researcher to look for patterns in
the data and sort it based on analogous characteristics (Bogdan & Biklen, 2007). Hatch (2002) provided the following steps for typological studies: identify the typologies to be analyzed; read the data and mark entries related to the typologies; record the main ideas in entries on a summary sheet; look for patterns, themes, and relationships within typologies; read data, coding entries while keeping a record of what entries go within each pattern; decide if the patterns are supported by the data; look for relationships among the patterns identified; write the patterns as one-sentence generalizations; and select data that supports the generalizations (p. 153).

Typological analysis is an efficient form of analysis and is utilized when a researcher is attempting to identify underlying themes embedded in the data. This form of analysis allows the researcher to form generalizations that answer the specified research questions (Hatch, 2002). Typological analysis is a deductive approach, meaning codes are identified before analysis begins (Leech & Onwuegbuzie, 2007). After data are coded and grouped by similarity, a theme is identified for each group (Bogdan & Biklen, 2007; Leech & Onwuegbuzie, 2007; Hatch, 2002). A disadvantage of typological analysis is that identifying predetermined categories may prejudice the researcher to other important aspects of the research (Hatch, 2002). It is essential for researchers to be prepared for unexpected relationships and themes to emerge during analysis.

Data obtained from the interviews were examined for reoccurring themes. As Hatch (2002) suggested, data analysis began after the first interview, allowing the discussion to be fresh in the researcher’s memory. Due to a smaller number of interviews, data were analyzed using the following process. While transcribing data from the interviews, the text was photocopied on a different color paper for each participant (Krueger, 1998; Taylor-Powell &
Renner, 2003). As the papers were sorted into trays labeled with the major themes that emerged, it was easy to determine if the ideas were from one participant in particular or from several participants based on how many colors were in each bin or tray.

**Ethical Considerations**

Creswell (2007) stated “a qualitative researcher faces many ethical issues that surface during the data collection in the field and in analysis and dissemination of qualitative reports” (p. 141). Participants’ anonymity is important. Therefore, a few precautions were in place. The Institutional Review Board (IRB) reviewed and approved the research proposal before the study began to ensure participants’ safety and anonymity.

Furthermore, all adults participating in the study received an Informed Consent Form that was clearly written, easy to understand, and described the study’s purpose. Participants were instructed that participation is voluntary and there are no negative repercussions if they declined participation. The signed Informed Consent Forms are stored in a separate location from the interview transcripts. This procedure helps to maintain confidentiality. All participants’ names were replaced with numbers to ensure anonymity. Participants were informed that no identifying information would be shared with any other participant. None of the schools’ identifying data was revealed. All electronic data is stored in a password-protected file on a computer that only the researcher has access. Hard copies are stored in a locked cabinet to which only the researcher has access.
Limitations

This study included data from four business leaders in one county in Southwest Ohio and seven superintendents of career centers in Southwest Ohio. One of the limitations of this study was that the group of participants was a stratified purposeful sample, which means the individuals were not randomly selected for participation. Participants were selected because they belong to a particular subgroup (Hatch, 2002). A second limitation dealt with the transferability of the results. The four business leaders were from one county located in southwest Ohio and the seven superintendents are from career centers all located in Southwest Ohio. This limited the diversity of the population as well as the ability to generalize the findings to other states or locations within the state. A third limitation was that only four business leaders from three businesses agreed to participate in the study. The lack of business leaders’ willingness to contribute to this study limits the validity of the results.

Lastly, data collection was limited by the participants’ honesty when answering questions. The study consisted of surveys and face-to-face interviews as the primary data collection methods. The survey was based on the participants’ opinions and not necessarily on experiential data. The conclusions and recommendations from this study are limited to the generalizations collected from participants’ responses. These limitations were considered carefully while discussing the findings and implications for the study.

Summary

In qualitative research phenomena are studied in their natural setting. Case study is a qualitative research method in which the researcher examines a bounded system via in-depth data collection, which entails various sources of information (Creswell, 2007). Qualitative
data are obtained through interviews, observations, and documents (Merriam, 2009). In qualitative research, the researcher is the primary instrument for data collection. When analyzing data, the researcher identifies common themes and sorts data accordingly. Data should guide the study in qualitative research.
CHAPTER 4. DATA COLLECTION AND ANALYSIS

Introduction

The purpose of this qualitative study was to examine the communication between CTE superintendents and business leaders. The completed surveys, interviews, and advisory meeting minutes were utilized to answer the following research questions: How do business leaders and CTE superintendents garner information related to local economic need? How do business leaders recruit newly trained CTE graduates? What practices can CTE and business leaders employ to strategically collaborate concerning future economic trends? The attitudes, practices, and potential barriers related to CTE superintendents and business leaders meeting the local economic needs were examined.

