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EXPLORATION OF INDUSTRY CERTIFICATIONS WITHIN CAREER PATHWAYS

Ashley Childs

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EXPLORATION OF INDUSTRY CERTIFICATIONS WITHIN CAREER PATHWAYS

by

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A DISSERTATION

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Abstract

This phenomenological research study explored industry certifications in career and technical education. A grand tour question and three research questions guided this study. Data collected from interviews with graduates of career pathway programs, career and technical education instructors, and industry employers provided a better understanding of the issues experienced in career and technical education. This study revealed a need for appropriate industry certifications in career and technical education programs and the workplace. In addition, the participants expressed a desire for students to start preparing earlier for their careers and be provided with alternatives to college for post-secondary education.

Keywords: Career and Technical Education; Industry Certifications; Carl D. Perkins Act; Work-Based Learning

Table of Contents

Title Page.....	i
Abstract.....	ii
Table of Contents.....	iii
Chapter I: Introduction	1
Research Questions.....	3
Purpose of the Study.....	4
Significance of the Problem	4
Definitions	5
Summary.....	7
Chapter II: Literature Review.....	8
Introduction	8
Secondary Education	8
Industry Based Certifications	9
Benefits to Industry	10
Benefits to Students	10
Career and Technical Education.....	12
History of Career and Technical Education	13
Taxonomy.....	14
Career and Technical Education Federal Legislation.....	15
Carl D. Perkins Act.....	17
Career Pathways	19
Relevance: Reform Needed	20
Work-Based Education.....	23

Disconnection with Industry	24
Academic Education	25
Credentials	26
Challenges.....	27
Disconnection within Education.....	28
Standards and Certifications	29
Student Connection.....	31
Concerns	31
Growth	32
Cost of Education.....	32
For-Profit versus Not-For-Profit.....	33
Summary.....	34
Chapter III: Methodology	36
Research Design.....	36
Purpose of Study: Exploration	36
Research Questions	37
Participant Selection Procedure	38
Procedures of Data Collection	38
Initial Contact with Participants.....	39
Protections for Participants.....	39
Setting and Logistics of Interviews.....	40
Interview Process	41
Interview Questions	41

Transcription	42
Procedures for Data Analysis.....	42
Coding.....	43
Reporting Procedures.....	44
Chapter IV: Data Analysis	45
Findings.....	45
Interview Participants	49
Research Questions.....	51
Interview Findings	51
Analysis.....	56
Employers	57
Educators.....	58
Graduates	58
Summary.....	59
Chapter V: Conclusions and Discussion.....	60
Discussion.....	60
Research Question Conclusions.....	61
Recommendations.....	65
P20 Implications	66
Limitations	68
Recommendations for Future Research	69
Summary.....	69
References.....	71

Appendix A: Institutional Review Board Approval Letter.....85

Appendix B: Interview Questions.....86

Chapter I: Introduction

Jobs in today's workforce that pay livable wages have required some education beyond a high school diploma. This education may be in the form of post-secondary education such as college or some industry certification such as those needed to be a medical assistant, paralegal, or welder. These industries, including healthcare, information technology, and business, have seen an increasing demand for skilled workers. Yet, the supply of this resource remains low, as well as training that would better prepare individuals for these fields (Restuccia et al., 2018).

The alignment of educational training to the needs of industries for students can bring success to all fronts and provide a path for students to obtain skills for future jobs. In addition, industry certifications that are embedded into educational pathways can provide the education beyond a high school diploma needed for success. Students that have certifications can potentially signal to employers that they have the skills necessary to complete tasks in a job.

As the introduction to this study, this chapter will discuss the background and context, the research problem, objectives and questions, and the significance and limitations of industry certifications and Career and Technical Education (CTE). The lack of research on the effects of certifications and the success that has resulted from them has created a loss of focus in the area. As the number of certificates and certifying bodies grows, so does the need for further research. Within the workforce, the market to be certified has become a fact of life. People who seek employment encounter the need to be certified in a particular area to qualify for a position. Gaining a professional certification is not a novel idea. For years, numerous professions have required this type of issuances, such as accounting, paralegals, and even some medical

professions. Regardless of employment or student status, certifications will continue to be essential for an individual to stay vital and competitive in the workforce (Cox & McKilip, 1997).

The data for this study was collected from employers, employees, and recent graduates of pathway programs. This study sought to understand whether certificates are necessary for the workforce and whether these certifications should be earned in secondary education institutions. In addition, the research sought to provide insight on whether all stakeholders benefit from certifications and whether these certifications should be used interchangeably with a college degree.

However, there are conflicting views among educators, employers, and graduates. The common issue is that some people do not test well. However, they are just as qualified as individuals who can pass a written exam. Because of this, individuals who cannot perform under the pressure of an exam could be negatively impacted.

Another issue relative to certifications is that there is little known about the educational value of these credentials. Because vendors work to develop industry certification examinations, the comprehensive data that link the academic outcome of these exams have not been reliable. In addition, these exams are administered individually throughout different industry sectors, contributing to the disconnect (Gallagher, 2018).

These issues could cause institutions and the government not to pursue a blanket regulation for certification for students. These issues could also force employers to rethink the significance of certifications if they find that their workforce, rather than being adequately trained, is memorizing enough data to pass an exam and are losing out on qualified individuals that may have just not scored as well on the written exams.

Research Questions

Grand tour question: What is the effectiveness of school-required certifications in the industry?

Research Question 1: What are the perceptions of recent graduates of career pathway programs regarding pathway preparation for the workforce?

Research Question 2: What are the perceptions of workforce management concerning pathway programs providing necessary skills?

Research Question 3: Do the industry certifications being provided by secondary institutions in Kentucky align with industries in the state?

The first step is to understand the need for industry certifications by employees fully. The research provided in the literature review covers why these certifications serve a need for potential employees, employers, and educational institutions alike. Industry certifications show proof that a potential employee has the knowledge and skills necessary to attain a job. However, each certificate is different and prepares an individual for different outcomes. For instance, a medical nurse aid certification proves understanding of skills needed in a medical facility such as long-term care. However, a welding certification does not provide an individual with the proper skills to work in a medical facility. Thus, although both certifications prove knowledge and skill, they prove two different types of skills.

Purpose of the Study

Acquiring industry certifications in high school is becoming a prerequisite for graduation in several states (Glennie et al., 2021). This study aims to understand better whether students' success is determined based on obtaining industry certifications. Specifically, the study explored four areas of interest. First, the study examined whether graduates feel that industry certifications prepare them for the workplace as claimed by the testing organization. Second, the study

investigated whether industry employers feel that pathway programs on the secondary education level properly train potential employees for the workforce. Third, the study looked at the usefulness of these programs and whether changes should be made within the secondary institution to better prepare students for the next step. Finally, this study also analyzed whether the industry certifications being provided within the career pathways align with the needs of the local industries. Qualitative data was obtained from interviews with graduates, employers, and educational professionals to accomplish these goals.

Significance of the Problem

As the workforce continues to change and grow, the employee pool should also. Unfortunately, as the need for qualified applicants continues to grow, there is a significant lack of qualified applicants to fill positions in the workforce (Gallagher, 2018). Going straight into the workforce has been a negative stigma rather than attending college for years. However, because of that growing stigma, now the workforce is low in qualified applicants.

Another problem that individuals face is potential employees struggling with debt because of the decision to go on to post-secondary education rather than obtaining a job right out of high school. Not every job available requires a college education. Some of these positions that only require a high school diploma and an industry certification pay substantially better than the positions students get after attending college (Chamorro-Premuzic & Frankiewicz, 2019). The stigma of attending college creates a problem on several levels, such as the growth of debt occurring for students before ever graduating college and the lack of prepared employees hitting the workforce promptly.

Individuals with this growing debt also find that they cannot find employment commensurate with the amount of debt taken out to complete a degree for the field they are

pursuing. In addition, scholars agree that not all students need to be steered into college programs (Sparks & Waits, 2011).

Definition of Key Terms

Accountability: This refers to the process in which a school is evaluated on their performance and their students' performance (Polikoff, 2020).

Advisory Committee: A group of individuals with a common goal and interest in a particular area of CTE. Some of those areas could be business, construction, or agriculture, to name a few. The members of this committee are made up of industry professionals from the local area, teachers, students, and even parents. This group develops and evaluates the CTE programs (Pennsylvania Department of Education, 2022).

Career and Technical Education (CTE): Programs designed to help prepare students for the workplace. CTE in secondary institutions works to equip students with essential skills for the workplace and gain a knowledge base. These programs help ensure learners entering the workforce right out of high school have sought-after skills (Scott, 2014).

Cooperative Education: A method of combining classroom instruction with hands-on work experience. Students can receive academic credit towards their education as well as pay. This term is often referred to as a co-op (What is cooperative education, 2021).

Effectiveness: The ability to provide quality curriculum, authentic assessment of learning standards in preparation for careers and continuance of education beyond high school (Stone, 2017).

Hands-on learning: A learning opportunity that occurs when students learn by doing, rather than just listening to instruction in a given subject (Martin, 2020).

Industry-Based Certifications: Examinations given to prove performance in specific areas within a particular industry. These examinations are specific to the industry aligned with that career field (Guide to online industry-based certificates, 2020).

Internships: Internships typically refer to a work-based learning opportunity that offers work experience by companies to students. This opportunity provides experience for entry-level positions, and these opportunities are generally unpaid (Zhang, 2020).

Pathway: The area of study in which a student chooses to focus during high school. This path is typically selected during the students' eighth or ninth-grade year and must be completed to graduate (Jenkins & Spence, 2006).

Soft Skills: An employee's attributes that a machine could not replicate. These skills include kindness, empathy, mindfulness, self-motivation, and resilience (Lau, 2021).

Stakeholders: Anyone affected by the well-being of a student and their education. This could include but is not limited to employers, teachers, principals, and industry professionals (McMahon, 2019).

Success: Success refers to the ability for an individual to master academic as well as technical content. This term also refers to an individual's ability to have gained soft skills such as punctuality, adhering to protocols, and demonstrate ethics (Credentials for all, 2015).

Transition Ready: Transition ready refers to the stage when a student is academically or career ready and proficient in English.

Vocational Education: This can mean a different path from college. In this text, vocational education can be interchangeable with career and technical education (Wyman, 2021).

Work-Based Learning: Programs that create learning opportunities in workplaces. In this text, work-based learning is not a paid cooperative education experience, but a program designed to teach work experiences in the classroom (Boud & Solomon, 2003).

Summary

This study addressed whether industry certifications and career pathways properly prepare high school students for the workplace. The study also addressed the concern of whether these students themselves feel prepared for the workplace after high school and after college. Research on this matter is essential for parties, including local industry employers, secondary education institutions, and students.

Continuance of this type of program can only happen with funding. This research sought to provide insight into the effectiveness of school-required certifications in the industry and could potentially help address CTE's role and the funding model used to support these types of programs. In addition, stakeholders could use this study to help determine whether they should continue supporting the industry certification process and if it is an essential part of a student's preparation for the workforce.

Chapter II:

Literature Review

Introduction

The growth of certifications and the bodies that administer them have increased in presence and need. The lack of research on this topic has presented the opportunity for this discussion. This chapter includes the history and background of Kentucky career education and industry certifications. Highlighted is the Carl D. Perkins Act, a significant piece of legislation promoting and funding CTE in secondary and post-secondary areas. Additionally, the chapter includes literature that reviews the need and use of industry certifications within the field of CTE and how these relate to the need for creating highly skilled employees that will enter the workforce. An overview of industry certifications and how and why these tests have been implemented in the secondary setting is also included. Finally, this study discusses the impact of the local workforce and whether their needs are being met.

