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HIGH SCHOOL PRINCIPALS' AND ASSISTANT PRINCIPALS' PERCEIVED
KNOWLEDGE OF CAREER AND TECHNICAL EDUCATION

A Dissertation
Presented to
The Faculty of the Department of Educational Administration, Leadership, and Research
Western Kentucky University
Bowling Green, KY

In Partial Fulfillment
Of the Requirement for the Degree
Doctor of Education

By
Sara Jo Greene

August 2021

HIGH SCHOOL PRINCIPALS' AND ASSISTANT PRINCIPALS' PERCEIVED
KNOWLEDGE OF CAREER AND TECHNICAL EDUCATION

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This dissertation is dedicated to the most important people in my life.

My parents, Steve and JoAnn: It is because of your love, never-ending support, and model of hard work that I am the person I am today. You both taught me to finish whatever I started and that although life on the farm was hard, through perseverance one can always accomplish their goals they set out to achieve.

My sister Nancy: Thank you for being my best friend and for always being there no matter what.

My Nanny Peggy: Thank you for setting an example of a work ethic like none other and for loving us all.

My fiancé Rob: Thank you for your continued support through the tough final stages of this process. I look forward to spending life with you and continuing to accomplish our goals together.

Without my wonderful support system, I would not be successful!

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TABLE OF CONTENTS

CHAPTER I: INTRODUCTION..... 1

Background..... 2

Research Problem 5

Purpose of the Study 6

Research Questions..... 7

Significance of the Study 9

Rationale for Methodology..... 9

Nature of the Research Design of Study..... 10

Definition of Terms..... 10

Nominal Definitions of Variables..... 11

Assumptions, Limitations, and Delimitations..... 11

Summary of Chapters 12

CHAPTER II: REVIEW OF LITERATURE 14

Introduction..... 14

Development of Knowledge 14

School Leadership..... 15

Counselors in CTE	15
School Administrators in CTE.....	17
Benefits of CTE	18
CTE Knowledge.....	18
Industry Certifications	20
Business and Industry Connections	22
Summary	23
CHAPTER III: METHODOLOGY	24
Introduction.....	24
Research Design.....	24
Research Questions	25
Data Sources	26
Setting and Population Selection	26
Instrumentation and Implementation	27
Variables	29
Dependent Variable: Perceived Knowledge	29
Independent Variable: Gender	29
Independent Variable: Educational Background	30
Independent Variable: Years of Administrative Experience	30

Ethical Consideration.....	31
Analysis of Data.....	31
Summary.....	32
CHAPTER IV: RESULTS.....	33
Introduction.....	33
Descriptive Statistics.....	33
Demographic of Respondents.....	33
School Size.....	34
Teaching Experience.....	35
Degree Held.....	35
Teaching Certification Area.....	36
Section A – Survey Questions.....	37
Section B – Survey Questions.....	42
Section C Survey Questions.....	43
Question 33 - Knowledge of CTE.....	45
Quantitative Analysis.....	46
Findings Related to Research Question 1.....	46
Findings Related to Research Question 2.....	48
Findings Related to Research Question 3.....	50
Summary.....	53

CHAPTER V: CONCLUSION	54
Introduction.....	54
Discussion of the Problem	55
Interpretation of the Findings.....	55
Implications.....	62
Recommendations for Action	63
Recommendations for Future Research	64
Conclusion	66
REFERENCES	68
APPENDIX A.....	78
IRB APPROVAL.....	78
APPENDIX B	81
INFORMED CONSENT LETTER	81
APPENDIX C	84
COPYRIGHT PERMISSION OF THE CTE PERCEPTIONS SURVEY	84
APPENDIX D.....	87
CTE PERCEPTIONS SURVEY	87

LIST OF TABLES

Table 1. School Population.....	34
Table 2. Years of Teaching Experience.....	35
Table 3. Degree Held.....	36
Table 4. Teaching Certification Area.....	37
Table 5. Section A – Questions 1-4.....	40
Table 6. Section A – Question 1.....	41
Table 7. Section A – Question 2.....	41
Table 8. Section A – Question 3.....	41
Table 9. Section A – Question 4.....	42
Table 10. Descriptive Statistics of Questions used for Perceived Knowledge.....	42
Table 11. Descriptive Statistics of Perceived Knowledge.....	43
Table 12. Reliability of Perceived Knowledge.....	43
Table 13. Section C – Full Questions 12-18.....	44
Table 14. Section C – Questions 12-18.....	44
Table 15. Question 33 – Knowledge of CTE based upon.....	46, 61
Table 16. Regression – Years of Administrative Experience on Perceived Knowledge..	48
Table 17. Years of Administrative Experience.....	48
Table 18. Regression – Educational Background related to Perceived Knowledge.....	49
Table 19. Educational Background.....	49
Table 20. ANOVA Summary Table.....	51
Table 21. Table of Coefficients.....	51
Table 22. Gender.....	52

HIGH SCHOOL PRINCIPALS' AND ASSISTANT PRINCIPALS' PERCEIVED KNOWLEDGE OF CAREER AND TECHNICAL EDUCATION

Sara Jo Greene

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Directed by: Gary Houchens, Kristie Guffey, and Lester Archer

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An employment crisis is ever growing in Kentucky. Business and industry continue to search for reliable skilled employees without success. These representatives have started looking at local high school and technical education centers to help fill these employment gaps. Career and Technical Education (CTE) provides students with a strong foundation to become a well skilled, employable individual who will make a great employee. Although CTE programs are available throughout the state of Kentucky, enrollment is not where it should be. The purpose of this study was to examine the relationship of perceived knowledge of CTE held by Kentucky high school principals and assistant principals. A multiple linear regression model was used to explore the independent variables of years of administrative experience, educational background, and gender on the dependent variable perceived knowledge of CTE. Results indicated that a relationship with educational background and perceived knowledge of CTE while there was no relationship with years of administrative experience, gender, and perceived knowledge. This study may be used to determine how educators perceive CTE to help boost enrollment to fill the employment gap and urgent cry from business and industry in the state of Kentucky with highly skilled CTE students.

CHAPTER I: INTRODUCTION

Current projections show that over 500,000 jobs will be unfilled in Kentucky by the year 2024 (Kentucky Center for Statistics, 2021). According to the Kentucky Center for Statistics (2021), on average there are 40,000 high school graduates in Kentucky each year. If every graduate went directly into the workforce, the demand would still be greater than the supply, leaving a shortage in the workforce needed. The current employment deficit must be addressed for Kentucky to remain economically viable and competitive.

A solution to the employment crisis is the connection of business and industry with Career and Technical Education (CTE) to build a pipeline from education to occupation. CTE allows students to gain skills necessary to compete professionally in the 21st century workplace (Houston Independent School District, 2021). Although business and industry know the value that CTE brings to the workforce (Fitzgerald, 2018), negative connotations still plague high school CTE programs across the country. CTE engages the hands-on learner in practical application (Allen, 2010). Even though CTE provides relevancy to learning, enrollment is still lower than expected, not only in Kentucky but across the country. Each high school's leadership team influences students, including the principal, who is the chief communicator (Denning, 2018). Principals and assistant principals must be knowledgeable about CTE and have unbiased perceptions (Hausman, 2012). The more educators that value CTE (Shanklin, 2014), the more likely that enrollment will increase.

The research encompassing CTE reveals gaps around administration, although Thornburg (2016) and Grewe (2019) surveyed career counselors about their knowledge

and perceptions of CTE. As the primary communicator for and among students, faculty, and staff, as well as representing the school in external communications, (Denning, 2018), it is important to know the knowledge of CTE that is held by the building principal. More research regarding administration plus research that examines the relevance of CTE in high schools is critical to solving the enrollment deficiency in CTE. This deficit reveals that we must do more to understand why there is a lack of students entering CTE to gain the skilled needed to excel in a career, especially in business and industry (Northern & Petrilli, 2019).

Background

During the early years in the United States, education was dependent upon the church, private tutoring, home schooling, tuition schools, and work apprenticeships. Many children were not educated due to their race, ethnicity, gender, or income. As the country grew, the forefathers realized that education was a necessity for its people to be competent. The idea of educating all forced the founders to issue federal land grants to states entering the union during 1785 (The George Washington University, 2020). The grant was given on the basis of creating schools to educate the people of their towns. Almost fifty years later, Horace Mann advocated for the creation of public schools that would educate children free of charge and be funded by the state. Reading, writing, and arithmetic became common subjects taught by schools during the 1800s.

The next century brought about the establishment of vocational education. Now known as CTE, the Smith-Hughes Act of 1917 (Central Tech, 2021) created a way to fund the education of trades, agriculture, and industry. Around the time of the industrial revolution, political leaders recognized the necessity to educate their workforce. Since

then, CTE educators have worked tirelessly to train the upcoming generation of trades professionals to fill the void in the skilled working class. CTE provides students with the relevant hands-on experiences to master their knowledge through practice and performance. Students are able to turn the traditional reading, writing, and arithmetic into practical application that allows them to preserve the information and put it to use in their future.

Throughout America's history, presidents have campaigned for the promise of better education for all. In December 2015, President Barak Obama and Congress issued the authorization of ESSA (Every Student Succeeds Act), which enabled states to be innovative and flexible and to gain transparency and accountability and helped to ensure that every child has the opportunity to learn and succeed (U.S. Department of Education, 2020). ESSA was formerly known as No Child Left Behind (NCLB) was signed by President George W. Bush in 2001 and was then improved during the Obama administration (United States Department of Education, 2021). Since then, Kentucky has continued to work to revise and develop an effective state plan to refocus its education system. Kentucky's new state plan places emphasis on students' preparedness for life after high school to ensure the education of the whole child (Kentucky Department of Education, 2021).

The Kentucky Department of Education's vision statement, "Each and every student empowered and equipped to pursue a successful future" led the way for schools and districts across the Commonwealth to tackle this challenge (Kentucky Department of Education, 2020). The strides made in Kentucky over the last five years have ensured advancement of its education system to a more student-centered and focused system. The

first result of this evidence was their new accountability system, College and Career Readiness (Stubbs & Stubbs, 2017). This system not only gave credit to general academics and national standardized exams like the ACT (American College Testing Program), but it also shed a new light on Career and Technical Education (CTE).

Five years into Kentucky's accountability system, College and Career Readiness is now known as Transition Readiness. High schools across the state continue to place an emphasis on CTE and the students who take part in these programs. CTE students' ability to obtain industry certifications, earn CTE dual credit through local community and technical colleges, and earn passing scores on the End of Program (EOP) assessment continue to raise the bar to allow schools to recognize these students and count them successful according to Kentucky's accountability system. This accountability system continues to give more focus to all students and their preparedness for life after graduation rather than just those students who performed well academically, specifically on the ACT.

The new system allows for those students who may struggle academically but have a technical skill or talent to excel and to be recognized for their accomplishments too. In Kentucky, students are often celebrated when achieving a perfect score of 36 on ACT, which deserves to be celebrated. A student who might be able to play multiple instruments, perform CPR and save a life, or have the ability to diagnose, troubleshoot, and fix a problem with a car engine should be celebrated just the same. The autonomy given in this new system allows school districts to honor and recognize all types of students, not only the academically gifted ones but also the well-rounded, hands-on learner. To show the accomplishments of CTE students, schools might recognize them by

career signing events like the traditional athletic signings, an awards night dedicated to all CTE programs and students, or add a special recognition at their graduation ceremonies.

In addition to the state accountability system, Kentucky school districts have developed a grouping of skills deemed necessary for life in the 21st century. The focus areas identified led to skills students should exemplify at the end of their K-12 educational experience. For example, Shelby County Public Schools in Shelbyville has developed a Profile of a Graduate (PoG) which has six key components that comprise a well-rounded, well-prepared student for life. These key pieces are 1) A Lifelong Learner, 2) A Critical Thinker, 3) A Global Citizen, 4) A Responsible Collaborator, 5) An Effective Communicator, and 6) An Inspired Innovator (Shelby County Public Schools, 2020). Many schools across the state have developed similar guiding practices that encourage their teachers to teach to the whole student and assess for learning in more ways than a written test. Additionally, Kentucky created the Quality of School Climate and Safety survey (Kentucky Department of Education, 2021). This survey uses a Likert type scale from strongly agree to strongly disagree with 27 statements. Students are surveyed during grades three through five and then again in high school. By enabling students to take this survey, Kentucky is allowing students to have a voice in their education, just another step towards a truly student-centered education system.