Chapter 4 provides the results and analysis of the research and includes four sections: data collection procedures, descriptive data, data analysis, and results. The section titled data collection procedures offers a detailed description of how data were collected. The descriptive data section describes the participants’ demographic information. The section titled data analysis explains how the data collected was analyzed to answer each research question. The results section reveals what the data produced for the research questions. The research questions are addressed in order. The chapter culminates with a summary.

Data Collection Procedures

Eight southwest Ohio CTE superintendents were asked to participate in the study. Once the superintendent agreed to participate, he or she signed a Letter of Consent. Upon receiving the signed Letter of Consent, the researcher emailed the survey to the superintendent to be completed. Seven of the eight superintendents signed and returned the
Letter of Consent as well as the completed survey. The seven CTE superintendents were also asked to send copies of advisory meeting minutes for review; only three of the seven CTE superintendents emailed a copy of advisory meeting minutes.

The researcher spoke to the President of the local Chamber of Commerce requesting several members’ participation. The President spoke to members asking for their support and cooperation in this research study. Even with the Chamber President’s personal request, several Chamber members were not interested in participating due to time constraints. In addition, the researcher asked business leaders for their participation. The researcher personally called each business leader who expressed interest in participating. This process afforded business leaders the opportunity to privately ask questions about participating in the study. Business leaders were asked to sign a Letter of Consent. Although more than 10 business leaders were contacted to participate in this study, three businesses agreed to participate. However, one of the three businesses had two interviewees.

After the interviews, the business leaders were emailed a transcription of the interview and asked to make any relevant changes or additions. To acknowledge final approval, participants responded to the researcher’s email with the words: I approve and verify the transcription of the interview. This step served as an electronic signature. The reply email confirmation became a saved image and stored in a password protected computer file.

Descriptive Data

A stratified purposeful sampling method was used to select participants. In other words, individuals were selected to represent particular subgroups of interest, such as CTE superintendents and leaders of businesses that have a relationship with the local career.
technical high school (Creswell 2007; Creswell, 2009; Hatch, 2002; Merriam, 2009). The population of the study included superintendents of career technical high schools and business leaders who have some affiliation with the local career technical high school. The sample of the study included seven superintendents from career centers in southwest Ohio and four business leaders from three businesses located in Southwest Ohio.

**Career Centers**

Career Center A serves about 400 students at the main campus and an additional 45 full-time equivalency (FTE) students in satellite programs. Career Center A is comprised of the main campus and six associate school districts. Of the 18 career technical pathways, Career Center A offers programs in 13 of the pathways. The programs on the main campus include: Power Mechanics, Graphics, Construction Trades, Early Childhood Education, PLTW Engineering, Clinical Health Care, Exercise and Sports Medicine, Culinary Arts, Cosmetology, Information Technology, Criminal Justice, Welding, and Automotive Technology. The satellite programs are: Marketing, which is located at two different satellite campuses, Agriculture Education, and Information Technology.

Career Center B is one of the largest school districts in Ohio. Career Center B consists of four main campuses and 10 associate school districts. There are approximately 1,500 students on the main campuses and another 14,000 students enrolled in satellite programs. Career Center B offers programming in 17 of the 18 career technical pathways. The programs available are: Equine, Vet Tech, Agriculture, Graphic Design, Communication Broadcasting, Dance, Theatre, Music, Visual Arts, Digital Media, Business, Career Connections, Work-based Learning, Construction Technologies, Early Childhood Education, Teacher Academy, Engineering, Cooking for Food and Nutrition, Career Mentorship, College and Beyond,
Finance, Accounting, Allied Health/Nursing, Exercise Science, Dental, Culinary Arts, Cosmetology, Information Technology, Programming, Fire, Criminal Justice, Machining, Welding, Marketing, Auto Technology, Auto Collision, and Diesel Technology.

Career Center C is comprised of 27 school districts covering approximately 4,000 square miles. This district serves over a total of 2,000 high school students. This includes the main campus, youth connection campus, and satellite programs. Career technical programming is offered in 16 of the 18 career pathways. The programs offered are: Agriculture Resource Management, Animal Care and Management, Diesel and Power Technologies, Natural Resource Management, Veterinary Science, Digital Design Technology, Graphic Commercial Art, Graphic Commercial Photography, Media and Video Production, Business Ownership, Computer Network Engineering, Computer Technology Academy, Medical Office Management, Sports Management and Marketing, CBI, Construction Carpentry, Electrical trades, as well as Heating, Ventilation and Air Conditioning (HVAC). In addition, the following programs are offered: Heavy Equipment Operator, Allied Health Technologies, Biotechnology, Dental Assistant, Health Careers Academy, Sports Medicine, Hospitality Services, Cosmetology, Culinary Arts, Early Childhood Education, Firefighter / EMS, Criminal Justice, Air Force Junior Reserve Officer Training Corps, Architectural Design, Precision Machining Technology, Robotics and Automation, Welding, Auto Collision, Auto Technology, and Aviation Maintenance Technician.

