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A Mixed Method Investigation of Industry Recognized Credentials and Academic Achievement Among Urban Schools in the State of Missouri

Christopher L. McNeil

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A Dissertation submitted to the Education Faculty of Lindenwood University in partial fulfillment of the requirements for the degree of

Doctor of Education

School of Education

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Sherrie Wisdom — July 30, 2021

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Declaration of Originality

I do hereby declare and attest to the fact that this is an original study based solely upon my own scholarly work at Lindenwood University and that I have not submitted it for any other college or university course or degree.

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Signature: Christopher McNeil Date: July 30, 2021

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Abstract

The purpose of this study was to gather the effectiveness of the Industry Recognized Credentials in preparing Career and Technical Education students' postsecondary opportunities. This study sought to explore if students' exposure to Career and Technical Education (CTE) programing and attainment of Industry Recognized Credentials leads to positive postsecondary placement for Kansas City Public High School students. The researcher collected data from the 2018, 2019, 2020, and 2021 school years.

The researcher conducted a t-Test for difference in proportions, and the data revealed that the percentage of graduates attaining IRC for 2020-2021 was significantly higher than the previous years. The data showed a significant enrollment drop with no recovery in the next three academic years. The results from the survey data indicated that 72.5% of students planned to attend a two-year or four-year institution following graduation. The survey results revealed that 64.71% of the student respondents stated they were familiar with the Industry Recognized Credentials offered within the KCPS. The results from the focus group showed that students across the district were somewhat familiar with IRCs. Some respondents believed that the CTE program was designed only for manual jobs within the skilled trade areas, such as construction, trade, and auto technician. They were unaware the program could lead to college, as well as careers.

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Chapter One: Introduction

Since the founding of the United States, Americans have lived in search of opportunity and success— the American Dream. Former U.S. Secretary of State, Condoleezza Rice summarized it in this manner, "The essence of America – that which really unites us – is not ethnicity, or nationality, or religion – it is an idea – and what an idea it is: That you can come from humble circumstances and do great things" (Quotable Quotes, n.d., p. 1) And what better path is there to come from nothing and achieve everything than education, the great equalizer (Okemos High School, n.d.).

Although our system of education has greatly improved, we still have a distance to travel before this American Dream can be achieved by everyone. In the United States, there is a significant achievement gap between white students and minority students that has barely been narrowed over the last 50 years. If education is key to the American Dream, then adjusting the way that we look at it will help ensure that more kids will graduate and want to continue to educate themselves for the rest of their lives. These students, many from underserved communities, deserve equal opportunities to ensure their success in our nation (Okemos High School, n.d.).

The familiar vision of high school, as expressed as far back as in the No Child Left Behind Act, is that every student will reach a high level of proficiency in core academic skills. Unfortunately, the current American high school education system is based on a model established when the expectations of high school education was far different. The model assumed that most students would not go on to postsecondary education or training, and that the majority had little need for rigorous academic

preparation. Now, those thoughts of students' post-secondary opportunities for high school have changed (U.S, Department of Education [USDOE], n.d., p. 1)

The national discourse on high school reform was increasingly focused on the role of Career and Technical Education (CTE) in preparing all students for success in both postsecondary education and the workforce. High schools were moving away from the stand-alone vocational courses of the past, into which students with lower academic achievement or perceived potential were often channeled. Many educators were now calling for approaches that linked career-technical education, rigorous academic coursework, and experiences that showed students the relevance of education to their future, while teaching them the academic and employability skills they needed to be successful in both college and career. Across the nation, schools, districts, cities, and states were launching or scaling these new programs. Yet many initiatives were struggling to gain traction and expand, due in part to inadequate resources and in part to a shortage of rigorous evidence of their efficacy (Visher & Stern, 2015)

A distinct difference exists between vocational schools and Career and Technical Education (CTE). The old vocational education model made students choose between preparation for a job and preparation for post-secondary education, while the CTE model provides the opportunity for students to prepare for both. CTE programs prepare students for admission to and success in college and career by providing them with a rigorous college preparatory program and industry skills that lead to certifications required for particular careers. Upon graduation, students in CTE schools leave with a high school diploma, an Industry Recognized Certification in a high-demand industry area, and acceptance to a college or other post-secondary institution (Wood-Garnett, n.d.)

The paradigm of college prep and CTE bridges the gap while preparing students for college and secondary education jobs and experiences. Since this is the current direction of education, then some attention is needed regarding CTE, especially as it relates to the American Dream (Obrien, 2010).

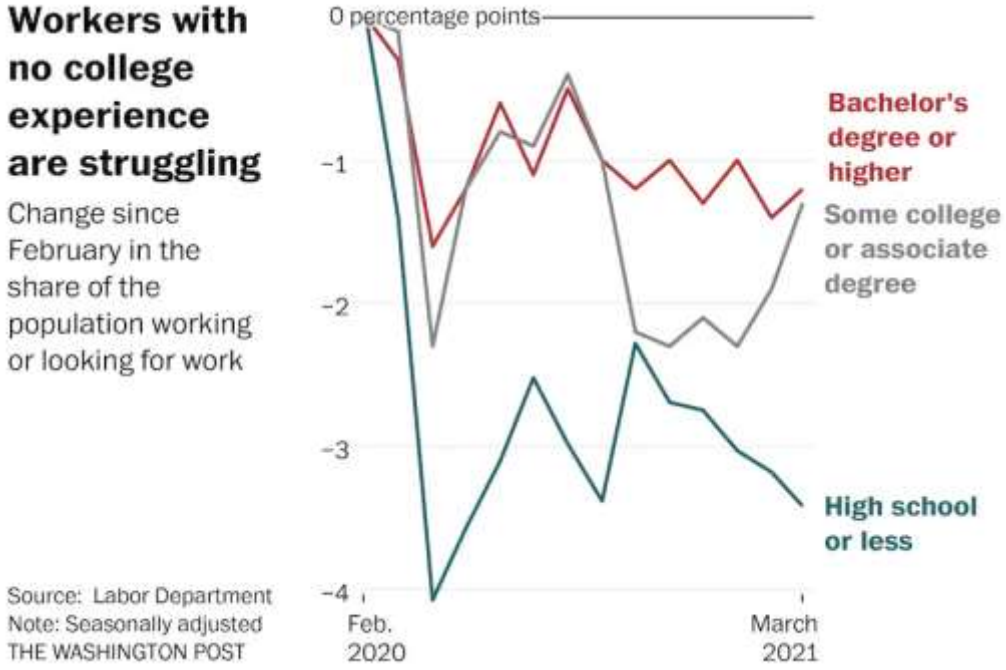
The Association of Career and Technical Education (ACTE) reported that over 14 million students in the United States participated in Career and Technical Education (CTE; Moore, 2015a). Career and Technical Education (CTE) is academic and occupational skill training to prepare students of all ages. Training programs are offered in Agriculture, Business, Health Sciences, Family and Consumer Sciences, Skilled Technical Sciences, Technology and Engineering, as well as Marketing and Cooperative Education (Missouri Department of Elementary and Secondary Education [MODESE] , 2020). One of the major goals of CTE is to help students prepare for their postsecondary career plans. Student with effective CTE programs can earn an Industry Recognized Credential (IRC), college credits, and/or work experiences related to their field of study (Myers, 2015, p. 5; RTI international , 2019). While the majority of recent high school graduates (66.2%) enrolled in colleges or universities to pursue their associates and bachelor's degrees, there was a good portion of students that entered directly into the workforce (U.S. Bureau of Labor Statistics, 2020).

Individuals who plan to enter the labor market without a college degree, or job experience are finding it very hard to finding gainful employment (Figure 1). Nearly four million adult workers without college degrees have not found work again after losing their jobs in the pandemic. Only 199,000 adult workers with a bachelor's degree or higher are in the same situation. About 2.4 million adults over 25, with associate's

degrees had a job in February 2020 and have not returned to work a year later (Long, 2021).

Figure 1

Education and the Workforce.



According to the former president of the National Institute for Work and Learning, Barton (1991), stated that nearly half of the nation's high school graduated population go on to pursue a post-secondary degree, while the other half enter directly into the workforce. He also goes on to state that the students who enter into the workforce have very few options, due to lack of preparedness and experiences in the traditional high school settings (Barton, 1991).

According to the Bureau of Labor Statics, in 2020, 73.3 million workers aged 16 and older in the United States were paid at hourly rates, representing 55.5% of all wage and salary workers. Minimum wage workers tended to be young. Although workers under age 25 represented just under one-fifth of hourly paid workers, they made up 48%

of those paid the federal minimum wage or less. Among employed teenagers (ages 16 to 19) paid by the hour, about 5% earned the minimum wage or less, compared with 1% of workers aged 25 and older ("Characteristics of minimum wage worker," 2020, 2021).

In a survey of 54 personnel/human resource directors, eight trainers, and 16 managers in Texas manufacturing firms, 34% forecasted a decrease in hiring of high school graduates. Most-desired skill categories were group interaction, employability, and personal development, not communication and computation (De Leon & Borchers, 1998).

To that end, it is critical for schools and school districts to have a thriving CTE programs that provide students with more of a competitive edge to equip them for the post-secondary plans. In order for schools and school districts to accomplish this task, they have to meet both labor market demands and the state's department of education. For Missouri school districts to receive accreditation, districts must receive at least 70% or more of the Annual Performance Report (APR) possible points. Annual Performance Reports determine a district's accreditation status and are calculated using the Missouri School Improvement Plan (Donaldson & Rhinesmith, 2021) According to the Missouri Department of Elementary and Secondary Education (MODESE), there are no school districts in the state that are classified as unaccredited. A school district with an unaccredited status typically indicates poor academic performance and concerns of financial mismanagement. School-aged students who reside within the boundaries have the opportunity to transfer to a nearby accredited district at the expense of the local school district. School districts that earn less than 50% of the APR received this status. Although there are not any Missouri school districts that are unaccredited, there are some

that are classified as provisionally accredited, seven to be exact. The provisionally accredited school district earns between 50% and 69.9% of the available APR points (Figure 2). The school districts in the state that are provisionally accredited are: Gilman City, Hayti, Hickman Mills, Kansas City, Naylor, Normandy Schools Collaborative, and Riverview Gardens (2021).

Figure 2

Missouri Accreditation

Missouri's Accreditation Levels	
Accredited with Distinction (not used in MSIP 5)	Equal to or greater than 90% of APR points possible and criteria yet to be determined by the State Board of Education
Accredited	Equal to or greater than 70% of APR points possible
Provisionally Accredited	50% to 69.9% of APR points possible
Unaccredited	Less than 50% of APR points possible

Source: Missouri Department of Elementary and Secondary Education, https://dese.mo.gov/faq-categorization/mo-school-improvement-5-msip5

According to data pulled from the National Center for Education Statistics, four out of the seven school districts that are provisionally accredited serve a higher percentage of minority and students that qualify for free and reduced lunch. Those school districts that are provisionally accredited and serve a high percentage of minority students qualifying for free and reduced lunch include: Hickman Mills C-1, Kansas City 33, Normandy School Collaborative, and Riverview Gardens.

The Missouri School Improvement Program (MSIP) 5 works to prepare every child for success in school and life. MSIP 5 is the state's school accountability system for reviewing and accrediting public school districts in Missouri. MSIP began in 1990 and entered its sixth version in 2020 (MODESE, 2012). MSIP has categories or standards that they use to calculate a district's APR: Standard 1, Academic Achievement; Standard 2. Subgroup Achievement; Standard 3. College and Career Readiness; Standard 4.

Attendance; and Standard 5. Graduation Rate. For the purpose of this study, the researcher will explore Standard 3, College and Career Readiness. Particularly Standard 3, Indicator 4, focuses on the percentage of graduates who earn a qualifying score on Advanced Placement (AP) courses, International Baccalaureate (IB) programs, and obtain and Industry Recognized Credential (IRC). The goal of this research is to examine the effectiveness of IRC attainment in positive placement of students after graduation. Although there is a great deal of research on the positive impact of the Career and Technical Education on student achievement (Zinth, 2015), there is not a wealth of research of this on student positive placement rates. According to a report by the Institute of Education Sciences (IES), little research has documented the system-level alignment of high school CTE programs to projected labor market needs (Harris et al., 2020, p. 3).

Background of the Study

America's urban educational system is in a state of crisis. The achievement gap between inner-city students and their more affluent suburban counterparts has continued to grow. One researcher stated,

> Between 1970 and 1988, the achievement gap between African American and White students was cut in half, and the gap separating Latinos and whites declined by one-third. That progress came to a halt around 1988, however, and since that time, the gaps have widened. (Haycock, 2001, p. 6)

Over the last 50 years, multiple educational and societal experts have attempted to address many of the core issues plaguing the urban educational structure in the United States. Many inner-city students come to school with a unique set of challenges such as poverty, violent neighborhoods, and lack of educational resources. Many educators

would intuitively agree: Failure is not an option for today's students. However, every day in almost every inner-city school, you will find students failing their classes and even dropping out of school. (Blankstein, 2004). In response to this educational dilemma the United States Government enacted the federal School Improvement Grants (SIG) program and was authorized by Title I, Section 1003(g) of the No Child Left Behind Act of 2001. The purpose of the grants was to help turn around the nation's persistently lowest-achieving schools (National Center for Education Evaluation and Regional Assistance, 2011). The Elementary and Secondary Education Act (ESEA), supplemented by the American Recovery and Reinvestment Act (ARRA) of 2009, and the SIG program provided $3.5 billion over the three years toward the goal of turning around the nation's lowest-performing schools (National Center for Education Evaluation and Regional Assistance, 2013). In addition to the SIG program, the Strengthening Career and Technical Education for the 2stst Century Act of 2018, also known as Perkins V, was designed to improve and expand high quality Career and Technical Education (CTE) programs. Perkins V requires a stronger connection between secondary schools and postsecondary education through a student programs of study, attainment of Industry Recognized Credentials (IRC) and work-based learning experiences (Minnesota Department of Education, n.d.). According to the Perkins Web Portal, nearly nine million students participated in Career and Technical courses in 2018-2019 school year.

Theoretical Framework

The theoretical framework of this study is based on Social Construct Theory (SCT), Social Cognitive Career Theory (SCCT), and Experiential Education Theory (EET). Even though there are various viewpoints of this notion, in general the theory

states that people develop knowledge of the world in social context, and that much what one perceives as reality depends of shared assumptions. Social Construct Theory (SCT) and Social Cognitive Career Theory (SCCT) are relatively new theories aimed at explaining three interrelated aspects of career development: (1) how basic academic and career interests develop, (2) how educational and career choices are made, and (3) how academic and career success is obtained (Lent & Brown, 2013). Kolb's Experiential Learning Theory (Starting Point, 2018) defines experiential learning as "the process whereby knowledge is created through the transformation of experience" (p. 1). Knowledge results from the combination of grasping and transforming experience.

Statement of the Problem

In the past two decades, the labor market changed in dramatic ways that make CTE more important than ever. Low-skill jobs are declining in number and value as they are replaced by new technologies or by work performed abroad (Goldin & Katz, 2008) The market for middle-skills jobs—those that require more education and training than a high school diploma, but less than a four-year college degree, is consistently failing to clear (Carnevale et al., 2017). That failure is inflicting a grievous cost on the competitiveness of American firms and on the standard of living of American workers.

Educators burdened by budget cuts focused on enrollment levels and graduation rates. As once-important employers stopped hiring and newer disciplines emerged, educators found it harder to train students with relevant skills. According to an extensive survey conducted by the University of Missouri, in conjunction with the MODESE on the Perceptions of Career and Technical Education in Missouri 57% of adult respondents agreed that CTE tended to focus on a student who was not college-bound. In comparison,

44% of adult respondents agreed that CTE students were not as respected as those who take traditional classes (Russell & White, 2019, p. 2). This attitude about CTE was not just limited to the Midwest but also extended south. A number of citizens of the state of Mississippi also held this sentiment, as well. In 2012, Jordan and Dechert, researchers from Mississippi State University Research and Curriculum Unit (RCU) conducted a CTE perception study involving 418 adults, and 44% the respondents concluded that CTE courses were targeted to the student who would not likely go to college. When the researchers asked if the CTE was highly valuable for student not going to college, 61% said yes; but when the same question was asked in relation to students going to college, only 48% of the respondents said yes (Jordan & Dechert, 2012, p. 3).

Combined with negative perception of the general lack of knowledge of CTE and the increase emphasis of students going to college, CTE has seen a decline in enrollment. According to the National Assessment of Career and Technical Education, there is a decline in overall CTE student participation (National Assessment Center of Career and Technical Education [NACTE], 2014). This trend is particularly true as it pertains to urban Missouri school students who attend schools with a higher concentration of minority and low-income students. The exception to this declining trend is in the areas of health sciences, and public services (NACTE, 2014, pp. 16-25). Figure 3 indicates jobs, listed by ranking and education requirements.

Figure 3

Jobs by Education, Industry, and Occupation

Jobs by educational attainment

Educational attainment	Number of workers	Workers with good jobs	Median earnings	Median earnings of workers with good jobs
Non-BA Workers				
Less than high school	137,000	23,000	$21,000	$52,000
High school graduate	625,000	183,000	$29,000	$53,000
Some college	546,000	203,000	$31,000	$55,000
Associate's degree	216,000	99,000	$36,000	$55,000
All non-BA workers	**1,524,000**	**508,000**	**$30,000**	**$54,000**
BA+ Workers				
Bachelor's or higher	784,000	522,000	$51,000	$67,000
All workers	**2,308,000**	**1,029,000**	**$35,000**	**$60,000**

NON-BA GOOD JOBS

Top five industries

Industry	Number of non-BA good jobs	Share of non-BA good jobs	Share of non-BA workers with good jobs	Median earnings
Manufacturing	96,000	19%	43%	$54,000
Transportation and utilities	59,000	12%	54%	$60,000
Construction	58,000	11%	46%	$57,000
Health services	57,000	11%	25%	$52,000
Information, financial activities, and real estate	55,000	11%	45%	$56,000

Top five occupations

Occupation	Number of non-BA good jobs	Share of non-BA good jobs	Share of non-BA workers with good jobs	Median earnings
Management	65,000	13%	59%	$64,000
Office and administrative support	62,000	12%	24%	$50,000
Production	54,000	11%	35%	$52,000
Transportation and material moving	50,000	10%	34%	$53,000
Construction and extraction	50,000	10%	46%	$57,000

Note: Figures in charts and tables may not sum, due to rounding.

Information in Figure 3 is from Georgetown University Center on Education and the Workforce; Survey microdata (2013-2015), U.S. Census Bureau and Bureau of Labor Statistics, Current Population Survey (CPS), March Supplement data (1992-2016).