Secondary Education

Earning a college degree has been the goal of countless high school graduates. Research has shown that people with a college degree tend to make more money (Carnevale et al., 2011). In contrast, other research has shown that a percentage of students that enter college do not leave with a completed degree. Statistics show that the overall dropout rate among undergraduate students is 40%. Thirty percent are first-year students who drop out of college by their sophomore year (Hanson, 2021).

Rather than completing a degree, students are graduating college with a tremendous amount of student loan debt and no way to sufficiently pay it off due to the non-completion of their degree (Lynch et al., 2010). In addition, it is becoming more and more evident that a high

school diploma is not the only vital credential to have when leaving high school. Industry-based certifications have a more immediate value, ensuring no costly post-secondary education (Parish, 2004). Unfortunately, education and the workforce consider certificates a well-kept secret because few students are given the opportunity while in high school. Those students who are given the option do not pursue the possibilities put forward (Xu & Trimble, 2016).

Industry-Based Certifications

Industry-based certifications are based on exams that can be administered by organizations that are typically third-party and credentialed to administer the exam in different industries (Hartman & Andzulis, 2019). Certifications can be classified into three areas. These areas are vendor-specific, domain-specific, and practical. As the name indicates, the vendor-specific certifications typically focus on the company offering the exam. The domain-specific certificates lean more towards a specific set of knowledge that helps to apply that knowledge to real-world situations. Finally, practical certifications require accomplishing tasks to be awarded the certificate. Examples of this type would be welding certifications and medical nurse aides (Cowley et al., 2021).

Research indicates that industry-based certifications are in demand by employers as an indicator of job skills (Goldring, 2017). Although certification programs have a clear vocational path, they are also academic in nature. Because of this, students can succeed within their chosen career path and learn using hands-on techniques (Xu & Trimble, 2016). This type of education provides opportunities for students of all learning levels. Certifications have become an effective tool for teaching soft skills to students. Instructors can use this tool to develop assignments, create an organization within the course, and even establish hands-on lessons to lead to the certification exam (Laverie et al., 2020). Industry-based certifications break down barriers and

create benefits and opportunities for students and teachers. Students can apply their knowledge, become recognized by potential employers, show self-direction, become attainable, and establish brands for themselves. Instructors benefit from their certifications by having the ability to integrate technology into the classroom, focus on concepts and ensure that the curriculum is meeting industry needs, and continue engagement within the community (Goldring, 2017). As industries change and the skills necessary for those jobs change, instructors need access to these benefits; CTE will continue to be prevalent and cost-effective (Miller & Davies, 2020).

Benefits to Industry

Having an industry-based certification or professional certification is becoming more prevalent, and the number of those that have them has risen quickly over the last 50 years (Cunningham, 2019). However, occupational licensing is more prevalent now than professional certifications. Some occupations that fall in this category are information technology and mathematical positions. More stakeholders outside of these sectors are beginning to see the benefits of the certification process and adopt them (Cunningham, 2019). Research finds that using industry-based certifications during the hiring process shows maturity in the industry (Jackson et al., 2016). These organizations within each industry sector benefit from the cost savings of not sending new employees to be certified as they come certified right out of high school (Mata & Carpenter, 2014).

Benefits to Students

CTE provides an outlet for success by delivering pathway choices to high school students. This allows the student to personalize their education based on their learning outcome. In addition, the pathways provide the ability to explore careers by using hands-on learning experiences. A couple of shared learning experiences are work-based learning opportunities and

training for industry-based certifications (Ross et al., 2020). This type of education provides students with skills that can be applied directly in the workforce (Blissett, 2020). In addition, the certifications within CTE demonstrate that a student possesses the skills and knowledge necessary to perform the job (Cunningham, 2019). These attributes may include soft skills, hands-on learning abilities, or industry-specific skills such as welding, nurse aide, or carpentry, to name a few.

Certifications are not the only benefit to CTE students. They also benefit from opportunities such as internships that are built into the curriculum and certification process (Mata & Carpenter, 2014). Internships can be from paid cooperative education work to unpaid internships within companies. Hands-on learning experiences or internships provide students with backgrounds in the industry. Still, they must be prepared to have high levels of responsibility and the ability to set expectations and receive feedback (Mirvis et al., 2008).

According to a study by Castellano et al., students that are completers of a pathway (completed four courses in a pathway and earned a certification) were more likely to have a higher overall GPA, earn more STEM credits and be better prepared for the transition into the workplace. Compared to students that were only CTE concentrators (only completed one or two courses in a pathway) or non-CTE concentrators, which refers to students that did not complete any pathway courses (Castellano et al., 2015).

Therefore, CTE programs that offer industry-based certifications can provide standards that meet real-world needs. In addition, the industry-based certificates have tended to create more student engagement which means more completion within the CTE programs (Gomillion, 2017). Because students are more engaged in their learning, they are more likely to enjoy the topic and complete the program.

Career and Technical Education

CTE allows students to engage in project-based learning within the classroom and then apply the knowledge directly into the workplace. CTE provides the opportunity for secondary education institutions to provide students with these lessons and certifications at a younger age. Meeder (2007) suggested that enrollment in CTE classes provides students the opportunity to learn soft skills, interpersonal skills, and work readiness abilities that enhance their later job performance.

Tamar-Belgraves (2016) discusses that learning theory among adults suggests that students tend to perform better when they can connect what they are learning with how it will benefit them in the future. She also states if students are to compete with potential employees in the workforce outside of their local economy, they need to be provided with work experience set by expectations in their business community and on a national level. Tamar-Belgraves further discusses that students with an opportunity to complete CTE courses and who take full advantage of industry certifications with their pathway are better prepared and able to make decisions on their future without the pressure of college.

CTE has been through a transformation over the years. Essentially, almost every student now completes an academic education and concentrates on a CTE pathway. CTE is now considered an alternate route to college (Haviland & Robbins, 2021). CTE has continued to provide hands-on learning to students and prepare them for industry certifications. Programs such as Certification of Computing Professionals (ICCP) have been providing examinations and education for the industry since 1973. One of the first certifications administered and specified by this program was Novel in 1989, an information technology certification (Zhang et al., 2010).

Now another technology company, Google, offers the most significant number of certifications and training programs that prove helpful to the workforce (Laverie et al., 2020).

Not only has CTE been beneficial to the workforce but also the students. CTE has been at the forefront of providing education to students that struggle academically. Education-based pathways have offered a safe place for students who find themselves in danger of not graduating while also providing a rigorous academic opportunity and relevance for college-bound students (Tamar-Belgraves, 2016). Overall, CTE has shown to be a solution for at-risk students who could have dropped out of school by bringing real-world applications into the classroom setting (Gomillion, 2017).

History of Career and Technical Education

As previously stated, CTE was formerly known as vocational education. Goals were not developed and mandated to prepare students directly out of high school during that time. During the early 2000s, the main programs designed during vocational education were automotive, construction, and basic trades (Meeder, 2007). Now CTE pathways help prepare people from all walks for careers in various industries (Lee, 2019). However, now that the efforts from legislative reform have changed the look and feel of CTE, the programs will need to evolve to create the idea of small schools within larger learning communities in which education in academics, as well as trades, are working hand in hand (Meeder, 2007).

Vocational education began after the beginning of the industrial revolution. As industries began to boom, so did the need for skilled laborers to handle the mass production settings. This education path started as a typical education curriculum; however, during the late 1800s, what would become CTE quickly began to develop into the hands-on learning that is seen today to

help provide practical skills and exposure (Chen & Schmidtke, 2017).

Taxonomy

One taxonomy that describes CTE is Dave's Psychomotor Domain Taxonomy. Teachers can apply this taxonomy in developing the curriculum and design within CTE. This domain follows a theory of confidence. Dave's taxonomy includes imitation, manipulation, precision, articulation, and naturalization (Lee, 2019). The idea of developing a curriculum around industry certifications also follows a technique called digital-first pedagogy. This approach balances applied and conceptual knowledge to attain certifications (Cowley et al., 2021).

To ensure that students receive a well-rounded education, school districts are beginning to include CTE instructors into teams of teachers from core classes. The districts also provide these teachers with planning time to create plans that help students apply the academic knowledge in core classes to real-world situations. This knowledge can be implemented into job training in CTE classrooms. Research suggests that creating this seemingly more minor learning environment can positively impact the achievement of students and the engagement that they give in their studies (Tucker & Hughes, 2020).

This type of reform within the school structure is not easy to implement. Humans tend not to like the idea of change, and the focus of teachers, specifically core teachers, must shift for a new structure such as this to work. The change needs collaboration between CTE teachers and core teachers to enhance the curriculum. Morgan et al. (2011) suggest that career education programs that focus on specific career skills are more successful than programs that teach basic skills. Those who teach basic skills do not provide enough hands-on training to embrace a career fully.

Career and Technical Education Federal Legislation

Over the years, vocational education has been supported federally. The Morrill Act of 1862, also known as the Land Grant College Act, introduced the vocational training program into post-secondary education. With the introduction of the Morrill Act in 1862, public lands were allowed to be sold, and the money was used to fund colleges. The colleges funded by the Morrill Act, such as Delaware State and Kentucky State, would be required to teach mechanical arts and agriculture. Inherently, these are CTE fields of study (National Research Council, 1995). Research proved that this valuable legislation within the education system enhanced the lives of Americans (Main et al., 2019).

The next step in vocational education came about in 1867 when Congress appropriated \$15,000 to create the Department of Education, later named the National Education Association (Dilger & Cecire, 2019). After only a year, Congress downgraded the Department of Education to the Office of Education within the Department of Interior; education did not regain its status as a department again until 1979 (Cross & Islas, 2022).

The second Morrill Act passed in 1890 provided funding for higher education institutions that followed a separate but equal education for minorities. States responded to the Morrill Act by legislating new colleges that focused on agricultural and mechanical arts rather than funding existing state institutions that did not focus on vocational education (National Research Council, 1995).

A change occurred in 1907 to include federal funding for vocational education in the Morrill Act amendments. In 1917, the Smith-Hughes Act began to fund vocational schools. The Act did come with federal rules that dictated which institutions received funding, but the Act was

a leap in the right direction (Steffes, 2020). During the 1930s, the New Deal funded educational activities such as school construction and repairs and the hiring of teachers.

The programs created during the New Deal created precedents for later subsidies in education. Between the 1940s and the 1950s, federal changes within education were constricted due to World War II. Most of the legislation passed during that time focused on the G.I. Bill and impact aid. However, in 1958 the launch of Sputnik by the Soviet Union changed the way of thinking and more Americans accepted CTE (Ramsey et al., 2012). After Sputnik was launched, the National Defense Education Act (NDEA) was signed in 1958. The purpose of this legislation was to ensure students were provided with an education that prepared them for vocational paths that helped secure national security. Unfortunately, partly due to this legislation, less and less interest began to exist by the early 1960s in attending college (Meeder, 2007). Although CTE is federally funded, there is no United States CTE program; instead, each state is independent in the direction of CTE. There are eight distinct CTE education areas within each state's CTE system: business, agriculture, marketing, health, family and consumer science, trade, technical, and technology.