Career Center D has six associate school districts. There are about 600 students on the main campus and another 2,500 in satellite programs. Of the 18 career technical pathways, Career Center D offers programming in 15 of the pathways. Career Center D programming

Career Center E serves approximately 659 students on the main campus and another 100 students in satellite programs. The district offers career technical programs in 13 of the 18 career technical pathways and has eight associate school districts. The following career technical programs offered at Career Center E are: Natural Resource Management, Computer Graphic Arts, CBI, Project Search, Carpentry, Electrical Trades, Heating, Ventilation, and Air Conditioning (HVAC), Early Childhood Education and Care, CADD, Engineering, Dental Assisting, Nurse, Assisting, Medical Assisting, Health Occupations Technologies, Culinary Arts, Hospitality and Tourism, Cosmetology, Multimedia Productions, Networking Systems and Electronics, Software Program Design, Welding, Auto Collision, Auto Services, and Auto Technologies.

Career Center F has about 850 students on the main campus and another 2,000 in satellite programs. Students may choose a career technical program from one of 12 career technical pathways. There are 14 associate schools for Career Center F. Programming at Career Center F includes: Ag Power Technologies, Environmental Occupations, Horticulture and Landscape Management, Design and Digital Print Technologies, Medical Information Management, CBI, Buildings and Grounds Management, Carpentry, Electrical Trades, Heating, Ventilation, Air Conditioning, and Refrigeration (HVAC-R), Early Childhood Education, Teacher Academy, Pre-Engineering and Design Technologies, Family and

Career Center G has four main campuses and serves approximately 2,700 students and offers programs from 11 of the 18 career pathways. Career Center G has 32 associate schools. Career Center G offers the following secondary programming: Animal Science and Management, Equine Science and Management, Veterinary Assisting, Digital Arts and Design, Commercial and Residential Electricity, Construction Framing and Finishing Technologies, Construction Technologies, HVAC, Heavy Equipment Operations and Engineering, Masonry, Early Childhood Education, Dental Assisting, Health Technology, Secondary Practical Nursing, Sports Rehabilitation and Therapy, Surgical Technology, Culinary Arts and Hospitality Services, Restaurant Operations, Cosmetology, Computer Service Technician and Networking, Law Enforcement, Firefighting/Emergency Medical Services, Engineering Technologies and Robotics, Precision Machining, Welding, Automotive Technology – Collision, Automotive Technology – Mechanics, Aviation Maintenance Technician, and Industrial Diesel Mechanics. Appendix C provides a summary and comparison of data, including secondary programming, for the seven career centers.

**Business Leaders**

As part of this study, the President of the local Chamber of Commerce asked to facilitate communication between the researcher and business owners. He approached several businesses requesting their participation in this research study. The Chamber President preferred this method in lieu of the researcher speaking during a Chamber event.
Business 1 is located in southwest Ohio and supplies custom parts manufacturing services to other greater Cincinnati area businesses. They offer manufacturing solutions with a specialty in stainless steel fabricated parts. Business 1 utilizes high-powered lasers and the latest in machining technology to provide precision fabrication to multiple industries. Business 1 was founded 40 years ago and is currently managed by the founder’s grandson. There are 46 employees.

Business 2 was started in 1960 and serves as a general contracting firm specializing in water/wastewater treatment. They employ approximately 120 workers. Business 2 serves clients across the United States in small municipalities to large corporations. They complete projects valued from $5,000 to over $40 million. According to the business administrators, most of the employees have a decade or longer service to the company.

Business 3 is a design-build commercial construction company. They employ 25 full-time workers. This family-owned company has been in business for 42 years. The company’s experience includes multi-story office buildings, office and manufacturing facilities, retail, restaurants, industrial, medical facilities, educational, and churches.

Results

The study’s population included CTE superintendents and business leaders all located in southwest Ohio. The sample included seven CTE superintendents and four business leaders. Data analysis involved making sense of the superintendents’ surveys, interview transcripts from business administrators, and the notes from examining written advisory meeting minutes. The results are described below.
Research Question One: How does career technical education garner information related to local economic need?

All seven superintendents responded that the advisory committee meetings were an intricate part of garnering information regarding local economic need. Each career technical program has a minimum of two advisory meetings per year. Depending on the career center, some advisory committees have at least one large meeting with all advisory committee members from all CTE programs where dinner or light refreshments are provided. Career technical instructors are required to hold meetings and to interact with the members throughout the year. According to the Carl D. Perkins Act, every CTE superintendent is required to have their own advisory committee comprised of business partners’ CEOs. Furthermore, the superintendents are required to meet with their committee at least once per school year.