Purpose and Significance of the Study

The rationale for this research was to determine if student participation in and awareness of CTE courses and the earning of IRCs would lead to positive placement after students graduate. For this study, a positive placement is the percentage of CTE concentrators who are enrolled at a college or university, advanced training, military service, or a service program that receives assistance under title I of the National and Community Service Act of 1990 (Perkins Collaborative Resource Network). This was accomplished by analyzing data from CTE students who earned an IRC and participated in CTE courses, along with their placement status after graduation. Also examined was the difference between the CTE students who were labeled as concentrators and those who earned an IRC. The term CTE concentrator refers to a student who earned two or more credits within a single program of study, such as Health Science or Business Management and Administration (Wisconsin Department of Public Instruction, 2020, p. 1; 2021).

Analysis of 12 years of longitudinal data found that those who devoted about one-sixth of their time in high school to occupation-specific vocational courses earned at least 12% more salary one year after graduating and about 8% more seven years later (Bishop & Mane, 2004, p..381). The U.S. Department of Education (USDOE) also stated, “Eight years after their expected graduation date, students who focused on career and technical education (CTE) courses while in high school had higher median annual earnings than

students who did not focus on CTE" (U.S. Department of Education [USDOE], 2019, p. 1). The Association for Career & Technical Education (ACTE) revealed that students concentrating in CTE programs had a higher graduation rate. ACTE reported that CTE student concentrators had a graduation rate 95% (Parlier, 2019). According to the National Center for Education Statistics, the national graduation rate for public high school student is 85% (National Center for Education Statistics , 2020).

Research Hypotheses and Questions

H1: The 2021 graduates will have a higher attainment of IRC (Industry Recognized Credentials) than the IRC attainment of Kansas City Public School (KCPS) previous two graduating classes.

H2: The overall student participation in Career and Technical Education programing will be higher than the three previous years.

H3: In support of Perkins V, the 2021 graduates will have a higher attainment of acceptance into post-secondary schools than the previous two KCPS graduating classes.

RQ1: Why and how will the attainment of Industry Recognize Credentials affect high school students' post-secondary opportunities

RQ2: What is the awareness of Industry Recognized Credentials among KCPS students?

Definition of Key Terms

Adequate Yearly Progress (AYP) is the measure by which schools, districts, and states are held accountable for student performance under Title I of the No Child Left Behind Act of 2001 (NCLB), the version, current at the time of the Elementary and

Secondary Education Act. AYP, however, is not a new concept; it was introduced into federal law in the ESEA 1994 reauthorization (Education Week, 2011).

Area Career Center. An area career center is a school which accepts secondary students for high school in a consortium for the purpose of training students in the area of career and technical education (MODESE, 2015)

Career and Technical Education (CTE) is academic and occupational skill training to prepare students of all ages. Training programs are offered in Agriculture, Business, Health Sciences, Family and Consumer Sciences, Skilled Technical Sciences, Technology and Engineering, and Marketing and Cooperative Education.

Carl D. Perkins Career and Technical Education Act (Perkins IV) is a principal source of federal funding to states and discretionary grantees for the improvement of secondary and postsecondary career and technical education across the nation (USDOE, n.d.).

CTE Student concentrator. CTE concentrator is defined as a student who has completed at least two course credits in a single career and technical education (CTE) subject, according to the student's high school transcript (USDOE).

CTE Student Participant. At the high school level, the term *CTE participant* refers to a student who earned at least one credit in any CTE course. The term *CTE concentrator* refers to a student who earned two or more credits within a single program of study, such as Health Science or Business Management and Administration (USDOE).

Industry Recognized Credential (IRC) is a verification of an individual's qualification for competence. The IRC can take many forms, including certifications,

certificates and licenses. Industry-recognized credentials are valued in the labor market and are a validation of knowledge and skill. They can take many forms, including certifications, certificates, and licenses (Ohio Department of Education, 2019).

Individual Career and Academic Plan (ICAP) is a plan of study to guide students through the coursework and activities for achieving personal career goals, post-secondary planning and providing individual pathway options (MODESE, 2015).

Positive Postsecondary Placement. The percentage of CTE concentrators who, during the second quarter after program completion, remain enrolled in postsecondary education, are in advanced training, military service, or a service program that receives assistance under Title I of the National and Community Service Act of 1990 (42 U.S.C. 12511 et seq.), are volunteers as described in section 5(a) of the Peace Corps Act (22 U.S.C. 2504(a)), or are placed or retained in employment (Perkins Collaborative Resource Network).

School Improvement Grant (SIG): Yatsko et al. (2015) stated that these are federal funds used to significantly improve the performance of schools that are in the bottom 5% of Title I schools.

Limitation and Assumption

The limitation of the study is in the area of location and student demographics. The sample group of this study was limited to the high schools locate within the city of Kansas City. Each high school was predominantly populated with African Americans and students who were eligible for free and reduced lunch, this in turn may limit comparison to other more diverse school. The high schools of this study were limited to the urban

high schools within the Kansas City region. Furthermore, a larger sample from other suburban and rural districts could result in more generalizable information.

Sample demographics. Although the intent was to use a sample from which implications may be drawn about the general population, unknown demographics parameters may limit the impact of replication in different geographical locations. This was a study of a large urban Missouri school district with a higher population of minority students. This research was intended to be indicative of the entire region, state and country. However, the sample was readily available and convenient, which may result in wide confidence intervals.

Instrumentation

According to Fraenkel et al. (2012) threats to the validity of the instrumentation process in surveys can cause individuals to respond differently from how they might otherwise respond. While the data from the survey collected from MODESE are archival, accuracy was dependent on the answers collected by former students or their close relatives and friends. The accuracy was further dependent on human third-party collectors charged with collecting and reporting data to MODESE on behalf of their districts.

Summary

Bernhardt (2013) stated when schools focus primarily on compliance, they tend to concentrate on school improvement efforts and how they are being measured. The school district in this study must look beyond the APR and determine how it can better prepare students for post-graduation success. This could come in the form of enrollment in two-year or four-year institutions, or direct employment. This will require the district to develop career pathways at the high school level. The pathways would offer students a

sequence of courses that would provide student real-world experiences, skilled training, and the ability to obtain a Market Value Asset (MVA). An MVA can either be an IRC, nine college credit hours, a client connected project, or an entrepreneurial experience.

Chapter Two includes an exploration of the different aspects of Career and Technical Education. These aspects of Chapter Two include the history of education in the United States, the history of Career and Technical Education in the United States, the history of Career and Technical Education in Missouri (particularly in Kansas City and St. Louis), College and Career and Readiness-MSIP-Technical Skills Assessment (TSA), Industry Recognized Credentials (IRC), Post-Graduation 180-day follow up, and the effects of COVID-19 on CTE programs and student achievement.

Chapter Two: Review of Literature

John W. Gardener, former U.S. Secretary of Health, Education, and Welfare stated, "The society which scorns excellence in plumbing as a humble activity and tolerates shoddiness in philosophy because it is an exalted activity will have neither good plumbing nor good philosophy: neither its pipes nor its theories will hold water" (Forbes Quotes, 2021, p. 1). Years ago, students who participated in vocational education programs (now Career and Technical Education) were commonly viewed as the students who did not have cognitive ability to pursue high educational degrees at colleges and universities. Hsieh, president of San Diego Miramar College, when referring to Career and Technical Education (CTE) stated, "It's considered a second choice, second class, we really need to change how people see vocational and technical education" (Fain, 2017, p. 2). Although some people's perceptions of Vocational or Career and Technical Education programs are negative, some research has shown that Career and Technical Education programs can have a very positive impact of students current and future success (Ball et. al, 2001). Specifically, studies have shown that at "at-risk" student participation in effective Career and Technical Education (CTE) programs have increased student engagement, enrollment, attendance, and graduation rates (Cardon, 2000). Advocates for the expansion of CTE programs state that effective CTE programs should educate students for work, about work, and through work. Educating students for work refers to specific job training and development of skills (Castellano et al., 2005). Students are able to prove their level of skill and competency in certain areas through the attainment of an Industry Recognized Credential (IRC). Educating students about work helps students learn about future careers and what it takes to enter into and move though their careers.

Schools and districts often use the offer of classes, such as career exploration, to provide knowledge about potential career paths. Finally, educating student though work refers to teaching students academic content through the context of work. This became a very popular strategy because it allowed for core content teachers to work with CTE teachers and industry to solve real world problems (Castellano et al., 2005).

According the Hattie, 97% of the interventions that education implements works or enhances students learning; but he cites evidence that some things work better than others (Arnold, 2011, p. 219). Hattie goes on to explain that the excitement of learning and the process of learning are critical outcomes. Byrne and Hattie stated that higher achievement scores were found in schools that students perceived as happy places with many opportunities (as cited in Byrne et al., 1986). Career and Technical Education (CTE) offers a wide range of opportunities for students to be exposed to skill training in 16 career cluster areas in a variety of occupational areas, such as science technology engineering and math (STEM), business, communications, and health science (Xing, et al., 2019).

This literature review will explore the following:

1. The history of Education in the United States
2. The history of Career Technical Education in United States
3. The history of Career and Technical Education in the Missouri (Particularly in Kansas City and St. Louis)
4. College and Career Readiness-MSIP-Technical Skill Assessment (TSA) and Industry Recognized Credentials
5. Post-Graduation 180 Follow up

6. The effects of COVID-19 on CTE programs and student achievement

Theoretical Framework

For this study, the researcher will explore the history of Vocational/Career and Technical Education in the United States and how increased funding and legislation have helped to enhance CTE program offerings and student achievement over the past century. This genesis and evolutions of CTE programs and how they have been built and implemented in the United States has been a very interesting study. With its origin are deeply rooted in Agriculture and bipartisan support to develop its current expansion of incorporating all career areas (Hillison, 1995). The cluster areas include but are not limited to: architecture, business, education, finance, health services, human services, information technology, manufacturing, marketing, science, and transportation (Harrison et al., 2021, p. 2).

The history of Career and Technical education in the one of Missouri's largest urban school districts, which is Kansas City Public Schools, will be explored. In this section, the researcher broadly explores the similarities and differences of program offerings across the state, as compared with the Kansas City Public Schools (KCPS). The research will also compare elements of CTE programing with St. Louis Public Schools (SLPS), because it is closely matched with KCPS in its size and demographics.

The College and Career Readiness (CCR) section of the literature review will include an examination of how the MODESE uses the Missouri School Improvement Program to help determine a Missouri school or district's accreditation status. MODESE computes an Annual Performance Report (APR) score for each Local Education Agency (LEA) and school. This overall score is comprised of scores for each of the MSIP 5

Performance Standards, which are: (1) Academic Achievement (2) Subgroup Achievement (3) High School Readiness (K-8 districts) or College and Career Readiness (K-12 districts), (4) Attendance Rate and (5) Graduation Rate (K-12 districts). Status, progress, and growth (where applicable) are used to calculate a comprehensive score used to determine the accreditation level of a school district (MODESE, 2014, p.30). The researcher will specifically explore how standard 3, indicator 4, of the College and Career portions affected the Kansas City Public School.

In the 180-day follow-up section of the literature review, the researcher will explore how districts used the post-graduation information as part of Core Data (CD) collection process to assess the effectiveness of Career and Technical Education Programs across the district. The Core Data System is a data collection system with integrated screens, used to directly enter or update information from school districts. Data in several Core Data screens are now populated from Missouri Student Information System (MOSIS). MOSIS contains data at the individual level and derives from the data counts for the aggregate collections. In MOSIS, data is standardized, collected, and presented such that the maximum use can be made for decision making and reporting (MODESE, 2016).

History of Urban Education in the United Stated

To understand the state of urban education in America and the need for implementation of effective CTE program one must have an appreciation of the major socio-economic trends that occurred in metropolitan areas across the nation, since the latter half of the 20th century. During the early decades of the 20th century, the United States experienced significant demographic transformation. There was a remarkable

increase in the country's immigrant population. Simultaneously, a sizeable portion of America's indigenous rural population moved towards urban centers. At the dawn of the 20th century, nearly 60% of America's population lived in or near towns with populations fewer than 2,500 (Rabinowitz, 2004, p. 85). Between 1870 and 1920, millions of Americans migrated from largely rural agricultural communities to the nation's urban industrial centers seeking social advancement and economic opportunity. "Forty-seven million people were added to the urban population as the 1900s began, and all of them needed roofs over their heads" (Rabinowitz, 2004, p. 86). During the same time period, successive waves of new arrivals began streaming into America's cities from around the world. Following a national economic downturn in the 1890s, immigration into America surged. Approximately 3.5 million immigrants came to the United States in last decade of the 1800s. That number ballooned to nearly nine million in the first decade of the 1900s. Immigrants from Northern and Western European countries, like France, England, and Germany continued coming to America, as they had for three centuries. But in the early 1900s, substantially decreasing numbers of immigrants came from those traditional locations (Bodnar, 1987). "After the second decade of the 19th century and prior to World War II, over four million of these individuals left homelands in Asia, North America, Europe, and elsewhere to find a place in the new economic order of capitalism" (Bodnar, 1987, p. 3). After 1880, the majority of immigrants coming to America tended to emanate from Eastern and Southern European countries (Alexander, 2004). By 1910, these Europeans made up over 70% of the immigrants entering the United States of America (Kraut, 2001). The overwhelming majority of these immigrants settled in ethnically concentrated neighborhoods in cities throughout America.

The unprecedented population shift into America's cities placed a great demand on urban social and physical infrastructure (Kraut, 2001). As the nation's cities expanded during the early decades of the 20th century, so did the urban crises. Before 20th century America, most cities did not have urban planning programs. Metropolitan areas were ill-equipped to effectively provide adequate public services to the expanding populations. Urban law enforcement, health organizations and social service groups were often overwhelmed. "The coalescence of industrialization, urbanization, and immigration telescoped urban development far beyond the existing capabilities of most city dwellers and their institutions" (Ebner & Tobin, 1977, n.p.). It was not long before cities, like Chicago, New York, and St. Louis discovered their housing supplies, streets, and other public services were inadequate to meet the demands of the urban masses. New professions, institutions, and government bureaucracies emerged, in order to deal with the growing urban crisis. During this time, the professional discipline of contemporary American city planning was established (Horman, 2010). Fairfield (1993) explained, "The economic and physical changes associated with the new metropolitan form was only one part of a more profound transformation of American society during that sixty-year period, (1877- 1937)" (Fairfield, 1993, n.p.).

America's urban core experienced increased growth, until shortly after World War II. The Great Depression of 1930s had all but stalled the residential housing markets. Mass production spurred by the need for war materials during World War II sparked an economic resurgence in America that lasted throughout the 1950s. While the suburbs, as a place, existed for decades before World War II, they were exclusive to individuals and families with considerable income. However, following World War II several domestic

policies initiated by the federal government made home ownership available for many more individuals. The Wagner-Steagall Housing Act of 1937, which established the United States Housing Administration Authority and the Housing Act of 1949 made home ownership available for millions of families for the first time. In addition, the Servicemen's Readjustment Act of 1944, also known as the G.I. Bill, was a law passed by Congress that made available a wide range of benefits for returning World War II veterans. The benefits included low-cost mortgages, low interest business loans, and college tuition. By 1956, over two million soldiers used the G.I. Bill to attend college, and even more used the benefits to purchase homes. Millions of African-Americans had moved from the segregated South to northern, mid-western, and west coast industrial centers to pursue better jobs and educational opportunities. During World War II, many African-Americans worked in plants producing goods and materials for the war effort. Many White soldiers returning from World War II wished to start new settled lives outside of the urban core. Racial tensions in many of the country's metropolitan centers only hastened the large-scale movement of Whites to towns just outside major urban areas. Whites moved in mass to the emerging suburbs across the nation. A suburban boom began to take place in the early 1950s in America. The nation was experiencing tremendous prosperity.

Unfortunately, most of the wealth was not invested in American cities. Industrial boomtowns, like East St. Louis, IL, began to feel the pain of White flight (Boustan, 2010)

President Dwight D. Eisenhower spearheaded the first Federal-Aid Highway Act in 1956. The Eisenhower administration believed creating the interstate system would provide jobs and connect America’s expanding suburbs to the nation’s urban centers. The

nation's leading urban policy specialists predicted the interstate system could clear blighted urban areas and restore waning property values (United States Senate , 1956). The 1960s plan pointed to the ongoing construction of five major highway projects, in and around East St. Louis, at the time. Interstates 64, 55, 70, 255, and Illinois Route 15, were under construction (Boustan, 2010). The construction of freeways in the 1960s pushed the city of East St. Louis to a socio-economic point of no return. The local governmental structure was increasingly unable to adequately address the community's growing socio-economic needs. Throughout the 1960s, unemployment and poverty devastated the city and its neighborhoods. An urban historian, Self (2003), wrote about similar contemporary socio-economic dynamics, which occurred in post-World War II Oakland, CA. Self (2003) pointed out that Oakland did not experience characteristic "white flight" (pp. 26-30). Self (2003) suggested a more precise evaluation was that Oakland's white population was lured away from the central city by potent financial inducements. Similar events took place in East St. Louis during the 1960s. The "steering variables" of increased property values, expanded public services, and community well-being attracted families to other cities. Both Oakland and East St. Louis became examples of an abused urban location (Logan & Molotch, 1987). Urban authorities Logan and Molotch (1987) explained the rising and falling fortunes of cities were related to the current and prospective values of land in a particular regional market place.

According to the 1950 U.S. Census, it was the first time in the nation's history that more people lived in the suburbs than anywhere else in America. Urban industrial factories were closing. The expanding service sector of the economy increasingly looked to move their operations outside of the urban core. The development and expansion of

mass transportation and interstate highway system transported wealth and people from the city to suburbs. One of the major unintentional consequences of the rise of suburban America was the collapse of the American urban educational system. As a result of this collapse, the achievement gap between the urban student population (low-income minorities) and their more well-off suburban counterparts widened. The Federal, State, and Local Governments, along with the local school districts throughout the United States, bore witness to this educational polarization and were left with the daunting task of fixing this problem (Fryer & Levitt, 2005).

> Between 1970 and 1988, the achievement gap between African American and white Students was cut in half, and the gap separating Latinos and whites declined by one-third. That progress came to a halt around 1988, however, and since that time, the gaps have widened. (Haycock, 2011, p. 7)

According to the National Center for Educational Statistics (NCES) in 1999, by the end of high school only one in 50 Latinos and one in 100 African American 17-year-olds could read and gain information from specialized text, such as the science section in the newspaper (compared to about one in 12 Whites), and fewer than one-quarter of Latinos and one-fifth of African Americans could read the complicated, but less specialized text, that more than half of White students could read. The same patterns were true in math (National Center of Education Statistics, 2011)

About one in 30 Latinos and one in 100 African Americans could comfortably do multistep problem solving and elementary algebra, compared to about one in 10 White students. Only three in 10 African American and four in 10 Latino 17-year-olds mastered the usage and computation of fractions, commonly used percent, and averages, compared

to seven in 10 White students. By the end of high school, in fact, African American and Latino students had skills in both reading and mathematics that were the same as those of White students in eighth grade. Significant differences also persisted in the rates at which different groups of students completed high school, and in their postsecondary education experiences (Haycock, 2011).