With CTE backed by federal legislation, the next concern was ensuring that the federal government supported industry-based certifications. The Work Opportunities Act of 1994 did just that. In addition, the Commission on the Skills of the American Workforce called out to those in business and labor to make decisions on certification standards among a large spectrum of occupations (Gomillion, 2017). With the work created by the Commission and the Work Opportunities Act of 1994, the National Skills Standards Board was created in 1994. This board created a national system to build standards of skills and abilities. However, even with creating these federal standards, the need for progress in creating certifications for industries continues.

Some measures have not yet been developed to bring industry-based and recognized certifications to fruition (Gomillion, 2017).

Carl D. Perkins Act. The original authorization of federal funding for vocation education occurred with the Smith-Hughes Act of 1917. Later legislation for vocational education included the Vocational Education Act of 1963 and the original Carl D. Perkins Act, authorized in 1984. The federal government reauthorized the Carl D. Perkins Act in 1990, 1998, and 2006 as the Carl D. Perkins Career and Technical Education Act of 2006 (Perkins IV) (Miller, 2022). The Carl D. Perkins Act should be revised and reauthorized every six years to ensure skilled workers' preparation and rigor among CTE programs (Gomillion, 2017; Meeder, 2007). Perkins funding allocates to CTE programs on a state-by-state basis. A formula was derived to determine allocation amounts based on several factors, including the funds being distributed to the state. Then the state allocates funding to each local CTE program. As a result, the programs can use the budget for various purposes to help CTE students build their skills and assist with earning industry certifications (Granovski, 2018).

According to LaFollette et al. (2011), the 2006 reauthorization of Perkins, or Perkins IV, created new opportunities for access to CTE programs for all students and ensured innovation and quality among the programs. Another notable change in the bill was that the emphasis on eliminating sex bias between males and females in career pathways and created more accountability of the standards by focusing on measurable outcomes. Before the reauthorization in 2006, much legislation occurred that led to the current status of this Act.

As a part of the 2006 revision, the Perkins Act distinguished vocational education and CTE. For years vocational education has carried the stigma that led to an idea that the course offerings were not valuable to the academic setting. In contrast, the term CTE creates an idea of

combined academics and technical training. This revision helped ensure that students and parents understood what CTE was essential to the legislation. Also, with the shift in accountability, there is a shift to focus on students earning industry-recognized certifications, which continues to build a trained workforce (Meeder, 2007). Also, it has been considered that vocational or CTE is only for those skilled trades such as carpentry and automotive.

Perkins Act measures include students reaching targets established by the federal government and the state. In addition, during the early 2000s, each state was expected to follow accountability standards set forth by the No Child Left Behind (NCLB) to ensure graduation standards were being met. The accountability requires that if the continued improvement is not seen, the state must create a plan to meet those goals or face the consequences (Meeder, 2007).

During the revision of the Perkins Act in 2006, a significant change took effect: introducing study programs. As a result, CTE was no longer a large category. Instead, each program was distinctive and was held accountable on its own. During the revision, they found that students typically were just taking CTE courses blindly, but now they were required to pick a track and stay on that track to complete that pathway or program (Meeder, 2007). Before this revision, the CTE curriculum did not have a standard to meet and could be viewed by some as not deserving of the funding.

To properly follow the Perkins IV reauthorization, states were required to find a way to measure success in the field. As a result, some programs developed end-of-course assessments such as the NOCTI (National Occupational Competency Testing Institute) exam to measure technical skills appropriately. In addition, this examination was used as an opportunity to coordinate with industry and provide a practical number of options of skill assessment for students completing a program of study (Staklis & Klein, 2010).

As Perkins IV was developed and accountability came to the forefront of education, it has been evident that industries and career pathways have already produced substantial curricula and assessments that meet their needs. Those who have not mastered this process are beginning to adopt industry-based credentials as part of their accountability. Mata and Carpenter state that offering industry certifications within the career pathways incentivize students to choose those paths. Certifications can be an innovative solution to address the need for students to explore within the programs (Mata & Carpenter, 2014).

The Perkins Act was again reauthorized in 2018 during the Trump administration and became known as Perkins V. As a part of this reauthorization, a significant number of revisions were made. Notable revisions included in Perkins V are the increased funding to ensure more students can participate, the shift of control to local authorities, and keeping industry involved. The revision strengthened CTE for the twenty-first century and comes with the public's renewed interest in CTE (Blissett, 2020).

Career Pathways

A well-defined definition of a career pathway is essential to ensure that all programs meet that definition's standard. The Center for Occupational Research and Development met in 2004 along with those representing the College and Career Transitions Initiatives to develop a proper definition of Career Pathways:

A Career Pathway is a coherent, articulated sequence of rigorous academic and career/technical courses, commencing in the ninth grade and leading to an associate degree, baccalaureate degree, and beyond, an industry-recognized certificate, and/or licensure. The Career Pathway is developed, implemented, and maintained in partnership among secondary and post-secondary education,

business, and employers. Career Pathways are available to all students, including adult learners, and lead to rewarding careers (Hull, 2003, p. 15).

With this definition, each state and each local school district can create programs in schools that meet the expectations set above and the needs of students.

Relevance

Reform Needed

The Carl D. Perkins Act brought forth a tremendous positive change to education. However, education continually needs reform to ensure that education meets the workforce's needs. Chow (2011) states that significant educational reform can be linked to the 1983 report, *A Nation at Risk: The Imperative for Education Reform*. This report indicated that the United States was no longer competitive within education. *A Nation at Risk* caused Americans who had focused their energies towards creating equality in schools to become angered, which pushed the United States into an education reform movement (Gardner, 1983).

Although reform is at the forefront of each new government administration each year, students continue to drop out of school without earning their high school diploma and without any marketable skills that will enable them to obtain gainful employment (Orfield, 2006). The concern is that the efforts are not creating a more educated society. What appears to be the more significant cause of this decline is not the reform itself but rather the students' motivation. Research on the classroom goal structure and student motivation concerning academic achievement found that research struggled to pinpoint how to create successful student motivation (Ahmed & Gut, 2020).

The Ewing Marion Kauffman Foundation surveyed more than 750 high school students and found that,

Survey participants indicated that students are graduating high school college-ready, not career-ready. Across the board, “real-world skills” are seen as the best way to help prepare students for success in the workforce. Further, employers, even white-collar employers, responded that they are open to hiring someone without a college degree. Experience stands out as the most important factor in hiring decisions with employers rating it more important than success with subject matter (Scheidegger, 2019, p. 2).

With concerning statistics such as these, even with reform regularly occurring through legislative acts; more reform is needed to ensure that students remain engaged in school to continue to grow the ever-changing workforce.

Another concerning situation is that due to the course regulations regarding career pathways, students must choose a pathway selection in the eighth grade, no later than the ninth grade. The student must decide to have sufficient time throughout their secondary education to complete all required courses within that pathway. The concern is that trends have also pointed to students' difficulty during their ninth-grade year, such as coping skills that hinder some from smooth school transition and eventually create the drop-out cycle (Neild, 2009).

Bridgeland et al. (2006) interviewed groups of young people from 25 different U.S. cities who dropped out of high school. The resulting report entitled *The Silent Epidemic* discussed that these students' main reason they dropped out was that they were not motivated in the schoolwork. A great deal of the interviewed students come from homes in which their parents were not involved (Bridgeland et al., 2006).

Some research suggests that career pathways could be what reengages students. Taylor and Parsons (2011) researched the issues of student disinterest and how choosing a path in high

school could reengage that interest. They pointed to three specific areas that bring hope. The first area that they highlight is the students' involvement in CTE programs during high school and their ability to obtain a job in that field after graduation. The second area encompasses combining these programs with academics by overlapping standards. Third, CTE welcomes at-risk students who may fall behind academically but perform higher in hands-on learning settings.

Although these programs are changing and progressing, it is crucial to understand that CTE is not just about finding a job after high school. Duncan (2011) made it clear that there is a need for this type of education, but there must be a larger end goal, and that end goal should be a post-secondary degree or an industry-recognized certification. In Kentucky, it is necessary to be college and career-ready to graduate. Still, it is also essential to understand that having multiple options is imperative when entering the workforce (Duncan, 2011).

Although options are needed, the programs are moving in the right direction when recognizing that having an industry certification is as crucial as post-secondary education. Hitchcock (2007) stated that society has not previously perceived certifications as anything more than product-based training, and academic degrees being the only form of post-secondary education (Hitchcock, 2007). Society has begun to grow beyond this mindset and embrace the changes.

The stigma creates barriers with its negative perception that jobs in these fields are not as important as jobs requiring a post-secondary degree. Because of this negative perception, the quality of vocational education was not ideal until Perkins III was introduced. With that progress, structural changes occurred, and academic integration began (Lafollette et al., 2011). Breaking down barriers for under-served populations is a positive outcome of providing certification

routes. In addition, quick-focused learning allows students to break the stereotypes created around their circumstances (Carnevale et al., 2012).

Other research by Lynch (2010) suggests that CTE provides much-needed contributions to school reform as a whole and integrates the use of technology and decision-making and problem-solving skills. Although this can be helpful in education, it can also be a problem. CTE is considered a solution for students with academic issues. CTE can also become an alternative route in education for challenging students who do not thrive academically (Fletcher et al., 2018). Unfortunately, CTE programs sometimes find their students uninterested because of their lack of interest in school in general.

Work-Based Education

Work-based education must meet the workplace's needs, or the career path is not valid. In addition, the curriculum must meet educational requirements and include hands-on learning (Major, 2016). Advisory committees play a crucial part in the planning process to ensure that the work-based education and certification process is valid. Aligning educational institutions with industry partners can increase the success of CTE programs (McIver et al., 2020). These advisory councils play an essential role in alignment. Alignment is a crucial expectation of Perkins V that helps create opportunities for students to become potential employees. Alignment and advisory councils cannot be a one-time process it must be a continuance to succeed (McIver et al., 2020).

To discern what the need is amongst industries; advisory committees are used to determine the needs and direction of programs. Advisory committees within CTE institutions provide leadership, expertise from industry representatives, and guidance to instructors and students (Barbee, 2005). The members of these advisory committees understand the importance

and value of certifications in the high school setting. Their mission and goal are to ensure that these programs continue for quality employees to be developed from them (Mata & Carpenter, 2014).

An important function of an advisory committee is to help the program faculty create a viable curriculum. An example of this would be the suggestion to include instruction that would help potential employees obtain soft skills. These soft skills could include showing up to work on time and working as a team (Gomillion, 2017). This type of information from the committee is essential in developing a proper curriculum. Additionally, advisory committees help to gain support with legislation, identify industry certifications that best fit their needs, and make recommendations for programs and workstations (Barbee, 2005). While the advisory committee is meant to help ensure that students receive the best education and the best possible certifications available, occasionally this does not happen. This is due, in part, to committee members' lack of commitment to the cause, failing to attend all the meetings, or not developing a good rapport with the group (Barbee, 2005).

Disconnection with Industry

According to the National Association of Manufacturers (NAM), employers within the manufacturing sector believe that the failure of training productive workers comes from the public school system (NAM, 2021). The study found that potential employees were deficient in essential employability soft skills and basic academic skills such as math, writing, creative problem solving, and thinking skills. A National Assessment of Educational Progress (NAEP) survey results showed 37% of high school seniors tend to perform below basic levels (Stone et al., 2008). Gomillion (2017) states CTE courses can supply essential soft skills that employers

desperately need in the workforce. In addition, the survey results show that students have not been adequately prepared for the workplace.