According the superintendent of Career Center F, in the past few years there has been a need for extra meetings to educate the members and make decisions about course selections. The superintendent stated,

[he] places a significant amount of emphasis on the advisories. No equipment is purchased without advisory recommendations. I read all the minutes and follow-up on discussions. In addition, certain required discussion items are included on an agenda. Further, we require the advisories to sign off on a program evaluation report that we developed several years ago in which program data are provided and reviewed and goals for improvement identified.

All seven superintendents have some local business organization involvement. All seven superintendents belong to their local Chambers of Commerce. Some of the career
centers span multiple cities and counties and therefore are aligned with multiple Chambers of Commerce. Several superintendents attend weekly meetings at Rotary, Kiwanis, or Lion’s Clubs. The superintendent of Career Center G stated that his career center, along with three other southwest Ohio career centers, sponsor a major economic development initiative in Cincinnati, Ohio. Career Center C partners with such groups as Partners for a Competitive Workforce, Independent Electrical Contractors, Association of Building Contractors, among others.

All of the superintendents noted specific supports that business partnerships offered for their career technical programming. These supports include:

- recommendations regarding equipment, courses to offer, skills to teach, etc.;
- equipment donations;
- recruitment assistance such as being present at Explore Careers Day and Open House, purchasing giveaways for sophomores, writing personal letters to interested sophomores;
- presentations and demonstrations to students;
- sponsoring field trips;
- sponsoring awards and advisory meetings off-site;
- helping to fund opportunities for lab instructors to make national presentations;
- provision of grant dollars;
- assistance with the development of lab-specific marketing campaigns; and
- participating on interview teams.

Superintendent for Career Center B stated, “Most supply intellectual awareness of current labor market needs and expectations.”
Each of the superintendents cultivated partnerships with area business leaders to support the mission. Most superintendents said that at the district level they work with Chambers of Commerce to target specific business leaders. The superintendent is the primary contact. Superintendent for Career Center F stated that the “key is community involvement and visibility.” Superintendent for Career Center C noted that partnership development is a teacher level responsibility. Instructors, according to Superintendent for Career Center C, work with the companies through established relationships, apprenticeships/early placement programs, and/or campus visits. Meanwhile, the superintendent is constantly engaging CEO’s and senior leadership at businesses within the career-technical planning district. Superintendent for Career Center A stated that his advisory team created the district’s mission statement, core values, and strategic objectives. He stated, “They own our mission.”

Each superintendent answered the question regarding workforce development needs and how those needs should be addressed at the classroom level to meet local economic trends. This includes program changes that need to be made. Superintendents for Career Centers A, B, D, and F all addressed the fact that career technical education needs to refocus on employability skills, presentation skills, technical skills, and teamwork. According to Superintendent of Career Center A, all of his advisory partners, regardless of the trade, provided the same suggestions, including critical thinking skills and 21st Century soft skills such as punctuality, work ethic, and being drug-free. Career Center A implemented a mentoring program to address these skills specifically. Several of the seven superintendents stated that the collaboration of the academic teachers and career technical teachers reinforcing these skills was essential for students to understand the importance of the skills.
Superintendents meet with leaders of small and large businesses to discuss whether the career center is properly training its students to meet the business’ needs. Most of the superintendents mentioned that the size of the company is not a significant factor in deciding how often to meet with the business leader. One superintendent noted that employers must be educated about the programs already in place at her career center. Furthermore, she encourages the business leaders to become active members of her career center’s advisory committees and take advantage of the existing programs and services.

Superintendents were asked how they strategically plan to meet the forecasted needs of local business. Most superintendents use labor market trend data from the State of Ohio, the Ohio Department of Education, the Occupational Outlook Handbook, and OhioMeansJobs. In addition, they have regular conversations with regional business leaders and gather stakeholders’ responses through surveys and personal conversations. Most of the superintendents stated that these were the best practices used across the State.

Each superintendent was asked a specific question concerning an opinion of how his or her career center meets the labor market needs. The Superintendent of Career Center A responded that his career center is doing an admirable job but does not have tangible data to support his opinion. He suggests that it would be helpful to have a system that tracks graduates over a career. The Superintendent of Career Center B stated that his career center must improve its ability to satisfy the local labor market needs. He asserted that his continued involvement with economic development entities leads to discussions concerning needed improvements.

The Superintendent of Career Center C reiterated that meetings with CEOs and senior leadership help provide up-to-date, real-world knowledge of the ever-changing workforce
demands. The business representatives are very appreciative of on-going conversations about their needs and thrilled to see education at the table in many workforce discussions. The Superintendent of Career Center C noted,

We are not meeting the workforce needs because we have openings in programs with high job placement rates. Unfortunately, the current school funding system does not provide enough of an incentive for associate schools to send every student to the career center that could benefit from CTE.