Education Reform

In 1964, Lyndon B. Johnson won his election on his Great Society Platform. At this time in U.S history, roughly 20% of the American population lived below the poverty line. President Johnson went on to urge the nation "to build a great society, a place where the meaning of man's life matches the marvels of man's labor" (The White House , n.d, paras. 5-6).

> In his commencement speech at Ohio University on May 7, 1964, he stated: The United States will be a place where no man who wants to work will fail to find it. Where no citizen will be banned from any door because of his birthplace or his color. Where peace and security is common among neighbors and possibly, among nations. (Ohio University Archives, 1967)

Throughout the Johnson administration, over 200 laws and programs were enacted, which included but was not limited to: Medicaid, Medicare, National Foundation of the Art and Humanity (NEA), the Civil Rights Act, and the Elementary and Secondary Act (ESEA). For the purpose of this study, the researcher took a closer look into ESEA and its implication on schools and districts.

The goal of ESEA was to have equal access to education, increased accountability for school and districts, and to close the achievement gap between students across the

nation. ESEA offered new grants to districts serving low-income students, federal grants for textbooks and library books, funding for special education centers, and scholarships for low-income college students. Additionally, the law provided federal grants to state educational agencies to improve the quality of elementary and secondary education. ESEA was broken down in six sections or Titles, I-VI. Title I provided funds for schools with at least 40% of the student population classified as low-income. The goal of this section of ESEA was to improve schools and prevent dropouts (USDOE, 2004, paras. 1-2).

During the first years of ESEA, schools were not allowed to use the Title I funds on a school-wide basis, and because the federal government wanted to make sure that the resources were going straight to the intended students, punitive measures were put into place to make sure that schools complied with the regulations. In fact, the schools could only use the funds by implementing pullout programs. In 1978, an amendment was passed that allowed schools with at least 75% of students considered to be low-income students to use the funds on a school-wide basis (USDOE, 2018).

With every new administration came a new iteration of ESEA. In 1981, the Reagan Administration passed the Education Consolidation and Improvement Act (ECIA). The ECIA of 1981 was intended to provide opportunities for states and local governments to have more control of their educational programs and to deregulate the administration of federal programs. Introduced at a time when state funding and revenue systems were severely depleted, it presented states with many answered questions. ECIA funds were intended for working on school improvement programs, but lowered funding meant officials' attentions would be directed towards maintenance of existing programs.

Decision-making relationships were left unclear-by the ECIA, and compliance standards were uncertain (Darling-Hammond & Marks, 1983).

On October 20, 1994, under the Clinton administration the Improving Americas Schools Act (IASA) was passed. According to Le Tendre (1996), "The primary focus of the revised statue is to support comprehensive state and local reform to improve teaching and learning for all students" (p. 6). The emphasis was on high academic standards with aligned curriculum, assessments, and professional development. Another major change with this version of ESEA was the addition of math and reading standards, along with ability for schools to apply for a waiver to loosen some of the restrictions that came along with Title I funds.

By 2001, most states including the District of Columbia, developed academic standards, content standards, and achievement standards. Academic standards described what student should know and be able to do in the core academic areas. The aforementioned core area included: math, science, social studies, and language arts. Content standards described the body of knowledge that all students should know, and achievement standards described what level of performance is considered basic, proficient and advanced (Spellings, 2005, p. 15). The year 2001 was also the year that the No Child Left Behind Act (NCLB) was passed into law, and it brought increased accountability measures for school district around the country. According to the 2005 report published by the United States Education Department,

> The federal No Child Left Behind Act of 2001 requires states to test all students in reading and mathematics in grades 3–8 and at least once in high school. Science assessments will be required at least once during grades 3–5, 6–9, and

> 10–12 starting in the 2007–08 school year. Each state, school district and school is expected to make adequate yearly progress toward meeting state standards in these subject areas and to measure this progress for all students. Special focus is placed on the progress of students who are economically disadvantaged, are from racial or ethnic minority groups, have disabilities or have limited English proficiency. (Spellings, 2005, p. 16)

Under NCLB states were required to bring all students to the "proficient level" on state tests by the 2013-2014 school year; but some educational experts suggested that it did little to increase low performing schools. By 2010, it was clear that many schools were not going to meet NCLB's achievement targets. As of that year, 38% of schools were failing to make adequate yearly progress, up from 29% in 2006 (Klein, 2015).

In 2009, under the Obama Administration, the American Reinvestment and Recovery Act (ARRA) was passed. This act earmarked more than $90 billion for education, including the Race to the Top initiative, aimed at spurring K–12 education reform. Authorized under the American Recovery and Reinvestment Act of 2009 (ARRA), the Race to the Top Assessment Program provided funding to consortia of States to develop assessments that were valid, and supported and informed instruction, provided accurate information about what students knew and could do, and measured student achievement against standards designed to ensure that all students gained the knowledge and skills needed to succeed in college and the workplace (House - Appropriations; Budget, 2009).

History of Career and Technical Education in America

According to Moore, who is the past president of the Association for Career and Technical Education (ACTE) in late 1800s and early 1900s, the American education system had fallen out of step with societal needs (Moore G., 2015a). "What was learned in schools was often of little value or of practical use in a rapidly developing industrial nation that still has agrarian roots" (Moore, 2017, p. 17-19). O. J. Kern, Winnebago County, Illinois, Superintendent of schools asked,

> Why not a course of training in the country school for the country boy which shall teach him more about the country life about him? Along with his study of the kangaroo, the bamboo and cockatoo, why not study the animals of the farm (Lindvall, 2008, p. 4).

During this time there was a ground swell of support for changing schools to meet the need of society, and in 1917 it began.

On February 23, 1917, the Smith-Hughes National Vocational Education Act was signed into law, launching the federal investment in career and technical education (CTE). This Act provided funds to support agriculture, home-making, trade and industrial education. (DeWitt, 2017). According to Hillison (1995), it took a powerful coalition of unlikely allies to support the passage of the Smith Hughes Act of 1917. Members of the coalition included: National Society for the Promotion of Industrial Education (NSPIE), American Federation of Labor (AFL), National Education Association (NEA), National Association of Manufactures (NAM), United State Chamber of Commerce, National Democratic Party. Progressive (Bullmoose) Party, American Home Economics Association (AHEA), General Federation of Women's Clubs, Wallace Farmer, Hoard's

Dairyman, National Grange, and Association of American Agricultural Colleges and Experiment Stations (Hillison, 1995). The Act was named after Senator Hoke Smith, Chairman of Committee on Education and Labor who was also a lawyer, and Dudley Hughes from Georgia, who was a farmer.

The Smith-Hughes Act had major provision which provide some structure and overcite for the newly passed legislation. The purpose of vocational education was to prepare individual training to enter in to the workforces. For the states to accept the funds, they had to first develop a training plan to prepare the teaches. To enroll in vocational education programs participants, need to be at least 14 years of age. The minimum age of 14 was adopted because the legislators want to encourage student to continue their education and prevent the money from going to elementary schools. Along with teacher preparation state boards of vocational education were established to develop a plan on how the funds would be used and allocated. In addition to the state boards, federal board were created, and it was their job to set rules and regulations. Finally, states were required to match the federal funds and only public schools could receive the funds (Moore, 2017, p. 17-21).

Over the next two decades after the Act was implemented, student participation in vocational education programs significantly increased (Greenberg, 2007). During this time vocational education was designed to focus on meeting the need of the society. One of the major needs was farming. According to the U.S. Census, 95% of the American population resided and worked in rural areas (The Housing Assistance Council, 2011). Although the Smith-Hughes Act helped to create what we now know as Career and Technical Education programs, major funding did not occur until the 1960s and 1970s.

The Vocation Act of 1963 meant that States were now funded based on student population rather than field of study, including money for academically and economically disadvantaged and disable students. According to Wolf (1978),

> The basic purpose of the Federal effort in vocational education is to enable States to extend, improve, and maintain existing programs of vocational education for persons of substantially varying needs including such special need groups as handicapped, disadvantaged, language minorities, and women who want to enter traditionally male occupations. (Wolfe, 1978, p. 5)

Prior to 1980, vocational education received less than one percent of educational expenditures, but was increased five 5% by 1980 (Arum, 1998). Although the funding increased, the government support began to falter. Social scientists also questioned the efficacy of spending additional funds on vocational programs for two reasons: Liberals argued that the vocational programs did not help the working class, but segregated and diverted students from higher educational attainment, and the conservatives questioned the public school's ability to spend efficiently to design effective programs and use the additional resources constructively (Arum, 1998).

At the time of his writings, Riccardi (2017) reported that federal government allocated $1.3 billion in funding annually for vocational education at the secondary level in the United States, particularly with the authorization of the Perkins Act in 1984 and its reauthorization in 1998 and 2006 (Riccardi, 2017). Carl D. Perkins was a Democrat from Kentucky who served in the House of Representatives. He was a strong supporter of technical education, and his legacy can be found in both the Perkins Loan and the Perkins Act. While commonly referred to as vocational education, new wording in the law

changed the vernacular from “vocational” to “career and technical education.” The Strengthening Career and Technical Education for the 21st Century Act (Perkins V) was signed into law by President Trump on July 31, 2018. This bipartisan measure reauthorized the Carl D. Perkins Career and Technical Education Act of 2006 (Perkins IV) and continued Congress’ commitment in providing nearly $1.3 billion annually for career and technical education (CTE) programs for our nation’s youth and adults (USDOE, 2018).

At first glance, Perkins IV and Perkins V appear to be the same; because of the focus on the advancement of Career and Technical Education; but, the latest version possessed distinct differences. Perkins V Legislation (2021) provided for greater flexibility in how funds were spent and reformed accountability systems. Under Perkins V, states are required to report annually on the following core indicators of performance. States are also required to report disaggregated data on the performance of students by race, ethnicity, gender, and special population categories (2021). The core indicators for Perkins V include the following: 1S1: Four-Year Graduation Rate, 1S2: Extended-Year Graduation Rate, 2S1: Academic Proficiency in Reading/Language Arts, 2S2: Academic Proficiency in Mathematics, 2S3: Academic Proficiency in Science, 3S1: Post-Program Placement, 4S1: Non-traditional Program Concentration, 5S1: Program Quality – Attained Recognized Postsecondary Credential, 5S2: Program Quality – Attained Postsecondary Credits, 5S3: Program Quality – Participated in Work-Based Learning, and 5S4, 5S5, 5S6...: Program Quality – Other.

1S1: Four-Year Graduation Rate refers to the percentage of CTE concentrators who graduate high school, as measured by the four-year adjusted cohort graduation rate

defined in ESEA. The four-year adjusted cohort graduation rate is the number of students who graduate in four years with a regular high school diploma divided by the number of students who form the adjusted cohort for the graduating class. From the beginning of 9th grade (or the earliest high school grade), students who are entering that grade for the first time form a cohort that is "adjusted" by adding any students who subsequently transfer into the cohort and subtracting any students who subsequently transfer out, emigrate to another country, or die ("Graduation Rate for ESEA Flexibility" 2021).

1S2: Extended-Year Graduation Rate refers to the percentage of CTE concentrators who graduate high school by extended-year adjusted cohort graduation rate defined in ESEA. By definition, the extended graduation rate is referred to the number of students that graduated after their cohort groups. This is calculated using the legacy graduation rate formula which include is the number of student's student who graduate high school with a regular diploma that year divided by the number of students expected to complete high school that year (Wisconsin Department of Public Instruction, 2021).

2S1: Academic Proficiency in Reading/Language Arts is the CTE concentrator proficiency in the challenging State academic standards adopted by the State under section1111(b)(1) of the Elementary and Secondary Education Act of 1965, as measured by the academic assessments in reading/language arts as described in section 1111(b)(2) of such Act ("Indicators of Performance," 2021).

2S2: Academic Proficiency in Mathematics is CTE concentrator proficiency in the challenging State academic standards adopted by the State under section 1111(b)(1) of the Elementary and Secondary Education Act of 1965, as measured by the academic

assessments in mathematics as described in section 1111(b)(2) of such Act ("Indicators of Performance," 2021).

Academic Proficiency in Science is the CTE concentrator proficiency in the challenging State academic standards adopted by the State under section 1111(b)(1) of the Elementary and Secondary Education Act of 1965, as measured by the academic assessments in science as described in section 1111(b)(2) of such Act ("Indicators of Performance," 2021).

3S1: Post-Program Placement is the percentage of CTE concentrators who, in the second quarter after exiting from secondary education, are in postsecondary education or advanced training, military service or a service program that receives assistance under title I of the National and Community Service Act of 1990 (42 U.S.C. 12511 et seq.), are volunteers as described in section 5(a) of the Peace Corps Act (22 U.S.C. 2504(a)), or are employed ("Indicators of Performance," 2021). In most school districts this commonly referred to as the 180 day follow up survey. The operation of Career and Technical Education (CTE) programs must report Follow-Up data related to any students who have achieved concentrator status within those programs. This data is collected via a Follow-Up Survey of concentrators, which is designed to gather information needed to help students, parents, and administrators make decisions related to the CTE programs that prepare students to hold jobs after leaving high school. National and state agencies use Follow-Up survey results for policy studies, annual program planning, and establishing funding formulae. Additionally, many districts report local and state results to their school boards and the press.

4S1: Non-traditional Program Concentration The percentage of CTE concentrators in career and technical education programs and programs of study that lead to non-traditional fields. This means that a student gets counted under this indicator if individuals from their gender comprise less than 25%of the individuals employed in the related occupation or field of work.

5S1: Program Quality-Attained Recognized Postsecondary Credential-The percentage of CTE concentrator graduating from high school having attained a recognized postsecondary credential. This indicator of performance measures the CTE concentrators attainment of an IRC (Industry Recognized Credential). Industry Recognized Credential (IRC) is a verification of an individual's qualification for competence. The IRC can take many forms, including certifications, certificates and licenses. Industry-recognized credentials are valued in the labor market and are a validation of knowledge and skill. They can take many forms, including certifications, certificates, and licenses (Ohio Department of Education, 2019).

5S2: Program Quality-Attained Postsecondary Credit-is the percentage of CTE concentrators graduating with credits in the relevant career and technical education program or program of study earned through dual credit or concurrent enrollment or other transfer agreement. A Dual Credit program is a program in which postsecondary courses, taught in a high school by certified secondary instructors, which a high school student may take to earn both high school and higher education credits. Courses may also be administered online, or as hybrid courses ("Dual Credit," 2021). Advanced articulation an agreement between a school district and a college or university that allow students to get a certain number of college credits after graduation if they attend the specific college or

university after they graduate high school and major in the specified program area. The university often require those to earn a certain number of general education courses before that student is able to apply the aforementioned credits to their degree and certification ("College Articulation Agreements – Students – Career and Technical Education," 2021).

5S3: Program Quality – Participated in Work-Based Learning-is the percentage of CTE concentrators who participated in work-based learning opportunities such as internships, practicums, and clinical rotation. These opportunities typically occur after students have demonstrated mastery or competency in certain areas and that student is working in under close supervision of an instructor, mentor, or industry professional (D'abate et al., 2009). 5S4, 5S5, 5S6...: Program Quality – refers to the percentage of CTE concentrators achieving on states selected measure of student success in CTE ("Perkins V Comprehensive Local Needs Assessment," 2021).

The latest authorization of Perkins will stretch from 2019-2024, and state plans will cover a four-year period and will need to be evaluated every two years. This is a huge change in accountability, because in the past evaluations were not completed regularly and could not keep up with rapid changes and demands. Perkins V increased funds for the first time in about 30 years, boasting a $75 million increase in FY2018 and another $70 million increase in FY2019 (Mantick, 2019). These increased funds allow school and districts to use the funds to provide CTE programs to middle school students. Previously Perkins IV would not allow schools to use funds for middle school courses. Another key difference between Perkins IV and V is that requirement for stakeholder input. In Perkins V, state plans must be developed in consultation with specific

stakeholders, including those from secondary and postsecondary CTE programs, community representatives, the WIOA-established workforce development board, and representatives from the special populations (Perry, 2019, p. 17). The special population similar to subgroups included: English-language learners, students in special education, and poor and minority children, whose achievement, on average, trailed their peers (Klein, 2015). The new reauthorization of the fund changed the definition of the concentrator, as a student who completed two CTE courses within a pathway. Previously, the students would only be considered concentrators if they completed three courses within a CTE pathway (USDOE, 2019). The definition of CTE student participation remained the same to include students who participated in at least one CTE course during high school. According to Stump (2019), Assistant Secretary for Career, Technical, and Adult Education, "On our most recent reported data set, on CTE participation and concentration, it shows that only 8 million of America's 15 million high school-aged students participate in a CTE course in a given year" (Stump, 2019,).

Finally, a major difference between Perkins IV and Perkins V is that the latter allows for alignment with other federal laws. In the past, Perkins grant recipients had not been required to have a comprehensive needs assessment, while many of the other federal program had (Perry, 2019, p. 17). The comprehensive local needs assessment (CLNA) is a new requirement of the Perkins V Legislation (2021). Each institution that receives a Perkins Basic grant allocation must conduct a needs assessment that addresses how Perkins programming and funding will support CTE programs and assist special populations students as outlined by the Act ("Perkins V Comprehensive Local Needs Assessment," 2021).

Additionally, the difference between Perkins IV and Perkins V is the alignment of Perkins funds with other federal laws. When Congress passed the Workforce Innovation and Opportunity Act (WIOA) in 2014, steps were taken to support the alignment and integration of programs in states' workforce and talent development pipelines. WIOA allowed for the submission of a joint plan, in conjunction with Perkins plans, which were designed to connect a state's vision for the state workforce system and align and integrate the State workforce system across Federal programs (Perkins Collaborative Resource Network [PCRN], 2019). According to the Perkins Collaborative Resource Network (2019), six states submitted the WIOA/Perkins State plans. The aforementioned states are Delaware, New Hampshire, Virginia, Ohio, Pennsylvania, and Minnesota (PCRN, 2019).

States Leading in CTE

In 2012, 42 states, the District of Columbia, and Palau participated in the development of Common Career Technical Core (CCTC) standards. The CCTC included a set of standards for each of the 16 Career Clusters and their corresponding Career Pathways that defined what students should know and be able to do after completing instruction in a program of study (Consortium, 2012). Career Ready Practices described the career-ready skills that educators should seek to develop in their students. The CCTC standards included twelve notions that sought to ensure that CTE participants were able to be success in the workforce and academic settings. The standards are as follows:

1. Act as a responsible and contributing citizen and employee.
    a. Career-ready individuals understand the obligations and responsibilities of being a member of a community, and they demonstrate this understanding every day through their interactions with others.