Academic Education

According to Gray (2004), CTE and industry certifications are necessary because college will not be for everyone. Using national data, Gray developed 24 hypothetical first graders and tracked their progress over 12 to 16 years. Gray states that at least one in three of these first-grade students will never receive their diplomas. Also, six of the 18 students who graduate will not go to college; instead, they will go straight to work. The 12 students left in this scenario will go to college. Of those 12, only six will graduate from college with a degree. Three of those six students will not obtain employment commensurate to their education or capable of supporting their student loan debt (Gray, 2004).

Orfield (2006) estimated that student involvement in CTE could potentially reduce the high school drop-out rate by 6%. According to the Kentucky Department of Education (KDE) report card data, Kentucky's graduation rate increased to 92% in 2020 from 91.6% in 2019 and 91.3% in 2018 (Perkins, 2020). The KDE report card contributes CTE to be one of the main reasons for the increase. Although some progress has been made, the drop-out rate will need improvement through reform. As students learn that they can earn more than just a high school diploma while attending a secondary institution, the graduation rate will increase nationwide. Students that have started working on a career pathway in high school will already have a leg up on the competition straight out of high school (Parish, 2004). High school students who complete as CTE concentrators tend to graduate from high school at higher rates and find full-time employment at higher rates (Ross et al., 2020).

Credentials

There is a growing trend of higher education pressuring institutions to offer credentials such as micro-credentials into their academic programs outside of the typical degree path. There is also a demand for potential employees to have more than just a degree. An example of a micro-credential is an industry-based certification. Industry-based certifications could one day begin to merge into the traditional academic curriculum (Bowen & Thomas, 2014). These certifications can be earned without formal education and are available to anyone who wants to invest the time to study and have the exam administered (Hartman & Andzulis, 2019). Thus, certifications could not only supplement post-secondary education but could be an alternative to this route (Miller & Davies, 2020). However, providing data on the results can add value to the programs and certifications (Mata & Carpenter, 2014).

Certifications, in general, can be categorized in two ways, technical and professional. As far as what industry is currently looking for from high school graduates, they would be looking for technical certifications such as information technology or even automotive (Parish, 2004). Also, soft skills that involve showing up to work on time, responsibility, and personality skills are skills requested by employers. A disconnect exists when industries seeking employees do not communicate with secondary institutions their current needs. Although a disconnection exists, states such as Louisiana use industry-based certifications to develop their workforce to ensure consistent programs and employees (Jackson et al., 2016).

Raths' (2010) research on the importance of certifications, specifically information technology (IT), concluded that 85% of IT employers felt that they would rather their next employee have at least one IT certification. There is a perception that certificates are only helpful

for entry-level positions. However, certifications for all levels and functions are preferred (Raths, 2010).

Challenges

The greatest challenge currently facing the industry is finding potential employees that have the skills necessary to fill jobs (Blissett, 2020). Cunningham (2019) states that 84.4 % of people with a certification said their accreditation was required for their current position. That same research also noted that, on average, a person that held a certificate made approximately \$300 dollars more a week than an individual that did not have a certification (Cunningham, 2019). The industry has shown that certifications are necessary and indicate that students can be professionals. Industry leaders use credentials to identify qualified applicants and determine advancement opportunities with the company (Koivisto, 2015).

As the demand for employees increases and the supply is low, companies are beginning to not require bachelor's degrees for positions that they once did if the potential employee possesses relevant skills and experience (Palmer, 2020). In addition, gaining employees with these skills is essential, specifically during a skill shortage within the industry (Watkins & Tananis, 2020).

Although certifications serve their purpose and prove useful, some within the industry do not feel that they answer all the workforce's needs. Some of these issues include that some certifications are inappropriate for secondary education level students, and students may not qualify to take an exam due to their age. Another issue is the quality of the teaching and insurance that the certificate is relevant due to the continuously growing and ever-changing industries and the industries' needs (Jackson et al., 2016).

Disconnection within Education

CTE and industry certifications have not always been at the forefront of education. This secondary education segment has often been shrugged off as a lesser education. Haviland and Robbins (2021) state that CTE does not adequately prepare students. Occupational content could be taught in academic classrooms; however, teachers in core educational classes do not feel that preparing students for a job is part of their curriculum. The debate continues today; however, legislation currently sides with CTE because it is essential in students' education (Haviland & Robbins, 2021).

Morgan et al. (2011) discuss the disconnection specifically at the guidance level. Their report looked at whether counseling sessions with students truly benefited the student and CTE as a whole. School initiatives did not include proper guidance and relied more on teachers of CTE to guide students and drive the industry forward. Also noted, in 1989, the National Career Development Guidelines were released to develop effective career education programs and the ability to guide and lead these programs (Morgan et al., 2011).

Raths (2010) discusses that certifications among different pathways are not always equal rigor and relevance. For example, specific tracks such as information technology have recognizable industry-based certifications, whereas certification in the marketing pathway may not be as identifiable (Raths, 2010). Because of this, academic and guidance counselors tend not to put as much stock in certifications as they should because they are not as familiar with their relevance.

Educational institutions also tend not to recognize the value of career pathways and certificate programs. However, high-demand fields that require only industry certifications can provide jobs with high wages and allow students to quickly enter the workforce and begin

developing even more skills that they may not have learned within the classroom. In addition, some of the under-served populations can benefit from this opportunity to start creating a quality life for themselves (Carnevale et al., 2012).

The perception by those in educational administration and core content is not the only educational barrier. The cost of the exams has proven to be an issue among schools attempting to implement industry-based certifications. Because of the cost of the certificates, only a few students are now being certified, even though research has shown that those that have career paths are solid and stable (Major, 2016). According to Major (2016), interviews were conducted at a high school where pathways were prevalent. The study showed that the teacher in the information technology pathway found that their students' skills were strong enough to pass industry certifications; however, the exorbitant cost of those exams caused those students not to complete them (Major, 2016).

Another issue that has haunted CTE is that some in education feel that industry certifications give CTE teachers a more accessible curriculum set. However, CTE curriculum and technologies are constantly changing, and teachers must also change and adapt. The required certificates ensure that the CTE instructor meets all the necessary standards in their instruction (Goldring, 2017). Each state CTE program dictates which criteria must be met for graduation requirements within career pathways and the bar that the instructor must meet. Although each state develops, teaching industry certifications can also follow these standards.

Standards and Certifications

Standards and certifications do not have a comprehensive set of guidelines. Each industry has its own set of standards, and each state determines the criteria to be met within CTE programs. Examples of industries that develop their standards and certifications include

automotive, information technology, and welding. The National Automotive Technicians Education Foundation, founded in 1983, creates its standards for training programs within the automotive industry. Whereas Computing Technology Industry Association, also known as CompTIA, develops industry-based certifications and training programs for the information technology industry (Gomillion, 2017). Those industries that do not have industry-led efforts meet accountability requirements set up by the Carl D. Perkins Vocational and Applied Technology Education Act of 1990 (Gomillion, 2017).

When they are designed well, high-quality industry certifications help the employers determine competencies in the potential employee and whether they hold a specific skill set that the employer is looking for (Van Noy, 2020). Quality assurance standards can determine whether a credential is of high quality. National accredited organizations can make determinations for states to assess whether quality standards are being met (Van Noy, 2020). Assurance is necessary to prove to the workplace that the student is prepared to be successful at the position they are applying for (Jackson et al., 2016).

Industry-based certifications indicate that those applying for entry-level positions are prepared for employment (Glennie et al., 2021). Employers have had positive and negative views towards certifications but still prefer post-secondary-level education over certificates (Gomillion, 2017). Industry standards and certifications that can be earned are typically awarded by professional industry groups such as CompTia. Certifications are generally time-sensitive but can be renewed as needed. These credentials can prove that individuals are skilled in that pathway; when well-designed, these certifications can prove to be foundational for potential employees (Van Noy, 2020). Certificates can also benefit potential employees who do not have sufficient work experience. The certification proves the individual's skills and abilities even though they

have not proved it in the workplace. Individuals with credentials benefit by receiving employment and making more money (Koivisto, 2015). These abilities can prove to be defined as attributes of someone's persona that affect how a person works (Carnevale & Smith, 2013). As industries begin to offer opportunities to earn third-party certifications that help demonstrate skills, these certifications will help fill a need within the workforce by coupling the knowledge and hands-on experience needed to obtain a certificate (Cowley et al., 2021).

Student Connection

According to Ahmed and Gut (2020), students felt that their public school system did not prepare them for the workplace. In addition, students felt that their last year of high school would have been more helpful had they taken courses that prepared them for life outside of school. Also noted, schools can build curricula to meet these needs of the student but are slow to meet this demand (Ahmed & Gut, 2020).

Other trends also point to the issue that first-year students have more significant problems transitioning into high school and fail to correctly choose a career pathway suited to succeed (Neild, 2009). Some students feel that CTE choices are, for some, what advanced placement is to academic students. Students who do not perform academically in non-CTE classes could excel in CTE (Haviland & Robbins, 2021).

Even though CTE is more hands-on and built to address occupational concerns, students must be active in their education (Michel, 2020). Benefits are immense for students, but not much research has been conducted to address the available certificates and their effectiveness (Laverie et al., 2020). According to Laverie et al., those with credentials, even at a base level, increase salary by 10 to 20% and help employees find employment easier.

Concerns

Some concerns regarding certifications are that students feel that certifications may merely represent the business or industry associated with them. Also, the problem is that some individuals may not test well, thus causing specific competent individuals to gain the same opportunities only because they could not pass an exam. Also, certifications are not all equal in rigor, leaving people to wonder about the validity of some certifications (Lommel, 2013). Therefore, the literature also examines alternative industry certification and traditional schooling. These alternatives include academic credentialing, which can prove competence without the need for third-party exams and organization-specific testing, and multiple testing methods.

Growth

The rapid growth creates the need for industry certifications and alternative teaching sources (Goldring, 2017). Unfortunately, the need for certificates by employers can be misleading if students are not adequately prepared for those particular careers that fill employment gaps and make use of those credentials. Research shows that there are over 5,000 different certifications that are potentially available. However, only about one percent of those are necessary for current employment needs (McCaffery et al., 2020). Therefore, awareness of which certifications are helpful in the workforce is an integral part of the education process.

Cost of Education

Higher education costs are rapidly increasing. Students increasingly turn to Pell Grants and student loans to offset these costs. As costs rise, the number of graduates receiving jobs proportional to the price they put into their education is dwindling (Lynch et al., 2010). A typical four-year institution requires students to finance approximately \$35,331 a year, but these same students cannot pay off these debts after the fact (Hanson, 2022).

Industry-based certification in high school lessens the burden for students to feel the need to continue their education in higher education. In addition, skill-based employment opportunities provide income much more significant than employment opportunities for students with post-secondary education. Unfortunately, students don't know where to look or gain these certifications. This type of preparation takes more than individual teachers to provide this information to students. Guidance counselors, academic instructors, and even community members must back the initiative for students to be given the most significant amount of opportunity possible (OECD, 2012).

Lynch et al. (2010) found, with regard to for-profit institutions, that students often finance the cost of their education with loans due to the high cost of for-profit post-secondary institutions. Typically, students max out their borrowing limit on their credit before even entering the workforce. Thus, making it impossible to start their life without debt and continue on a sound financial path. With the amount of debt acquired by Americans, adding to this equation through student loans creates a circle that is hard to break for families (Elliott, 2014).