The Superintendent of Career Center D asserted that there are no best practices used at her career center to obtain this information. However, she feels they are doing well based on student placement data and the feedback from local businesses. The Superintendent of Career Center E believed his career center “absolutely meets the market needs based on the enrollment increases the last few years.” The Superintendent of Career Center F affirmed that positive feedback from employers and demand for students in apprenticeships gives credence to the fact that his career center is meeting the local labor market needs. The Superintendent of Career Center G stated that changing the general attitude to understand that the majority of industry jobs require specific skills instead of a four-year college degree.

**Research Question Two: How do business owners recruit new skilled employees?**

Each of the business leaders utilized the traditional route of job postings or referrals to fill positions within their companies. They have not worked with career centers to fill positions. None of the business leaders knew of any of their employees that had graduated from a career center.

Business owner 3 is actually worried about the future workforce. In his opinion, skilled people are retiring and dying off. In the past, “the German masons taught their family
the skills of the trade and many of our employees are third and fifth-generation masons,” he said. The job site superintendent for Business 3 added that one of the biggest hurdles for “vocational education” is that parents do not want their children working in blue-collar positions because this “generation’s mindset is that a machine shop is a low life dirty place to work.” Many parents think that machinists don’t need skills. However, the reality is that a machinist’s job is very technical. Business owner 3 stated that many of these shops are very clean, productive places to work and a source of pride for its workers.

Business owner 3 asserted that CTE has the added problem of marketing this concept to parents because they do not want their child working in a machine shop the rest of their life. The job site superintendent afforded “there is a lucrative living to be made in machining, and it is a lot different than parents’ perception of those types of facilities.” The owner added, “A skilled carpenter or skilled machinist may make more than a college graduate and (does) not have a college loan to pay back. They can begin at the same salary level as a college graduate if they have good technical skills.” The owner of Business 3 noted that not every child is college bound and it is invaluable for some students to gain the skills of a trade or profession without attending college.

Career tech presents different types of employment opportunities to students. Attending a career tech school does not necessarily mean that they will continue working in that career until retirement. Career tech may steer them toward college, but “the more we can expose students to more choices, the better opportunity they have to make a career choice to fit their needs,” Business owner 3 said.

The owner of Business 3 stated that prior to his involvement with the Chamber of Commerce he did not know about career technical high schools as an option for seeking
potential employees. Even though Business 3 has a tremendous need for skilled labor, he asserted that he would continue to be selective with whom they hire. The two interviewees from Business 3 stated that they looked for cleanliness and neatness in their potential employees. The job site superintendent stated, “I don’t want to hire a slob. I want someone who is going to show up and doesn’t miss work two days a week.” Twenty-first century soft skills development is important to all companies interviewed.

The business owner and job site superintendent agreed that looking for employees who have excellent attendance, are punctual, and conduct themselves professionally on the job site is as important as finding a skilled employee. The company’s job site superintendent stated, “If you have the eagerness to learn, I can teach you the rest.” The job site superintendent’s career technical connection has spanned the past 15 years including remodeling at his local career center, serving as a school board member for a career technical associate school, and most recently, employed as an evening instructor for an adult carpentry class. Even though the job site superintendent has had significant exposure to CTE, Business 3 has never hired students from a career technical high school. There was no reason given as to why they have never hired a career tech graduate.

The owner of Business 2 acknowledged that until six months ago, his business did not have a relationship with a career technical high school. The owner utilized other means for apprentice training for new employees. He said, “We don’t have much experience with a specific career center.”

In the construction industry, there was a recession that started in the early 2000s and available work was minimal. Many construction workers found work elsewhere or retrained in other fields and have not returned to the construction workforce. The owner of Business 2
noted that his company is in need of talented construction workers who are skilled in carpentry and are able to operate the equipment. He forecasted that the construction industry would need approximately two million workers. He fears that labor wages will increase, causing the cost of new construction to be much more expensive.

The owner of Business 1 admitted that he has not utilized career center connections to fill positions. However, his current relationship with a career technical welding program advisory committee has prompted his interest in using career tech as an employment avenue. Welding is one of the services that Business 1 sells. The owner stated that he was not a welding expert; however, he saw being a part of the advisory committee as a way for him to learn.

**Research Question Three: What practices can CTE and business owners employ to strategically meet trends for skilled workers?**

As the State continues to invest in career technical education, career centers are using that money to expand curriculum that will continue to meet the trend for locally skilled workers. CTE has built partnerships between education and local businesses through advisory committees to garner input from the community. It would behoove of CTE programs to build strong partnerships with businesses outside of their communities so that students have an opportunity to meet state, regional, and local workforce demands. The communication between CTE and businesses through advisory committees ensures alignment between CTE and economic trends. CTE must continue to self-advocate to ensure that they are preparing students for high demand jobs.