Research Problem

Kentucky's education accountability plan evaluates the level of success for each student based on multiple performance indicators, like Transition Readiness. As defined by the state of Kentucky, Transition Readiness is the necessary knowledge, skills, and dispositions students attain during their educational career that ensure their success to

transition to life after K-12 education (Kentucky Department of Education, 2021). A student's success during their high school experience is dependent upon many factors like their support system, socioeconomic status, academic and mental health, and other external and internal factors (Suldo et al., 2018; Dube et al., 2014). Fortunately, today students have many support personnel in place to assist with their high school experience and needs (Bastian et al., 2019). For example, there are teachers, counselors, family resource personnel, administrators, specific counselors for mental health or college and career readiness, cafeteria staff, coaches, and other ancillary support staff (Conley, Gould, & Levine, 2010; Dube et al., 2014). As the leaders of the building, principals and assistant principals have many direct and indirect influences on students (Rodman, 2012). The role of the high school principal and assistant principal varies from day to day and in each high school. When these leaders talk with students, does the leader's knowledge and perception affect the outcome of those conversations? For example, if the principal of a high school has a bias for four-year post-secondary education, that bias might influence each conversation and become the expectation for students.

Kentucky's focus on Career Readiness has returned CTE programs to the forefront of education, which responds to the needs of businesses and industry in the state who are looking for skilled laborers (Fitzgerald, 2018). Although businesses and industry see the need, high school principals and assistant principals need to understand that skills taught by CTE programs allow students to successfully transition to the workforce (Sublett, et al. 2019).

Purpose of the Study

The purpose of this study is to determine the strength of the relationship between

principals' and assistant principals' years of administrative experience, gender, and educational background on the perceived knowledge of CTE held by Kentucky high school principals and assistant principals. An extensive search of empirical literature on principal and assistant principal perceived knowledge of CTE revealed zero results. The search yielded articles about counselor perceptions of CTE (Grewe, 2019; Thornburg, 2016), CTE administrators' perceptions of secondary teachers' attire (Gordon, 2010), principal perceptions of CTE teachers' professional development (Cannon, Tenuto, & Kitchel, 2013), and perceptions of CTE teachers' teaching style (Chenven, 2018), which were used during the process to guide this study.

Kentucky's development and revision of their extensive state education plan and accountability system to monitor, track, and record a student's preparedness for life after high school shows commitment to students and CTE. It is important for each state to develop a plan which allows students to make choices and be prepared for the educational path they take. This evidence supports the authorization of ESSA and ensures that all students can be successful (Darling-Hammond et al., 2016).

Research Questions

The following questions were developed to assess the relationships and guide research to determine principals' and assistant principals' perceived knowledge of CTE.

Research Question 1: What is the relationship between Kentucky high school principals' and assistant principals' years of administrative experience and their perceived knowledge of CTE?

H1₀. Kentucky high school principals' and assistant principals' years of administrative experience has no relationship with their perceived knowledge of

CTE.

H1_A. Kentucky high school principals' and assistant principals' years of administrative experience has a relationship with their perceived knowledge of CTE.

Research Question 2: What is the relationship between Kentucky high school principals' and assistant principals' educational background (e.g., attended a CTE program [one course or more] or attended a traditional academic program [no CTE]) and their perceived knowledge of CTE?

H2₀. Kentucky high school principals' and assistant principals' educational background does not have a relationship with their perceived knowledge of CTE.

H2_A. Kentucky high school principals' and assistant principals' educational background has a relationship with their perceived knowledge of CTE.

Research Question 3: What is the relationship between a linear combination of Kentucky high school principals' and assistant principal's years of administrative experience, educational background, gender, and their perceived knowledge of CTE?

H3₀. Kentucky high school principals' and assistant principals' years of administrative experience, educational background, and gender does not have a relationship with their perceived knowledge of CTE.

H3_A. Kentucky high school principals' and assistant principals' years of administrative experience, educational background, and gender has a relationship with their perceived knowledge of CTE.

Significance of the Study

This study provides a deeper understanding of Kentucky high school principals' and assistant principals' perceived knowledge of CTE. Although not directly expressed in the research questions, this study may help the Kentucky Department of Education and the Kentucky Office of Career and Technical Education determine if there is a need to further educate Kentucky teachers and leaders about CTE and the benefits of these programs. Furthermore, it may support the need to rebrand CTE programs throughout the state of Kentucky.

Although Kentucky has a well-developed accountability plan, it is currently undergoing implementation, so the sustainability of the plan is yet to be measured (Kentucky Department of Education, 2021). Kentucky needs to provide an area in which students who do not meet the state's academic benchmarks can still demonstrate their abilities in the visual, technical, and demonstrative arts. The Kentucky Department of Education (KDE) must continue to work together with all stakeholders, students, parents, business and industry, and community members to ensure that their plan meets industry needs (Northern & Petrilli, 2019).

Rationale for Methodology

This study intended to determine the level of perceived knowledge of CTE held by Kentucky high school principals and assistant principals. A cross-sectional survey design modeled after Thornburg (2016) was sent to participants that included 36 questionnaire-style questions. A quantitative study was used to gain insight into the connection between principals' and assistant principals' perceived knowledge of CTE and their years of administrative experience, gender, and educational background. The

survey (see Appendix D) was emailed to principals and assistant principals in Kentucky whose high schools offered CTE programs as identified by KDE. Survey results and research methods are expanded upon in chapter three of this study.

Nature of the Research Design of Study

The intent of this research was to survey Kentucky high school principals and assistant principals to determine their perceived knowledge of CTE. A survey consisting of questions using a Likert scale supported with the selection for a quantitative research method. The goal of the research study was to determine if principals and assistant principals have knowledge of CTE since they are the leaders of Kentucky high schools.

Definition of Terms

The following terms are defined to provide clarity throughout this study:

Career and Technical Education (CTE): CTE provides students with relevant academic and technical content to prepare for future education or careers specific to their state that may be aligned to high-skill, high-wage, and in-demand industry sectors (Carl D. Perkins Career and Technical Education Act 2006, sec.3, 2018).

Transition Readiness: The necessary knowledge, skills, and dispositions students attain during their educational career that ensure their success to transition to life after K-12 education (Kentucky Department of Education, 2021).

Career Readiness: Indicators set by the state of Kentucky for CTE students to demonstrate attainment of one or more of the following: industry certifications, CTE dual credit, CTE End-of-Program (EOP) assessment for Articulated Credit, and KDE/Labor Cabinet Approved Apprenticeships (Kentucky Department of Education, 2021).

ESSA: Every Student Succeeds Act replaced No Child Left Behind (NCLB) signed by President Obama in 2015 to ensure the education of all students throughout the United States (U.S. Department of Education, 2020).

Nominal Definitions of Variables

Educational Background: This study relied on Thornburg's (2016) definition of education background. Thornburg noted, "[E]ducational background refers to the educational experiences a high school principal or assistant principal has acquired over their lifetime. The word 'educational' is defined as 'intended or serving to educate or enlighten' (Pearsall, 2013, para. 1). The word background is defined as 'a person's education, experience, and social circumstances' (Pearsall, 2013, para. 2)." In their research, Thornburg, "sought to determine if a high school principal's or assistant principal's educational experiences have an impact on their perceptions of CTE initiatives and programs" (Thornburg, 2016).

Knowledge: This study will use Pearsall's (2013) definition: "facts, information, and skills acquired through experience or education; the theoretical or practical understanding of a subject" (Pearsall, 2013, para. 1).

Assumptions, Limitations, and Delimitations

This section reviews the assumptions, limitations, and delimitations of the research study. Foremost, there is the assumption that all principals and assistant principals (as participants) answered the questions in the survey honestly. Additionally, this study was based on the assumption that because of Kentucky's accountability system, College and Career Readiness, now Transition Readiness, principals and assistant

principals are knowledgeable about CTE. Finally, the results of this study are only a snapshot of the current time in which the survey was issued. This assumption leads into the limitations of the survey because the participants were surveyed 10 months into the world-wide Covid-19 pandemic. Without being able to meet in person, this survey had to be disbursed by email instead of mentioning it to potential participants at conferences or meetings. Since the survey was sent from the researcher's work email, the respondents to the survey might have only taken the survey because of their personal knowledge of CTE and the researcher. Furthermore, as an oversight on the researcher's part, the survey did not ask the specific question for which role the participant currently served in, principal or assistant principal. This question would have allowed the researcher to compare role groups and determine the difference between principals and assistant principals.

Under the control of the research, the delimitations of this research study included that the survey was only emailed to Kentucky principals and assistant principals whose high school provided CTE programs as identified by the Kentucky Department of Education (KDE). Additionally, the survey included Likert scale responses as well as open-ended responses. However, there was a limited number of responses collected through the open-ended responses. Lastly, the reason for surveying only principals and assistant principals in Kentucky was to determine how the researcher's colleagues viewed CTE.

Summary of Chapters

The research study explored perceived knowledge of CTE held by Kentucky high school principals and assistant principals. To provide ease of reading, this research is split into five chapters with subcategories. Chapter One set out to provide an overview of the

study while providing a detailed background and the reason for the study. The next section, Chapter Two, provides the review of the limited literature available about connections of principals and assistant principals to CTE. The literature review presents the voids in the information, which demonstrates the need for the study. Chapter Three examines the methodology used to analyze the data collected. A multiple linear regression model was used to analyze the relationship between independent variables years of administrative experience, educational background, gender, and the dependent variable perceived knowledge. An explanation of the results is presented in Chapter Four. Finally, Chapter Five provides the recommendations for future studies while discussing the outcomes of the study.

CHAPTER II: REVIEW OF LITERATURE

Introduction

Unlike previous generations, today's high school students have numerous opportunities to ensure their successful transition into the workforce (Sublett et al., 2019). Students can enroll in dual credit courses earning both high school and college credit. Career and Technical Education (CTE) course opportunities are continuing to expand past traditional programs like agriculture, family consumer science, and business and into public law and service, engineering, welding, health sciences, and others (Kentucky Department of Education, 2021). Additionally, high schools continue to expand staffing such as college and career counselors to provide students with the necessary knowledge to make smart decisions that ensure a positive impact on their future (Grewe, 2019). In spite of these positive changes, there still seems to be a divide among students who excel academically and those who do not (Tucker & Hughes, 2020), as well as an ever-growing employment need in the workforce.

Development of Knowledge

The Smith-Hughes Act of 1917 (Central Tech, 2021) established the funding and promotion of vocational education including agriculture, homemaking, trades, and industry. Since then, knowledgeable CTE education professionals have dedicated their lives to educating the next generation to ensure that business and industry have skilled employees. In 1984, the Carl D. Perkins Vocational and Technical Education Act (Carl D. Perkins Career and Technical Education Act 2006, sec.3, 2018) was authorized to provide federal funding for CTE for both secondary and postsecondary institutions in all 50 states (Northern & Petrilli, 2019). The Perkins Act was named for Kentucky

Representative Carl Perkins who dedicated his service towards education of the underprivileged. The Perkins Act was most recently reauthorized in 2019 to continue to fund CTE. According to the Kentucky School Report card website, there were 39,362 high school seniors enrolled in CTE programs throughout the state of Kentucky during the 2019-2020 school year (Kentucky Department of Education, 2021).

In Kentucky, Perkins funds are used to maintain and expand CTE programs in high schools, colleges, and universities. The College and Career Readiness (CCR) accountability system that was established in 2014 has refocused and placed value upon CTE programs (Stubbs & Stubbs, 2017). Career Readiness places emphasis for schools to celebrate students who excel in the area of CTE. Before CCR, schools primarily recognized students who excelled academically, like on national exams like the ACT, yet achievements in the CTE area were not celebrated as equally as general academics.