2. Apply appropriate academic and technical skills.
    a. Career-ready individuals readily access and use the knowledge and skills acquired through experience and education to be more productive. They make connections between abstract concepts with real-world applications and they make correct insights about when it is appropriate to apply the use of an academic skill in a workplace situation.
3. Attend to personal health and financial well-being.
    a. Career-ready individuals understand the relationship between personal health, workplace performance and personal well-being; they act on that understanding to regularly practice healthy diet, exercise and mental health activities. Career ready individuals also take regular action to contribute to their personal financial well-being, understanding that personal financial security provides the peace of mind required to contribute more fully to their own career success.
4. Communicate clearly, effectively and with reason.
    a. Career-ready individuals communicate thoughts, ideas and action plans with clarity, whether using written, verbal and/ or visual methods. They communicate in the workplace with clarity and purpose to make maximum use of their own and others' time.
5. Consider the environmental, social and economic impacts of decisions.
    a. Career-ready individuals understand the interrelated nature of their actions and regularly make decisions that positively impact and/or mitigate negative impact on other people, organizations and the environment.

6. Demonstrate creativity and innovation.
    a. Career-ready individuals regularly think of ideas that solve problems in new and different ways, and they contribute those ideas in a useful and productive manner to improve their organization.
7. Employ valid and reliable research strategies.
    a. Career-ready individuals are discerning in accepting and using new information to make decisions, change practices or inform strategies.
8. Utilize critical thinking to make sense of problems and persevere in solving them.
    a. Career-ready individuals readily recognize problems in the workplace, understand the nature of the problem, and devise effective plans to solve the problem.
9. Model integrity, ethical leadership and effective management.
    a. Career-ready individuals consistently act in ways that align to personal and community-held ideals and principles while employing strategies to positively influence others in the workplace.
10. Plan education and career path aligned to personal goals.
    a. Career-ready individuals take personal ownership of their own educational and career goals, and they regularly act on a plan to attain these goals. They understand their own career interests, preferences, goals and requirements.
11. Use technology to enhance productivity.

a. Career-ready individuals find and maximize the productive value of existing and new technology to accomplish workplace tasks and solve workplace problems. They are flexible and adaptive in acquiring and using new technology.

12. Work productively in teams while using cultural/global competence. (Consortium, 2012, p. 1)

Career-ready individuals positively contribute to every team whether formal or informal. They apply an awareness of cultural differences to avoid barriers to productive and positive interaction. They find ways to increase the engagement and contribution of all team members. They plan and facilitate effective team meetings, (Consortium, 2012, pp. 1-2)

In West Virginia, 70% of the long-term projected employment occupational training beyond high school; but less than a bachelor's degree. Further the 93% of the aforementioned were served by at least one aligned CTE program (Harris et al., 2020). The state's department of education was very intentional about setting their students up with success, while in school. In order to graduate, students were required to earn 24 credits. Those credits were: four in Reading and English Language Arts, four in Math, three in Science, four in Social Studies, one in Physical Education, one in Health, one in Art, two Electives, and four in Career Concentration Courses. (West Virginia Board of Education , 2006). The resulting CCTC was a set of rigorous, high-quality standards for CTE that states can adopt voluntarily.

Another notable state that bolstered significant student success in CTE was Tennessee. As one the first states to receive Race to the Top funds, this state made

notable changes to their CTE plans. One of the major areas of focus was the blending of the state core academic standards with CTE standards and competencies (Gibney, 2014) . According to Gibney, in the 2014 school year Tennessee had 117 new and revised CTE courses that reinforced Tennessee state standards (2014).

Finally, the next states that will be referenced are Florida, Kentucky, and Indiana. These states where a part of a study conducted by ExcelinEd, in conjunction with Burin glass Technologies. The study included over a million students that spanned an eight-year period. According to the report, all of the participating states found that earning a credential related to positive outcomes for student. The positive outcome included: high school graduation, enrollment and completion of Community College, and high wages for participants (Walsh et al., 2019, p. 5).

CTE in Missouri

Missouri's Career Education delivery system consisted of 521 local education agencies. These local education agencies included 444 comprehensive high school districts (57 with area career centers), one state technical college, 12 community college districts (four with area career centers), seven four-year institutions, and two state agencies (MODESE). MODESE also stated that 64%of all high school students participated in at least one CTE program during the 2018-2019 school year. MODESE also reported for that academic school year that over 178,000 students participated in CTE programs. (MODESE, 2020). According the Missouri Division of the Association for Career and Technical Education (MCACTE) the state received over 25 million dollars of the Federal Perkins CTE funding in fiscal year 2020. MOACTE goes on to site that Missouri CTE student concentrators have a higher graduation rates than those who do not

participate in CTE. According to the association Missouri student graduation rate is 89%while CTE concentrators are at 96.5%(Association for Career and Technical Education , 2021, p. 1).

According to the DESE career education program/course enrollment data report for the 2019-2020 school year 16% of the student receive their CTE training at an area career center and the remaining 84% enroll in CTE courses at their comprehensive high school. This data indicates that CTE programing has the highest growth potential within comprehensive high schools. In that same year, 48.9% of CTE student were female and 51.1% of the student were male. Although the participation in CTE programs are close when categorized by gender that's where the equality ends.

Only 25.6% of the total CTE student enrollment can be classified as people of color, while the remaining 74.4% of student are white (MODESE, 2020, p. 2).

Table 1

Total Secondary Program/Course Enrollment Demographics (Occupational Programs)

Demographic		2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20
Gender	Female	49.5%	49.2%	49.0%	48.9%	49.0%	48.9%	48.7%	48.9%
	Male	50.5%	50.8%	51.0%	51.1%	51.0%	51.1%	51.3%	51.1%
Race	Black	15.0%	14.9%	15.1%	15.1%	14.4%	14.1%	13.4%	13.4%
	White	77.8%	77.4%	76.7%	76.1%	75.8%	75.4%	75.4%	74.5%
	Other	7.3%	7.6%	8.2%	8.8%	9.9%	10.6%	11.3%	12.2%
Disadvantaged		30.4%	32.7%	18.6%	27.2%	28.4%	28.9%	27.9%	27.3%
Disabled		9.7%	10.0%	6.1%	10.0%	10.0%	10.4%	10.4%	10.3%

Breaking done the data further shows that the top three programs that student where enrolled in where Family Consumer Sciences and Human Services, Business Education, and Agriculture Education.

The most popularly enrolled programs were was FCSH (Family Consumer Sciences and Human Services) with a total student enrollment of 134,138. Within FCSH program area the most populated course was Personal Finance with a total student

enrollment of 40,293. It is important to note that Personal Finance is a graduation requirement for high school students. The next course within the FCSH with the large enrollment numbers is Nutrition and Wellness with a student enrollment of 17,149. Lastly, is the General Foods course with a student enrollment of 12,579.

Second was business education with an overall student enrollment of 108,117 across the state. The top three course within the business education pathway include Personal Finance which has a total enrollment of 40,293. The high volume of student in this course maybe contributed the fact that all Missouri student are required to take this course as a graduation requirement. The next highest enroll business education course is computer application with a total student enrollment of 16,973 high schoolers. Rounding out the list of business education course is multimedia with a total student enrollment of 5,625 students.

Third was agriculture education with combine student enrollment of 36,068. Within the agriculture education program, the course with the highest student enroll are Agriculture 1-Animal Science (9,487 enrolled), Agriculture 2-Plant Science (4,964 enrolled) and Agriculture Construction (3,186 enrolled). Table 2 shows the other programs areas and their enrollment data, it also included both secondary and adult data from the state (MODESE, 2020).

Table 2

Total 2019-20 Career Education Program/Course Enrollments by Program Area/Instruction Level

Section	Secondary	Adult	Postsecondary	Total
Agriculture Education	36,068	3,970	2,921	42,959
Business Education	108,117	2,246	17,731	128,094
Marketing and Cooperative Education	15,972	138	3,197	19,307
Health Sciences	15,535	9,805	17,252	42,592
Family Consumer Sciences & Human Services	134,138	343	3,630	138,111
Skilled Technical Sciences	13,140	31,942	17,481	62,563
Technology & Engineering	14,800	0	0	14,800
Totals	**337,770**	**48,444**	**62,212**	**448,426**

MISP 5

The Missouri School Improvement Plan (MSIP) is the State of Missouri's accountability systems for reviewing and accrediting public school district, outline the expectations for students with the ultimate goal of each student graduating ready for success in college, career, and life (MODESE, 2019, p. 2). According to the MSIP 5 Comprehensive Guide, The APR is comprised of MSIP 5 performance standards, (1) Academic Achievement (2) Subgroup Achievement (3) High School Readiness (K-8 districts) or College and Career Readiness (K-12 districts), (4) Attendance Rate and (5) Graduation Rate (K-12 districts). Status, progress, and growth (where applicable) are reported (MODESE, 2019, p.7).

For this study, the researcher will focus on MSIP standard three which is College and Career Readiness. This standard measure a district effectiveness in preparing to be

successful after they graduate from high school. Standard three is comprise of six indicators. For this study the researcher will concentrate on indicators four through six. Standard 3 indicator 4 is concerned with the percent of graduates who earned a qualifying score on an Advanced Placement (AP), International Baccalaureate (IB), or Technical Skills Attainment (TSA) assessments and/or receive college credit through early college, dual enrollment, or approved dual credit courses meets or exceeds the state standard or demonstrates required improvement (Carnahan, 2021). Standard 3 indicator 5 and 6 looks at the percent of graduates who attend post-secondary education/training or are in the military within or employed in a related career field six month after graduation (Carnahan, 2021).

Missouri State Plan for Perkins V

Perkin V planning began in the summer of 2018 after the Strengthening Career and Education for the 21st Century Act was passed. One January 28, 2019 the first state holder's meeting was held with the Missouri CTE Advisory Council. The member of the council included: An administrator of Career and Technical Education, individuals from the business community with a background in commerce, former CTE instructors, representative from a business organization, association of businesses, community college representative, a representatives from Southeast Missouri State University and Central Missouri, Superintendents, three State Representative, Director of School Counseling, Director of the Missouri Division of Workforce Development, and a member of Coordinating Board for Higher/Education. The role of this group was to provide insight and guidance for short- and long-term plans ("Missouri Perkins V Plan," 2021). Out of the series of meetings the following priorities emerged: Access, opportunity,

equity: Provide all students access to a broad range of high-quality educational opportunities form early learning into post-high school engagement. Teacher and leaders: Prepare, develop and support educators to ensure an effective teacher in every classroom and an effective leader in every school. Efficiency and effectiveness: Create an internal environmental of continuous improvement, effective programing and efficient business operations ("Perkin V Workshop Presentation," 2021). The state plan also identified cluster of innovation, which was defined as a group of competing or cooperating companies, suppliers, service providers and research institutions found within a state. The innovation cluster that came from this group included: Advance Manufacturing, Energy Solutions, Biosciences, Health Sciences and Services, Information Technology, Financial and Professional Services, and Transportation and Logistics ("Missouri Perkins V Plan," 2021).

Every school district in the state of Missouri is accredited, however seven districts are classified as provisionally accredited. Out of the seven that have this distinction 4 of them serve a high percentage of minority students who qualify for free and reduced lunch (MODESE, 2021, p. 4). Hickman Mills School district has a designation of provisionally accredited, its enrollment is 6,019 students and 91% of the students fall within a minority group. (Public School Review , n.d.). For the 2020 academic school year 486 student participated in CTE programs, while only 54 were classified as concentrators. Out of the 52 student concentrators 51 graduated with in the cohort group, 26.5 scored proficient or high on state assessment in Language Arts and Mathematics, 5 students score proficient or higher in science. 96.5% of the district CTE student concentrators had a positive post-graduation placement. The positive placement status meant that with 6 months after

graduation student either attended a two-year or four-year institution, were employed in a related CTE field, was a member of the armed forces, or were enrolled in advance training. Only 14 of those students earned an IRC (Industry Recognized Credential) in 2019 and none in 2020.

Kansas City Public School District

Kansas City Public School District is the one of the largest school districts in the state of Missouri, with a student population of 15,568 enrolled in grades PK-12. This urban school district serves a very diverse student population with 57% of the population being black, 28% Hispanic, 9% white, and 6% classified as other. All of the student within the district qualified for free and reduced lunch. 1 out of 5 students' first/primary language in not English ("By the Numbers - Kansas City Public Schools," 2021). The school district is also classified as provisionally accredited. In 2011 the district lost it accreditation due to poor student performance and consistently failing to meet the annual APR. To provide some historical data in 2013 KCPS earned 84 of a possible 140 points in the APR. In 2014 the district showed slight improvement and earned 92.5 out of the 140-point available. The district continued to show progress and increase its score to 98 out of the possible 140 points. The school of 98 points equated to 70% which equated to the district being eligible for accreditation in six years. In 2018 the district continued their upward trajectory by scoring 99.5 out of the possible 120 points which meant that the distract earned 82.9% of point on the AYP ("MSIP 5 District/Charter APR Summary Report - Public Historical," 2021). Table 3 provides a break down the points assigned by MSIP 5 standards, for Kansas City Public Schools.

Table 3

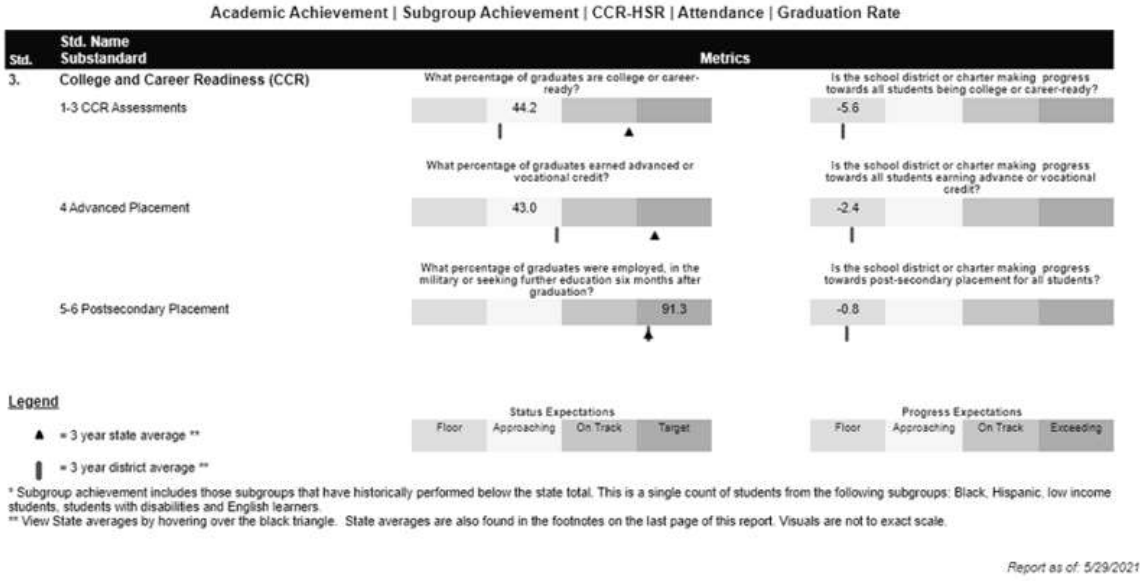
MSIP 5 Standards: Kansas City Public Schools.

MSIP 5 Standards	Points Possible	Points Earned	Percent Earned
1. Academic Achievement	40.0	35.0	87.5%
2. Subgroup Achievement	10.0	9.0	90.0%
3. College and Career Ready (CCR)	30.0	25.5	85.0%
4. Attendance	10.0	6.0	60.0%
5. Graduation Rate	30.0	24.0	80.0%
Total	120.0	99.5	82.9%

In 2019 Annual Performance Report (APR) was redesigned and removed the percentile score that the state uses to make accreditation decisions and replaced it with color-coded bar graphs meant to give parents a more detailed look at how their school district or charter school is doing. It is important to note that the researcher was is using the data from 2019 because on March 19, 2020 in response to the COVID-19 pandemic DESE announced that the Missouri Assessment Program (MAP) would not be administered in the spring. This include both Grade-Level (GLA), End of Course (EOC) and Missouri Assessment Program-Alternative (MAP-A).