The job site superintendent for Business 3 believes that the local career center takes ownership with their students and often provides them with parental guidance. He stated,
“Traditionally, a lot of those students aren’t getting the support they need at home.” He feels that the career center “takes these students under their wing, believes in them, and makes them believe in themselves, so they become better productive members of society.” From his point-of-view as a construction trade evening instructor, the local career center’s carpentry program does an excellent job of teaching the rights and wrongs of the safety aspect of construction. Furthermore, the students may not spend a career doing construction, but he believes that anything they learn in the construction program is valuable for the rest of their lives. Hopefully, “all of these students will become homeowners; anything they learn in the classroom is not a wasted effort.”

There are many pathways in the construction trade that go beyond what is being taught at the high school level. High school programs expose students to the construction field allowing the students to determine if they want to continue into the field after high school. The job site superintendent’s experience with the local career center included the career center’s contact of local businesses and specific inquiry into local economic trends. He ended by stating, “I don’t know how well that is being reciprocated.”

The owner of Business 2 believes the purpose of career technical centers is to develop students’ technical hands-on skills, to improve their knowledge of a career, and help students choose an appropriate career path. He asserts that the career center can meet business needs by finding employees, either in high school or recent graduates, to fulfill their current workforce needs. He affords that the career center is a marketing tool for business and industry. The owner of Business 2 states that it is difficult to attract interested construction workers. He maintains “reports state that over the next 5-10 years, there will be a 2 million-person manpower shortage for construction workers.” He says that somehow individuals
need to understand that construction can be a long-or short-term career. This business owner states that there is a need for companies and career centers to collaborate to promote high-demand job opportunities.

Businesses can help career centers with educational needs and expenses. Businesses can provide students with relevant, high-tech learning experiences that are geared toward economic trends. There are several significant ways the private sector can contribute. One opportunity is for businesses to make vital contributions of current technology and equipment. These contributions allow students to learn on and train with the same technology and equipment that they will encounter on the jobsite. Other opportunities for businesses to help include volunteering in CTE classrooms and/or allowing students to intern at their place of business. Business owner 2 affords that advisory committees are definitely a means of collaboration, but the difficulty develops when companies are focused on earning profits and time is minimal. In his opinion, it is difficult to make time to collaborate, “but somehow it needs to happen.”

The process of hiring new employees is crucial to a businesses’ success. The recruiting process involves planning and consideration. The businesses interviewed did not consider CTE a key aspect for recruitment. Advisory committees open up opportunities for businesses to find experienced and qualified students that fill an economic need.

Summary

The purpose of this qualitative study was to describe how CTE superintendents garner information related to economic need; how business leaders recruit new employees; and what types of communication and practices CTE and business leaders employ to collaborate
strategically concerning future economic trends. The attitudes, practices, and potential barriers related to CTE superintendents and business leaders meeting the local economic needs were examined. Participants in the study included seven CTE superintendents and four business leaders from three businesses from one county in Southwest Ohio. The completed superintendents’ surveys, unstructured, in-depth, face-to-face interviews with business leaders, and advisory committee meeting minutes were utilized to answer the three research questions.

Chapter 4 contained a detailed description of the data analysis and the results of the study. The findings for the first research question, which addressed how career technical education garners information related to local economic need, showed that superintendents believe that through advisory committee meetings, business meetings, and other political efforts, they are reaching out to business and industry to extract the information needed to add and delete programming based on local business need. The findings for the second research question, which concentrated on how business owners recruit new skilled employees, found that traditional job postings and personal referrals continued to be the norm in Southwest Ohio. The findings for the third research question, which focused on the practices CTE and business owners can employ to meet economic trends strategically for skilled workers, found that communication and collaboration are needed so that career centers understand business needs and businesses are a resource for the career centers. Chapter 5 begins a summary of the study, followed by a summary of the findings and conclusion, recommendations for future research and practice, and implications of the study.
CHAPTER 5. RESULTS, CONCLUSIONS, AND RECOMMENDATIONS

Introduction

Chapter 1 presented the problem and purpose of examining how career technical education (CTE) superintendents and business leaders interpret their interactions related to economic need and how the two groups may cultivate better communications. Chapter 2 reviewed the literature on CTE, economic needs, employment projections, and on the job training. Chapter 3 described the methodology used to collect and analyze data. Chapter 4 discussed and analyzed the results of the completed superintendents’ surveys, business leaders’ interviews, and advisory committee meeting minutes. Chapter 5 begins with a brief summary of the study. This is followed by a summary of the findings and conclusions; this section includes conclusions based on the data analysis and findings. The chapter ends with recommendations for future research, recommendations for future practice, and the implications for the study.