School Leadership

Counselors in CTE

Thornburg (2016) noted that the state of Kansas has documented a lack of qualified potential employees graduating from high school and entering the workforce. Researchers like Thornburg (2016) questioned if students are being informed by educators about the possibilities that await them upon graduation (Thornburg, 2016). Thornburg (2016) found enrollment in CTE programs was lagging behind in Kansas which resulted in a lack of skilled workers for the industry demand needed. Responding to the low enrollment in CTE, Thornburg decided to survey high school counselors. Kansas high school career counselors were surveyed Kansas high school career counselors on their perceptions of CTE initiatives, background knowledge, and

counseling time devoted to CTE students (Thornburg, 2016).

Thornburg (2016) determined that as the counselor's knowledge level increased their perception of CTE became more positive. Additionally, positive CTE perception was associated with the counselors' time available to meet with students. As counselors became more knowledgeable about CTE, more students knew about the CTE initiatives in Kansas. This study helps to shine the light on a problem that is occurring across the United States. This study seeks to build upon Thornburg's (2016) theoretical framework to respond to similar concerns in Kentucky with a focus on principals and assistant principals since not all high schools have college and career counselors.

Pierce (2017) studied middle and high school counselors and their perceptions of CTE. The results showed that Mississippi middle school and high school counselors had a strong awareness of CTE, but additional tasks keep counselors from working closely with their students and implementing the Choices program (Pierce, 2017). The necessity to have counselors available to students to advise about career opportunities and other needs is important for school leaders to recognize.

Grewe (2019) conducted a study of Indiana's public-school counselors, and it revealed that Indiana counselors overall have a lack of background CTE program knowledge which inhibits them from informing students about Indiana CTE opportunities. The study found that as counselors' perceived knowledge of CTE increased, so did their positive perception. Indiana counselors also lacked background CTE experiences (Grewe, 2019). It can be inferred from these studies that counselors need more training on CTE, and the opportunities provided by CTE for their students.

School Administrators in CTE

Like Thornburg (2016), Grewe's study raises a question about building-level leadership. The lack of training of the school counselors may show a lack of concern for CTE by the building principal. As the instructional leader, it is the responsibility of the principal and assistant principal to ensure that all staff are knowledgeable of all opportunities available to their students (Keeling, 2015).

As the leaders of each high school, the principals and assistant principals have a great impact on the programs offered in their schools (Sproule & Mombourquette, 2020). The research questions for this study address the perceptions of principals and assistant principals of CTE students and how their perceptions relate to CTE student achievement outcomes. Russell and White (2019) found that the vast majority of adults working in education hold negative perceptions about CTE and perceive that CTE students are typically not college bound. The researchers surveyed over 10,000 educational practitioners throughout the state of Missouri who were involved in CTE. Students also lacked the knowledge of CTE opportunities, such as transferrable credits and industry certifications (Russell & White, 2019). The results of this survey inform how the perceptions of Kentucky school administrators affect students' decisions.

Hausman (2012) surveyed administrators including superintendents, principals, assistant principals, and counselors in Northeastern Arizona. The results of the survey revealed that administrators had positive perceptions of CTE students but for different reasons. Administrators who were in CTE schools viewed these students as college bound and mainstream, where administrators who were not in CTE schools viewed CTE programs as opportunities even though students were college bound or not (Hausman,

2012). It can be inferred that an administrator may hold different perceptions of CTE and may be biased too.

Rodman (2012) studied CTE principals in Pennsylvania at area CTE schools. The study found that CTE principals in Pennsylvania are similar to principals at traditional schools in regard to leadership skills. Teachers and principals do influence student achievement (Rodman, 2012). Nix (2012) explored first year principals and their leadership of CTE programs. The study found that principals must have general knowledge specific to CTE to fulfill the responsibilities upon entering principalship (Nix, 2012). Principals must be knowledgeable about their programs in order to make instructional decisions for their schools (Sproule & Mombourquette, 2020). Principals and assistant principals must know about CTE and the opportunities it presents to their students.

Benefits of CTE

CTE Knowledge

In Montana, Ryan (2016) explored high school students' perceptions of CTE and their experience in those courses, along with their choices after high school. Students who participated in, were exposed to, and who had available options for CTE had more positive perceptions of CTE than those who did not (Ryan, 2016). Students with CTE exposure were more likely to develop a true understanding of the field and have information to make educated choices in their future, demonstrating that educators need to ensure students that all students are aware of the opportunities available to them including CTE programs.

Chadwell (2016) examined high school students' perception of CTE. The study

was divided by the students' socioeconomic status, gender, and the comparison of the two. Results showed that there were no differences between male and female students and their perceptions of CTE. Overall, the perceptions of coastal South Carolina students have of CTE is positive (Chadwell, 2016). The different levels of socioeconomic status (low, middle, high) did not affect students' perception of CTE. Since students have positive perceptions of CTE, there is research needed to determine the cause for low enrollment in CTE programs throughout the country.

Handy (2012) compared perceptions of CTE curriculum and academic core curriculum. The researcher surveyed teachers, counselors, and administrators. The results showed that educators' perceptions were the reason for the lack of integration of CTE curriculum and academic core curriculum in classrooms (Handy, 2012). One might infer from these results that professional development might be needed to assist teachers with integration of both curriculums.

CTE teachers are typically occupation-based teachers, which mean they have professional work experience in their teaching area (Educational Professional Standards Board, 2021). Superintendents were surveyed to determine perceived professional development needs for their CTE teachers. Results showed that safety attitudes and practices held the highest level of competency (Cannon, Tenuto, & Kitchel, 2013). The area that needed the most attention for CTE teachers was integrating reading and writing standards in to CTE. It is important to remember to effectively support CTE through professional development to ensure school improvement (Keeling, 2015).

Rebell et al. (2017) determined that in order to improve CTE, a 9-14 program to bridge high school CTE programs to post-secondary CTE programs must be developed.

This study was conducted in New York but found that nothing like this was available in any other state in the country. By creating this bridge, students will be prepared to become effective citizens ready for the workforce (Rebell et al., 2017). This should become more common with the reauthorization of Perkins V to encourage those secondary and post-secondary institutions to work together to ensure that students transition successful from one to the other (Carl D. Perkins Career and Technical Education Act 2006, sec.3, 2018). The Virginia Community College System is working to promote the value of CTE so that all students are able to complete CTE pathways (Howell et al., 2019).

Industry Certifications

The reauthorization of ESSA (Darling-Hammond et al., 2016) and Perkins V has given states the opportunity to provide an additional focus on CTE. Through a CTE pathway, students have the advantage of becoming industry certified in their area of study (Kentucky Department of Education, 2021). Since Ohio, Kentucky, and Indiana have aligned their CTE standards, industry certifications, and post-secondary connections to business and industry demands, a student will have more career ready skills be successful (Kentucky Department of Education, 2021; Indiana Department of Education, 2020).

States across the country, including Ohio, Indiana, and Kentucky, are working together with business, industry, and workforce development stakeholders to develop a current list of industry recognized credentials that students can complete through their CTE programs (Kentucky Department of Education, 2021). No longer are students earning dated or questionable credentials that are not recognized by business and industry. By earning industry recognized credentials, students are able to complete

graduation requirements both at the secondary and post-secondary levels. At the secondary levels, these earned credentials allow schools to honor the attainment of such certifications at awards nights and graduation ceremonies.

For example, students in healthcare have the opportunity to earn their nursing assistant certification. However, the exact name of this certification may vary by state, SRNA (State Registered Nurse Aide), CNA (Certified Nursing Assistant), or MNA (Medicaid Nurse Aide). This certification qualifies students for an entry level position at long term care facilities, hospitals, and other healthcare facilities. In Kentucky and Ohio, this certification serves as an entry point and prerequisite into nursing school for either a two-or four-year registered nurse program (Kentucky Board of Nursing, 2021).

According to the National Center for Education Statistics, a percentage chart was developed based upon a group of 2013 high school graduates (National Center for Education Statistics, 2020). These graduates earned at least one or more CTE credits during high school. The report showed the percentage of graduates who were either employed or enrolled in post-secondary. Seventy-two percent of students were concentrators, meaning they earned three or more credits were employed. Thirty-one percent of those graduates were both employed and enrolled in post-secondary institutions (National Center for Education Statistics, 2020). The report included a breakdown of this data by gender; a review of the data indicated that gender was not a determining factor. Although this data chart did not show the attainment of industry credentials, it is likely that those students who earned three or more credits in a CTE program had an industry credential.

Within the next year or two, more data will be available from high school

graduates who participated in CTE programs and earned industry credentials (Kentucky Center for Statistics, 2020). Given that the focus of College and Career Readiness is recent, beginning as early as 2015 across the U.S., the data pool is limited at this time. More data would be needed to draw a more accurate conclusion at this point in time.

Business and Industry Connections

Within the last five years, many states and schools have shifted their focus towards CTE with the need to satisfy the demand in the industry sector (Kentucky Education Workforce and Development Cabinet, 2021). This movement was spurred by business and industry in conjunction with legislative members who saw the need to backfill a retiring generation of workers across America (Dohm, 2000). The pendulum has swung to place more value on technical education and workforce rather than the need to pursue a degree at a four-year, post-secondary institution. An entire generation of workers are retiring, and the creation of newly advanced jobs are being developed each day requiring additional skill (Stuart et al., 1999).

According to the Kentucky Center for Statistics (2020), a group of 2014 graduates were tracked over the course of four years. A group of 6,742 students were identified as having completed a CTE certificate during their high school career. Seventy-four percent of those completed a CTE pathway, meaning they earned four or more credits. By 2018, almost 40% of them had completed a CTE certification, 42% of them had some college experience, 5% had obtained a post-secondary credential or diploma, 7% had earned an associate's degree, and 9% had earned a bachelor's degree (Kentucky Center for Statistics, 2020). This specific report did not give information about students' current employment. This group of students graduated before Kentucky shifted focus to College

and Career Readiness. One can generalize from this data, if a student participated in CTE programs and completed a pathway certification, they would be more likely to continue some sort of education after high school.

Summary

The literature review provided background knowledge about CTE and the congressional acts that enabled the creation of and ensured funding for CTE to continue. Studies involving CTE throughout the country were reviewed to determine how others are using CTE to ensure the next generation of students have the skills necessary to fill the employment gaps (Fitzgerald, 2018). The literature analyzing Kentucky CTE is lacking and needs to be updated to see how the state compares to others across the country. Literature about high school administrators and their influence on schools and students, specifically CTE students is lacking too. This study aims to examine high school principals and assistant principals and their perceived knowledge about CTE.

Chapter Three continues to expand the study to reveal the methodology used to analyze the survey data collected during the study. This data will assist in determining the answer to the research questions posed in chapter one.

CHAPTER III: METHODOLOGY

Introduction

This study was designed to evaluate the relationship of years of administrative experience, educational background, and gender on the perceived knowledge of Career and Technical Education (CTE) held by Kentucky high school principals and assistant principals. Building principals and assistant principals should be knowledgeable about the programs offered in their school and available to students. Fitzgerald (2018) recognized the need for CTE programs to educate students to enter the workforce as skilled potential employee to fill the deficit business and industry are currently facing. A quantitative research design was selected to evaluate principal and assistant principal perceived knowledge of CTE. This chapter includes the research design, research questions, research procedures, variables of interest to the study, and the analysis plan of the data collected during the study.