Figure 4

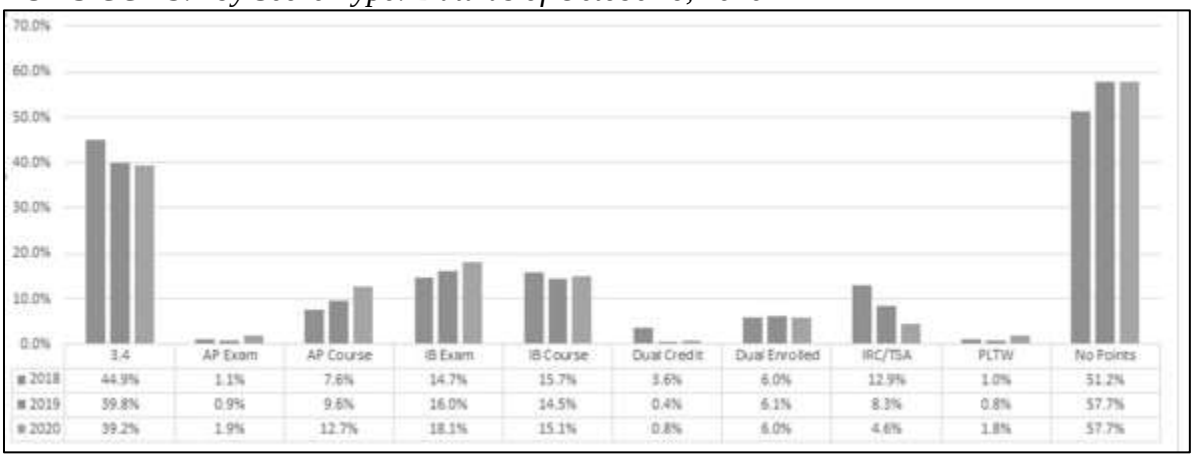
2019 MSIP5 District/Charter APR Summary Report – Public Final: Kansas City 33 (048078)



For the purposes of this student the researcher, used standard 3 indicators 4-6 which focuses on College and Career Readiness (CCR). This is the area in which aligns with the study. The MSIP Standard 3: Indicator 4 – College and Career Readiness is the percentage of graduates who earn qualifying score on AP, IB or IRC assessments and/or receive college credit at or above state standard or meets required growth? MSIP Standard 3: Indicators 5 and 6 – College and Career Readiness is the percentage of graduates who attend post-secondary education/training or are in military within 6 months of graduating at or above state standard or meets required growth of graduates who complete approved career education programs are placed in occupations directly related to their training, continue their education, or are in the military within 6 months of graduating at or above state standard or meets required growth (MODESE, 2019). Figure 5 shows the data for Kansas City Public School Districts for the 2019/20 school year:

Figure 5

MSIP5 CCR 3.4 by Score Type: Data as of October 6, 2020

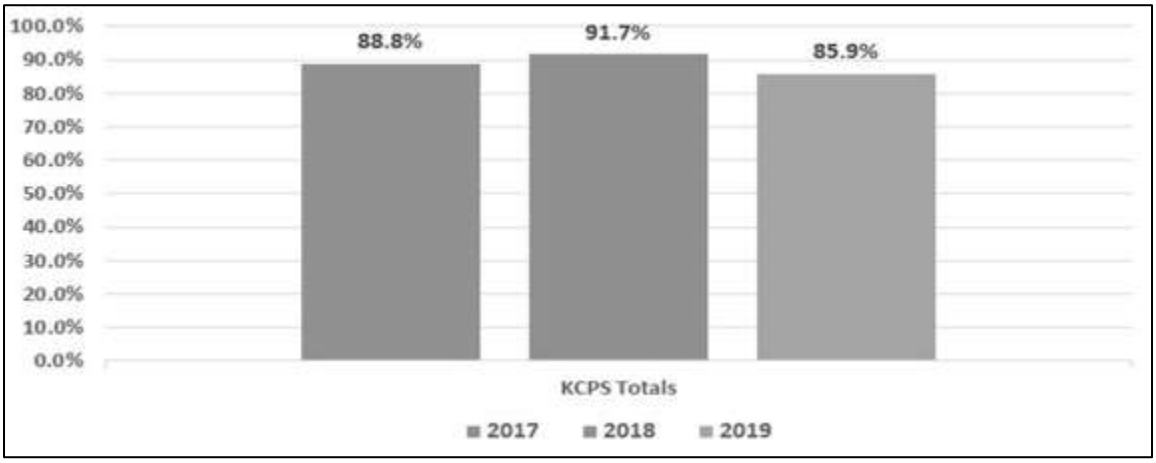


	3.4	AP Exam	AP Course	IB Exam	IB Course	Dual Credit	Dual Enrolled	IRC/TSA	PLTW	No Points
2018	44.9%	1.1%	7.6%	14.7%	15.7%	3.6%	6.0%	12.9%	1.0%	51.2%
2019	39.8%	0.9%	9.6%	16.0%	14.5%	0.4%	6.1%	8.3%	0.8%	57.7%
2020	39.2%	1.9%	12.7%	18.1%	15.1%	0.8%	6.0%	4.6%	1.8%	57.7%

Figure 6 displays MSIP 5 Data Standard 3 Indicator 5-6

Figure 6

MSIP5 Standard 3.5-6 Postsecondary Follow-up: Data as of October 6, 2020



Normandy Collaborative School District

Normandy Collaborative School District is another provisionally accredited urban school district located in the within North Saint Louis County. Normandy has a total of six schools with a total of 3,096 student enrolled. The student body served by this school district is 94.6% Black, 2.0% Hispanic, and 3.4% of the student are classified as other

("Normandy Schools Collaborative," 2021). In 2012 the school district lost it accreditation due to poor student performance and was taken over by the state for governance. In 2013 the school district earned only 15.5 out of the possible 140 available AYP points. In 2014 the district earned 10 AYP points which was 7.1% of the total point available. 2015 brought significant growth for the district and they increase there AYP percentage to 30.4%. In 2018 the district increased there AYP percentage to 67.5% which put them in the provisionally accredited range. Below, in Table 4, is the break MSIP 5 break down for that year.

Table 4

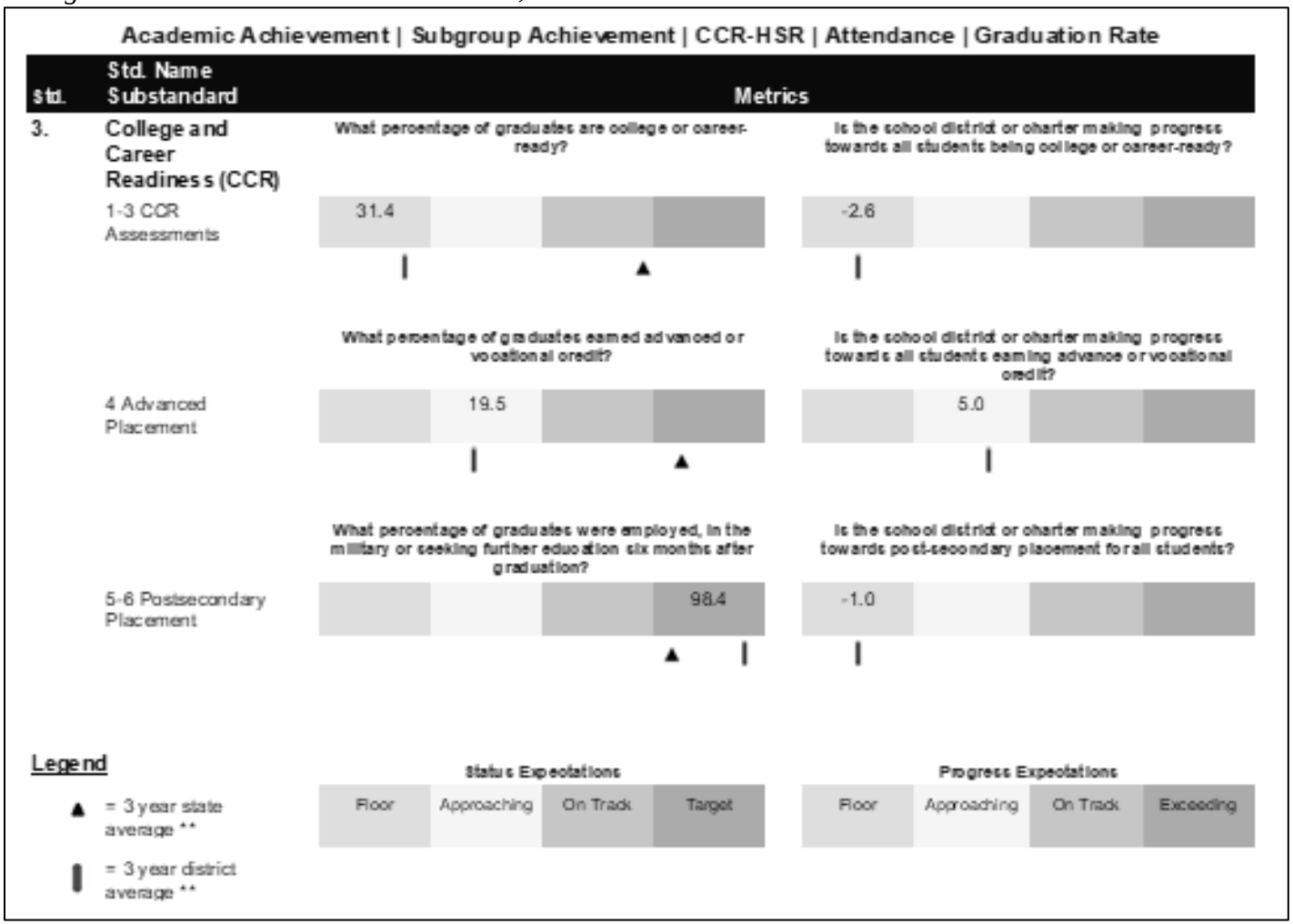
MSIP 5 Standards: Normandy Collaborative School District

MSIP 5 Standards	Points Possible	Points Earned	Percent Earned
1. Academic Achievement	40.0	26.0	65.0%
2. Subgroup Achievement	10.0	7.0	70.0%
3. College and Career Ready (CCR)	30.0	18.0	60.0%
4. Attendance	10.0	0.0	0.0%
5. Graduation Rate	30.0	30.0	100.0%
Total	120.0	81.0	67.5%

During this year the school district earned 60% of the available points in MSIP 5 Standard 3 indicator 4-6, for College and Career Ready. For 2019 the graph below shows the information for MSIP 5 indicators 3-6 (Figure 7).

Figure 7

College and Career Readiness – Attendance, Graduation Rate



Industry Recognized Credentials

As school districts are helping to prepare students for post-secondary plans they are using CTE programs to lead the way. According to researchers, CTE programs have been linked to greater earning, higher graduation rates, and post-secondary enrollment (Walsh et al., 2019).

> High school CTE programs that offer opportunities to earn IRC adhere to an education for work approach, since they are preparing students for the workplace . . . Students have the opportunity to learn skills that are assessed by measures external to the high school. IRC bring "real-world" standards and expectations into high school, presumably increasing student engagement in and completion of CTE programs and course sequences that culminate in such credentials. (Castellano et al., 2005, p. 8)

One of the ways in which CTE programs are equipping students for their futures is the attainment of (Industry Recognized Credentials (IRCs). IRCs are credentials awarded by third parties to certify competency in a skill or set of skills that are relevant to an occupation. (Walsh et al., 2019). IRC's can be classified in the following types: License, Certification, Software, General Career Readiness, and CTE Assessment.

Licenses are mandated by law; workers gain permission to practice in particular occupation. This permission to practice or operate typically expires over a period of time and needs to be renewed periodically. According to an article published by the U.S. Bureau of Labor and Statistics, Cunningham (2019) said, "The prevalence of occupational licenses, common in fields such as healthcare, law, and education, has risen substantially over the past 50 years" (Cunningham, 2019, p. 5). Examples of licensures

are Cosmetology, Licensed Practical Nurse (LPN), and Commercial Driver License (CDL). In careers, such as cosmetology or nurse assistant, certification is granted after accruing a set number of instructional and applied hours, and after passing written and performance-based exams of proficiency (Castellano et al., 2005).

Certifications also signal those persons have acquired a set of skill and abilities. Certification is the process by which organizations recognize individuals for meeting certain criteria established by the organization in which individuals are recognized for advanced knowledge and skills. It is a form of self-regulation, which is voluntary in that it is not required of individuals prior to practice and is without governmental oversight (Bellevue College, 2014).

The next type of IRC that will be discussed is Software. The software IRC indicate a person can demonstrate a level of proficiency in a particular program software. Common software IRCs include but are limited to: Microsoft Office Specialist, Adobe Certified Expert, and QuickBooks. Microsoft Office Certification is offered in many career and technical education courses. Almost every job today requires some form of technology skills. Students have the option to take these industry-recognized exams at no cost and will have a distinct edge in today's job market (Snohomish School District, n.d.).

"General Career Readiness measure foundational workplace skill including basic reading, math, financial and digital literacy, workplace safety, and basic life support or first aid" (Walsh et al., 2019, p. 14). One example of General Career Readiness is Occupational Safety and Health (OSHA) Act. "The OSHA Outreach Training Program provides workers with basic and more advanced training about common safety and health

hazards on the job. Students receive an OSHA 10-hour or 30-hour course completion card at the end of the training" (United States Department of Labor , n.d.).

CTE Assessments are used to measure the skill attainment of students who have completed a program of study. According to MODESE, in order for a student to receive this accommodation they are required to:

1. Meet all requirements set forth in state and local board of education policies related to earning a high school diploma.
2. Complete at least three courses in a single career and technical education program of study. A course is defined locally as a series of lessons that equal one credit.
3. Maintain a minimum grade point average of 3.0 on a 4.0 point scale in the CTE area of concentration as defined on the student's Individual Career and Academic Plan (ICAP).
4. Pass an approved Technical Skill Assessment (TSA) and/or earn an approved Industry Recognized Credential or Certificate (IRC) aligned with the student's CTE area of concentration.
5. Complete a minimum of 50 hours of appropriate work-based learning experiences aligned with the student's CTE area of concentration. Work-based learning experiences may include Registered Apprenticeships, Cooperative Career Education programs, internships, clinical settings, job shadowing, entrepreneurial experiences, school-based enterprises, structured business/industry field trips, service learning, or other opportunities that provide students with real-time, authentic work experiences.

6. Maintain at least a 95% attendance record overall for grades 9-12. (MODESE, 2019, p. 1)

Today's economy demands a better educated workforce than ever before, and jobs in this new economy require more complex knowledge and skills than the jobs of the past (American Institutes for Research, 2013). The decade of the 1990s saw an increase in the development of industry skill standards considered necessary for entry and success in various industries. (America's choice: High skills or low wages!' Commission on the Skills of the American Workforce, 1990). Although school districts across the country see the value of IRCs as a driver for a future success, very few monitored the data related to credential attainment at the secondary level (Walsh et al., 2019). In 2002, 10 states had policies stipulating that high school CTE programs must use these industry-recognized credentials as program drivers, and programs must develop their courses of study based on the industry-based knowledge and skill requirements (Workforce Excellence Network, 2002).

Chapter Three: Methodology

Chapter Three outlines the methodology procedures followed during this study. However, following the approval of this study, the United States school systems began dealing with the effects of the world-wide pandemic of COVID-19. The researcher will discuss some of the challenges presented and some changes brought about related to CTE, as well as describe procedures for the study.

Research Hypotheses and Questions

The Hypotheses and Questions for this study were:

Null H1: The 2021 graduates will not have a higher attainment of IRC (Industry Recognized Credentials) than the IRC attainment of Kansas City Public School (KCPS) previous two graduating classes.

Null H2: The overall student participation in Career and Technical Education programing will not be higher than the three previous years.

Null H3: In support of Perkins V, the 2021 graduates will not have a higher attainment of acceptance into post-secondary schools than the previous two KCPS graduating classes.

RQ1: Why and how will the attainment of Industry Recognize Credentials affect high school students' post-secondary opportunities

RQ2: What is the awareness of Industry Recognized Credentials among KCPS students?

The Effects of COVID-19 on CTE Programs and Student Achievement

In this section of the methodology, the researcher will explore some of the effects of COVID-19 on urban schools, which likely had an effect on data generated and gathered throughout this study. Particularly, the researcher will explore the unique

challenges that came about as a result of the digital divide among students of color accessing technology and resources and the challenges of teaching CTE courses remotely.

According to the Center on Reinventing Public Education, a Seattle-based research organization, districts that served students living in poverty were more likely to start fully remote, too. Forty-one percent of the highest poverty districts would be operating all remote for the fall 2020 semester, compared with 25% of the lowest-poverty districts (Klein, 2020a). As the world becomes increasing interconnected so has risks that society face.

The COVID-19 virus is linked to Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV) that similarly can be as fatal (Meng et al., 2020). This new virus can be transmitted just in minutes through droplets or even touching surface metals or other materials which have been infected from a person who has respiratory problems (Toquero, 2020, p. 4). Although the COVID-19 caused a global pandemic and affected many people from all walks of life, it disproportionally affected people of color.

According to the Center for Disease Control and Prevention (CDC), long-standing systemic health and social inequities have put many people from racial and ethnic minority groups at increased risk of getting sick and dying from COVID-19 (Center for Disease Control and Prevention [CDC], 2020). COVID-19 hospitalization rates among non-Hispanic Black people and Hispanic or Latino people were both about 4.7 times the rate of non-Hispanic white people (Marshall, 2020). To that end, schools that serve students of color who are living in poverty have also been disproportionally affected.

According to Klein (2020b), districts that serve students living in poverty are more likely to start fully remote education routines, in the fall, too. Forty-one percent of the highest poverty districts will be all remote this fall, compared with 25% of the lowest-poverty districts (Klein, 2020b).

In a technical sense a remote learning system combines on-line service information and remote user information with a television signal designed to be received by students using multimedia personal computers (United States of America Patent No. US5833468A, 1996). Practically, remote learning may feature some of the same content styles as online classes but could also incorporate a number of other instructional methods. While most courses will follow a unique structure that fits best with the curriculum and instructor's teaching style, remote learning may be delivered synchronously or asynchronously (Campo, n.d.). Synchronous learning of live online instruction sessions while asynchronous learning refers to the material that students are engaged in over a period of time (Levy, 2020).

In an abundance of caution, a number of school districts serving students who are economically disadvantaged decided to conduct their instruction remotely and have further exposed the digital divide. The idea of the "digital divide" refers to the growing gap between the underprivileged members of society, especially the poor, rural, elderly, and handicapped portion of the population who do not have access to computers or the internet; and the wealthy, middle-class, and young Americans living in urban and suburban areas who have access ("The Digital Divide," n.d.).

The effects of COVID-19 on CTE was incredibly taxing because of the nature of education that it offers student. According to a national survey conducted by the ACTE in

January and February of 2021, CTE professionals reported that the biggest challenge they faced during the 2020-2021 school year was motivating and engaging learners and providing hands-on learning opportunities, such as lab time and work experiences. The respondents of the survey also had trouble getting students prepared for their respective certification exams and difficulties with technology (Association for Career and Technical Education [ACTE], 2021). This sentiment was echoed by Kimberly Wilson who interviewed and was asked how COVID-19 has affected her classroom experience. Ms. Wilson stated the following,

> Many students still do not have reliable technology to engage in daily virtual learning instruction and activities, which leaves them feeling disengaged and frustrated. With the lack of engaging face-to-face interaction and work-based learning opportunities, students lack the desire to participate in the virtual classroom. (Wilson, K., 2020, p. 1)

ACTE also cited decreased student participation in CTE courses, as well as lower student achievement. CTE administrators also forecasted a continued decline in students' enrollment in the future (ACTE, 2021). The Perkins V Act also has provisions for what the legislation referred to as unanticipated circumstances. As per the Perkins V Act, Section 113(b)(3)(A)(iii), a state may, after public comment, revise State Determined Levels of Performance (SDPLs) if unanticipated circumstances arise. Due to the COVID-19 pandemic of 2020, secondary and postsecondary schools that provide career and technical education experienced qualifying unanticipated circumstances. According to section 113, if an unanticipated circumstance happens, then the state will be able to adjust the levels of performance, then the agency will submit the changes to the Secretary with

evidence of improvement. Then, the Secretary will make the recommendation for approval. In Missouri, MODESE decided to follow the steps in order to take advantage of these provision. In March of 2021, state administrators anticipated that a number schools and districts would not meet the state determined performance levels; so, they decided to submit an Improvement Plan for all Perkins grant recipients. The charts in Figure 8 and Figure 9 display the adjusted performance levels expectations.

Figure 8

Revised Performance Levels Based on Covid-19 Interference - Secondary.