Summary of the Study

Vocational education is changing its image and its structure. Originally, the emphasis of a joint vocational school was to teach low-skill occupational training with the goal of job placement (Daggett, 2002). In 2006, the term *vocational education* changed to *career technical education* (CTE) in the United States (Daggett, 2002).

CTE also prepares students to take college preparatory courses (Harris, 2007). The current structure of CTE still teaches production skills, but also a higher level of cognitive thinking to prepare students for postsecondary education. Therefore, CTE students learn the skills necessary to be successful in college and career.
The main purpose of this study was to examine how CTE superintendents and business leaders interpret their interactions related to economic need and how the two groups may cultivate better communications. More specifically, this study described how CTE superintendents garner information related to economic need; how business leaders recruit new employees; and what practices CTE and business leaders employ to collaborate strategically concerning future economic trends. The attitudes, practices, and potential barriers related to CTE superintendents and business leaders meeting the local economic needs were examined.

**Summary of Findings and Conclusion**

This case study examined the perceptions of collaboration between businesses and career centers. The attitudes, practices, and potential barriers related to CTE superintendents and business leaders meeting the local economic needs were also examined. The findings and the conclusions for each research question are addressed in order.

**How do business leaders and CTE superintendents garner information related to local economic need?**

CTE superintendents state that their stakeholders include business and industry, higher education, labor, associate schools, parents, community members, school employees, Ohio Department of Education, and the Ohio Board of Regents. CTE superintendents utilize advisory committee meetings as an intricate part of garnering information regarding local business and industry partners’ economic need. In addition, each superintendent utilizes their local Chamber of Commerce to build relationships with business and industry, as well as other local business organizations. These partnerships and the communication between
business and industry and the schools are vital to gather the information needed to decide on programming in the career centers or in local associate schools.

According to the businesses interviewed, they agreed that the CTE superintendents reached out to the businesses for information related to their particular businesses. They also agreed that CTE did not factor into the equation when recruiting for vacant positions.

**How do business leaders recruit newly trained CTE graduates?**

Each of the business leaders utilized the traditional route of job postings or referrals to fill positions within their companies. They have not worked with career centers to fill positions. None of the business leaders knew of any employees that had graduated from a career center.

In addition, each business leader said they did not actively recruit from the career centers. Two business owners stated that they looked for cleanliness and neatness in their potential employees as opposed to a developed skill set. Business owners are having problems finding workers who have a good work ethic. An employee who has excellent attendance, is punctual, and conducts himself or herself professionally on the job site is as important as finding a skilled employee.

The business leaders admitted having little experience with hiring graduates from career centers, but do want to have a relationship with a career technical high school for the purpose of apprentice training for new employees or hiring of new employees in the future.

**What practices can CTE and business leaders employ to strategically collaborate concerning future economic trends?**

According to the business owners interviewed, career centers need to assume the parental role and guide students into programs, courses and interviews related to certain
fields. Business leaders understand that students may not spend a lifetime in a particular career, but students need a jumpstart through an initial program to get them acclimated into the workforce. Each believes that the career technical centers should develop students’ technical hands-on skills, improve their knowledge of a career field, and help students choose a career path that best suits each student.

The business owners believe that career technical education is a marketing tool for business and industry. Each believes that it is difficult to attract interested workers and sees the need for companies and schools to collaborate to market careers that are available. Advisory committees have been a means of collaboration, but the difficulty develops when companies are focused on earning profits and time is minimal. Business leaders said that it has been difficult to make time to collaborate with career technical centers, but they value the relationship with the career center enough to find at least some time to the process of advising career technical education.

**Recommendations**

The purpose of this study was to examine how Ohio career-technical education (CTE) superintendents and business leaders, located in communities situated around southwest Ohio, perceive the communication between business leaders and CTE superintendents. In addition, this study examined the success of practices used by career technical centers to address economic trends and business needs. The intent of this case study was to ascertain the best practices that Ohio career technical centers employ to define and meet the needs of local business. In addition, this case study collected the perceptions from business administrators concerning the effectiveness of career technical education.
Recommendations for Future Research

The purpose of this study was to discern the perceptions of collaboration between businesses and career centers. Given the findings of this research study, several recommendations are suggested below.

1. It is recommended that further study include associate schools’ superintendents. These superintendents are required to have career plans for every child. Therefore, they may have a unique perspective of how career technical education is meeting local business need.

2. In order to take into account the diverse economic needs across the nation, further study may be conducted in various regions of the country.

3. In addition, further study could include student beliefs, perceptions, attitudes, and concerns about career technical education’s ability to prepare them for in-demand jobs.