Research Design

This study used a cross-sectional survey designed by Thornburg (2016) to collect data about Kentucky high school principals and assistant principals. The survey included questions about participants' perceived knowledge of CTE, their educational background, and perceptions of CTE along with demographic identifiers. The survey was amended from a focus on Kansas and career counselors to Kentucky and principals and assistant principals. A quantitative descriptive study was selected to generate numerical data to test the hypothesis that there is a relationship between the linear combination of gender, years of administrative experience, and educational background on high school principals' and assistant principals' perceived knowledge of CTE. The independent variables used in the

study was the gender of the principals and assistant principals, along with their years of administrative experience, and their educational background. For this study educational background are defined as studying or being involved in a CTE program during college or high school. The dependent variable used in this study was principals' and assistant principals' perceived knowledge of CTE.

For this research study, multiple linear regression was chosen for the statistical analysis. Multiple linear regression (MLR) allows the researcher to use multiple variables to determine the relationship between them. In this study, the researcher was able to use the three independent variables to determine the relationship with the dependent variable. Although there are many types of statistical analysis, multiple linear regression does have its strengths and weaknesses. One strength of MLR is that the researcher can clearly determine outliers or anomalies. This means if there are glitches in the data or the results, it will be clear to the researcher which is particularly helpful. A weakness of MLR is that the researcher must be careful interpreting the data and making sure that the data is clean and accurately reflects what the researcher wants it to. Even though there are strengths and weaknesses, MLR allowed the researcher to determine the relationship between the variables used in this study.

Research Questions

The purpose of this study was to determine if there was a relationship between the independent variables—years of administrative experience, educational background, gender—with the dependent variable, perceived knowledge of CTE held by Kentucky high school principals and assistant principals. The following research questions were designed to guide the research study.

Research Question 1: What is the relationship between Kentucky high school principals' and assistant principals' years of administrative experience and their perceived knowledge of CTE?

Research Question 2: What is the relationship between Kentucky high school principals' and assistant principals' educational background (e.g., attended a CTE program [one course or more] or attended a traditional academic program [no CTE]) and their perceived knowledge of CTE?

Research Question 3: What is the relationship between a linear combination of Kentucky high school principals' and assistant principal's years of administrative experience, educational background, gender, and their perceived knowledge of CTE?

High school principals and assistant principals were chosen for this study due to the impact that they have on student achievement (Keeling, 2015). These leaders are the contributors who affect communication throughout their schools (Denning, 2018). Since principals and assistant principals impact student achievement, it is important that they be knowledgeable about the benefits and opportunities associated with CTE. Students need to know about the opportunities available to them to be competitive in the workforce to fill the employment gap (Fitzgerald, 2018).

Data Sources

Setting and Population Selection

The population identified in this study were Kentucky high school principals and assistant principals. The list of principals and assistant principals was obtained from the Kentucky Department of Education (KDE) website, which identified high schools that currently offered CTE programs during the 2020-2021 school year (Kentucky

Department of Education, 2020). At the time of the study, there were approximately 520 Kentucky high schools serving high school students grades nine through twelve who attend CTE centers. Participants were contacted via their school email address and asked to complete the survey. Approximately 240 emails were sent to Kentucky high school principals and assistant principals. The list published by KDE only listed the principal's or assistant principal's name and not their full email address. By typing the name in the Kentucky school email data base, the researcher was able to confirm 240 email addresses from the list. One week after the initial email, a reminder was sent, followed up by an additional reminder two weeks after the initial email. The survey link was made active for one month or until the minimum number of responses needed to provide an appropriate response size was received. The final number of fully completed surveys was 72 ($N=72$) for a 30% response rate.

The sample ($N = 72$; females = 29; males = 40; other = 3) was taken for school administrators who were principals and assistant principals in Kentucky. Their years as administrators ranged from 3 to 10+ ($M = 1.902778$; $SD = 1.063607$). For this sample, the high school student populations ranged from less than 500 students to greater than 1500 students ($M = 1$; $SD = .7872219$). In this sample, 50% ($n = 72$) held a master's degree. Teaching certification areas included Academic ($n = 48$; 66.67%), CTE ($n = 14$; 19.44%), and both Academic and CTE ($n = 7$; 9.72%).

Instrumentation and Implementation

The survey used for this study was Thornburg's (2016), Career and Technical Education (CTE) Perception Survey. This survey was designed to assess counselors' perceptions of CTE in the state of Kansas. Permission was granted by Dr. Thornburg via

email to amend the survey as necessary. Upon gaining permission, the researcher amended the survey to reflect questions related to Kentucky. The survey used a combination of Likert-type questions and open-response questions. Section A of the survey included four questions that were developed to assess general CTE knowledge related to Kentucky and Perkins V. The Carl D. Perkins act was reauthorized for a fifth time to go into effect beginning 2020 and is now referred to as Perkins V (Carl D. Perkins Career and Technical Education Act 2006, sec.3, 2018; Chadwell, 2016). The remaining sections of the survey were amended to ask questions from the perspective of principal and assistant principal rather than counselor. Section B of the survey included six questions about perceived knowledge of CTE using the Likert scale ranging from poor to excellent. Section C of the survey included nine questions about perceptions of CTE using the Likert scale of disagree to agree. The final section of the survey, Section D, collected general demographic data while keeping the identity of the individual confidential. Questions included those covering gender, years of administrative experience, years of teaching experience, school enrollment size, and educational background regarding CTE.

WKU's Qualtrics survey software provided a platform to present survey data in an accessible way while maintaining confidentiality by not collecting emails or other identifying information. Permission to conduct this study was granted through the Institutional Review Board of Western Kentucky University (IRB 21-134). Appendix A contains the application and approval letter from WKU IRB. Participant consent (see Appendix B) was added from the IRB approval to begin the CTE Perceptions survey. CTE Perceptions survey used for Kentucky principals and assistant principals in this

study can be found in Appendix D.

Variables

Dependent Variable: Perceived Knowledge

Using Thornburg's (2016) survey, six questions were used to measure principals' and assistant principals' perceived knowledge of CTE. These questions used a Likert-type scale of poor, below average, average, above average, and excellent. The reliability of these items was checked using the Stata/BE v(17.0) software. These items were grouped together to create the variable "Perceived Knowledge" used for this study to reflect the perceived knowledge of CTE held by Kentucky high school principals and assistant principals. For the purposes of this study, the researcher will rely on Pearsall's (2013) definition: "facts, information, and skills acquired through experience or education; the theoretical or practical understanding of a subject" (Pearsall, 2013, para. 1) to define knowledge. Tables 14 and 15 show a full breakdown of responses as well as the descriptive statistics for the variable created as Perceived Knowledge. The dependent variable, Perceived Knowledge, is a continuous variable measured at the ratio level.

Independent Variable: Gender

In section D of the survey, demographic data were collected to use during data analysis. Table 20, *Gender*, shows the breakdown of participants. There was a total of 72 ($N=72$) respondents in this data set. Of those participants, 40 were male, 29 female and three who chose not to reveal their gender. Approximately 56% of the participants in this survey were males while the other 40% who participated in the survey identified as females. The independent variable, Gender, is a categorical variable measured at the nominal level.

Independent Variable: Educational Background

For the purposes of this study, educational background is referred to a participant having had experience with CTE while in college or high school. Participants could have also studied in CTE as their degree major during college. This information was collected in Section D of the survey and used for this research study. The total number of participants in the study was 72 ($N=72$). Over 76% of the participants identified as not having educational background experience with CTE. Only 17% of principals and assistant principals who completed this survey answered yes, which meant they had an educational background involving CTE through their participation in CTE during their high school and or college careers. Table 18 shows the breakdown of the variable Educational Background. The independent variable, Educational Background, is a categorical variable and measured at the nominal level.

Independent Variable: Years of Administrative Experience

The final independent variable analyzed in this research study was principals' and assistant principals' years of administrative experience. Years of administrative experience is defined by the length of time in years that the participant has held the title of principal or assistant principal. Table 16, *Years of Administrative Experience*, shows the full frequency responses from survey members. The data show that almost 39% of the principals and assistant principals who responded to the survey had 10 plus years of administrative experience. Although the majority of participants were in the 10 plus year range, 23% of participants were in the 4–6-year range and 25% of participants were in the 7–9-year range. Only 12.5% of participants were in the 1–3-year range meaning they were just beginning their careers as principals or assistant principals. The independent

variable, Years of Administrative Experience, is a categorical variable measured at the ordinal level.

Ethical Consideration

For this research study, the researcher incorporated the following ethical considerations. The researcher provided a safe and secure survey environment for participants that included no collection of email addresses, nor names or names of the school in which they were currently employed. Generally, since there was no physical requirement, there was no harm to the participants. In addition, the data received from the survey was kept secured on the researcher's computer under password protection. Finally, there was no intervention for this study, so there is no need to necessarily share results with the participants.

Analysis of Data

Survey questions used for this study can be review in Appendix C. The data were retrieved from WKU's Qualtrics survey software, exported to a Microsoft Excel document to ensure all responses were numerical then imported into Stata/BE v(17.0) statistical software program for data analysis. Results were reviewed as both descriptive and inferential statistics. The variables, years of administrative experience, educational background, and gender were analyzed as descriptive statistics. The mean, standard deviation, frequency, and percentage were calculated for each variable. Inferential statistics were used to answer the research questions posed in this study. To assess the variables and their relationship, the researcher used a regression model in the Stata/BE v(17.0) program. The first regression model was run to look at years of administrative

experience and perceived knowledge of CTE followed by educational background and perceived knowledge of CTE. The final regression model was run to determine the effects of gender and educational background on perceived knowledge of CTE.

Summary

The purpose of this study was to evaluate the relationship between the perceived knowledge of CTE held by principals and assistant principals and the independent variables years of administrative experience, educational background, and gender. WKU's Qualtrics software was used to develop the electronic survey instrument that was emailed to participants. This chapter discussed the methodology of the study including the design, the instrument, and the variables of interest to measure the relationship of principals' and assistant principals' perceived knowledge in regard to CTE. Statistical tests were conducted on the data collected to test the hypothesis outlined in this chapter through multiple methods. The reliability and validity of the instrument was described. Chapter Four discusses the results and how they were scrutinized in the upcoming section.

CHAPTER IV: RESULTS

Introduction

The purpose of this study was to determine the strength of the relationship between principals' and assistant principals' years of administrative experience, gender, and educational background on the perceived knowledge of CTE held by Kentucky high school principals and assistant principals. This chapter discusses the findings of the survey, includes an in-depth view of demographic data collected from participants, and explanations of the results regarding the research questions posed for this study. Chapter Four will begin by providing the descriptive statistics for the study. Next the demographic data collected from the survey will be discussed in detail including school size, years of teaching experience, degrees held by participants, and their teaching certification areas. In addition, the sections of the survey will be broken down from sections A through C, and the CTE Knowledge question. In the next section, the results of the research questions will be provided. This section will include the results of the regression analysis will be explained followed by the final summary of the chapter.

Descriptive Statistics

Demographic of Respondents

At the end of the survey, participants were asked questions to identify general demographic data to be used in this study. Data included their gender, which was used to answer Research Question 3. Years administrative experience was used to answer Research Question 1 along with educational background, which was used to answer Research Questions 2 and 3. Additional demographic items collected were highest degree

held, school population, years of teaching experience, and teaching area prior to becoming an administrator. There were 240 principals and assistant principals invited to participate in the survey. Not all responses to the survey were complete. There were 13 respondents who either began the survey or did not answer all questions throughout the survey and these were removed from the data analysis. The number of fully completed surveys was 72 to use for data analysis. This resulted in a 30% response rate. The following sections outline demographic data and response rates that were collected during this study, both a descriptive overview and a table to show the actual results.

School Size

Principals and assistant principals who completed the survey were from a variety of school populations. Over half (56%) of the participants came from schools where the student population was between 501 to 1,000 students. The data collected represents the size range of high schools throughout the state of Kentucky (Kentucky Department of Education, 2020). As noted by the Kentucky Department of Education (KDE), during the 2019-2020 school year there were 255 high schools, grades 9-12 in Kentucky (Kentucky Department of Education, 2020). See Table 1 for the full breakdown of participants' school population frequency.