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6
Indicators	**Baseline Level**	**Performance Levels**			
		FY 2020	**FY 2021**	**FY 2022**	**FY 2023**
Secondary Indicators					
1S1: Four-Year Graduation Rate	92.70%	93.30%	93.90%	94.50%	95.10%
Revised Targets		91.0%	91.00%	91.5%	92.0%
2S1: Academic Proficiency in English Language Arts	68.50%	70.30%	72.20%	74.00%	75.90%
Revised Targets		12.0%	12.0%	15.0%	25.0%
2S2: Academic Proficiency in Mathematics	56.30%	58.90%	61.50%	64.00%	66.60%
Revised Targets		9.0%	9.0%	11.5%	21.0%
2S3: Academic Proficiency in Science	39.00%	39.50%	40.00%	40.50%	41.00%
Revised Targets		7.0%	7.0%	7.5%	10.0%
3S1: Post-Program Placement	90.50%	90.75%	91.00%	91.23%	91.50%
Revised Targets		70.0%	70.0%	72.5%	75.00%
4S1: Non-traditional Program Concentration	23.00%	23.10%	23.15%	23.20%	23.25%
Revised Targets		7.0%	7.0%	7.5%	8.0%
5S1: Program Quality – Attained Recognized Postsecondary Credential	12.40%	12.90%	13.40%	13.90%	14.40%
Revised Targets		2.0%	2.0%	2.5%	5.0%

Figure 9

Revised Performance Levels Based on Covid-19 Interference - Postsecondary.

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6
Indicators	Baseline Level	Performance Levels			
		FY 2020	FY 2021	FY 2022	FY 2023
Postsecondary Indicators					
1P1: Post-Program Placement	70.43%	71.60%	72.77%	73.94%	74.21%
Revised Targets		50.00%	50.00%	5500%	65.00%
2P1: Earned Recognized Postsecondary Credential	43.43%	43.90%	44.37%	44.84%	45.41%
Revised Targets		15.00%	15.00%	17.50%	25.00%
3P1: Non-traditional Program Concentration	21.92%	23.16%	24.40%	25.64%	26.88%
Revised Targets		5.00%	5.00%	10.00%	15.00%

Along with the challenges came opportunities to innovate and experiment with new techniques. In Rockbridge County High School, students were able to create outdoor classrooms in order to allow the students to complete performance assessments and check of competencies in a safe manner. In Kansas, DECA organized virtual challenges to develop students' leadership skills. In Missouri, students at Manual Career Center were allowed to use simulations and computer-based programs in order to practice various methods and techniques (ACTE, 2021).

Methods and processes used in this study are outlined in this chapter to show how the findings will be helpful for urban school district within the state of Missouri. In this chapter, the researcher will layout the purpose and problem, rationale, research questions and hypotheses, research design, population, instrumentation, and data collections.

The primary purpose of this study was to gather information on the impact of secondary-level Career and Technical Education on positive graduation placement. This information may inform expansion of CTE programs throughout the metropolitan region, including participating schools and districts. The current situation regarding the Area Career Center is four high schools plus one charter school feed into the center. There is high student participation in CTE programs from the sending school district but a lower number of student completers. Already the number of students attending the Area Career Center has steadily dropped. For example, in 2018 the Area Career Center had an enrollment of 228 and the overall enrollment decreased in 2021 to 124 students. The Industry Recognized Credential (IRC) should have an uplifting effect on the number of students completing the certifications. Specifically, this should be an incentive for students to participate and complete the prescribed program.

An Industry Recognized Credential is defined as a portable, recognized credential that validates an individual has successfully demonstrated skill competencies in a core set of content and performance standards in a specific set of work-related tasks, single occupational area, or a cluster of related occupational areas. A student does not have to be a concentrator to take an IRC ("Technical Skills Attainment & Industry Recognized Credential," 2021). In 2018, 147 students earned 147 credentials. There were 47 student that earned the American Association Family and Consumer Sciences (AAFCS-CA) in Culinary Arts, one student earned AAFCA-EF, four students earned the AACCS-Fashion, 18 students earned the ASE (Auto Collision Repair Technology), 20 earned ICAR, and 14 earned PACT.

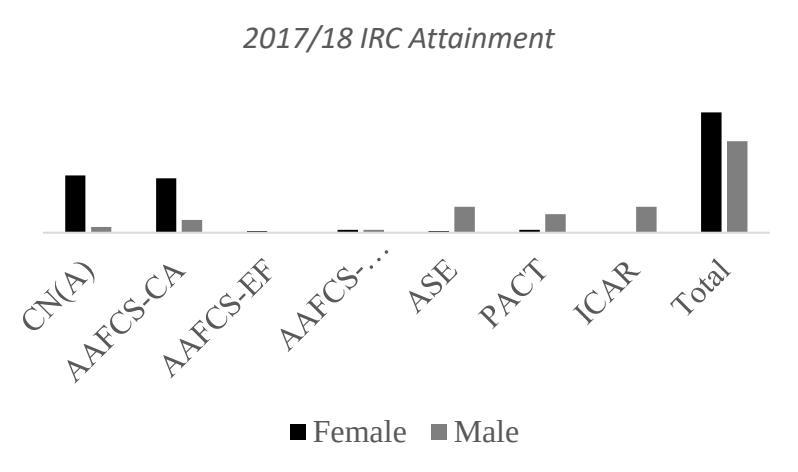
IRC Certification: Gender

In the 2017-2018 school year, a desegregation of the data reveals that certain genders earned IRCs in particular areas. Over 90% of the CNA certifications were earned by female students and over 94% of the ASE certifications were earned by male students. Figure 10 provides more details. The result of the 2018 gender data analysis is consistent with national trends. According to a study conducted by the National Center for Education Statistics,

> Among the 2013 cohort, males earned more credits than females in the five CTE subject areas of engineering, design, and production; construction; mechanical repair and operation; computer and information sciences; and agriculture and natural resources. Females earned more credits than males in the four CTE subject areas of consumer services, healthcare, communication and communication technologies, and public services. In 2013 there was no statistically significant gender gap in credit earning in business, finance, and marketing. (Liu & Burns, 2020 p.9)

Figure 10 displays the 2017-2018 IRC data; IRC attainment by gender.

Figure 10. 2017-*2018 IRC Data by Gender*



The Top three certification areas were AAFCA-CA, ASE, and ICAR. Industry standards and requirements drive the Culinary Arts Assessment and Certification; based on industry standards that are useful in a broad range of education and employment settings ("Technical Skills Attainment & Industry Recognized Credential," 2021).

The ASE is to identify and recognize those Automobile and Light Truck (up to Class 3). Technicians who can demonstrate knowledge of the skills necessary to diagnose, service, and repair cars, SUVs, and light duty trucks ("Test Series," 2021).

The Inter-Industry Conference on Auto Collision Repair (I-CAR) was established in 1979 as a non-profit organization for providing training and continuing education to members of the auto collision industry. I-CAR training programs focus on keeping members of the industry (including auto collision shops, repair technicians, insurance companies and vehicle manufacturers) up-to-date with the latest technologies and repair techniques, to ensure that the customer's vehicle repair is performed safely and thoroughly, and with the highest quality standards ("I-Car Train to Gain - Protocol", 2021).

In the 2021 academic school year, students who participated in CTE programs at the Area Career Center earned 51 during this year. This was a decrease in overall student achievement. The certified nurse assistant (CNA) training program is required by the Omnibus Nursing Home Act and Section 198.082, RSMo, 1994. The CNA training program prepares individuals for employment in a long-term care facility. The program teaches skills in resident care under the direct supervision of a licensed nurse ("Certified Nurse Assistant (CNA)," n.d.).

The students also were able to earn IRCs in several areas, which included: Culinary Arts, Auto Collision, Auto Technology, Certified Nursing Assistant, Construction, Water Management, Engineering, and Agriculture. In addition to the student's attainment of IRC, ten students within the Health Sciences earned stackable credentials. Stackable credentials focus career and technical education programs on building the critical skills needed for students to advance in growing sectors of the economy (Berg, 2018, p. 2).

Validity

For this study, the researcher analyzed student enrollment patterns, demographics of students who participated in CTE programs, post-graduation placement rates, and attainment of industry-recognized credentials of students that attended the Area Career Center from 2017-2021. The researcher conducted surveys, analyzed trend data from focus groups, and gathered MODESE and KCPS CTE data. According to Fraenkel et al. (2015), a threat to the "validity of the instrumentation process in surveys can cause individuals to respond differently from how they might otherwise respond" (p. 407). It is important to note that post-graduation placement data were not available for the 2021 school year.

The researcher used construct validity with respect to the survey and focus group responses. The construct validity directly connects measurement and allows interpretation of empirical evidence in terms of theoretical relationships (Ortlieb, 2017). The social construct theory and the social cognitive career theories are relatively new theories aimed at explaining three interrelated aspects of career development: (1) how basic academic

and career interests develop, (2) how educational and career choices are made, and (3) how academic and career success is obtained (Lent & Brown, 2013)

Procedure

This mixed-method study allowed a focus on both quantitative and qualitative data to garner a well-rounded view of how effective CTE programing and IRC attainment prepared students for post-secondary plans. The information the researcher uncovers may serve as a roadmap for future for plans for Kansas City Public Schools. The Kansas City Public Schools strategic plan states that students will become 21st Century Critical Thinkers and Problem Solvers by demonstrating global competitiveness, creative thinking, and innovation through effective reasoning, communication, and advocacy for themselves and their community.

The researcher conducted *t*-tests for difference in proportion on collected data from each of the surveys. The researcher used open coding of the survey answers from the additional comments section on each of the surveys and the verbal comments from the student focus group. Additionally, the research summarized and analyzed secondary data from the United States Department of Education, Missouri Department of Elementary and Secondary Education, United State Department of Labor, and Kansas City Public School District. The researcher compiled the results in written form.

Surveys

Student Survey Questions / Prompts

- *What are your immediate plans after high school?*
- *I have taken two or more CTE course and earned credit for each.*
- *Have you identified a career that interests you?*

- *What career or career field interests you the most?*
- *Does your career interest influence the courses you select in high school?*
- *Are you aware of the industry recognized credentials that are available to you as a KCPS high school student?*
- *Who influences you most when it comes to selecting electives courses you can take each year in high school?*
- *I am currently or have taken Career and Technical class in the following area:*
- *Which Classes Have You Taken or Are Currently Taking?*
- *My CTE instructors and Administrator have explained the potential college and career options available to me based on my career pathway selection.*
- *Have Your CTE Instructors and Administrator Explained College and Career Options?*
- *I previously have taken a career exploration class that helped me to explore my skills interest and talents.*
- *When I am an adult, I want to pursue a career in:*
- *The following factors influenced my decision to pursue my selected high school career path:*
- *My CTE classes have prepared me for my post-secondary plans.*
- *I participated in Career and Technical Student organization while attending CTE classes.*

Program Survey Questions / Prompts

- *Please select all of the career cluster pathways that directly related to your industry:*

- *The Career and Technical Education Program and curriculum offered by Kansas City Public School are in alignment with industry standards.*
- *The IRC's (Industry Recognized Credentials) and other Market Value Assets (MVA) offered by Kansas City Public Schools Career and Technical Education Department is valued in my industry.*
- *There are potential long-term opportunities available in my industry or business for successful CTE students.*
- *My company or organization would be interested in hiring successful CTE student as full-time employees, interns or externs.*
- *Kansas City Public School CTE program objective well defined.*
- *Kansas City Public School CTE program objective outcomes are measured.*
- *Kansas City Public Schools CTE program offerings meet the community's labor needs.*
- *Are there significant occupational areas not served by Kansas City Public Schools Career and Technical Education Programs? If So, please select all that applies.*
- *Kansas City Public School's CTE Programs have effective recruitment, placement, and follow-up services.*
- *Kansas City Public School's CTE Programs provide a relevant and inviting description of educational programs and support services.*
- *Kansas City Public School's CTE Program Advisory Committee recommendations and follow up information are used to systematically improve programs.*

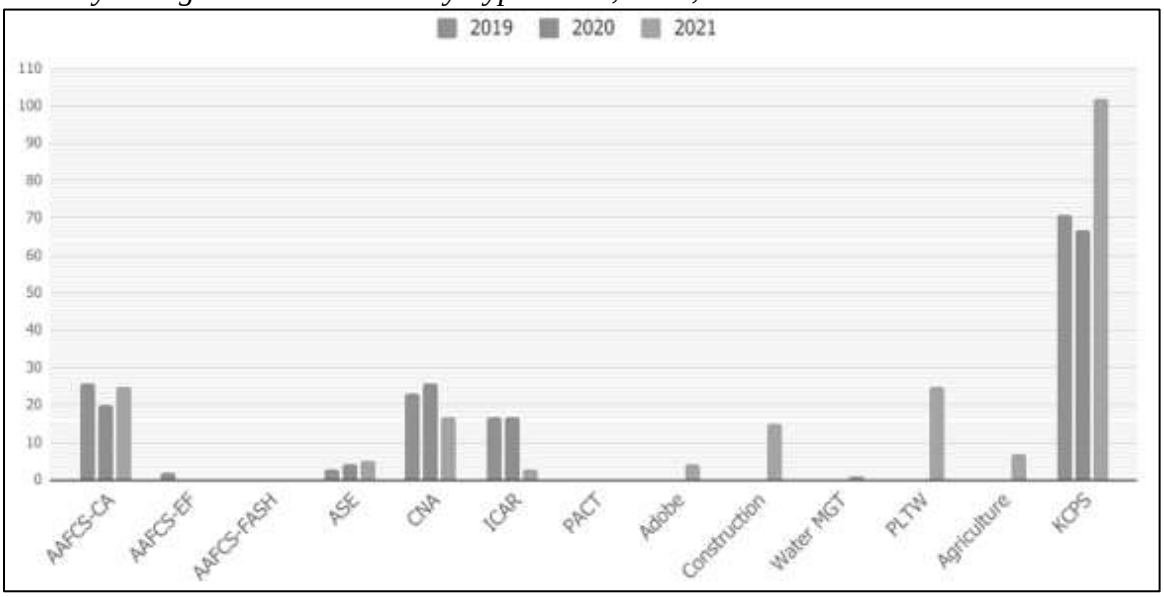
Data Summary

Figure 11 provides a description of the number of Industry Recognized Credentials gained during 2019, 2020, and 2021. The percent of graduates attaining IRC for 2020-2021 was significantly higher than the percentage for every three academic years: 2019-2020, 2018-2019, and 2017-2018.

A summary of data results generated by the Student Survey Questions / Prompts and the Program Survey Questions / Prompts is presented here.

Figure 11

Industry Recognized Credentials by Type: 2019, 2020, & 2021



Post-Secondary Placement by IRC

Post-Secondary Placements among the study participants are shown in Table 5, Table 6, and Table 7. The data are displayed by the type of placement and the IRC participation category of the placement. Table 5 indicates the female and male post-secondary placements for 2017-2018. Females were participated within six IRC categories and males participated within six IRC categories.

The most prominent type of post-secondary placement for both male and female participants was the four-year placement, followed by the two-year. Overall placement decreased each year, as did CTE participation, with total placements for each of the three years totaling 179, 79, and 68, consecutively.

Table 5

2017/18 CTE Student Post Secondary Placement

	4YR	2YR	EMPR	MILR	NOCR	NA	Blank
Total	24	28	79	2	10	1	5
Female	18	18	42	0	4	0	2
CAN	6	9	20	0	2	0	0
AAFCS-CA	9	7	19	0	2	0	1
AAFCS-EF	0	1	0	0	0	0	0
AAFCS-FASH	2	0	0	0	0	0	0
ASE	0	0	0	0	0	0	1
PACT	1	1	0	0	0	0	0
ICAR	0	0	0	0	0	0	0
Male	6	10	37	2	6	1	3
CAN	0	0	2	0	1	0	1
AAFCS-CA	0	2	3	1	2	0	1
AAFCS-EF	0	0	0	0	0	0	0
AAFCS-FASH	1	1	0	0	0	0	0
ASE	1	2	13	1	0	1	0
PACT	3	1	7	0	2	0	0
ICAR	1	4	12	0	1	0	1

There was a decrease in enrollment steadily from 2017-2018 through 2020-2021; however, there were significant differences in enrollment drops. Following 2017-2018 there was a sharp enrollment drop with no recovery the next three academic years. The percent increase/decrease in students attaining IRC is not different from the previous year for each academic year. Table 6 displays the female and male post-secondary placements for

2018-2019. Females participated within two IRC categories and males participated within six IRC categories.

Table 6

2018/19 CTE Student Post Secondary Placement

	4YR	2YR	EMPR	MILR	NOCR	NA	Blank
Total	12	13	43	1	4	5	0
Female	11	8	27	0	2	2	0
CAN	6	4	14	0	0	0	0
AAFCS-CA	4	2	13	0	2	2	0
AAFCS-EF	1	0	0	0	0	0	0
AAFCS-FASH	0	0	0	0	0	0	0
ASE	0	0	0	0	0	0	0
PACT	0	0	0	0	0	0	0
ICAR	0	0	0	0	0	0	0
Male	1	5	16	1	2	3	0
CAN	0	0	2	0	1	0	1
AAFCS-CA	0	2	3	1	2	0	1
AAFCS-EF	0	0	0	0	0	0	0
AAFCS-FASH	1	1	0	0	0	0	0
ASE	1	2	13	1	0	1	0
PACT	3	1	7	0	2	0	0
ICAR	1	4	12	0	1	0	1

Table 7 displays the female and male post-secondary placements for 2019-2020. Females participated within three IRC categories and males participated within four IRC categories.

Table 7

2018/19 CTE Student Post Secondary Placement

	4YR	2YR	EMPR	MILR	NOCR	NA	Blank
Total	10	9	24	0	0	3	22
Female	8	8	11	0	0	2	14
CAN	6	6	3	0	0	2	7
AAFCS-CA	3	0	8	0	0	0	6
AAFCS-EF	0	0	0	0	0	0	0
AAFCS-FASH	0	0	0	0	0	0	0
ASE	0	0	0	0	0	0	0
PACT	0	0	0	0	0	0	0
ICAR	0	2	0	0	0	0	1
Male	2	1	13	0	0	1	8
CAN	0	1	4	0	0	0	0
AAFCS-CA	0	0	1	0	0	0	2
AAFCS-EF	0	0	0	0	0	0	0
AAFCS-FASH	0	0	0	0	0	0	0
ASE	0	0	2	0	0	0	1
PACT	0	0	0	0	0	0	0
ICAR	2	0	6	0	0	1	5

A descriptive summary of the data gathered from the Student Survey Questions / Prompts and the Program Survey Question / Prompts is given here. Hypotheses and Questions are discussed in Chapter Four.

Student Survey Results

Question 1-What are your immediate plans after high school?

This question had total of 101 responses. Forty-nine percent of the students reported that they plan to attend a four-year college or university. 27.78% of the student's respondents indicated that they plan to attend a two-year college focused on a trade, 17.82% of students planned to enter directly in the workforce, 12.87 were undecided and 3.96% of the students selected other and indicated that they would pursue acting and screen writing, travel, and change career fields.

Question 2- I have taken two or more CTE course and earned credit for each.