Furthermore, a post-secondary degree does not guarantee a person a job, and in some instances, individuals with industry-based certifications receive job offers over those with a degree. Thus, for-profit institutions only ensure student debt and not a dependable future (Lynch et al., 2010). Research has even shown that there is no indication that individuals that list for-profit colleges on their resumes have more interest by employers (Darolia et al., 2015).

For-Profit versus Not-For-Profit

The most significant difference between a not-for-profit and a for-profit college is the use of revenue. For-profit colleges use the revenue from tuition to be given directly back to investors and marketing expenses. In contrast, not-for-profit colleges reinvest revenue back into the

college for things such as improvements, salaries of instructors, and other resources for students (U.S. G.P.O., 2012). In 2014, the Gainful Employment Rule was instituted as a safeguard. The rule was in place to ensure that students would not access federal aid to attend the for-profit school if the cost to participate in the school would heavily outweigh to potential earnings of a graduate. The for-profit universities under this regulation were required to disclose program length, debt graduates incurred, and degree offerings. Under this rule, not-for-profit colleges were also required to disclose this information for non-degree offerings. The Gainful Employment Rule was rescinded in June of 2019. Although revenue for not-for-profit and for-profit colleges is spent differently, students are still taking out substantial loans to pay for their education (Franklin University, 2022).

Although higher education is not for everyone, some will want to further their education. Students who have been through a career pathway and received an industry certification are more likely to continue their education because they want to enhance those skills. Students who choose this path are already set up for success because they can obtain gainful employment while attending college because of their certification (Staklis & Klein, 2010). In addition, those who have been successful with their certification path tend to be lifelong learners, a characteristic trait intriguing to employers (Love, 2011).

Summary

For some time, students have begun to thirst for change in the realm of education. Students are looking for an education path that prepares them for life in the real world. Yet, even teachers and taxpayers alike also question the validity of an education that does not consist of real-world attributes (Ferm, 2021). Research shows that certifications help develop the knowledge necessary to meet the workforce's needs and build understanding within the student

regarding what is vital in the certificate (Laverie et al., 2020). Furthermore, the literature suggests that as certifications become more prevalent, students will choose them over other means of education. Students tend to see certificates as multi-purpose. Not only do they educate, but they also provide the credentials they are looking for to become effective workforce individuals (Cowley et al., 2021).

Chapter III: Methodology

This chapter outlines the qualitative research methodology used to complete the study. The study gathered data from participants in workforce management, educators, and recent graduates from career pathway programs. The study's objective is to explore the perceptions of recent pathway graduates regarding preparation, perceptions of those in workforce management regarding whether students from career pathways are prepared in necessary skills, and determine if industry certifications in secondary education align with industry expectations.

Research Design: A Framework

Research Design

A phenomenological conceptual framework was used to conduct this research. Phenomenology studies an individual's experiences and consciousness rather than looking at facts and data (Audet & Amboise, 2001). Due to the nature of the topic, the study was a qualitative, multi-site case study. Qualitative research by design is interactive (Maxwell, 2013). Interviews with groups are the definition of interaction. Questioning of this type allows participants to use their experience as the basis of their answers. Each group interviewed for the study was formed of different types of individuals. Some with backgrounds of inexperience, such as graduates, some of which have only educational experiences, and individuals with backgrounds in particular industries within the local area.

Purpose of Study: Exploration

For years students, teachers, and school administrators have felt the impact of the post-secondary education stigma. As a result, students are becoming bombarded by student loan debt, and employers cannot keep a steady flow of trained and job-ready employees. The purpose of

this study is to explore whether industry employers, educators, and graduates feel that the certifications offered in high schools align with the needs of the industry. The study also seeks to determine whether graduates feel that their education and the curriculum provided in the career pathway of their choice prepared them for the workforce and whether the industry itself feels that these students are ready to enter their workplace. By using phenomenological research, the questions allowed participants to answer freely without being confined by the structure of the question.

Research Questions

This study explored reasons why graduates felt unprepared for the workforce and whether institutions are correctly preparing students for the skills necessary deemed by industry. This study was guided by the following grand tour question:

What is the effectiveness of school-required certifications in the industry?

In support of the grand tour question, the following research questions were used.

Research Question 1: What are the perceptions of recent graduates of career pathway programs regarding pathway preparation for the workforce?

Research Question 2: What are the perceptions of workforce management concerning pathway programs providing necessary skills?

Research Question 3: Do the industry certifications being provided by secondary institutions in Kentucky align with industries in the state?

Participant Selection Procedure

The study was conducted at a public college and career center based at a public high school. The College and Career Center for this study is the only one in the county but is structured similarly to surrounding counties. The mission statement for the College and Career Center focuses on instruction that meets industry needs and offers the ability to obtain certificates and dual credit options in association with the state community and technical college system.

The population for the study includes graduates of pathway programs, teaching professionals, and industry workforce individuals. The industry participants were selected based on their field of employment. The sample consists of industry professionals from industrial maintenance, telecommunications, chemical engineering, utility, heating ventilation and air conditioning (HVAC), and customer service fields.

The teaching professionals have varied backgrounds and comprise 12 individuals, five females and seven male instructors. The experiences of these individuals range from business, medical, and information technology to trade-based pathways such as welding and carpentry. In addition, these individuals serve as the path instructor and act on the advisory committees for their designated industry. There was an interview session with each individual and the administrator for this institution. Everyone interviewed signed a consent form, and confidentiality was assured to each of these individuals.

Procedures of Data Collection

The quality of data is driven by selecting participants in the study. Using the term participant is essential throughout the study because the term could refer to graduates of a career pathway program, educators, or employers. Participants that are educators were selected based

on the subject they teach. This study requires the chosen to be educators in the career and technical education field. Recent graduate participants were selected based on names given to the researcher by instructors of each pathway. Employer participants were selected based on whether the industry is a pathway option for students at the county college and career center and in the local area.

Initial Contact with Participants

The researcher began by making initial contact with participants through email. Next, the researcher contacted potential participants who met the criteria previously stated. After the initial contact, interviews were set up based on those participants that agreed to be part of the study.

Protections for Participants

Documentation for IRB was prepared and submitted for approval to establish the safety of identity for participants. Data collected by the researcher are currently kept in a secured file folder on a secure server. In addition, all transcriptions of in-person interviews are also kept in a secure file to ensure confidentiality and security of data.

The researcher took steps to ensure all participants remained anonymous and pseudonyms were used for anonymity. No names, photographs, or identifiable information was retained. The only record containing any identifiable information was consent forms stored securely. The option of either an electronic copy or a paper copy of the IRB consent form was made available to participants. Any participant who requested a paper copy was guaranteed that safeguards were in place to secure the document.

Creswell and Creswell (2018) indicate addressing researcher bias adds to the validity of the study. The researcher of this study also serves as an instructor and member of the advisory committee for the industry. Therefore, the researchers' experience as an instructor and former

employee of the industry could influence the interpretation of the data. In addition, the researcher approached this study aware of her biases about the perceptions of recent graduates and educators concerning workforce preparations.

Another variable in the study to consider was the community relations in a small county. Because of the close-knit relationships between the school and the surrounding employers, careful consideration and assuredness of confidentiality must be given to employers when conducting interviews. Employers may worry that the educational institution will react negatively if privacy is breached, which could cause tainted interview data.

Setting and Logistics of Interviews

The researcher met in person with each of these participants at their designated institution or business location to collect data about the curriculum and assessments of each pathway. The researcher developed semi-structured questions for the interviews and ensured the same questions were used for each individual to keep consistency in the sample.

The graduates were contacted through contact information gained from the counselor's office to participate in a questionnaire. The email message was comprised of the author's overview of the purpose of the study, the information to be collected, and the confidentiality of the data collected. In addition, a copy of the Informed Consent/Assent Form (Appendix A) was attached to the email.

The study was also conducted on a sample of industry workforce managers. The industries were chosen based on the pathways provided at the college and career center. The selected sectors were Health Care, Advanced Manufacturing/Welding, Information Technology, Business, and Automotive.

Interview Process

After the initial contact by electronic mail, the interviews were set up with those who agreed to participate. Due to issues related to Covid-19, participants were given the option to be interviewed via remote media. Consent forms were signed, but verbal consent was also requested before the beginning of the recording. The IRB-approved script was read as part of the oral consent ensuring anonymity. Participants were also instructed that they were free not to answer any questions.

Interview Questions

Interviews were used to gather information. Questions used during the interview were freeform but were based on the following questions:

Questions to workforce management in industry:

- Do you feel entry-level employees are prepared when beginning employment?
- Do the industry certifications earned while in high school align with the credentials your company requires for employment?

Questions to recent graduates that previously attended a secondary institution:

- Do you feel that the curriculum offered within your chosen pathway prepared you for the workplace?
- Do you feel that the industry certifications required within your chosen pathway aligned with what was necessary for the workplace?

Questions to educators in secondary institutions:

- Do you feel that the state-required industry certifications for the pathway you teach properly align with those needed to succeed in the industry?

- Do you feel that the state-required curriculum for the pathway you teach properly aligns with the necessary knowledge to succeed in the industry?

Transcription

After all the interviews were concluded, the recordings were reviewed and transcribed into an electronic document. Transcripts were checked for accuracy, and the researcher ensured all identifiable information was omitted. Once transcribed, all data was stored on a password-protected computer. Transcripts were also provided to participants to review for accuracy and to enhance trustworthiness of the study.

Procedures for Data Analysis

Due to the nature of the study, the researcher used qualitative methods to analyze the data. The transcripts from the interviews were used by sorting the answers by interview questions and by organizing the responses by type (workforce, educator, graduate). As an example, the researcher grouped all the workforce responses, all of the educator responses, and all of the graduate responses. After organizing the groupings, the responses were organized by question. Data from the notes and transcripts collected were used to create themes. To identify themes within the research, the data was uploaded into the research software Dedoose. Dedoose is a software that assists researchers in finding themes and making conclusions about research. This allowed the researcher to look at each question on a group level as well as individual. The research takes a phenomenological approach to analyze the data by piecing the responses together to create a holistic look. Rather than dissecting the data into pieces and repeating information, the phenomenological framework gives meaning to the collected data. Although this framework can be considered subjective, the researcher felt that this distinction provides the study with a comprehensive understanding.

Coding

A standard qualitative research methodology is grounded theory. This type of methodology produces a theory to explain the patterns within data (Corbin & Strauss, 2008). This type of methodology is helpful because it allows the researcher to discover patterns and relationships to make predictions. Corbin and Strauss (2008) state that coding takes concepts from an initial state and determines their properties. Grounded theory, in particular, breaks down coding into three phases: open, axial, and selective (Corbin & Strauss, 2008). Although the framework for this study was phenomenological, the researcher used two phases of grounded theory as part of the methodology. Open coding allowed the researcher to use the data to enable all potential possibilities for interpretation. Axial coding allowed the researcher to gather data to determine categories and subcategories (Corbin & Strauss, 2008).

Open and axial coding was used for the study's analysis phase. Each interview was reviewed and then categorized by experiences and overall themes during the analysis phase. Anonymity protects each participant and creates a facile process by not creating bias in the data. The researcher used letters in place of participant names but ensured not to use any letters that could be misunderstood as a word or abbreviation.

The data were printed and organized using the color-coded note cards to identify themes amongst the data to begin the process. After the manual hard copy process, the transcripts of the interviews were uploaded into Dedoose. This software provided an additional way to analyze the data and determine themes amongst the interviews. Dedoose was also used during this process to manage the information that collected and develop a coding scheme to identify the themes and trends.

Reporting Procedures

The data that was collected by participants in the form of open-ended interviews and was reviewed and analyzed holistically and individually in this study. The study results were presented following the phenomenological framework and provided a way to determine recommendations and insight into the grand tour question and related research questions.

Chapter IV: Data Analysis

Findings

This chapter reviewed the discoveries found for the data collected from the 15 participants and included the analysis of this data. The objective of the research being conducted was to explore whether industry employers, educators, and graduates feel that the certifications offered in high schools align with the needs of the industry. The study also sought to determine whether graduates feel that their education and the curriculum provided in the career pathway of their choice prepared them for the workforce and whether the industry itself felt that these students are ready to enter their workplace. The researcher asked two questions based on whether the person is a leader in the workforce, a secondary education instructor or a graduate of the college and career center. The type of questions used supported the participants in their quest to provide answers to the researcher and feel free to maneuver away from the structure of the question. During the analysis of data, three themes emerged: (1) Importance of quality industry certifications; (2) Inconsistency within CTE curricula; and (3) Importance of soft skills.

Theme 1: Importance of Quality Industry Certifications

All participants (workforce, educators, and graduates) all saw the importance of quality industry certifications being provided at the high school level. Certifying a student on competencies that are not going to serve a purpose will lead to unnecessary outcomes. Based on the data that was analyzed, all the participants felt that certifying a student just to check a box was needless. When participant EB was asked whether they felt that the required industry certifications for the pathway they teach properly align to what is needed in industry they stated, “no, the minimum required certification is a joke.” Participant ED also backed up this finding by

saying that “NIMS and dual credit do not give a good certification.” Industry certifications can be high in quality and significance when they are well designed and reflect competencies necessary in the workplace.

Industry certifications that are required in secondary institutions should be those that are recognized by industry or professional groups. A quality industry certification should demonstrate skills in the program area and provide a direct path to a career. Certain criteria should be analyzed to determine whether an industry certification is high quality and a direct path for students in their local area. This can be done by looking at the demand in the labor market, the outcomes of employment earnings, and stack ability. Stack ability plays a significant role in determining whether a certification is high quality. Certifications that are stackable allow individuals to start with entry level certifications and continue to work their way up. This stacking can occur in high school over the course of four years or could be implemented in a structure in which students graduate with entry level certifications and then gain more at their place of employment. The health science pathway is a good example of how this can occur. Participant EE discussed that, “The NOCTI EOP does not certify or serve a purpose, however the MNA and pharmacy tech does.” Both the MNA and pharmacy tech certification are entry level certifications in the health science field that can later be stacked with more certifications or education.

Theme 2: Inconsistency Within CTE Curricula

The educator participants for this case all taught at the same college and career center, some had previously taught at other institutions around the state. The college and career center that was studied had a vast amount of pathway offerings. The curricula for these pathways are

created on a state level. The Kentucky Department of Education dictates what standards need to be met for each course and each pathway. Although this is done on a state level there is inconsistency among the depth of curriculum from one pathway to the next. Also, each educator is given the autonomy to pursue the curriculum on an individual basis. During the process of interviews, it was clear that all the educators that participated were dedicated to their pathway and the principles of CTE, however each educator approached the curriculum differently and not all the educators felt that the state required curriculum was what was best for the students. For example, when asked “Do you feel that the state-required curriculum for the pathway you teach properly aligns with the necessary knowledge to succeed in the industry? Educator (D) stated, “Yes, but the curriculum should last three years but only take six months to teach.” Educator (A) felt that what they teach aligns but they do not actually have any curriculum from the state to use and must compensate with industry standards. This can cause an issue of all educators in that pathway are just using the standards as a jumping off point and how no true curriculum to follow.

Most of the educator participants serve on boards such as advisory councils and workforce development boards, yet their presence on these committees do not seem to be making a difference in creating a voice for educators regarding the curriculum and standards that are being decided on the state level.

Theme 3: Importance of Soft Skills

An overall theme that appeared during the research and analysis was the importance of soft skills within all career pathways. Based on the interviews with workforce, educators, and graduates there was a consensus about soft skills and the importance they have in the workplace.

Soft skills offer students the ability to grow interpersonal attributes that will prepare them for college or career. Although each pathway has different curriculum and each educator has their own teaching style, soft skills content can be delivered in every classroom with success.

Real-life applications are the embodiment of CTE courses and tends to be why students enjoy CTE more than traditional secondary education. Students can gain real-life skills that can be applied but soft skills are not always ingrained into the CTE courses. Soft skills can be easily applied to these courses without much effort. For instance, requiring students to report to the teacher when they are not able to attend school that day, demonstrating safety practices, and communicating with one another. This list of soft skills that could be applied is extensive but beneficial to students taking these courses. Not only are soft skills important for the workplace but also in preparing students for other school subjects. For instance, critical thinking skills that are taught in CTE courses can be essential by providing students the ability to think outside the box and find relevance in their other core courses such as mathematics. With 15 years of experience, Industry Employee D discussed how soft skills are needed the most at her place of employment, “These students have been prepared to work but they lack basic entry-level job skills such as answering the phone, greeting customers, interacting with other employees, paging over the intercom, balancing a cash drawer, taking messages, and balancing a checkbook.”

Since soft skills are not a required standard amongst all pathways there tends to be a knowledge gap amongst some graduates. Some skills such as communication, being punctual, even answering the phone are skills that graduates are not obtaining. Some graduate participants did not feel that they were fully prepared for the workplace regarding soft skills, however participants such as Graduate A discussed that they did feel prepared, “especially with resumes and job interviews.”

Interview Participants

This research study consisted of participants who were teachers from a secondary institution, managers in local workforce industry, and graduates at the college and career center. The participant pool included eleven females and four males ranging from ages 20 to 57. All participants were Caucasian and held varying levels of education. To ensure that anonymity was preserved, the researcher used a coding method to identify participants in this study in the following manner: Educator A (EA), Industry A (IA), or Graduate A (GA).

Educator A (EA) was a 35 year-old Caucasian female. She has a Bachelor of Science in Agriculture Education. She has taught career and technical education at two different schools, in the same region, over a period of 11 years.

Educator B (EB) was a 47-year-old Caucasian male. He worked in the manufacturing industry for twelve years before deciding to teach career and technical education. He has taught his trade at a college and career center for six years.

Educator C (EC) was a 38-year-old Caucasian male. He worked in the automotive technology industry for 18 years and currently works in industry when not teaching career and technical education. He has taught at a college and career center for seven years and has also served on an industry advisory council.

Educator D (ED) was a 57-year-old Caucasian male. He has a Bachelor of Arts in Teaching, spent over 20 years working in the manufacturing industry as well as taught in two different schools over a period of 15 years. He also serves on an industry advisory council in the local area as well as on the state level.

Educator E (EE) was a 26-year-old Caucasian female. She has a Bachelor of Science in Nursing and has been teaching for seven years. She also worked in the medical industry for five years before entering the world of career and technical education.

Educator F (EF) was a 57-year-old Caucasian female. She has a Master of Arts in Teaching and has been teaching for 25 years. She also serves on a local industry advisory council. EF also worked in business administration, specifically the banking industry, for over 10 years.

Industry Employee A (IA) was a 42-year-old Caucasian female. She holds a Bachelor of Science in Nursing and has worked in the medical industry for over 15 years. Participant IA also serves on local advisory councils as the industry representative.

Industry Employee B (IB) was a 39-year-old Caucasian female. She has a Bachelor of Science in Business and has worked in her industry for over 15 years and been a member of the local chamber of commerce.

Industry Employee C (IC) was a 43-year-old Caucasian female. She holds a Bachelor of Arts in Business Administration and has worked in the finance industry for over 25 years. Participant IC has also served on the local advisory board as the industry representative.

Industry Employee D (ID) was a 37-year-old Caucasian female. She holds a Bachelor of Arts in Business Administration and has worked in the automotive and engineering industry for over 15 years.

Industry Employee E (IE) was a 45-year-old Caucasian female. She holds a high school diploma and has worked for a local utility company for over 20 years.

Graduate A (GA) was a 23-year-old Caucasian female. She has been out of high school for five years. She has her Bachelor of Arts in Business Administration.

Graduate B (GB) was a 21-year-old Caucasian female. She has been out of high school for two years and is working to complete her Bachelor of Science in Nursing.

Graduate C (GC) was a 20-year-old Caucasian male. He has been out of high school for two years. He went on to work towards an associate degree at the local community but did not complete it and went on into the workforce.

Graduate D (GD) was a 20-year-old Caucasian male. He has been out of high school for two years. He went off to college at a university and is working on a bachelor's degree in sports management.

Research Questions

Fifteen participants were interviewed and described their own opinions based on the questions asked by the researcher. Eleven interviews were conducted face-to-face, and four interviews took place over the phone due to scheduling issues. Each of the interviews took place during May of 2022. Every participant was asked the same interview questions depending on whether they were an industry employee, former graduate, or educator. The researcher used the pre-determined questions to lead the interviews to collect data that would insight to the grand tour question.

Grand tour question: What is the effectiveness of school-required certifications in the industry?

Research Question 1: What are the perceptions of recent graduates of career pathway programs regarding pathway preparation for the workforce?

Research Question 2: What are the perceptions of workforce management concerning pathway programs providing necessary skills?

Research Question 3: Do the industry certifications being provided by secondary institutions in Kentucky align with industries in the state?

Interview Findings

To find answers to the grand tour and research questions, the researcher created two interview questions to ask each participant. Each question was developed to be open ended to allow participants to expand upon any question.

Questions to Workforce Management in Industry

Question 1: Do you feel entry-level employees are prepared when beginning employment?

One participant responded that they felt that entry-level employees are prepared when they begin employment, two answered no, and two answered yes and no.

IA answered simply “yes” without elaboration, whereas the other answers varied. IC responded “yes and no, I think it all depends on when they start courses on what they want to do. I think it should be brought up when leaving middle school, that they take those needed courses in high school. I feel if they do not do this and start their junior year, it is not as effective in them being prepared.”

ID also had a varying answer, they stated that “for our technical associates, our employees are prepared based on the skillset acquired in the automotive technology classes. These students are well versed in automotive repair at the entry-level and are generally energetic to learn additional skills as they progress. For our non-technical associates, it’s a larger learning

curve. Our business is Microsoft Excel based and we have specific web-based programs that must be taught at the beginning of employment. These students have been prepared to work but they lack basic entry-level job skills such as answering the phone and balancing a cash drawer.”

IB said “for my business, no, not at all.” IE responded a simple “no” without elaboration on the answer.

Question 2: Do the industry certifications earned while in high school align with the credentials your company requires for employment?

Of the five industry participants, two stated they did not feel that the industry certifications earned in high school align with the credentials needed by their company, one participant felt that they do, and two participants had varying answers. IA responded with a “yes”, IB and IE responded with a “no.” Whereas IC stated, “yes and no, depends on if they took the right courses in high school to prepare them to meet these credentials. If they never took these courses, then no they will not align with company requirements,” ID also gave a varying answer, “the automotive pathway aligns, but other entry-level jobs have not aligned and require significant training on what we consider basic skills.” Some of the basic skills that were mentioned included the use of Microsoft Office products, answering a telephone, and communicating within the workplace.