Table 1

School Population

Population Size	Frequency	Percent
< 500	18	25%
501-1000	40	55.56%
1001-1500	10	13.89%
> 1500	4	5.56%
Total	72	100%

Teaching Experience

The Kentucky Educational Professional Standards Board is the governing body over Kentucky teacher certifications including teacher, principal, superintendent, and other certified endorsements (Educational Professional Standards Board, 2021). This group keeps track of years of teaching for purposes of retirement, pay grades, and additional certifications. An example is principal certification, a teacher must complete three full years of teaching to sit for their principal certification exam (Educational Professional Standards Board, 2021). These years of teaching experience can be completed at any level and at any school or state that recognizes teacher certifications received from an accredited university or college. Participants in this study were asked to identify the years of teaching experience that they currently have at the time of the study. Table 2 shows the complete response history from the survey. Seventy-five percent of respondents have more than ten years of teaching experience. The other 25% of participant fall within the range of 9 years or less teaching experience.

Table 2

Years of Teaching Experience

Years	Frequency	Percent
1-3	2	2.78%
4-6	8	11.11%
7-9	8	11.11%
10+	54	75%
Total	72	100%

Degree Held

Survey participants were asked to select the highest degree that they currently hold at time of the survey. One missing item from this table that should have been an

option was Rank I. In Kentucky, it is not a degree but a level of certification that one can achieve through additional college courses beyond a master’s degree. This is something that is specific to Kentucky and typically only recognized in the state (Educational Professional Standards Board, 2021). Table 3 shows that almost 42% of participants hold an Education Specialist degree; typically, this degree gives teachers the option to add superintendent certification to their list of credentials and receive their Rank I in level of certification. Rank changes primarily affect an educator’s pay grade in addition to years of general educational experience. There were six participants who hold doctorate degrees, which is becoming more popular throughout the education community in the state of Kentucky. Table 3 provides a full report of participant data collected reflecting degree held.

Table 3

Degree Held

Degree	Frequency	Percent
Masters	36	50%
Education Specialist	30	41.67%
Doctorate	6	8.33%
Total	72	100.00

Teaching Certification Area

In Kentucky, there are variety of areas in which teachers may become certified. Teachers can be certified for specific subjects or specific grade levels. For example, agricultural education teachers are certified in the specific area of agriculture and for the grades of 5-12. This means that they can teach agriculture to middle and high school students in the state of Kentucky. Principals and assistant principals in this study were

asked to select their teaching certification area from the list of Academic, CTE, Both, and Other. This question was asked to help determine the educational background of survey respondents. Academic teaching certification is defined as an area such as math, science, social studies, or other non-CTE courses. For the purposes of this question, CTE is referred to as any CTE-related program such as welding, health science, agriculture, family consumer science, and more. Sixty-seven percent of participants selected academic certification. This means that they likely taught subjects such as math, science, social studies, and English. The 4% of participants who selected other could have been certified in the area of Special Education or other specific services for special students. See Table 4 for a full report from participants regarding their teaching certification area.

Table 4

Teaching Certification Area

Teaching	Frequency	Percent
Academic	48	66.67%
CTE	14	19.44%
Both	7	9.72%
Other	3	4.17%
Total	72	100.00

Section A – Survey Questions

Table 5 reflects the questions used in Section A of the survey that was sent to principals and assistant principals for the purposes of this study. Thornburg (2016) used these questions to determine the specific knowledge about the CTE initiatives going on in Kansas. For the purposes of this study, the researcher revised these questions to reflect questions about Kentucky CTE. Although these questions were not used for statistical data in the study, these questions provide support to the study and are represented in the

table below. Questions one and four do not have a correct answer; however, they do have an answer ideal to the present study. Questions two and three have to do with Transition Readiness for CTE as well as Perkins V funding.

In Kentucky, CTE educators and stakeholders have been involved in an extensive study of programs and employment projects as a response to the reauthorization of the Perkins V grant (Kentucky Department of Education, 2021). Principals and assistant principals have most likely been one of those stakeholders involved in the state's Perkins study. Tables 6, 7, 8, and 9 provide the results from the survey used in this study.

Section A, question one results showed that the principals and assistant principals who took this survey consider Transition Readiness not part of their workload. It is likely that these participants have identified leaders and personnel who track Transition Readiness like a college and career coach. This leader provides a report to the principal on a regular basis to determine the percentage of the senior class who have reached Transition Readiness. This information is identified in Table 6.

Section A, question two results are provided in Table 7. Question two asked participants about the qualifications that help a student become Transition Ready through CTE, otherwise known as Career Ready. The correct answer to this question is all the above which 98% of the participants selected. It appears that even though Transition Readiness does not fall within their workload, they are still knowledgeable with the qualifications that students must meet to become Transition Ready through CTE.

Section A, question three was used to determine the participant's knowledge about the funding regarding CTE. The correct answer to this question is selection b, Carl D. Perkins funding through the state of Kentucky. Table 8 shows that 96% of principals

and assistant principals selected the correct answer. Each state is awarded an annual amount of Perkins grant funds which is then disbursed among high school and career and technical centers, both secondary and post-secondary based upon student enrollment in CTE programs (Kentucky Department of Education, 2021).

Section A, question four results are provided in Table 9. The answer to question four can be the opinion of the participant. The researcher's ideal answer for question four was "I would need more information about the student." Although some participants selected agree, that is a matter of opinion. The question asked if meeting Transition Readiness benchmarks deemed a student ready for life after high school. Educators could debate the answer to this question for an unlimited time.

Although these questions were not used during the data analysis for this research study, the information collected from these questions provide the researcher insight into some general knowledge that the principals and assistant principals have regarding CTE.

Table 5

Section A - Questions 1 – 4

Item Number	Question	Answer Options	Correct/Ideal Answer
1	Overall, how familiar are you with the requirements for Kentucky high school students to become Transition Ready?	<ul style="list-style-type: none"> a. I am familiar with the requirements b. I am not familiar with the requirements but should be c. Transition Readiness does not fall within my workload d. I do not know what Transition Readiness is 	<i>I am familiar with the requirements</i>
2	From your experience, students in CTE programs can become Career Ready as a part of Transition Readiness through the following means:	<ul style="list-style-type: none"> a. 6 hours of CTE Dual Credit in a CTE program b. Obtainment of an Industry recognized certification c. By passing the End of Program Assessment Exam in a CTE program d. All the above e. None of the above 	<i>All the above</i>
3	From your experience, CTE programs in Kentucky are partially funded by which of the following:	<ul style="list-style-type: none"> a. Federal Title IX funding b. Carl D. Perkins funding through the state of Kentucky c. Federal Title III funding d. State Aid through the state of Kentucky e. I do not know 	<i>Carl D. Perkins funding through the state of Kentucky</i>
4	From your experience, Transition Readiness accurately reflects a student's preparedness for life post-graduation.	<ul style="list-style-type: none"> a. I agree b. I disagree c. I do not know d. I would need more information about the student 	<i>I would need more information about the student</i>

Table 6

Section A - Question 1

Answer Selected	Frequency	Percent
A	2	2.78%
B	3	6.94%
C	67	93.06%
D	0	0
Total	72	100%

Note. No participants selected option D for the answer to question 1. The majority of participants selected C, that Transition Readiness does not fall within their workload.

Table 7

Section A - Question 2

Answer Selected	Frequency	Percent
A	0	0
B	1	1.39%
C	0	0
D	71	98.61%
E	0	0
Total	72	100%

Note. 98.5 of participants chose the correct answer for question 2.

Table 8

Section A - Question 3

Answer Selected	Frequency	Percent
A	0	0
B	69	95.83%
C	0	0
D	3	4.17%
E	0	0
Total	72	100%

Note. 95% of participants chose the correct answer for question 3.

Table 9

Section A - Question 4

Answer Selected	Frequency	Percent
A	30	41.67%
B	13	18.06%
C	0	0
D	29	40.28%
Total	72	100%

Note. Answer A (Agree) and D (Need to know more information) were close to an even split in the number of responses received.

Section B – Survey Questions

The questions used in Section B of the CTE survey was created by Thornburg (2016) and designed to determine the perceived knowledge of participants using the Likert scale of poor to excellent. Tables 10, 11, and 12 provide the full descriptive statistics for questions 6-11.

Table 10

Descriptive Statistics of Questions used for Perceived Knowledge

Variable	Obs.	Mean	Std. dev.	Min	Max
Question 6	72	3.986111	.8958913	1	5
Question 7	72	3.805556	1.043273	1	5
Question 8	72	3.902778	.921721	1	5
Question 9	72	3.527778	.9490132	1	5
Question 10	72	3.680556	.9761434	1	5
Question 11	72	3.333333	1.06149	1	5

Note. These questions were combined to create the dependent variable “Perceived Knowledge.”

Table 11, *Descriptive Statistics of Perceived Knowledge*, provides the sum of responses on the variables, survey questions six through eleven, that make up the dependent variable Perceived Knowledge. The mean of the responses is 22.23611 while the standard deviation is 5.105901. Table 12 provided the reliability score for the

dependent variable Perceived Knowledge. The scale reliability coefficient score of 0.9367 is statistically strong.

Table 11

Descriptive Statistics of Perceived Knowledge

Variable	Obs.	Mean	Std. dev.	Min	Max
Knowledge	72	22.23611	5.105901	6	30

Note. Perceived Knowledge = Questions 6-11 from survey.

Table 12

Reliability of Perceived Knowledge

Test scale = mean (unstandardized items)	
Average interitem covariance:	.6783125
Number of items in the scale:	6
Scale reliability coefficient:	0.9367

Note. Perceived Knowledge = Questions 6-11 from survey.

Section C Survey Questions

Thornburg (2016) designed the survey questions in Section C to assess counselors' perceptions about CTE programs and its incorporation in high school curriculum. The researcher amended this section to reflect principal and assistant principal in place of counselor. This section had participants select an answer using the Likert scale of disagree, disagree somewhat, undecided, agree somewhat, and agree. Due to the poor correlation and reliability, these questions were omitted from the study. Tables 13 and 14 provide an in depth look at the correlation and the wording that made up questions 12-18.

Table 13

Section C - Full Questions 12-18

Question
CTE program serve primarily to support area employment needs.
Certifications are valuable for students to secure future employment.
CTE is an avenue to retain students who are at risk.
Exposure to available CTE programming for students should occur prior to the start of high school.
Students enrolled in CTE programs tend to be well-prepared academically.
It is feasible for a student to attend a CTE program and get all their required high school credits to graduate.
Parents are supportive of their students enrolling in CTE courses or programs.
Counselors have sufficient time to expose students to CTE pathways.
Counselors have sufficient time to counsel students on their career aspirations.

Table 14

Section C - Questions 12-18

Item	Obs.	Sign	Item-test correlation	Item-rest correlation	Average interitem covariance	alpha
Q12	72	+	0.6715	0.3985	.0831638	0.3596
Q13	72	+	0.5484	0.3212	.1149844	0.4163
Q14	72	+	0.4168	0.1123	.1513954	0.5107
Q15	72	+	0.5725	0.4109	.1150496	0.4016
Q16	72	+	0.6180	0.3819	.0978743	0.3818
Q17	72	-	0.3194	-0.0133	.1823813	0.5732
Q18	72	+	0.3796	0.1637	.1493219	0.4793
Test scale					.1277387	0.4908

Question 33 - Knowledge of CTE

The final question of the CTE survey asked participants to select all that apply in regard to their knowledge of CTE. By selecting each response, participants deemed that their knowledge about CTE came from the information located in each option. Table 15 shows the possible choices and how many times each answer was selected. There was a total of 72 ($N=72$) responses to the survey recorded for data analysis purposes. According to the responses, 66 of 72 or 92% of participant's schools were currently offering CTE programming. This result contradicted the fact that the participants were selected from the Kentucky Department of Education's database whose school currently offered CTE programs. The survey was only sent to principals and assistant principals from those schools.

Table 15

Question 33 - Knowledge of CTE based upon...