4. It is recommended that further study be conducted with students who attended career technical programming and went directly into the workforce. This information could prove to be beneficial to superintendents at career technical centers by helping them make a connection between their business relationships and successful student employment.

A qualitative case study is suggested to research the preceding recommendations.

Recommendations for Practice

Case studies provided CTE superintendents and business leaders in Southwest Ohio the opportunity to explain in greater detail their feelings regarding the relationship between
CTE and business and industry. Given the findings of this research study recommendations for practice are suggested below.

1. Career technical teachers, along with their academic partners, should be given time to meet with business partners. This could be accomplished through paid extended days in the summer or with professional time during the school year.

2. Career technical teachers could be expected to make monthly contact with employers and potential business contacts. This could be through phone calls, emails, or face-to-face.

3. Career technical teachers and labor union connections could be a useful marketing tool for recruitment of students because labor unions tend to notice the need for skills employees before the individual businesses.

**Implications from the Study**

Today’s changing society requires that schools and communities work closely together, especially career technical education and local businesses. Bringing employers and educators together on advisory committees provides a format for sharing business need and educational ideas to support those needs. Career technical education has been in the forefront by organizing venues for business to provide advice and assistance to specific career technical programs. The implications of these two groups collaborating are that students learn the most current skills for their chosen career field and businesses are an integral part of providing guidance. Since local businesses have expressed that they have a shortage of skilled employees, the impact of collaboration between these two entities ensures a future quality workforce. Career technical education must continue to reach businesses to support as many
career pathways as possible. These connections will ensure that business and industry utilizes CTE for their future staffing needs.

Summary

Career technical education and businesses have opportunities to interact and discuss training for future workforce. Businesses direct communication with CTE superintendents is crucial to promote industry skill standards. It is important that business and industry share the information that is essential to career technical programming. Based on the business leaders’ interviews, CTE was not their first choice for recruitment or training purposes. Even though CTE and businesses share common concerns, there was not a connection. The CTE community believed they were meeting workforce needs through advisory committee meetings. The business community indicated that CTE had not been considered when filling vacancies. It is a core responsibility of the CTE superintendent to facilitate a dialogue between the business community and for CTE to allow essential communication regarding education preparedness and potential need so that CTE is the first choice for local businesses to fill their future workforce.
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1. There are 18 career technical pathways. Please list the types of programming in each pathway that your CTPD offers in each pathway.

   - Agricultural and Environmental Systems
   - Arts and Communication
   - Business Administration
   - Career-based Intervention
   - Construction Technologies
   - Education and Training
   - Engineering and Science Technologies
   - Family and Consumer Sciences
   - Finance
   - Government and Public Administration
   - Health Science
   - Hospitality and Tourism
   - Human Services
   - Information Technology
   - Law and Public Safety
   - Manufacturing
   - Marketing
   - Transportation Systems
2. How many business advisory committee meetings do your career technical programs have a year? How engaged are your administration and teachers in the business advisory committee meeting process?

3. In what local business organizations do you and/or your district representative participate? How involved are you with these organizations?

4. How many business partnerships offer support and resource to your career technical programming? What support or resource do they supply? How likely are you to implement suggestions given during business advisory committee meetings?

5. How do you cultivate partnerships with area business leaders to support the mission of your district?

6. What workforce development needs should CTE be addressing at the classroom level to meet economic trends of the local area? What programs have you implemented to meet these needs?

7. How often do you meet with your largest business tax payers? Do you discuss how CTE can help supply workforce development for their changing needs? If so, how?

8. How do you strategically plan to meet the forecasted needs of business? What factors do you use to develop your “plan of attack”?

9. What are your current best practices used to address economic trends in your career technical planning district area? How does this affect the programming that you start, continue, or discontinue?

10. How do you think your career-planning district is satisfying your local labor market needs? How do you know? Do you have a best practice for gaining this information?
APPENDIX B. INTERVIEW QUESTIONS FOR BUSINESS LEADERS

1. Name, business and number of employees?

2. What relationships do you have with career technical educational institutions? How did you develop those relationships?

3. Do you participate in a CTE advisory committee? If so, in what capacity?

4. In your opinion, what is the purpose of CTE?

5. What areas do you think CTE is doing well? What areas can CTE improve upon?

6. How do you think that CTE meets/could meet the needs of industry? What does this tell us about trends in CTE?

7. What are the trends in industry in your business field in the last ten years? What are the forecasted trends for the next ten years in your field of business?

8. How should these trends drive CTE programming?

9. How effective has the career technical center been with preparing students for your field of business and your growing needs?
## APPENDIX C. SUMMARY AND COMPARISON OF CAREER CENTERS

<table>
<thead>
<tr>
<th>Career Center</th>
<th>A</th>
<th>B</th>
<th>C</th>
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<th>E</th>
<th>F</th>
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