Questions to recent graduates that previously attended a secondary institution:

Question 1: Do you feel that the curriculum offered within your chosen pathway prepared you for the workplace?

Of the four graduate participants that were interviewed, three responded that they felt that the curriculum offered within their chosen pathway prepared them for the workplace, one participant did not. GA stated that “yes, I feel that it did, especially resumes and job interviews.”

GB and GD responded simply “yes.” This answer by GB and GD could point to the fact that each of the two graduate participants continued into the career path that they studied in high school. Whereas GC responded “no, I feel that I made a rushed decision when choosing a pathway and instead of learning skills for the workplace I learned a skill that I will never use because I choose a pathway in haste.” GC mentioned that she felt that students are expected to make big decisions on pathways too young and are not mature enough to make those large decisions.

Question 2: Do you feel that the industry certifications required within your chosen pathway aligned with what was necessary for the workplace?

Of the four graduate participants that were interviewed, three stated that they do not feel that industry certifications required within their chosen pathway aligned with what was necessary for the workplace, one participant responded that it did. GC and GD simply responded with a “no.” The answer by GC and GD could suggest that the industry certification that they obtained did not align with the industry requirements or that the participants did not proceed into the career pathway that they studied in high school. However, GA stated “not necessarily for the career I chose or for any jobs that I worked previously. I believe I received certifications in things pertaining to retail and no one asked about them or even referenced those certifications when I applied for jobs.” GB responded “yes, especially since I did MNA and pharmacy technician. Both have helped a ton in nursing school, it helped significantly that I had taken courses like medical terminology, anatomy, and physiology and especially the MNA skills. I say all the time how glad I am that we had to choose a career pathway! I also have continued to work through school as an aide so had I not chosen to go to college I would still had a decent job to fall back on.”

Questions to educators in secondary institutions:

Question 1: Do you feel that the state-required industry certifications for the pathway you teach properly align with those needed to succeed in the industry?

Out of the six educator participants, only one stated that they felt that state-required industry certifications align with certifications needed to succeed in industry, three stated they did not align, and two participants gave a varying answer. EC stated a simple “yes” with no comments. Participant EC is involved with the automotive technology pathway and this technical pathway has historically aligned with the local area needs. EA responded “our students take an EOP (end of program exam), and this does not give them an industry certification. There are options for industry certification, but the cost is outrageous. I feel that the EOP aligns somewhat well and the certifications if we gave them would align well. Our EOP is more based on employment standards than actual content.” EB stated “no, the minimum required certification for the pathway is a joke.” EE responded “yes and no, the NOCTI EOP does not certify or serve a purpose. However, the MNA and pharmacy tech exam does, so it just depends on which pathway the student chooses.” The response from ED was “No, we use NIMS and dual credit as our end of program exam, and it does not give a good certification that would be useful.” EF simply responded “no.” Participant EF teaches in the business pathway; this pathway has shown over time to not align well with the needs of the local community.

Question 2: Do you feel that the state-required curriculum for the pathway you teach properly aligns with the necessary knowledge to succeed in the industry?

Of the six educator participants that were interviewed, four stated that they feel that the state-required curriculum for the pathway properly aligns with the necessary knowledge to succeed in the industry, two participants gave a varying answer. Participants EC, EE and EF all

stated a simple “yes.” The answer from participant EC, EE, and EF suggests that the educators feel that the curriculum aligns. EA stated, “yes, although we do not have state required curriculum, we do have industry standards that we meet.” EB responded, “yes, I have 300 pages of curriculum to choose from.” ED responded, “yes, but curriculum should last for three years of a program but only takes six months to teach.”

Analysis

The purpose of this qualitative phenomenological study was to explore whether industry employers, educators, and graduates felt that the certifications offered in high schools aligned with the needs of the industry. The study also sought to determine whether graduates felt that their education and the curriculum provided in the career pathway of their choice prepared them for the workforce and whether the industry itself felt that these students are ready to enter their workplace. Each of the 15 participants had strong opinions regarding the questions and were able to freely express their thoughts, beliefs, and perceptions about their own experiences with the topic.

Employers

Within the category of industry employers, the answers were divided. The answers were split between employers not feeling that entry level employees are prepared when beginning employment and employers feeling undecided with their answer. Two of the industry employers felt that the answer to the question depended on what area they were referring to. For instance, ID stated “For our technical associates, our employees are prepared based on the skillset acquired in the automotive technology class.” That participant goes on to state, “Our business is Microsoft Excel based and we have specific web-based programs that must be taught at the beginning of employment. These students have been prepared to work but they lack basic entry-

level job skills.” Some of these job skills included showing up to work on time, answering the telephone and basic computer skills.

Regarding the alignment of industry certifications, the participants were again split with their answers. Two participants stated no they do not align, one felt that they did, and the other two gave varying answers. Participant ID again felt that they answer depended on the field in which we were discussing. The participant stated that “the automotive pathway aligns, but other entry-level jobs have not aligned and require significant training on what we consider basic skills.” Those working in the medical industry also felt that certifications and skills acquired aligned for entry level employees but some of these employees still were lacking basic soft skills such as dressing in appropriate attire, showing up on time, communicating with their co-workers, as well as being able to follow policies.

Educators

Within the category of educators, the answers to the question about feeling that the state-required industry certifications properly align with those needed to succeed in the industry were not unanimous. Four out of six of the educator participants felt that the industry certifications did not align properly to industry, one felt that they did, and one participant gave a varied answer. The varied answer by EE stated, “Yes and no, the NOCTI EOP does not certify or serve a purpose. However, the MNA and pharmacy tech certification does.” Essentially it depended on which branch of the pathway that the students chose, and ultimately the student is not educated on pathways enough when making that choice to know to ask those types of questions.

Regarding the question about whether the curriculum for the pathway that they teach properly aligns with the necessary knowledge in industry was a unanimous yes by all six

participants. Some comments around their answers included a response from participant ED, “yes, but curriculum should last three years but only takes six months to teach.” Whereas participants in other pathways felt that there was more curriculum than they had time to share during a 3 to 4 course pathway. Participant EB stated, “I have 300 pages of curriculum to choose from.” As well as participant EA mentioned that they have plenty of guidance in regard to standards. EA stated, “although we do not have state required curriculum, we do have industry standards.”

Graduates

Regarding the graduates that attended the institution, the overall theme of their answers was that they did feel that the curriculum that was followed within their chosen pathway prepared them for the workplace. However, there was also a trend that they did not feel that the industry certifications that were required for the pathway aligned with the skills necessary to be successful in the workplace. When asked if they felt the industry certification required within their pathway aligned with what they needed in the workforce, participant GA stated “not necessarily for the career I chose or for any jobs that I worked previously. I believe I received certifications in things pertaining to retail and no one asked about them or even referenced those.” Whereas participant GB stated, “yes, especially since I did MNA and pharmacy tech, both have helped a ton in nursing school. It helped significantly that I had taken courses like medical terminology, anatomy & physiology, and especially the MNA skills and drug information. I say all the time how glad I am that we had to choose a career pathway. I also have continued to work through school as an aide so had I not chosen to go to college I would still had a decent job to fall back on.” Participants GC and GD did not elaborate on their answer of no;

however, this suggest that there are issues with the alignment of industry certifications within pathways.

When in high school, students assumed the curriculum being taught would be useful. However, after entering the workforce, they realized their education was missing important components that facilitated skill development. Some of the skills they were missing were the soft skills and industry specific skills that were not offered as an option prior to graduating.

Summary

The qualitative research study explored the perceptions of recent pathway graduates regarding preparation, perceptions of those in workforce management regarding whether students from career pathways are prepared in necessary skills and determine if industry certifications in secondary education align with industry expectations. The participants shared responses about curriculum and industry certifications. Participants gave details regarding their answers. Overall, the participants felt that industry certifications do not necessarily align with what is needed in industry but felt that it was dependent on the industry and required certification.

Chapter V: Conclusions and Discussion

Discussion

The purpose of this study is to explore whether industry employers, educators, and graduates feel that the certifications offered in high schools align with the needs of the industry. The study also seeks to determine whether graduates feel that their education and the curriculum provided in the career pathway of their choice prepared them for the workforce and whether the industry itself feels that these students are ready to enter their workplace. This chapter includes a discussion of findings as related to the literature on career and technical education and industry certifications. This chapter is also comprised of a discussion on the connections between the skills needed in the workforce and the state required industry certifications on a secondary level. This chapter will conclude with a synopsis of the areas of future research as well as a summary.

This chapter contains items of discussion and possibilities for future research regarding the following research questions:

Grand tour question: What is the effectiveness of school-required certifications in the industry?

Research Question 1: What are the perceptions of recent graduates of career pathway programs regarding pathway preparation for the workforce?

Research Question 2: What are the perceptions of workforce management concerning pathway programs providing necessary skills?

Research Question 3: Do the industry certifications being provided by secondary institutions in Kentucky align with industries in the state?

The study explored the perceptions of three types of participants, recent pathway graduates, workforce management, and secondary education instructors. The study looked at their insight regarding preparation of students in regard to necessary skills and the practicality of industry certifications. The participants shared responses not only about industry certifications but also curriculum. The majority of the participants felt that industry certifications do not necessarily align with what is needed in industry but felt that it was dependent on the industry and required certification.

Research Question Conclusions

This qualitative study provided insight on how 15 participants from industry leaders, educators, and graduates view industry certifications. This study also examined whether the state required curriculum aligned to the needs of industry. Each participant offered their unique perspective on the topic. The similarities, differences, and trends were gathered and analyzed from the participants' responses and were used to answer the research questions for this study.

Grand Tour Question

What is the effectiveness of school-required certifications in industry?

The study was developed to determine the answer to the above grand tour question. Ultimately the literature and the study of participants provided the determination that school-required certifications are not effective in industry. There are exceptions to this such as medical nurse aid certifications and ASCE automotive certifications that have a direct entry level path. However, even with those direct path certifications the curriculum and the certification itself is not creating well rounded employees. Although a medical student can take a four-course pathway that leads to the MNA certification they now do not have the band width in their course load to take any other course that could teach them workplace skills. As some of the participants

mentioned, employees are entering the workforce without basic job skills such as time management, basic computer skills, and the ability to communicate with co-workers and clients.

Secondary education curriculum, pathways, and industry certifications are only effective if they are developing well rounded and skilled employees, currently that is not the case. The industry certifications that are being mandated to be required in schools are developed by a workforce committee through the state of Kentucky. Students that live on the eastern part of the state, attend high school, and will potentially work in those communities do not need the same pathway standards and certifications and students on the western side of the state and anywhere in between. Workforce development committees from each region should make the determination on which industry certifications are required within their own region rather than a state decision that does not work for everyone. Curriculum and certifications cannot be treated as a one size fits all solution.

Research Question One

What are the perceptions of recent graduates of career pathway programs in regard to pathway preparation for the workforce?

Overall, the study revealed that recent graduates felt that the curriculum being taught was beneficial; however, the state required industry certifications served them little to no purpose in the workforce. This could be the case because the state required industry certifications do not consider the industry that is in each regional area. Students that are leaving high school often stay in their community or in close proximity. If the certification that they earned does not apply to any of the industries in the area in which they are located, then the industry certification will likely not be as useful to the student. If industry certifications continue to be determined on a state level, then potentially students will continue to find that the certifications are not meeting

their needs when entering the workforce. The data suggests that students could make better use of their education in high school if offered certifications that better fit their needs in the local workforce.

Research Question Two

What are the perceptions of workforce management concerning pathway programs providing necessary skills?

The study showed that overall workforce management felt that students are not entering the workforce prepared in important areas. The study also showed that the state required industry certifications did not always align with the certifications that are needed to be successful in industry. Again, because state required industry certifications do not necessarily consider the unique nature of industry that is in each regional area, the need of the workforce is not being met equitably across the state. Companies want students that are leaving high school to stay in their community or a close by community. If the certification that the student earned during high school does not apply to any of those industries in the area, then the industry certification will not be useful to the employer. The purpose of career and technical education in high school is to prepare students to directly enter the workforce. If companies are having to retrain new employees and recertify them with certifications that are valid for their company, then the education that those students are receiving in high school has limited value to the employer. Local workforce advisory councils can serve as a tool to help determine the certifications and skills necessary in the area. These councils, although already intact, could be more robust in their purpose. There is also a need for the local school district to be more deliberate in their interaction with employers. Not only the employers on the advisory councils but on an individual basis, as not all employers are represented on these councils. An example from our participants comes

from participant IB, they suggest that graduates entering the workforce and being employed by her company are not taking a pathway course that is relevant to her industry. IB owns a real estate company, and the local college and career center does not provide a career pathway that is specific to real estate. As a matter of fact, the Kentucky Department of Education does not recognize real estate as a program of study. Students can take a business or marketing pathway; however, they will not be certified in the real estate industry. Real estate licensing is not a career path that needs a college degree and would be an opportunity for students to excel right out of high school if offered a path such as this that would certify them. Another example comes from participant IE. They are a manager at the local electric company, her answer could point to several different issues. While in high school students could possibly be taking a career pathway such as culinary or allied health and then going to work for the electric company after graduation. These pathways would not give a student any business skills to put into practice. Another possibility is that the graduate is taking a business course, but the curriculum or certifications are not aligning with the needs of that company. Again, the answers from IB and IE could suggest that the students are not taking the career pathways that are necessary to succeed at these companies or the lack of a proper career pathway for that industry could be the issue.

Research Question Three

Do the industry certifications being provided by secondary institutions in Kentucky align with industries in the state?

The answers to the interview questions by educators, workforce management and recent graduates determined that industry certifications being provided by secondary institutions in Kentucky do not always align with the needs of industry. The purpose of career and technical education is to prepare students to go directly into the workforce, trained and educated. Due to

the restrictions in place on the state level of which industry certifications can be used for each pathway, not all employers benefit from career pathways. The hands-on activities taught in CTE classes and some of the curriculum that is followed allow students to acquire transferable knowledge in the workplace but not transferable to an exam. Ultimately, because of the tight restrictions and decisions being made on a state level, challenges exist in preparing work ready high school students.

Recommendations

This study explores not only the effectiveness of school required industry certifications from the state but also the pathways and their alignment to the workforce. Based on the literature and the research that was conducted, alignment of industry certifications to pathways should include input from the regional level to supplement decisions made at the state level. Receiving a proper education is in the best interest of not only the student but also the community to ensure that new employees are prepared. With more decisions being made on a regional level, a pathway could not only include industry specific certifications but also other certifications, such as those that deal with soft skills, to create a well-rounded employee.

Not only do industry certifications need to be aligned better but also the curriculum for each pathway. One recommendation that can be made regarding curriculum from this study is to implement consistency between CTE programs. Soft skills should be part of the curriculum regardless of the program area. A lack of clarity and inconsistent lesson planning has resulted in irregularities in program areas.

CTE teachers would benefit from updated standards that included soft skill criteria for each pathway. CTE advisory councils can work together to create a CTE curriculum that best meets the needs of students and the local workforce.

Also, based on the feedback from the former graduate participants, students need to be better educated on the process of choosing a pathway and to what industries these pathways lead. Too many times in education, teachers and leaders of the pathway are driven by the need to increase the number of students choosing their pathway to ensure security in their own job rather than helping students to make the best life decision for themselves. A system needs to be put in place to help ensure teachers jobs are secure and to also develop a program that provides guidance to students, rather than guidance coming from teachers that are looking to benefit themselves.

Another recommendation is to create a stronger alignment with advisory councils or possibly creating multiple councils. Typically, advisory councils only work on a local level but there is a need to develop ideas and recommendations on a regional level and for the council to interact with the state regarding decisions that can be better made by local and regional councils. This recommendation not only points to the need for input from advisory councils but also creating a workforce liaison within the school. This type of position would work as a counselor for students as well as a contact for local workforce. This position could help students leaving high school be placed directly into jobs right in their local community. This workforce liaison could also work to ensure that industry certifications and curriculum is aligning to the needs of the workforce in the community. A workforce liaison should be at each local district, if a district already employs someone for this task, the district should evaluate the progress being made and potentially make better use of this position.

P-20 Implications

This study provides P-20 implications in which areas such as innovation, implementation, diversity, and leadership are covered.

Innovation. Any new change or idea regarding education is an innovation. Education must be innovative to continue to keep up with the changing world. The need for industry certifications to better align with industry and to move from a state level to a regional level is a huge innovation in secondary education. This process has been done this way throughout the years of career and technical education but as industry continues to develop and the need within each industry expands it is important that education grows and innovates along with it.

Implementation. The implementation of a change or innovation of this magnitude would take a great deal of work and a great deal of management once it is implemented. If regional areas were able to begin changing their industry certifications to align with the needs of their own regions an agency from the state level would be necessary to oversee the progress and to ensure that each regional area was properly attaining certifications and updating regularly as needed. But those in charge of pursuing this type of implementation could succeed because of their passion for career and technical education and their passion to ensure students and future employees are properly educated.

Diversity. Diversity is very much important to P-20 education which is why an implementation such as this is very important as well. Requiring students from all over the state to be tasked with pursuing the same certifications is not diversifying the workforce and is limiting students from being successful in their own communities. There is no need for students to receive a pathway education in law and public safety for instance that ends with a NOCTI certification which essentially does not certify a student to do anything in law and public safety. Another example would be having an aviation program at a high school that is not near a community with an airport. As career and technical education institutions the primary goal

should be ensuring that students are receiving an education that can help them to be successful locally because not all students will be able to move away or go off to college.

Leadership. Leaders within career and technical education have always been at the forefront of innovation, diversity, implementation but most importantly leadership. Those in career and technical education thrive in leadership because of the ability to relate to those within industry and the community. As aforementioned, to have a successful regional implementation it is important to have a good P-20 leader forging the path and ensuring that each region is providing proper industry certification needs and implementing them properly within each school. This leader could be on each regional level or even a state oversight committee. Leadership of this type can even come from a local district level. In the school that our participants were from, they are all leaders and are passionate about career and technical education just as all the instructors are in the state.

Limitations

A limitation of this study was the sample size of former graduate students due to lack of their availability. Although the sample size was small it was diverse regarding the pathways included. Although ethnicity was not part of this research study, greater diversity among the participants would have possibly brought more perspective, discussion, and possible experiences. Participant interaction during the interviews, particularly with educators and graduates, was sometimes limited. This was made evident with yes or no responses. A richer, more robust interview protocol may have helped with this issue. Another limitation of the study was that only six CTE pathway programs were included in the study. There are over 100 program areas in CTE within the state of Kentucky and over 25 to choose from in the local college and career center

that was studied. Using more educator participants from other CTE areas would provide additional insight. Finally, the intent of a qualitative study “is not to generalize findings to individuals, sites, or places outside of those under study” (Creswell & Creswell, 2018, p. 202). That said, the findings of this study are not generalizable but could potentially be transferable to other regions.

Recommendations for Future Research

For future research on this topic, a mixed methods study rather than just a qualitative study could have provided additional findings by including quantitative data. Also, a larger sample size could be useful. The larger sample size could include participants from other regions or areas in the state which could help to determine if they share in the same ideologies of those within the region that was sampled for this study. Finally, because each state has different standards and requirements for career and technical education, a multi-state study to determine the perspectives on a federal level could enrich the research that has already been completed.

Summary

This study, qualitative in nature, examined the need for appropriate industry certifications in career and technical education programs and the workplace. A total of 15 participants were represented in this study. Of those participants, six were career and technical education educators, five were management employees at local industries, and four were recent graduates of the local college and career center.

This study revealed that there is a need to better align industry certifications and pathway curriculum to the local industry. The study found that industry leaders feel that current

employees and new graduates are ill prepared for the workplace. Not every high school graduate will go on to college and earn a degree, nor do they need to. Each regional area in the state offers careers that can allow individuals to succeed and live a prosperous life without the need for a college education or the debt that comes along with it. These industry employers can be the answer for high school graduates if the education system can better prepare them to go directly into the workforce. The recommendations made within this study can be a guidance to make these changes happen.

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Appendix A

Institutional Review Board Approval Letter



Institutional Review Board

328 Wells Hall
Murray, KY 42071-3318
270-809-2916 • msu.irb@murraystate.edu

TO: Randal Wilson, Educational Studies Leadership and Counseling
FROM: Jonathan Baskin, IRB Coordinator *JB*
DATE: 4/25/2022
RE: Human Subjects Protocol I.D. – IRB # 22-181

The IRB has completed its review of your student's Level 1 protocol entitled *Exploration of Industry Certifications Within Career Pathways*. After review and consideration, the IRB has determined that the research, as described in the protocol form, will be conducted in compliance with Murray State University guidelines for the protection of human participants.

The forms and materials that have been approved for use in this research study are attached to the email containing this letter. These are the forms and materials that must be presented to the subjects. Use of any process or forms other than those approved by the IRB will be considered misconduct in research as stated in the MSU IRB Procedures and Guidelines section 20.3.

Your stated data collection period is from 4/25/2022 to 12/9/2022.

If data collection extends beyond this period, please submit an Amendment to an Approved Protocol form detailing the new data collection period and the reason for the change.

This Level 1 approval is valid until 4/24/2023.

If data collection and analysis extends beyond this date, the research project must be reviewed as a continuation project by the IRB prior to the end of the approval period, 4/24/2023. You must reapply for IRB approval by submitting a Project Update and Closure form (available at murraystate.edu/irb). You must allow ample time for IRB processing and decision prior to your expiration date, or your research must stop until such time that IRB approval is received. If the research project is completed by the end of the approval period, then a Project Update and Closure form must be submitted for IRB review so that your protocol may be closed. It is your responsibility to submit the appropriate paperwork in a timely manner.

The protocol is approved. You may begin data collection now.

**Opportunity
afforded**

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Appendix B

Interview Questions

Questions to workforce management in industry:

- Do you feel entry-level employees are prepared when beginning employment?
- Do the industry certifications earned while in high school align with the credentials your company requires for employment?

Questions to recent graduates that previously attended a secondary institution:

- Do you feel that the curriculum offered within your chosen pathway prepared you for the workplace?
- Do you feel that the industry certifications required within your chosen pathway aligned with what was necessary for the workplace?

Questions to educational leaders in secondary institutions:

- Do you feel that the state-required industry certifications for the pathway you teach properly align with those needed to succeed in the industry?
- Do you feel that the state-required curriculum for the pathway you teach properly aligns with the necessary knowledge to succeed in the industry?