Question	Frequency
I completed a CTE program in high school	16
I complete a CTE program in college	11
A family member or someone I know personally completed a CTE program	29
I have read materials about CTE programming	51
My school currently provides CTE programming	66
I have toured or observed students in a CTE program	59
My school administration has discussed CTE programming for our students	57
I have toured area industry and/or discussed CTE programs with community members	53
I have attended state meetings and/or conferences about CTE initiatives	46
I have limited knowledge of CTE because I have not been involved, or have read very little about CTE	5

Quantitative Analysis

Findings Related to Research Question 1

Research Question 1: What is the relationship between Kentucky high school principals' and assistant principals' years of administrative experience and their perceived knowledge of CTE?

H1₀. Kentucky high school principals' and assistant principals' years of administrative experience has no relationship with their perceived knowledge of CTE.

H1_A. Kentucky high school principals' and assistant principals' years of

administrative experience has a relationship with their perceived knowledge of CTE.

The null and alternative hypothesis were created to answer Research Question 1 by using the regression method to determine if principals' and assistant principals' years of administrative experience had a relationship with their perceived knowledge of CTE. Ninety-eight percent of the participants in the survey perceived their knowledge of CTE to be at the moderate or substantial level. More specifically, 43 of the 72 participants perceived their knowledge of CTE to be substantial.

Stata/BE v(17.0) was used to process the statistical tests to determine if the null hypothesis could be rejected. The independent variable years of administrative experience was tested to examine if it had a relationship with principal and assistant principal perceived knowledge of CTE. Regression results for years of administrative experience and perceived knowledge were not found to be statistically significant. This means that years of administrative experience, when measured as an ordinal variable, does not statistically correlate with perceived knowledge of CTE. Therefore, the null hypothesis is retained that Kentucky high school principals' and assistant principals' years of administrative experience has no relationship with their perceived knowledge of CTE. Table 13 provides a full report of the statistical regression test results and shows *p*-values all greater than .05. Tables 16 and 17 provide full statistical test results for the dependent variable, perceived knowledge of CTE and the independent variable years of administrative experience.

Table 16

Regression – Years of Administrative Experience on Perceived Knowledge

Variable	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
4-6	2.503268	2.117565	1.18	0.241	-1.722276	6.728803
7-9	.8888889	2.097105	.042	0.673	-3.295818	5.073596
10+	2.230159	1.968323	1.13	0.261	-1.697568	6.157886
_cons	20.55556	1.712279	12.00	0.000	17.13876	23.97235

Note. $R^2 = 0.0306$ ($p < 0.5459$); $F = 0.72$

Table 17

Years of Administrative Experience

Years	Frequency	Percent
1-3	9	12.50%
4-6	17	23.61%
7-9	18	25.00%
10+	28	38.89%
Total	72	100%

Findings Related to Research Question 2

Research Question 2: What is the relationship between Kentucky high school principals' and assistant principals' educational background (e.g., attended a CTE program [one course or more] or attended a traditional academic program [no CTE]) and their perceived knowledge of CTE?

H2₀. Kentucky high school principals' and assistant principals' educational background does not have a relationship with their perceived knowledge of CTE.

H2_A. Kentucky high school principals' and assistant principals' educational background has a relationship with their perceived knowledge of

CTE.

The null and alternative hypothesis were created to answer Research Question 2 to determine if principals’ and assistant principals’ educational background has a relationship with their perceived knowledge of CTE. Research Question 2 was analyzed using Stata/BE v(17.0) to run the step regression method to determine if the relationship existed. Table 18 provides a full report of the statistical test results and shows a *p*-value of less than .05. The null hypothesis which stated that there is no relationship between educational background and perceived knowledge is rejected. The model presented the results that there is a significant relationship (*p*-value - .004) with Kentucky high school principals’ and assistant principals’ educational background and perceived knowledge of CTE. This means that having CTE as a part of their educational background provides a relationship to their perceived knowledge of CTE. Table 19 provides the statistical test results for the independent variable educational background.

Table 18

Regression – Educational Background related to Perceived Knowledge

Variable	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
No	-4.003209	1.344354	-2.98	0.004	-6.684438	-1.321979
_cons	25.29412	1.174975	21.53	0.000	22.9507	27.63753

Note. r²=0.1124; F=8.87; p<.05

Table 19

Educational Background

Educational Background	Frequency	Percent
Yes	17	23.61%
No	55	76.39%
Total	72	100%

Findings Related to Research Question 3

Research Question 3: What is the relationship between a linear combination of Kentucky high school principals' and assistant principal's years of administrative experience, educational background, gender, and their perceived knowledge of CTE?

H3₀. Kentucky high school principals' and assistant principals' years of administrative experience, educational background, and gender does not have a relationship with their perceived knowledge of CTE.

H3_A. Kentucky high school principals' and assistant principals' years of administrative experience, educational background, and gender has a relationship with their perceived knowledge of CTE.

The null and alternative hypothesis were created to answer Research Question 3 by using the regression method to determine if principals' and assistant principals' years of administrative experience, educational background, and gender had a relationship with their perceived knowledge of CTE. Stata/BE v(17.0) was used to process the statistical tests to determine if the null hypothesis could be rejected. The independent variables years of administrative experience, educational background, and gender were tested to see if there was a linear combination relationship on principals' and assistant principals' perceived knowledge of CTE. A multiple linear regression model was conducted to interpret the linear combination of independent variables on the dependent variable. The null hypothesis was retained, meaning that there is not a relationship (p -value = .0598) between a linear combination of years of administrative experience, educational background, and gender on perceived knowledge held by Kentucky high school

principals and assistant principals. Table 20 provides a full ANOVA report of the statistical test results and shows p values greater than .05. Table 21 provides a full report of the coefficients from the multiple linear regression test. Tables 11, 12, 17, 19, and 22 provide full statistical test results for the dependent variable perceived knowledge of CTE and the independent variables year of administrative experience, educational background, and gender.

The ANOVA summary and model summary indicate that the overall model of the independent variables does not significantly predict perceived knowledge of CTE, $R^2 = 0.1653$, $R^2_{\text{adjusted}} = 0.0883$, $F = (6, 65) = 2.15$, $p = .0598$. However, a review of the coefficients indicates that educational background $b = -4.089$, $t(65) = -2.98$, $p\text{-value} = .005$, significantly contributed to the model.

Table 20

ANOVA Summary Table

Source	SS	df	MS	F	Sig.
Model	305.97756	6	50.996259	2.15	0.0598
Residual	1545.0086	65	23.769362		
Total	1850.9861	71	26.070227		

Note. Predictors: (Constant), (yrs. exp4-6), (yrs. exp7-9), (yrs. exp10+), (educ knowledge), (gender)

Table 21

Table of Coefficients

Knowledge	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
YAE						
4-6	1.405436	2.05636	0.68	0.497	-2.701399	5.512227
7-9	.5510837	2.04066	0.27	0.788	-3.524395	4.626563
10+	2.490032	1.890403	1.32	0.192	-1.285363	6.265427
EB						
No	-4.088526	1.415658	-2.98	0.005	-6.91579	-1.261261
Gender						
Female	1.546448	1.204225	1.28	0.204	-.8585549	3.95145
cons	23.33066	2.151436	10.84	0.000	19.03395	27.62738

Note. YAE=Years of Administrative Experience, EB=Educational Background

Table 22

Gender

Gender	Frequency	Percent
Male	40	55.56%
Female	29	40.28%
Other	3	4.17%
Total	72	100.00

The regression model:

Perceived Knowledge = $b_0 + b_1$ (yrs. exp4-6) + b_2 (yrs. exp7-9) + b_3 (yrs. exp10+) + b_4 (educational background) + b_5 (gender) + ϵ ; where b_0 is the intercept, b_1, \dots, b_5 , are the regression coefficients, ϵ is the error term.

The regression model used for prediction is:

Perceived Knowledge = 23.33066 + 1.405436 (yrs. exp4-6) + .5510837 (yrs. exp7-9) + 2.490032 (yrs. exp10+) – 4.088526 (educational background) + 1.546448 (gender) + ϵ ;

The overall model revealed an R^2 equals 0.1653 meaning that there is a 16% variation in the model. The p value is 0.0598 meaning that the overall model is not statistically significant. It appears that given the model, principals and assistant principals with 10 plus years of administrative experience have an increase of 2.49 units in perceived knowledge when controlling for the other variables in the model. The model suggests that principals and assistant principals with 4-6 years of administrative experience have an increase of 1.4 units in perceived knowledge when controlling for the other variables of educational background and gender in the model. Female principals and assistant principals surveyed in the study have an increase of 1.54 units in perceived

knowledge when controlling for the other variables in the model. Table 21 shows that all p values except for educational background are all greater than 0.05 which means they are not statistically significant. However, the model does suggest that principals and assistant principals without CTE educational background are less by 4.08 units when controlling for the other variables in the model.

Summary

This study surveyed Kentucky high school principals and assistant principals to determine if there was a relationship between years of administrative experience, educational background, gender, and their perceived knowledge of CTE. The statistical tests revealed that there is no relationship between years of administrative experience and perceived knowledge of CTE; therefore, CTE knowledge can still be lacking even as a veteran administrator with 10 plus years of experience. The study revealed that gender does not have a relationship with perceived knowledge of CTE nor is gender dependent on educational background. However, the study did reveal that principals and assistant principals who had a CTE educational background were more knowledgeable of CTE than those principals and assistant principals who did not have a CTE educational background. In short, there is a relationship between educational background and perceived knowledge of CTE. In the closing chapter of this research study the reader will review the interpretations of the findings and the recommendations for actions and future studies.

CHAPTER V: CONCLUSION

Introduction

This study was conducted to determine the strength of the linear combination of years of administrative experience, gender, and educational background on the effect of the perceived knowledge of Career and Technical Education (CTE) held by Kentucky high school principals and assistant principals. Results from the data and study revealed years of administrative experience does not predict perceived knowledge of CTE nor does gender. As the years of administrative experience increases, perceived knowledge of CTE decreases. The gender of principals and assistant principals presented no statistical significance on perceived knowledge of CTE. However, the study revealed that educational background is statistically significant on perceived knowledge, meaning those with no CTE educational background were less knowledgeable about CTE.

The final chapter of this study reviews the problem and provides recommendations for future actions and research that might impact the state of Kentucky and CTE programs. The discussion of the problem reviews the initial problem introduction provided in Chapter One of this research study then leads into the interpretations of findings for Research Questions 1, 2, and 3. Next the implications of the study are discussed, followed by the recommendation for actions section, which indicates changes needed in the fields of education and CTE. Finally, before the conclusion to this research study, the researcher provides an extensive list of recommendations for future studies as a result of this study.

Discussion of the Problem

According to the Kentucky Center for Statistics, there will be over a half of million jobs without skilled employees to fill the vacant positions by the year 2024. Although Kentucky produced over 40,000 graduates annually, there are not enough students emerging from Career and Technical Education programs with the skills, training, and certifications to meet the demand business and industry is currently facing. This gap contributes to Kentucky beginning to fall behind other states across the country who are competing to recruit employers to start their businesses here to positively affect the economy. As in the state of New York (Howell et al., 2019), Kentucky must develop a pipeline from high schools to post-secondary institutions to the workforce. Since CTE programs are able to prepare students to enter the workforce successfully, all students should be exposed to CTE in some way before leaving high school. This will allow students to make better and more informed decisions about what they want to do regarding their career. Employers are aware of the value of CTE, educational stakeholders just need to get other educators and students on board (Shanklin, 2014). Kentucky's focus on Career Readiness has restored the focus on CTE programs, which responds to the wants of businesses and industry in the commonwealth who are looking for skilled employees (Fitzgerald, 2018).

Interpretation of the Findings

This study was designed to answer the following research questions:

Research Question 1: What is the relationship between Kentucky high school principals' and assistant principals' years of administrative experience and their

perceived knowledge of CTE?

H1₀. Kentucky high school principals' and assistant principals' years of administrative experience has no relationship with their perceived knowledge of CTE.

H1_A. Kentucky high school principals' and assistant principals' years of administrative experience has a relationship with their perceived knowledge of CTE.