Respondents reported the following: 28.26% of student stated that they did take two or more CTE course and earned credit for each, while 48.91 stated that they did not, 22.83% were unsure and selected "maybe".

Table 8

Number of Students Enrolled in Two or More CTE courses

Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
I have taken two or more CTE courses and earned credit for each.	21.00	23.00	22.21	0.85	0.73	92

Table 9

Question 3 – I earned or have a plan to earn at least one MVA (Market Value Asset).

#	Answer	%	Count
4	Industry Recognized Credential	15.53	18
5	Internship	37.86	39
6	Client Connected Project	7.77	8
7	Entrepreneurial Experience	18.45	19
8	Other	20.39	21
	Total	100.00	103

When asked if they had identified a career of interest, 84.09% of students (74) stated that they had identified a career that interested them, 11.36% of students (10) were unsure and answered maybe, and 4.55% of students (4) reported that they had not identify a career interest.

Table 10

Question 4 – Have you identified a career that interests you?

Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
Have you identified a career that interests you?	4.00	6.00	4.20	0.50	0.25	88

Table 11

Question 5-What career or career field interests you the most?

- 84.09% of student (74) stated that they identified a career that interested them,
- 11.36% of student (10) was unsure and answered maybe, and
- 4.55% of student (4) reported that they had not identify a career interest.

This was an open-ended question that allowed the respondents to write in their responses. Because the number of unique responses provided, the researcher categorized the responses according to the 16 career cluster areas. The 16 cluster areas are Agriculture/Food/Natural Resources, Architecture and Construction, Arts/Audio/Video Technology/ Communications, Business Management/Administration, Education/Training, Finance, Government/Public Administration, Health Science, Hospitality/Tourism, Human Services, Information Technology, Law/Public Safety/Corrections and Security, Manufacturing, Marketing/Sales/Service, Science/ Technology/Engineering/Mathematics, and Transportation/Distribution/Logistics.

Question 6 – Does your career interest influence the courses you select in high school?

Out of the 88 respondents, 79.59% of students surveyed stated yes, and they agreed that the courses that they enrolled in were aligned to their career interest, 19.32% of students was unsure and responded by selecting “maybe,” and 9.09% of students reported that they did not think that the courses they selected were aligned to their career interest.

Table 12

Does Your Career Interest Influence the Courses You Select?

Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
Does your career interest influence the courses you select in High School?	5.00	7.00	5.38	0.65	0.42	88

Question 7 – Are you aware of the industry recognized credentials that are available to you as a KCPS high school student?

For this question 64.71% of students answered in the affirmative and reported that they were knowledgeable about the IRC's available to them as KCPS high school students. While 31.76% of the student's stated that they were not aware the IRC available to them, 3.53% of students selected neither yes or no.

Table 13

Are You Aware of the Industry Recognized Credentials?

Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
Are you aware of the Industry-Recognized Credentials that are available to KCPS High-school students?	2.00	1.00	1.39	0.56	0.31	85

Question 8 – Who influences you most when it comes to selecting electives courses you can take each year in high school?

In this question, students were able to select from the following list; Teachers, School Guidance Counselor, Family, Friends, and Personal Interest in the career field. The responses to this particular question were closely distributed amongst the response options, 23.53% answered teachers, 14.12% reported school guidance counselors, 22.35% indicated family, 4.71% selected friends, while 32.94% suggested personal

interest in the career field and 2.35% of the answers were classified as Other. In this category one student wrote in, “myself”.

Table 14

Who Influences You Most?

Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
Who influences you most when it comes to selecting the elective courses you can take each year in high school?	1.00	6.00	3.16	1.62	1.63	85

Question 9 – I am currently, or have, taken Career and Technical class in the following area:

The responses to this question varied and are shown on Table 15.

Table 15

Which Classes Have You Taken or Are Currently Taking?

Answer	%	Count
Agriculture Sciences	4.08%	4
Auto Collision and Repair	7.14%	7
Automotive Technology	11.22%	11
Barber, Cosmetology & Manicure	4.08%	4
Construction Technology	6.12%	6
Educator Preparation	4.08%	4
Emergency Medical Technician (EMT)	15.31%	15
Health Science	21.43%	21
Hospitality and Tourism (Culinary Arts, Cardinal Cafe, Hotel Management)	12.24%	12
Law and Public Safety (Social Justice, Law, Interpretation)	1.02%	1
STEM (Science, Technology, Engineering, Math, Architecture)	9.18%	9
Water Management	4.08%	4
Total	100%	98

Question 10 – My CTE instructors and Administrator have explained the potential college and career options available to me based on my career pathway selection.

For this question 57.65% of students strongly agreed with the statement, 30.59% of the student marked somewhat agreed, 5.88% of the students surveyed marked a neutral response of neither agree nor disagree, 2.35% indicated that they somewhat disagreed, and 3.35% strongly disagreed with the statement.

Table 16

Have Your CTE Instructors and Administrator Explained College and Career Options?

Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
My CTE instructors and Administrator explained the potential college and career options available to me, based on my career pathway selection.	23.00	27.00	23.64	.96	.91	85

Question 11 – I previously have taken a career exploration class that helped me to explore my skills interest and talents.

For this question 72.94% of the students said yes, while 23 of the students replied no.

Table 17

Have You Previously Taken a Career Exploration Class?

Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
I previously have taken a career exploration class that helped me to explore my skills interests and talents.	25.00	26.00	25.27	.44	.20	85

Question 12 – When I am an adult, I want to pursue a career in: [not summarized].

Question 13 – The following factors influenced my decision to pursue my selected high school career path:

For this question student responded in the following manner: 27.38% school staff (teachers, counselor, staff), 39.29% interest and hobbies, 13.10% parents or guardians, 7.14% potential salary, and 7.14% job outlook.

Table 18

Factors That Influenced Decisions

Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
The following factors influenced my decision to pursue my selected high school career path.	1.00	6.00	2.45	1.44	2.08	84

Question 14 – My CTE classes have prepared me for my post-secondary plans.

For this question students responded with the following answers: 34.52% school staff (teachers, counselor, staff), 30.95% internship/hobbies, 11.90% parents or guardian, 9.52% potential salary, 13.10% job outlook.

Question 15 – I participated in Career and Technical Student organization while attending CTE classes.

For this response 57.14% responded yes, while 42.86% responded no.

Program Survey Results

The community and industry partner where surveyed, this particular research collection tool had fewer responses. It was seventeen adult participants to complete the survey. The respondent replied with the following answers.

Question 1 – Please select all of the career cluster pathways that directly related to your industry:

Table 19

Which Cluster Pathways are Directly Related to Your Industry?

Answer	%	Count
Arts/ Audio and Visual / Technology and Communication	12.50%	4
Health Services	6.25%	2
Industrial/Engineering Technology	21.88%	7
Human Services	12.50%	4
Natural Resources and Agriculture	6.25%	2
Business/Marketing/Information Technology	34.38%	11
Other	6.25%	2
Total	100%	32

Question 2 – The Career and Technical Education Program and curriculum offered by Kansas City Public School are in alignment with industry standards.

For this question 35.29% strongly agreed, 41.18% agreed, 17.65% somewhat agreed, 0.00% neither agreed or disagreed, 0.00% disagreed, 0.00% strongly disagreed.

Table 20

Alignment with Industry Standards.

Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
The career aligned with industry standards.	41.00	45.00	42.00	1.03	1.06	17

Question 3 – The IRC's (Industry Recognized Credentials) and other Market Value Assets (MVA) offered by Kansas City Public Schools Career and Technical Education Department is valued in my industry.

For this question the respondent answered in the following: 22.22% strongly agreed, 22.22% agreed, 27.78% somewhat agreed, 11.11% neither agreed or disagreed, 0.00% somewhat disagreed, 11.11% disagreed, and 5.56% strongly disagreed.

Question 4 – There are potential long-term opportunities available in my industry or business for successful CTE students.

There are potential long-term opportunities available in my industry or business for successful CTE student.

For this question, the respondent submitted the following responses: 54.94% strongly agreed, 23.53% agreed, 17.65% somewhat agreed, 5.88% neither agreed nor disagreed, and 0.00% answered either somewhat disagreed, disagreed, strongly agreed.

Table 21

Long Term Opportunities

Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
There are potential opportunities available in my industry or business for successful CTE students.	21.00	24.00	21.76	.94	.89	17

Question 5 – My company or organization would be interested in hiring successful CTE student as full-time employees, interns or externs.

For this question 76.47% answered yes, 23.53% maybe, and 0.00% said no.

Table 22

Hiring of Successful CTE Students as Full-time, Interns, or Externs

Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
My company or organization would be interested in bringing successful CTE students as full-time employees, interns, or externs.	21.00	22.00	21.24	.42	.18	17

.

Question 6 – Q6 – Kansas City Public School CTE program objective well defined.

For this question the respondent answered in following way: 35.29% strongly agreed, 35.29% agreed, 17.65% agreed, 5.88% neither agreed or disagreed, 5.88% somewhat disagreed, 0.00% strongly disagreed.

Table 23

KCPS Objectives are Well Defined

Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
Kansas City Public School CTE program objectives are well defined.	22.00	27.00	23.18	1.29	1.67	17

Question 7 – Q7 – Kansas City Public School CTE program objective outcomes are measured.

For this question 100% of the respondent either answered strongly agree, agree, somewhat agree.

Table 24

KCPS CTE Programs are Measured

Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
Kansas City Public Schools CTE program objective outcomes are measured.	16.00	18.00	17.06	.80	.64	17

Question 8 – Q8 – Kansas City Public Schools CTE program offerings meet the community's labor needs.

For this question respondents answered in the following ways: 23.53% strongly agree, 41.18% agree, 29.41% somewhat agree, 5.88% neither agree nor disagree, and 0.00% marked either somewhat disagree, disagree, and strongly disagree.

Table 25

KCPS CTE Program meets Community Labor Needs

Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
Kansas City Public Schools CTE program offerings meet the community's labor needs.	13.00	16.00	14.18	.86	.73	17

Question 9 – Are there significant occupational areas not served by Kansas City Public Schools Career and Technical Education Programs? If so, please select all that applies.

Table 26

Are There Occupational Areas Not Served by KCPS?

#	Answer	%	Count
12	Work habits	14.29%	5
10	Technical/theoretical knowledge and skills	8.57%	3
22	Other	17.14%	6
11	Manipulative skills	8.57%	3
15	Integrated academic course offerings	14.29%	5
14	Human Relatioons	14.29%	5
13	Communication skills	11.43%	4
17	Appropriate equipment (tools, instructional material, etc.)	0.00%	0
18	Applied academic skills	11.43%	4
	Total	100%	35

Question 10 – Q10 – Kansas City Public School's CTE Programs have effective recruitment, placement, and follow-up services.

For this question, the respondent answered in the following manner: 11.76% strongly agree, 23.53% agree, 29.41% somewhat agree, 17.56% answered neither agree nor disagree, 0.00% somewhat disagree, 0.00% disagree, and 5.88% strongly disagree.

Table 27

KCPS Programs Have Effective Recruitment, Placement, and Follow Up

Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
Kansas City Public Schools CTE programs have effective recruitment, placement, and follow-up services.	28.00	34.00	30.18	1.56	2.26	17

Question 11- Kansas City Public School's CTE Programs provide a relevant and inviting description of educational programs and support services.

This report includes the following responses: 11.76% strongly agree, 58.8% agree, 17.65% somewhat agree, 5.88% neither agree nor disagree, 0.00% somewhat disagree, 5.88% disagree, and 0.00% strongly disagree.

Table 28

KCPS CTE Programs Provide Relevant Descriptions of Programs and Support

Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
Kansas City Public Schools CTE program provide a relevant and inviting description of educational programs and support services.	32.00	37.00	33.41	1.14	1.3	17

Question 12 – Kansas City Public School's CTE Program Advisory Committee recommendations and follow up information are used to systematically improve programs.

For this question respondent replied in the following ways: 17.65% strongly agree, 29.41%, agree, 23.53% somewhat agree, 23.53% neither agree nor disagree, 5.88% somewhat disagree, 0.00% respondent answer disagree and strongly disagree.

Table 29

KCPS CTE Program Advisory Committee Oversight of Program Improvement

Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
Kansas City Public Schools CTE Program Advisory Committee recommendations and follow up information are used to systematically improve programs.	15.00	19.00	16.71	1.18	1.38	17

*During the 2020/21 SY

It is important to note that when comparing 2019 data to 2021 data, the IRC offered within that school changed. In 2019 the following IRC's where offered: AAFCS-CA, AAFCS-EF, AAFCS-FASH, ASE, CAN, ICAR, PACT, and PLTW. However, in 2021, students were not tested in AAFCS-EF, AAFCS-FASH, and the WATER MGT, AGRICULTURE, and CONSTRUCTION assessments were added.

Figure 12

Comparison of 2019 IRC Data to 2020 IRC Data

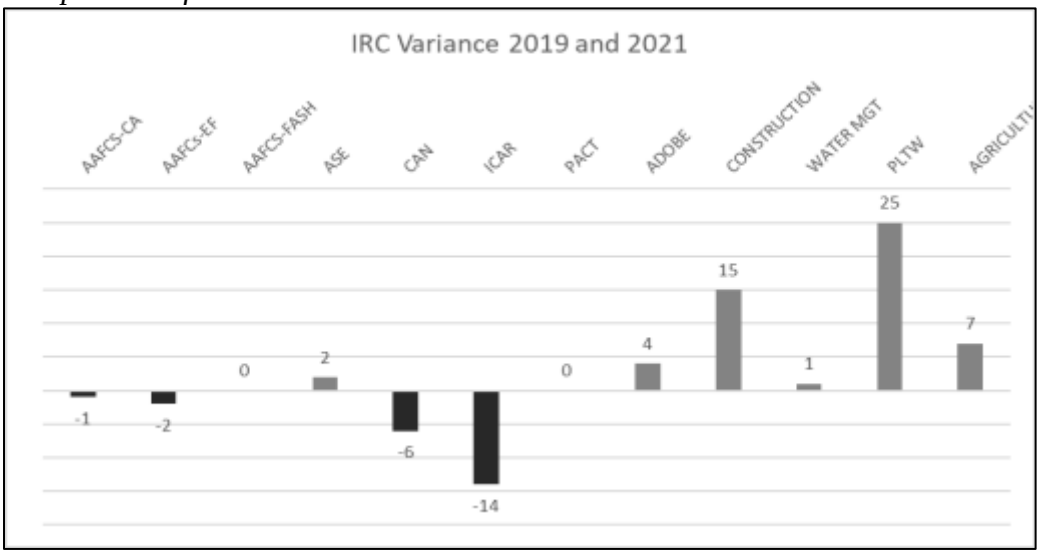
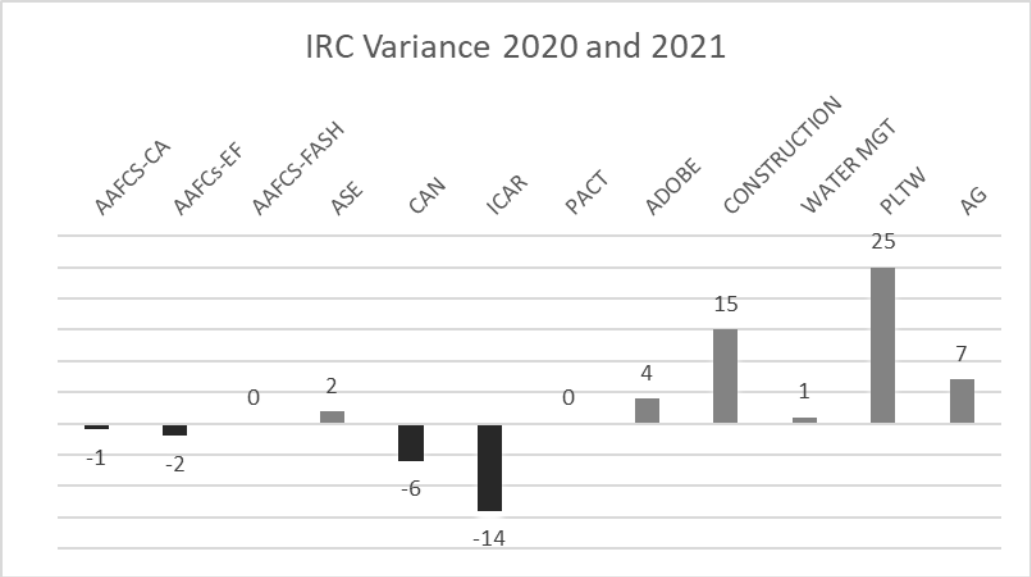


Figure 12 compares the IRC's earned in 2020 to IRC's earned in 2021, student earned 35 more IRCs in 2021 which is a percentage increase of 52.2% than the students in 2020. It is important to note that in 2021 the AG IRC was added to the assessment offerings.

Figure 13

Comparison of 2020 IRC Data to 2021 IRC Data



Comparing the data from 2019, 2020, and 2021 indicated students earned more IRC in 2021 school than is the previous two years.

Figure 14

Industry Recognized Credentials by Type: 2019, 2020, & 2021

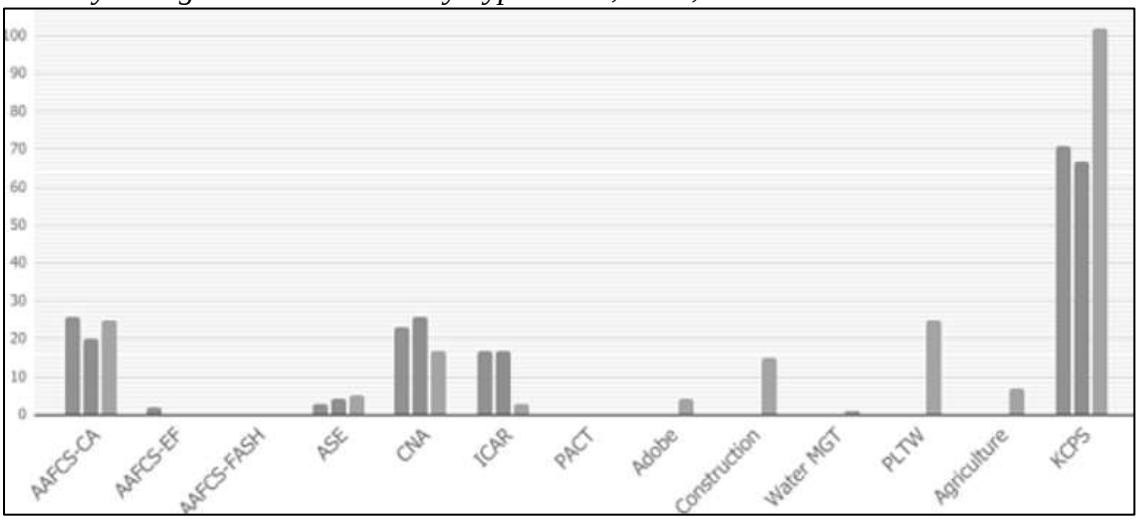


Table 30 shows the IRC's earned by students in the years 2019, 2020, and 2021.

Table 30

Comparison of 2019, 2020, and 2021

	AAFCS-CA	AAFCS-EF	AAFCS-FASH	ASE	CAN	ICAR	PACT	Adobe	Construction	Water MGT	PLTW	AG	KCPS
2019	26	2	0	3	23	17	0						**71**
2020	20	0	0	4	26	17	0						**67**
2021	25	0	0	5	17	3	0	4	15	1	25	7	**102**

Summary

The Survey Results indicated 83.33% of the student respondents' plans aligned with a positive post-graduation placement. Particularly 40.20% of student stated that their plans were to enroll in a four-year institution, 22.55% would attend a two-year college, 17.65% would enter the workforce, and 2.94% would join the military. 27.96% of the student respondents were classified as concentrators because they earned two or more CTE credits while in high school. 64.71% of the students surveyed had an awareness of the industry recognized credential offer within KCPS. The result for the student survey also revealed that students' selection of courses was greatly influenced by their personal interest (32.94%), Teachers (23.53%), and family (22.35%). The result for the question related to the groups that influenced student choice is consistent with Maslow Theory of Hierarchy, which suggests that certain basic motives must be met before higher motive can be achieved. Students' basic motive naturally comes from family and it makes sense that a student's family would be an influence on their choices (Maslow, 1970).

According to Holden (2002), "A growing body of research has looked at teachers and their impact on motivation. Wentzel & Wigfield (1998) concluded that when teachers interact in a positive and supportive way with their students in the day-to-day classroom setting, this has a positive impact on academic motivation" (p. 5). Results from the survey also revealed that exposure to CTE courses was important and could lead to positive outcomes for students. Petrilli and Shaw (2016) agreed with the results and stated students with "greater exposure to CTE were more likely to graduate, enroll in a two-year college, be employed, and have higher wages" (para.11). The report showed

that 72.94% of students surveyed were exposed to a career exploration course. Within KCPS, the career exploration class was offered during students' 8th grade year.

Chapter Four: Analysis of Data

To complete this research, the researcher surveyed three different groups (current students, graduates, and community and industry partners) to collect data for the study. In addition to the survey, the researcher conducted focus groups.

Research Hypotheses and Questions

The null hypotheses and research questions addressed were:

Null H1: The 2021 graduates will not have a higher attainment of IRC (Industry Recognized Credentials) than the IRC attainment of Kansas City Public School (KCPS) previous two graduating classes.

Null H2: The overall student participation in Career and Technical Education programing will not be higher than the three previous years.

Null H3: In support of Perkins V, the 2021 graduates will not have a higher attainment of acceptance into post-secondary schools than the previous two KCPS graduating classes.

RQ1: Why and how will the attainment of Industry Recognize Credentials effect high school students' post-secondary opportunities

RQ2: What is the awareness of Industry Recognized Credentials among KCPS students?

Career and Technical Education is an essential resource that schools and districts can use to ensure that their students are college and career ready. The purpose of this study was to assess the effectiveness of the Industry Recognized Credentials in preparing Career and Technical Education students' post-secondary opportunities. This study sought to explore if students' exposure to Career and Technical Education (CTE)

programing and attainment of Industry Recognized Credentials leads to positive placement for Kansas City Public High School Students. This was a mixed method study that focused on both quantitative and qualitative data to garner a well-rounded view of how effective CTE programing and IRC attainment prepares students for post-secondary plans.

The study revealed that CTE students had higher attendance, engagement, and graduation rates. This was particularly true as it pertained to students in the special population. Although the study showed that students' participation in Career and Technical Education programs can have a positive effect on their post-secondary plans, CTE does have a branding problem. National survey results showed that either individuals lacked adequate information about the program offering or had a negative view of the program.

As a part of the Perkins V requirement for local needs assessment, MODESE partnered with researchers from the University of Missouri to conduct a survey involving almost 100,000 participants with the state of Missouri. The respondents of the survey included: students, parents, educators, and business leaders.

One of the emerging trends was that people in the state had a lack of awareness of the CTE in general. A similar survey was given in Mississippi, and respondents viewed CTE courses where students with less academic prowess were targeted, as well as those students who were not college bound. Students within the focus groups also cited that they were unfamiliar with CTE and its programs offerings. Some respondents also were not sure which students where eligible to participate in CTE program offering. Unfortunately, the stigma of Career and Technical Education reaches as far back as the

early 1900s. There was also a point in time when students were tracked, and certain students were placed in certain CTE-related programs, if school officials deemed them unfit for college. These programs where primarily manual jobs within the skill trade areas, such as construction, trade and auto technician. Over the course of its existence, CTE has evolved to prepare students for both College and Career.

Through the data collected and analyzed, the researcher discovered that every district with Missouri was accredited; however, nine school districts held the lower designation of provisionally accredited. Out of those nine-school districts, four served a high minority population, who qualified for free and reduced lunch. These schools had shown improvements based on the MSIP 5 standards, particularly in Standard 3. Standard 3 measures a school or district's student level of achievement, as it pertains to earning AP, IB, Dual Credits, or IRCs. The researcher also found that the number of students designated as concentrators within urban Missouri schools were low, when compared to the district total student population and the number of students participating in CTE programs.

Findings

The hypotheses and questions were used to determine the impact of CTE on post-secondary placement for students.

***Null H1*:** The 2021 graduates will not have a different attainment of IRC (Industry Recognized Credentials) than the IRC attainment of Kansas City Public School (KCPS) previous two graduating classes.). Null H1 was rejected (t-critical = 1.96; t(2019) = 3.222; t(2018) = 2.513; t(2017) = 2.941). The percent of graduates attaining IRC for

2020-2021 was significantly higher than the percent for each of these three academic years: 2019-2020, 2018-2019, and 2017-2018.

Table 31

	Number Attaining IRC		
	11th grade	12th grade	Total #
2017-2018	33	117	150
2018-2019	15	63	78
2019-2020	18	51	69
2020-2021	2	49	51

Table 32

	Percent Attaining IRC		
	11th grade	12th grade	Total #
2017-2018	0.22	0.78	150
2018-2019	0.19	0.81	78
2019-2020	0.26	0.74	69
2020-2021	0.04	0.96	51

Table 33

The percent of 2020-2021 graduates attaining IRC is not different than the two previous years.

	Test value	Reject Null?	Support Claim of a difference?
2020-2021 & 2019-2020	3.222	yes	Yes, 2020-2021 was significantly higher
2020-2021 & 2018-2019	2.513	yes	Yes, 2020-2021 was significantly higher
2020-2021 & 2017-2018	2.941	yes	Yes, 2020-2021 was significantly higher

* t-critical = 1.96

The researcher found that students did not have a higher number of student attainments during the 2021 academic school year; however, the percent of attainment was still higher than the previous years. This was due to a lower enrollment across the district because of COVID-19. Also, students were required to complete the majority of their course work online. While the Area Career Center did a good job of pivoting to provide resources to staff and students, a number of the IRC's required that student have a certain amount of lab time to even qualify to sit for the associated credentialing exams.

***Null H2*:** The overall student participation in Career and Technical Education programing will not be higher than the three previous years. Null H2 was not rejected (*t*-critical = 1.96; *t*(2020-2021 to 2019-2020) = 2.273; *t*(2019-2020 to 2018-2019) = 5.548; *t*(2020-2021 to 2018-2020) = 3.062).

Following 2017-2018, there were significant changes in enrollment; however, there was a sharp, significant enrollment drop with no recovery the next three academic years.

Table 34

CTE Enrollment Trend Data

	11th grade	12th grade	Total #	# increase	Increase
2017-2018	33	117	150		
2018-2019	15	63	78	-72	-0.48
2019-2020	18	51	69	-9	-0.12
2020-2021	2	49	51	-18	-0.26

Table 35

The percent of increase/decrease in students attaining IRC is not different than the previous years.

	Test value	Reject Null?	Support Claim of a difference?
2020-2021 to 2019-2020	2.273	no	Yes, 2020-2021 drop significantly larger
2019-2020 to 2018-2019	5.548	no	Yes, 2019-2020 drop significantly smaller
2020-2021 to 2018-2020	3.062	no	Yes, 2020-2021 drop significantly smaller

* t-critical = 1.96

This hypothesis was also proven to be false, there was not a rise in overall student participation; however, there was a repeated significant drop across the timeline. The overall student participation in CTE programs at the AREA career center was lower than in previous years. This was again due to the lowered overall enrollment of the school district, due to the effects of COVID-19. There was a decrease in enrollment steadily

from 2017-2018 through 2020-2021; however, there were significant differences within those drops in enrollment, as shown in Table 36.

Null H3: In support of Perkins V, the 2021 graduates will not have a higher attainment of acceptance into post-secondary schools than the previous two KCPS graduating classes. Null H3 was rejected (*t*-critical = 1.96; *t*(2019-2020 & 2018-2019) = 0.567; *t*(2019-2020 & 2017-2018) = 2.275).

Table 36

CTE College Placement Trend Data

	Accepted	Total Number	Perecent of Total
Acceptance			
2017-2018	20	150	13.0%
2018-2019	26	78	33.0%
2019-2020	20	69	29.0%
2020-2021	NA	51	

Table 37

The percent of 2019-2020 graduates will have a different attainment of acceptance into post-secondary schools than the two previous years.

	Test value	Reject Null?	Support Claim of a difference?
2019-2020 & 2018-2019	0.567	no	No, 2019-2020 not significant; lower
2019-2020 & 2017-2018	2.275	yes	Yes, 2019-2020 significantly higher

* t-critical = 1.96

The data indicates that the percentage of students who attended colleges in 2018 was 13%, and the percentage increase to 33% in 2019. In the 2020 school year, the college acceptance decreased to 29% and the state data from the 2021 school year was not available at the time of the research. The results from the survey data indicated that 50.2% of the students planned to attend a four-year institution following graduation and 22.55% of students reported that they would attend a two-year college post-graduation.

RQ1: Why and how will the attainment of Industry Recognize Credentials effect high school students' post-secondary opportunities

This question was designed to determine how and why the attainment of Industry Recognized Credentials affects students' post-secondary placement. From the 101 KCPS CTE students surveyed, 49% indicated their plans to attend a four-year university, while 27.78% indicated their plans to attend a two-year post-secondary program.

The previously mentioned University of Missouri survey included 100,000 respondents from State of Missouri, which included: students, parents, educators, and business leaders. One notable trend was that people in the state lacked awareness of the CTE in general. Students within the focus groups also indicated they were unfamiliar with CTE and its programs. Some were not sure eligibility requirements to participate in CTE.

Some respondents had the misconception that the CTE program was designed only for manual jobs within the skill trade areas, such as construction, trade, and auto technician. They were unaware the program could lead to college, as well as careers.

RQ2: What is the awareness Industry Recognized Credentials among Kansas City Public School Students?

For this question, the researcher sought to measure the student awareness of Industry recognized credentials within Kansas City Public School. The results of the survey revealed that 64.71% of the student respondents stated they were familiar with the industry recognized credential offered within the KCPS. The results from the focus group revealed that students across the district were somewhat familiar with IRCs.

Chapter Five: Summary and Conclusion

Career and Technical Education is an essential resource that schools and districts can use to ensure that their students are college and career ready. The purpose of this proposed study was to gather the effectiveness of the Industry Recognized Credentials in preparing Career and Technical Education students' post-secondary opportunities. This study sought to explore if students' exposure to Career and Technical Education (CTE) programing and attainment of Industry Recognized Credentials leads to positive postsecondary placement for Kansas City Public High School Students. This was a mixed methods study focused on both quantitative and qualitative data to garner a well-rounded view of how effective CTE programing and IRC attainment prepares students for post-secondary plans.

Hypotheses

H1: The 2021 graduates will have a higher attainment of IRC (Industry Recognized Credentials) than the IRC attainment of Kansas City Public School (KCPS) previous two graduating classes.

H2: The overall student participation in Career and Technical Education programing will be higher than the three previous years.

H3: In support of Perkins V, the 2021 graduates will have a higher attainment of acceptance into post-secondary schools than the previous two KCPS graduating classes.

Research Questions

RQ1: Why and how will the attainment of Industry Recognize Credentials effect high school students' post-secondary opportunities

RQ2: What is the awareness of Industry Recognized Credentials among KCPS students?

The study revealed that CTE students have higher attendance, engagement, and graduation rates. This is particularly true as it pertains to students with the special population. Although the study showed that students' participation in Career and Technical Education programs can have a positive effect on their post-secondary plans, CTE does have a branding problem. National survey results showed that either individuals lacked adequate information about the program offerings or had a negative view of it. As a part of the Perkin V requirement for a local needs assessment, MODESE partnered with researchers from the University of Missouri to conduct a survey involving almost 100,000 participants with the state of Missouri. The respondents of the survey included: students, parents, educators, and business leaders. One of the trends that emerged was that people in the state had a lack the awareness of the CTE in general.

A similar survey was given in Mississippi and respondents viewed that CTE courses were for students with less academic prowess and was targeted to students who were not college bound. Students within the focus groups also cited that they were unfamiliar with CTE and it programs offerings. They also were not sure which students where eligible to participate in CTE program offering. Unfortunately, the stigma of Career and Technical Education reaches as far back as the early 1900s. There was also a point in time when students were tracked, and certain students were placed in certain CTE related programs, if school officials deemed them unfit for college. These programs were primarily manual jobs within the skill trade areas, such as construction, trade, and auto technician. Over the course of its existence, CTE evolved to prepare students for both College and Career.

Through the data collected and analyzed, the researcher discovered that every district within Missouri was accredited; however, nine school districts held the lower designation of provisionally accredited. Out of those nine-school districts, four of them served a high minority population, who qualified for free and reduced lunch. These schools have shown improvements based on the MSIP 5 standards, particularly in Standard 3. Standard 3 measures a school or districts' student level of achievement, as it pertains to earning AP, IB, Dual Credits, or IRCs. The researcher also found that students designated as concentrators within urban Missouri schools were low in number, when compared to the district total student population and the number of students participating in CTE programs.

Recommendation

Kansas City School District

The researcher currently serves as the Director of Career and Technical Education for KCPS. This study was both informative and fascinating. This study will help the district better discuss how it uses CTE to create unique opportunities for the students within the district. First, it was evident that the school district needs to start exposing students to CTE in early grades. The research suggests that some schools begin as early as kindergarten, but should be emphasized during a student's fifth grade year and continue as they matriculate through schools, including incorporating dual credit and advanced articulation agreements. Next, the researcher found that the development of career pathways was critically important when creating and maintaining a solid pipeline for student enrollment. The researcher found that students who attended schools with

established pathway models were more likely to enroll in the area career center and subsequently earn an IRC.

It is also recommended the school districts do a better job of marketing its programs to students throughout the year. The feedback from both the student survey and focus groups revealed that students do not lack awareness of the CTE-related opportunities available to them. The survey results also showed that it is equally important to connect with the student support system. Respondents to the survey suggested that student decisions were significantly affected by parents, friends, and school personnel.

Finally, the school district CTE department needs to incorporate student voice better, when selecting programs. The students indicated that their interests and hobbies were also motivators for choosing CTE programs. The district has made great strides, but they have a way to go and should have a presence at the state level to ensure advocacy for marginalized student populations. The district also needs to create an electronic database that links student interest, skills, and goals with CTE programs.

State

The researcher found it very difficult to locate consistent data from the MODESE reports during this study. For instance, the researcher would collect data from state-generated reports, but the information would be inconsistent for the same year, from report-to-report. Also, I would recommend that the MSIP and Perkins V would integrate better. As it currently stands, MSIP 5 and Perkins V do not blend well. For example, the only MSIP 5 indicator that aligned with Perkins V was the MISP 5 Standard 3 indicator 4. This standard measured levels at which students within the school district earned IRC,

Dual Credits, IB, and AP credits. The state, however, does not assign points in the other areas that Perkins V measures. MSIP 6 should also look at the level at which schools assess students, similar to MAP. For example, the state does not mandate a MAP style assessment for each CTE course or program. This lack of alignment can be highlighted using the business education cluster. The business education cluster has very limited IRC associated with it, relative to the number of students that participate in the program cluster. The research also discovered that approximately 84% of all CTE courses are offered in a traditional school setting, while the remaining 16% are made available at the Area Career Center. To that end, there is a tremendous opportunity to measure students' performance, if the state aligns MSIP with Perkins and allows adding a more comprehensive range of IRC that leans more to the types of programs offered within a traditional school.

***Covid*-19**

The COVID-19 pandemic changed the way everyone lived their lives. This change was particularly true when it came to the public education system. Across the country, schools that served a high population of students who qualified for free and reduced lunch struggled to provide student quality instruction, because of the phenomenon known as the digital divide. The term digital divide refers to the inequalities in access to and use of new media technologies between the so-called information "haves" and "have nots." This lack of access includes computers and tablets and access to an internet source, such as WIFI and other broadband sources. A student with the district struggled to have adequate access to both. The school district did its best to provide hardware and internet access points, but was not fully able to meet the massive needs of

the students. The teachers also struggled to adapt to this new mode of teaching. The district was scrambling to source computers, software, and internet access for its teachers. Training both teacher and student to learn and teach remotely created a unique challenge. The pandemic was particularly difficult for CTE educators and students, because of the nature of the courses' requirements. CTE courses required students to have hands-on experience, including lab time, practicums, clinical rotation, on-the-job training, and to document hours demonstrating proficiency levels. Covid-19 practices made it virtually impossible to accomplish all the needed experience to ensure that students met the rigorous requirements necessary to earn an IRC. With all that being stated, only 50 students could attain their IRC during the 2021 school year.

Along with the challenges that COVID-19 brought on, it also provided opportunities for innovations. Teachers at the area career center leveraged their knowledge of the subject matter with technology to create a unique learning experience that simulated the lab environment. The teacher also conducted a class in outdoor classrooms and used go-pro cameras to provide students with first-person view perspectives to imitate a "shop" environment. The Health Occupation students earned their IRC a semester earlier and earned an additional stackable credential in the same year. This accomplishment was groundbreaking for our KCPS students. KCPS also partnered with an Energy Company and a local college to develop an energy pathway. Teachers were able to expose students to more professionals via skype and zoom type platforms.

Future Research

The researcher suggests the same study to be conducted post COVID-19 to provide a better assessment of the district progress. This is because the pandemic created unique circumstances that were not common during a regular school year. Along with the effects of the pandemic, school district enrollment was greatly decreased. Also, I would recommend that the researcher conduct a similar study comparing an urban school district with their suburban counterparts. This would allow the researcher to compare levels of student achievement between suburban and urban school districts, by comparing Urban to Suburban Schools of similar size.

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