Research Question 2: What is the relationship between Kentucky high school principals' and assistant principals' educational background (e.g., attended a CTE program [one course or more] or attended a traditional academic program [no CTE]) and their perceived knowledge of CTE?

H2₀. Kentucky high school principals' and assistant principals' educational background does not have a relationship with their perceived knowledge of CTE.

H2_A. Kentucky high school principals' and assistant principals' educational background has a relationship with their perceived knowledge of CTE.

Research Question 3: What is the relationship between a linear combination of Kentucky high school principals' and assistant principal's years of administrative experience, educational background, gender, and their perceived knowledge of CTE?

H3₀. Kentucky high school principals' and assistant principals' years of administrative experience, educational background, and gender does not have a relationship with their perceived knowledge of CTE.

H3_A. Kentucky high school principals' and assistant principals' years of administrative experience, educational background, and gender has a relationship with their perceived knowledge of CTE.

Research Question 1 used the data collected and analyzed for this study to reveal that there is no relationship between a principals' or assistant principals' years of administrative experiences and their perceived knowledge of CTE. Due to these results, the null hypothesis was retained. The researcher's assumption going into the study was that there would be a relationship between the years of administrative experience the perceived knowledge of CTE. This assumption was supported by the fact that Kentucky has been using College and Career Readiness, now called Transition Readiness, as part of their accountability system since 2015 (Kentucky Department of Education, 2021). If this study was repeated in the next five years, would the same results occur, especially if Kentucky continues to focus on Transition Readiness? With these results, the Kentucky Department of Education will need to look at how they are educating stakeholders from the students to the principals about CTE. Businesses and industry are desperate for assistance, and it is the job of educators and the educational system to answer the call (Fitzgerald, 2018).

Research Question 2 analyzed the data collected regarding principals' and assistant principals' educational background. The study results showed that there is a relationship between educational background and perceived knowledge of CTE. Therefore, the null hypothesis was rejected for Research Question 2. According to the data, if a principal or assistant principal had an educational background that involved CTE, their perceived knowledge was greater than those who did not have a CTE

educational background. The researcher's assumption for Research Question 2 was that those with an educational background in CTE would have more knowledge about CTE. This held true as a result of the study.

Although the researcher's assumptions held true, an implication could be that some of the participants could have been Area Technology Center principals who likely were CTE teachers prior to becoming principals or assistant principals. Another implication could have been that the participants went to a high school where there was a focus on CTE. However, the participants could have attended a high school where CTE was not offered and did not allow them to have CTE as a part of their educational background. If educators without CTE educational backgrounds continue to move into leadership positions like principals and assistant principals, the state of Kentucky will need to develop a training system to ensure those leaders know about CTE. They will also need to know about the opportunities available through CTE to provide the best educational experience for their students. The need for a skilled and educated workforce is not going anywhere in the near future so this will continue to be an issue for business and industry to ensure that schools are preparing students to enter the workforce (Dohm, 2000; Fitzgerald, 2018).

Research Question 2 was closely related to Thornburg's (2016) study. In this research study, there was a relationship found between educational background and perceived knowledge of CTE. Those who did not have CTE in their educational background has less perceived knowledge of CTE than those who did have the CTE educational background. However, Thornburg did not find the same results in his study. There was no relationship found between career counselors' perceived knowledge, their

educational background, and their perception of CTE. Although there was a large number of counselors who did not have a CTE educational background, it did not affect their perception of CTE.

The final research question in this study, Research Question 3 established if there was a relationship between years of administrative experience, educational background, gender, and the perceived knowledge of CTE. The null hypothesis was retained, meaning the overall model did not show linear combination relationship between the independent variables and the dependent variable. The researcher assumed that the overall model would not be able to reject the null hypothesis however this did not hold true. Another assumption held by the researcher was in regard to gender. It was thought that one gender group might stand out more than the other, specifically males, since many CTE programs traditionally have larger enrollments of males than females. Additionally, this assumption was made because there were more male respondents to the survey than females.

Question 33, the final question of the CTE survey, asked participants to select all that applied in regard to their knowledge of CTE. By selecting each response, participants deemed that their knowledge about CTE came from the information located in each option. Table 15 shows the possible choices and how many times each answer was selected. There was a total of 72 ($N=72$) responses to the survey recorded for data analysis purposes. Although Question 33 was not used in the regression model and data analysis for this study, the researcher found the results from this question as supporting evidence for the cause of this study.

According to the responses, 66 of 72 or 92% of participant's schools were currently offering CTE programming. This result contradicted the initial search that

indicated participants were selected from the Kentucky Department of Education's database whose school currently offered CTE programs. In addition, there was a combined response selection of 27, or 38% who selected that they had either completed a CTE program in high school or in college. Again, this number is concerning that only 38% of these principals and assistant principals had been exposed to CTE in high school and college. This number must increase so that school leaders are able to provide more awareness to CTE and the benefits of these programs. Participants selected that they had toured area industry and/or discussed CTE programs with community member 53 times otherwise 73% of participants selected this option. Since the reauthorization of Perkins V, school leaders have been working to make the connections from school to workforce. This number shows that the majority of the participants had probably been involved in this process and used this to advance their knowledge of CTE.

Table 15

Question 33 - Knowledge of CTE based upon...

Question	Frequency
I completed a CTE program in high school	16
I complete a CTE program in college	11
A family member or someone I know personally completed a CTE program	29
I have read materials about CTE programming	51
My school currently provides CTE programming	66
I have toured or observed students in a CTE program	59
My school administration has discussed CTE programming for our students	57
I have toured area industry and/or discussed CTE programs with community members	53
I have attended state meetings and/or conferences about CTE initiatives	46
I have limited knowledge of CTE because I have not been involved, or have read very little about CTE	5

In this research study, Thornburg (2016) was used as a guiding tool, including using his survey, although the survey was amended to reflect questions about Kentucky CTE rather than Kansas and principals and assistant principals rather than career counselors. This study focused on the perceived knowledge of CTE held by principals and assistant principals while testing for relationship with years of administrative experience, educational background, and gender. Thornburg (2016) examined the perception of CTE held by career counselors on their educational background, actual knowledge level of Kansas CTE initiatives, and the amount of time career counselors have to counsel students. Thornburg (2016) relied on a theoretical framework. In Kansas,

he found that high school career counselors were knowledgeable about CTE; however, this knowledge was likely tied to the CTE initiative endorsed by the governor. Unlike this study, he did not find a relationship between career counselors' educational background and their knowledge or perception of CTE. Thornburg also found that career counselors had very little time to actually counsel students about their careers and CTE. Several of the career counselors had additional job responsibilities that kept them from being able to counsel students.

Like Thornburg (2016) found, there is very little research, if any, about principals, assistant principals, and career counselors and CTE. Until each of these studies were conducted, there was not any research in Kansas or Kentucky relating to these specific educators and CTE. If administrators (principals, assistant principals, and counselors) are the ones who communicate with students, parents, and teachers about the opportunities available to students in their schools and communities, it is essential for the research to provide the evidence to support the need for these administrators to know about CTE. Ultimately, the more students know about CTE, the more likely they are to enroll and then go into the workforce to fill the employment gap this country is facing today.

Implications

The results of this study offer guidance in determining how people perceive their knowledge levels of CTE. To ensure all parties are knowledgeable about CTE, both the benefits and opportunities available, educational leaders must work together to educate everyone. Strategic marketing and promotion of CTE will help to increase the awareness of the programs and offerings available to students (Howell et al., 2019). Parents will be important stakeholders in breaking the barriers between CTE and general education.

Community and technical colleges must continue to work with local high schools to develop a pipeline for students to transition from high school CTE programs to post-secondary CTE programs. As with everything, funding of CTE will be a contributing factor to the success of CTE, too. Students will need to be provided with opportunities to explore CTE programs beginning as early as elementary school. The more they are able to learn about careers, employer expectations, and the path to success, the easier it will be for students make more informed educated decisions about what they want to do with their futures.

This study could be shared with local high schools, the Kentucky Department of Education, the Kentucky Office of Career and Technical Education, the Kentucky Community College System, and could be generalized to be shared to other states. It is imperative that the knowledge of CTE continue to rise and be understood by all stakeholders to help meet the demands of business and industry. Like Thornburg (2016) and Grewe (2019), this study will help to provide a spotlight on CTE and the importance that school leaders such as principals, assistant principals, and counselors need to know about CTE.

Recommendations for Action

Educational leaders must take initiative and learn about CTE so that their students are able to find the relevancy to their learning. Leaders must ensure that teachers know about CTE and the value it brings to a student's educational experience. Many students benefit from tactile learning experiences (Bradberry & Maio, 2019), and CTE provides a great foundation for students to learn in a hands-on environment. The promotion of CTE throughout the entire education system in Kentucky is required to help fill the

employment crisis we are facing today and will continue to face in the future. Stakeholders must come together to develop a fail proof plan that will provide CTE information to those who need it. It will take everyone working tirelessly together to ensure that this problem is solved.

Recommendations for Future Research

This study provides a starting point for additional research into CTE including knowledge, perceptions, and benefits. Future studies could be beneficial to keep Kentucky, other states and the country moving forward for the support and promotion of CTE. The commonwealth of Kentucky is making strides through Transition Readiness to bring a focus on CTE. Educational leaders must be prepared to learn more about CTE to send students into CTE programs, so that they can find their passion and begin their career.

This research study and the studies of Grewe (2019) and Thornburg (2016) have started to break the barrier that lies between CTE and administration. Studies have proved that administration influences student achievement (Keeling, 2015), and educators must continue to improve so that students will continue to achieve. Administration does not just include the principal and assistant principal but also counselors, deans, college and career coaches, and others who serve on a school's leadership team. Success of CTE is also dependent upon district leadership like the superintendent, board of education members, and others who serve in the superintendent's leadership cabinet.

A way to improve this study could be by revising the survey questions to specifically look at CTE in the state of Kentucky and focus questions on actual

knowledge and perceptions of CTE. If participants were willing to give their school information to connect their student achievement data with CTE enrollment and students' success, the research might be able to pinpoint where the breakdown is and help the school do more for their CTE students. Another facet of this study could be to survey parents and students to determine their knowledge of CTE and the perceptions that they have (Russell & White, 2019). If educators are able to inform the parents and students of the benefits of CTE (Pierce, 2017), enrollment might increase. Since this study took a quantitative approach, like the research of Thornburg (2016) and Grewe (2019), a qualitative study that interviewed stakeholders about CTE would be a nice addition to the current data that is available. Stakeholders could take the form of principals, counselors, parents, students, community members, employers, and more. Interview questions could be developed to determine a correlation between stakeholder groups or to determine their perceptions CTE. The need to do these studies are very important to help fill the employment gap (Fitzgerald, 2018), as well as educate our students to become well rounded, skilled individual who are ready to go into the workforce and be successful in their career (Sublett et al., 2019). Everyone must work together to show the importance and benefits of CTE so that enrollment increases and successful entry into the workforce increases for our students here in Kentucky.

In addition, studies related to CTE, and student engagement could provide more information on why schools should have CTE programs and their benefits (Allen, 2010). Student engagement continues to be an issue for educators and school districts to ensure that students stay in school until graduation and then transition successfully to the next phase (Dube et al., 2014). If students are engaged in their learning and want to come to

school, they will be more likely to stay in school. CTE provides the hands-on learning experiences necessary to keep students engaged. Bradberry and Maio (2019) studied the impacts on learning by doing resulting that student typically learn better by doing.

The final study suggestion revolves around the high school administrator. Several studies have been conducted to determine the effects of the principal or assistant principal on student success or academic success. Houchens et al. (2018) looked at the differences between principals and assistant principals and student outcomes. This study could be expanded upon and look at the differences between those administrators and their opinions and perceptions of CTE. This would help determine if there were mixed messages coming from administration to the stakeholders in the school.

Conclusion

In conclusion, the data collected during this study found there to be a relationship between educational background and perceived knowledge of CTE held by Kentucky high school principals and assistant principals. The supports results from Thornburg (2016) and Grewe (2019) who found that Kansas and Indiana career counselors' educational background played a role on their perceived knowledge of CTE. From this study, the researcher was able to determine that some assumptions held were not supported by the data collected during this study. It was assumed by the researcher that the more years of administrative experience principals and assistant principals have the more their perceived knowledge of CTE would be. The need to spread the knowledge of CTE throughout the commonwealth and beyond still remains a great deed that must be done. The results from this study tell us that we need to get more people involved in CTE so that they know more about it. Once they know more, they will be able to pass along

that information to others. The ultimate goal of CTE is to prepare students to enter the workforce as a skilled educated employee who will be a successful citizen. It is imperative now, more than ever, that we as educators do all that we can do to prepare our students to close these employment gaps. To keep Kentucky growing, we must be able to supply the workforce needed so that businesses and industries are able supply the demand that is needed throughout the state, region, and country (U.S. Bureau of Labor Statistics , 2020).

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APPENDIX A
IRB APPROVAL

DATE: December 10, 2020
TO: Sara Greene
FROM: Western Kentucky University (WKU) IRB
PROJECT TITLE: [1694380-1] High School Administrators' Perceptions of CTE
Students and their Academic Success
REFERENCE #: IRB 21-134
SUBMISSION TYPE: New Project
ACTION: APPROVED
APPROVAL DATE: December 10, 2020
REVIEW TYPE: Exempt Review

Thank you for your submission of New Project materials for this project. The Western Kentucky University (WKU) IRB has APPROVED your submission. This approval is based on an appropriate risk/benefit ratio and a project design wherein the risks have been minimized. All research must be conducted in accordance with this approved submission.

This submission has received Exempt Review based on the applicable federal regulation. Please remember that informed consent is a process beginning with a description of the project and insurance of participant understanding followed by an implied consent form. Informed consent must continue throughout the project via a dialogue between the researcher and research participant. Federal regulations require each participant receive a copy of the consent document.

Please note that any revision to previously approved materials must be approved by this office prior to initiation. Please use the appropriate revision forms for this procedure.

All UNANTICIPATED PROBLEMS involving risks to subjects or others and SERIOUS and UNEXPECTED adverse events must be reported promptly to this office. Please use the appropriate reporting forms for this procedure. All FDA and sponsor reporting requirements should also be followed.

All NON-COMPLIANCE issues or COMPLAINTS regarding this project must be reported promptly to this office.

This project has been determined to be a MINIMAL RISK project.

Please note that all research records must be retained for a minimum of three years after the completion of the project.

If you have any questions, please contact Robin Pyles at (270) 745-3360 or irb@wku.edu. Please include your project title and reference number in all correspondence with this committee.

APPENDIX B
INFORMED CONSENT LETTER

Informed Consent for High School Administrators' Perceptions of CTE Students

Dear Colleague:

Please accept this invitation to participate in a research study designed to assess the level of understanding and perceptions of career and technical education (CTE) by high school principals and assistant principals in Kentucky.

The survey data will be collected and compiled into a final summary report within the electronic survey software [Qualtrics.com](https://www.qualtrics.com). Due to the electronic nature of Qualtrics respondents are anonymous to the researcher. Data will be collected and compiled by an independent research assistant to the sole researcher for this study.

SURVEY LINK - https://wku.co1.qualtrics.com/jfe/form/SV_dbAUJ6LqSzEBMYR

Participation in this research study is voluntary and participants may withdraw from the study at any time. Your participation in this study is greatly appreciated and will lead to a better understanding of the perceptions of CTE in general. The survey should take approximately 15 minutes or less to complete.

If you have questions about your rights as a participant, you can call Western Kentucky University IRB Office by phone, (270)745-3360. This project has been approved by the WKU IRB office, *IRB 21-134*. If you have any questions about this research project or would like a copy of the study results, please contact me, or you may contact my Faculty Sponsor, Dr. Gary Houchens.

Thank you for your time and willingness to participate in this research study.

Sincerely,

Sara Jo Greene

Doctoral Student

Western Kentucky University

sara.greene@topper.wku.edu

Principal

Shelby County Area Technology Center

230 Rocket Lane

Shelbyville, KY 40065

502-633-6554

sara.greene@shelby.kyschools.us

APPENDIX C

COPYRIGHT PERMISSION OF THE CTE PERCEPTIONS SURVEY

Marlon Thornburg <marlont@coffeyville.edu>

Wed 10/21/2020 3:09 PM

To: Greene, Sara <sara.greene@shelby.kyschools.us>

Sara,

Thank you for your message. I will gladly grant you permission to utilize and adapt my survey document as needed for your research project. I'll be watching for your finished product to see how your research matches up with my study in Kansas.

Best of luck with your study.

Sincerely,

Dr. Thornburg

Marlon Thornburg, Ed. D

President

Coffeyville Community College

On Wed, Oct 21, 2020, at 1:19 PM Greene, Sara <sara.greene@shelby.kyschools.us>

wrote:

Dr. Thornburg,

Hello, I hope this email finds you well. I am a current doctoral student at Western Kentucky University, and I came across your Dissertation during my research. I too am interested in Career and Technical Education and have a proposed dissertation entitled "High School Administrators' Perceptions of CTE Students and their Academic Success".

Your survey that you used with counselors for your dissertation would be very beneficial

to my research. Would you grant me permission to use your survey and adapt questions to fit my research? I would appreciate this opportunity to use the survey to further research in the areas for high school administrators and Career and Technical Education.

Thank you,

Sara Greene

WKU Doctoral Student

859-322-4816

APPENDIX D
CTE PERCEPTIONS SURVEY

Career and Technical Education (CTE) Perception Survey

The following survey questions are designed to assess the level of understanding and perceptions of career and technical education (CTE) by high school principals and assistant principals.

The survey data will be collected and compiled into a final summary report within the electronic survey software Qualtrics. Due to the electronic nature of Qualtrics respondents are anonymous to the researcher. Data will be collected and compiled by an independent research assistant to the sole researcher for this study.

Participation in this research study is voluntary and participants may withdraw from the study at any time. Your participation in this study is greatly appreciated and will lead to a better understanding of the perceptions of CTE in general. The survey should take approximately 20 minutes or less to complete. If you would prefer not to participate in this research study, please mark the appropriate box below and exit the survey.

Yes, I agree to participate in the following survey and understand that my personal information will be kept confidential.

No, I would prefer not to participate in this research study.

Section A: Principal and Assistant Principal's Knowledge Level of CTE

The following questions are designed to assess the knowledge level of high school principals and assistant principals regarding the Transition Readiness initiatives in Kentucky.

1. Overall, how familiar are you with the requirements for Kentucky high school students to become Transition Ready?

I am familiar with the requirements

I am not familiar with the requirements but should be

Transition Readiness does not fall within my workload

I do not know what Transition Readiness is

2. From your experience, students in CTE programs can become Career Ready as a part of Transition Readiness through the following means:

6 hours of CTE Dual Credit in a CTE program

Obtainment of an Industry recognized certification

By passing the End of Program Assessment Exam in a CTE program

All the above

None of the above

3. From your experience, CTE programs in Kentucky are partially funded by which of the following:

Federal Title IX funding

Carl D. Perkins funding through the state of Kentucky

Federal Title III funding

State Aid through the state of Kentucky

I do not know

4. From your experience, Transition Readiness accurately reflects a student's preparedness for life post-graduation.

I agree

I disagree

I do not know

I would need more information about the student

Section B: Principal and Assistant Principal's Perceived Knowledge Level

Please respond to the following survey questions using the following 5-point Likert scale.

Scale: 1 = Poor

2 = Below average

3 = Average

4 = Above Average

5 = Excellent

The following questions are designed to assess how a high school principal or assistant principal rates his/her knowledge level of CTE programs, area workforce needs, and CTE in Kentucky.

5. My knowledge of CTE career pathways available to high school students in the state of Kentucky is:

1 2 3 4 5

Poor

Excellent

Please explain why:

6. My knowledge of the skills requirements of CTE careers is:

1 2 3 4 5

Poor

Excellent

Please explain why:

7. The quality of information I am able to provide to students about CTE programs is:

1 2 3 4 5

Poor

Excellent

Please explain why:

8. My knowledge of current workforce needs in the state of Kentucky is:

1 2 3 4 5

Poor

Excellent

Please explain why:

9. My knowledge of local workforce needs in my community is:

1 2 3 4 5

Poor

Excellent

Please explain why:

10. My knowledge of the federal Perkins V Grant is:

1 2 3 4 5

Poor

Excellent

Please explain why:

Section C: Principal and Assistant Principal Perceptions of CTE

Please respond to the following survey questions using the following 5-point Likert scale.

Scale: 1 = Disagree

2 = Disagree Somewhat

3 = Undecided

4 = Agree Somewhat

5 = Agree

The following questions are designed to assess a high school principal's or assistant principal's perceptions about CTE programs and its incorporation into high school curricula.

11. CTE programs serve primarily to support area employment needs.

1 2 3 4 5

Disagree

Agree

12. Certifications are valuable for students to secure future employment.

1 2 3 4 5

Disagree

Agree

13. CTE is an avenue to retain students who are at risk.

2 3 4 5

Disagree

Agree

14. Exposure to available CTE programming for students should occur prior to the start of high school.

1 2 3 4 5

Disagree

Agree

15. Students enrolled in CTE programs tend to be well-prepared academically.

1 2 3 4 5

Disagree

Agree

16. It is feasible for a student to attend a CTE program and get all their required high school credits to graduate.

1 2 3 4 5

Disagree

Agree

17. Parents are supportive of their students enrolling in CTE courses or programs.

1 2 3 4 5

Disagree

Agree

18. Counselors have sufficient time to expose students to CTE pathways.

1 2 3 4 5

Disagree

Agree

19. Counselors have sufficient time to counsel students on their career aspirations.

1 2 3 4 5

Disagree

Agree

Section D: Educational Background

The following questions are designed to determine the educational background of high school principals and assistant principals participating in this research study.

Please check the appropriate response:

20. Highest level of education

Bachelors Masters Education Specialist Doctorate

21. As a student, which of the following did you attend? Select all that apply.

A community/junior college

A technical school/college

A four-year college or university

22. Did you participate in a CTE program while in high school?

Yes No

23. In College did you study in a CTE program area (e.g., Agriculture, Automotive, Electrical, Construction, Computers, Nursing, etc.)?

Yes, I have a CTE background

No, I do not have a CTE background

24. Area of Teaching Experience?

Academic Courses

CTE Courses

Both Areas

25. What was your major for your bachelor's degree?

26. What was your major for your master's degree?

Section E: Respondent Demographics

The following questions are designed to collect demographics about high school principals and assistant principals participating in this research study.

Please check the appropriate response:

27. Sex

Male Female

28. Years of Principal/Assistant Principal Experience

1 - 3 4 - 6 7 - 9 10+

29. Years of Teaching Experience

1 - 3 4 - 6 7 - 9 10+

30. How many students are currently enrolled at your high school?

Less than 100 - 500 501 - 1000 1001 - 1500 Over 1500

31. How much face-to-face contact do you have with each student enrolled in your high school yearly? (Non-Covid year)

Less than 5 hours 6 - 10 hours 11 - 15 hours Over 15 hours

32. Do you have additional job responsibilities at your school in addition to Principal or

Assistant Principal?

Yes No

If yes, please list those responsibilities:

33. My knowledge level of CTE is based on the following factors. Select as many as applicable.

- I completed a CTE program in high school
- I complete a CTE program in college
- A family member or someone I know personally completed a CTE program
- I have read materials about CTE programming
- My school currently provides CTE programming
- I have toured or observed students in a CTE program
- My school administration has discussed CTE programming for our students
- I have toured area industry and/or discussed CTE programs with community members
- I have attended state meetings and/or conferences about CTE initiatives
- I have limited knowledge of CTE because I have not been involved, or have read very little about CTE

Additional comments about this survey: