

9-2021

An Evaluation of Equity and Access for All Students in a School District's Career and Technical Education Programs

Cynthia M. Jaime
National Louis University

Follow this and additional works at: <https://digitalcommons.nl.edu/diss>



Part of the [Vocational Education Commons](#)

Recommended Citation

Jaime, Cynthia M., "An Evaluation of Equity and Access for All Students in a School District's Career and Technical Education Programs" (2021). *Dissertations*. 619.
<https://digitalcommons.nl.edu/diss/619>

This Dissertation - Public Access is brought to you for free and open access by Digital Commons@NLU. It has been accepted for inclusion in Dissertations by an authorized administrator of Digital Commons@NLU. For more information, please contact digitalcommons@nl.edu.



NATIONAL
LOUIS
UNIVERSITY

An Evaluation of Equity and Access for All Students in a School District's
Career and Technical Education Programs

Cynthia M. Jaime

Educational Leadership Doctoral Program

Approved:

Carla L. Sparks

Chair, Dissertation Committee

Stefanie Cider Shaver, Ed.D.

Member, Dissertation Committee

Christine Miller

Dean's Representative

Harmyter Gibson

Director, Doctoral Program

R. Miller

Dean, National College of Education

September 2, 2021

Date Approved

An Evaluation of Equity and Access for All Students in a School District's
Career and Technical Education Programs

Cynthia M. Jaime

Educational Leadership Doctoral Program

Submitted in partial fulfillment
of the requirements of
Doctor of Education in Educational Leadership

National College of Education

National Louis University

September 2021

Copyright by Cynthia Marie Jaime, 2021
All rights reserved

Abstract

There is a great deal of research regarding the need for equity and access in Career and Technical Education (CTE); however, very little research exists acknowledging strategies to achieve it. The purpose of this study was to evaluate equity and access in CTE programs, as well as to determine any barriers to CTE program enrollment, participation, and completion faced by students identified as economically challenged, students with disabilities, or English language learners. The context of this inquiry was high school CTE programs in one school district in the United States of America. My study demonstrates both qualitative and quantitative data that reveal what CTE teachers were doing in their 21st century classrooms to provide equity and access for all students, and it further acknowledges any barriers that those teachers identified.

Preface

As a Career and Technical Education (CTE) teacher in a public school district, I am interested in instructional practices that lead to student success, especially for those students who may not be on a college trajectory. As a former vocational education student, I did not attend college immediately after graduation; in fact, I did not begin college until more than 20 years after graduating high school. However, the skills I learned in vocational school, while significantly outdated by the time I enrolled in college, impacted me over the years and eventually led me to become a business education teacher. I have a future goal of becoming an administrator in CTE and have done a great deal of research in this area.

Throughout the course of my studies in the area of CTE, I discovered that a great deal of research exists on the need for equity and access for all students in CTE classrooms; however, I found very little that focused on what CTE teachers are doing in their classrooms to provide equity and access for all of their students. This lack of research caused me to embark upon a detailed study of CTE programs. In my research I focused on one school district, which I referred to as School District X, to shed light on any barriers foreseen among students who had been labeled as students economically challenged, with disabilities, or English language learners. I specifically looked for any barriers to enrollment, participation, and completion that these student groups faced within the CTE programs of School District X. I began by conducting a review of the literature related to CTE. I specifically read about CTE participation, marketing, policy and practice, and theory. I also read studies conducted previously on equity challenges in CTE and equity gaps in CTE. I then began collecting data from CTE teachers for my

research and conducting one-on-one interviews with various CTE teachers to determine strategies they used to provide equity and access for all students in their classrooms. I interviewed a medical academy teacher, a culinary teacher, an aerospace teacher, an agriculture teacher, and a robotics teacher to gain a wide variety of perspectives across CTE programs for this study. My overarching question that drove this evaluation was: How is equity and access for all students addressed in district CTE programs?

Through this study, I learned helpful leadership lessons for various evaluation methods. I developed practical skills for creating and implementing surveys and analyzing responses through my quantitative evaluation. I gained the knowledge to design engaging interview questions, conduct formal interviews, and document responses through my qualitative evaluation. My previous leadership experience focused on teaching and instruction, and now I am prepared to add research and evaluation skills to my leadership abilities. These new leadership abilities have prepared me for my quest to become a CTE administrator one day in my district.

Acknowledgments

I want to acknowledge several people for their support and guidance throughout my doctoral journey. First and foremost, I must thank my husband, Juan, for his support and encouragement throughout this journey. He always motivated me even while sacrificing family time with me while I worked on my dissertation and doctoral degree assignments, never letting me give up.

I am also grateful for my VICE sisters, Patra, Ayana, Jasodra, Marica, and Wendy, as we embarked on this journey together back in the Fall of 2019. Their encouragement, messages, advice, words of wisdom, and most of all, their friendship, carried me through, knowing we were in this together, and I will never forget them.

Words cannot express my sincere appreciation for my dissertation chair, Dr. Carla Sparks, and my dissertation committee member, Dr. Stefanie Shames. Their guidance was invaluable in helping me complete a dissertation that will add to the body of research for CTE, of which I am very proud. They both exude admirable leadership qualities that I aspire to possess one day.

I wish to thank the district leaders, school leaders, and teachers in the district of my study who graciously assisted me in my research in various ways. Without their support and participation, my study would not have been possible. My hope is that my research findings will have an impact on the overall success of students. I would also like to thank my friends and colleagues who encouraged me these past three years. Your support meant more to me than you could know.

Dedication

This dissertation is dedicated to my parents, Kenny and Marie Edelstein, whose memories served as a great inspiration to me, recalling the work ethic and beliefs they instilled in me as far back as I can remember. I would also like to dedicate this dissertation to my husband, Juan, who never stopped believing in me. To my children, Kyle, Brittani, and Dylan, my step-daughter Isabel, and my grandchildren Damien, Mason, James, Emily, Ailis, and Simmy, know that you can do anything you put your mind to!

TABLE OF CONTENTS

Abstract	iv
Preface.....	v
Acknowledgements	vii
Dedication	viii
List of Tables	xii
List of Figures	xiii
CHAPTER ONE: INTRODUCTION.....	1
Purpose of Program Evaluation	2
Rationale	3
Goals	4
Definition of Terms.....	5
Research Questions.....	6
Conclusion	7
CHAPTER TWO: REVIEW OF THE LITERATURE.....	8
CTE Participation.....	9
CTE Marketing	10
CTE Policy and Practice	11
CTE Theory	13
Equity Challenges in CTE	14
Equity Gaps in CTE	16
Conclusion	18
CHAPTER THREE: METHODOLOGY	19
Research Design Overview.....	19
Participants.....	19
Data Gathering Techniques.....	20
Teacher Survey	21
Interviews.....	21
Extant Data.....	22
Data Analysis Techniques	22
Diversity Focus	23
Effectiveness Focus	23
Impact Focus.....	24
Ethical Considerations	24
Limitations	25
Conclusion	25

CHAPTER FOUR: RESULTS	26
Findings.....	26
Quantitative Data	27
Teacher Surveys.....	26
Qualitative Data	34
Teacher Surveys.....	34
Interviews.....	43
Extant Data.....	60
As-Is Framework	63
Current Contexts	64
Current Culture	65
Current Conditions.....	66
Time	66
Space	67
Resources	67
Current Competencies.....	68
Interpretation.....	69
Judgments and Recommendations.....	71
Conclusion	74
 CHAPTER FIVE: TO-BE FRAMEWORK.....	 76
Envisioning the Success To-Be	76
Future Contexts.....	77
Future Culture	78
Future Conditions.....	80
Future Competencies	82
Conclusion	85
 CHAPTER SIX: STRATEGIES AND ACTIONS FOR CHANGE.....	 86
Strategies And Actions	86
Establish a Sense of Urgency.....	87
Create a Guiding Coalition	87
Develop a Vision and Strategy	89
Communicate the Change Vision	90
Empower Broad-Based Action	91
Generate Short-Term Wins.....	92
Consolidate Gains and Producing More Change.....	93
Anchor New Approaches in the Culture.....	94
Assessing the Effectiveness of the Strategies and Actions	95
Community Involvement Strategies.....	96
Conclusion.....	97

CHAPTER SEVEN: AND POLICY RECOMMENDATIONS.....	99
Policy Statement	100
Analysis of Needs	101
Educational Analysis	102
Economic Analysis	104
Social Analysis.....	105
Political Analysis	107
Legal Analysis	108
Moral and Ethical Analysis.....	109
Implications for Staff and Community Relationships	110
Conclusion	111
CHAPTER EIGHT: CONCLUSION	113
Discussion	113
Leadership Lessons.....	116
Conclusion	117
References.....	118
Appendices.....	131
Appendix A: Survey Questions	132
Appendix B: Interview Questions.....	134
Appendix C: As Is 4 Cs Chart.....	135
Appendix D: To Be 4 Cs Chart.....	136
Appendix E: Strategies and Action Chart.....	137

TABLES

Table 1. Themes Identified from Question Eight of CTE Teacher Survey	35
Table 2. Themes Identified from Question Nine of CTE Teacher Survey	39
Table 3. Identified from Question Ten of CTE Teacher Survey	42

FIGURES

Figure 1. Results of the responses to survey Question 1	28
Figure 2. Results of the responses to survey Question 2	29
Figure 3. Results of the responses to survey Question 3	30
Figure 4. Results of the responses to survey Question 4	31
Figure 5. Results of the responses to survey Question 5	32
Figure 6. Results of the responses to survey Question 6	33
Figure 7. Results of the responses to survey Question 7	34
Figure 8. Photo of adaptive equipment	44
Figure 9. Photo of adaptive equipment	45
Figure 10. Photo of medical academy student born with no arms.....	46
Figure 11. Photo of writing desk for student born with no arms	47
Figure 12. Photo of surgical gloves designed for feet	48
Figure 13. Photo of student born with no arms drawing blood using feet.....	48
Figure 14. Photo of students making dog treats.....	50
Figure 15. Photo of donation of dog treats to local animal shelter	50
Figure 16. Photo of flight simulator used in aerospace classroom	55
Figure 17. Photo of drone instruction in aerospace classroom	55
Figure 18. Demographic data of CTE participants	60
Figure 19. Demographic data of CTE student population by gender	61
Figure 20. CTE program information, participation, and completion data	62
Figure 21. Three-year CTE participation of special populations.....	63

Chapter One: Introduction

Career and Technical Education (CTE), formerly known as vocational education, has evolved significantly over the years. Vocational programs have transitioned away from the stigma of being known as *less than* or inferior educational pathways, or programs for students labeled as *not college material*. Educators and community leaders recognize 21st century CTE programs as pathways to high-wage, high-skill, high-demand occupations. Vocational programs historically provided students with training in a single skill or job. Today's programs empower students with 21st century workforce skills that enhance their high school experiences and provide opportunities for rewarding careers.

My focus throughout this research project was to observe one school district's CTE programs to assess the methods instructors utilized to provide equity and access for all students in their classrooms. This district, to which I will refer as School District X, lies in the heart of its state nestled between two metropolitan areas and has a history that dates back over 150 years. Its origin stems from a one-room schoolhouse where the school's academic calendar revolved around the local harvest seasons.

Presently consisting of over 150 schools that serve more than 101,000 students, this district is ranked one of the largest in its state and among the 30th largest districts in the United States. The student demographic make-up consists of 40% White, 20.6% Black, 34.4% Hispanic, 2.9% Multiracial, 1.6% Asian, and 0.4% Indian American/Pacific Islander. The grade span includes Pre-K to grade 12, two adult schools offering Graduate Equivalency Degree (GED) programs, and two technical colleges. (National Center for Educational Statistics, 2019).

Purpose of the Program Evaluation

The purpose of my program evaluation was to assess what CTE instructors were doing in their classrooms in School District X to provide equity and access for all students to enroll in CTE programs in one school district. Further, I wished to determine the existence of any barriers to CTE program enrollment, participation, and students' completion. My research focused specifically on students identified as economically challenged, students with disabilities, and English language learners. "The content of a program of study must be delivered in a way that enables students from various populations to succeed in the program whenever possible" (Imperatore, 2019, p. 11). With that ideology in mind, I reviewed one school district's high school CTE programs. My goal was to gain insight into how instructors made accommodations in their instruction to meet the needs of students identified as economically challenged, students with disabilities, and English language learners.

The mission statement of School District X was to provide a high-quality education for all students, including those who participated in CTE programs. School District X's CTE programs included the clusters of Agri-science, Business Technology, Diversified Education, Family and Consumer Sciences, Health Science, Industrial, Marketing, Public Service, and Technology. I selected this school district for my evaluation because of the vast amount and variety of CTE programs within School District X. I chose to focus on equity and access for all students in CTE programs because there was a great deal of research on the need for equity and access in CTE. In contrast, very little research existed showing what teachers were doing to provide equity and access for all students in their CTE classrooms.

Rationale

As a high school CTE teacher at the time of my study, I was very passionate about CTE students and their instruction. Further, I understood the importance of how CTE programs can help to prepare students for college and careers, leading them to a future of success. I realized while not all students will be college ready, CTE teachers can help bridge the gap and help prepare students for a pathway to career success.

Some form of postsecondary education or training beyond a high school diploma is increasingly a prerequisite for success in today's global economy. Providing learners opportunities to earn postsecondary credits while in high school is a critical aspect of any quality CTE program because it helps to ensure that learners can pursue post-secondary education at a much earlier time in their educational journey. (Advance CTE, 2020, p. 32)

CTE programs provide students with 21st century workforce skills that industry leaders are seeking.

My passion for CTE stems from my personal experience. I was a former vocational education student myself and did not attend college immediately after graduation; in fact, I did not begin college until more than 20 years after graduating high school. However, the skills I learned in vocational school, while significantly outdated by the time I enrolled in college, impacted me over the years and eventually led me to become a business education teacher. As stated, I did not attend college right after high school. Instead, I married and began raising a family shortly after graduating from high school. It was not until 28 years later that I found myself divorced with no formal education other than my high school diploma and obsolete vocational skills in computer

programming. However, I had office skills from serving as the school secretary at my children's school for over 18 years.

Realizing that I needed to pursue an education if I wanted any chance to obtain a job that would pay a higher salary, I enrolled in the local community college and earned a bachelor's degree in business. I then received my teaching certification and became a high school business education teacher. Upon discovering my love for teaching business classes, I continued to further my education and earned a master's degree in CTE, then a specialist's degree in educational leadership.

My ultimate career goal is to become an administrator in CTE, helping to build upon and grow the programs already in place in the district where I work. I feel I can help bridge connections with the local community to enhance CTE programming further and prepare students with the skills local business and industry leaders are seeking. "Effective partnerships between school districts and local employers result in better-prepared students who are more likely to be hired upon graduation, making for a healthier workforce and a stronger community" (Jackson, 2014, p. 19). With that in mind, I plan to address some of the critical issues in CTE, particularly regarding how CTE teachers provide equity and access for all students in their classrooms, including those students labeled as economically challenged, students with disabilities, and English language learners. I also want to acknowledge and find solutions for any barriers these students face with enrollment, participation, and completion of CTE programs.

Goals

Through this evaluation, I observed various CTE programs within one school district to assess how instructors provided equity and access for all students in their

classrooms. I wished to shed light on how CTE teachers made accommodations in their classrooms to meet all learners' educational needs to prepare students for the 21st century workforce. My plan was to share my study results with all stakeholders, including leaders for the district CTE programs I evaluated with the expectation for stakeholders to understand better the need to ensure equity and access for all students and create awareness for CTE teachers to have the necessary tools to meet all learners' educational needs.

Definition of Terms

The following terms are defined according to the meaning to which they are used throughout my study:

- 504 Plan – formal plan describing methods and strategies school personnel will use to accommodate and support the needs of students with disabilities
- Adult learning theory – the study of how adults learn
- Career academies – programs designed to prepare students for both college and careers
- CTE - Career and Technical Education
- Discriminatory disciplinary action – unequal reprimand or corrective action
- Equitable access – Providing all students with equal opportunities for participation
- Human capital theory – theory of wages compared to required education and training
- IEP – individual education program for special education instruction that provides supports and services to accommodate the educational needs of students with identified disabilities
- Industry certification – credential recognized by business and industry

- Ineffective disciplinary action – reprimand or corrective action that fails to produce results
- Paraprofessional – a staff member who assists teachers and students as needed in the classroom
- School choice – the choice to attend a school other than a zoned public school
- Special population students – students with barriers to educational achievement
- SREB – Southern Regional Education Board
- STEM – Science, Technology, Engineering, and Math

Research Questions

The single overarching question that drove this program evaluation was: How does School District X address providing equity and access for all students in their CTE programs? I identified two primary research questions to drive my program evaluation research. These questions were as follows:

- 1) What are CTE teachers doing in their classrooms to provide equity and access for all students in their classrooms? The sub-question was:
 - a) How are the academic needs of students being addressed who are identified as economically challenged, students with disabilities, and English language learners?
- 2) Are there any barriers to CTE program enrollment, participation, and completion faced by students identified as economically challenged, students with disabilities, or English language learners?
 - a) If so, what are the foreseen solutions to those barriers?

I answered both questions and sub-questions with data collected from a survey conducted with CTE teachers from various CTE programs across School District X. I also utilized feedback from five CTE teachers who allowed me to interview them to receive more specific responses. For a copy of the survey protocol, please see Appendix A. For a copy of the interview protocol, please see Appendix B. I also reviewed extant data provided by School District X's Workforce Education and Multiple Pathways Department to better understand the demographic makeup of CTE participants, student population, program information, participation, and completion. I also reviewed a three-year analysis of CTE participation of special populations. I did not need permission to use these data as they were publicly shared in CTE annual presentations to stakeholders; however, I did share with the district CTE director that I would be using this data in my study and that I would share the data from my written program evaluation.

Conclusion

As previously stated, much research exists on the need for equity and access in CTE. However, little focused on what was happening at the time of my study in CTE classrooms to provide equity and access for all students. I wished to shed light on how CTE teachers made accommodations in their classrooms to meet all learners' educational needs to prepare them for the 21st century workforce. The next chapter will focus on the literature that supports this research project and the research questions. I grouped the literature that drove this research project into the following categories: CTE participation, CTE Marketing, CTE Policy and Practice, CTE Theory, Equity Challenges in CTE, and equity gaps in CTE.

Chapter Two: Review of the Literature

Education aims to provide all students an equal opportunity to be successful in their educational endeavors. Providing equity and access for all students has become a significant priority for 21st century educational leaders. For high school students, Career and Technical Education (CTE) provides opportunities for students, including special population students, to learn workforce skills in secondary education. One may wonder how educators are addressing equity and access for all students in CTE. While some high school students plan to transition to college after receiving their high school diploma, this may not be a choice or an option for everyone. For various reasons, some graduates may instead choose to jump right into the workforce or perhaps change the part-time job status they were maintaining during their high school years into a full-time position upon graduation. Still, others are unsure of what the future holds or what opportunities may be available for them. Often, high school graduates who were labeled as special population students during their high school years will fall into this category. High-quality CTE programs can make a massive difference for special population students, opening doors to future career opportunities that may otherwise not have been available to them. Through this literature review, I will analyze research regarding equity and access in CTE.

Before beginning a review of the current literature, I looked at who is among the targeted population of students in the educational objective of achieving equity and access for all students. The Strengthening Career and Technical Education for the 21st Century Act (Perkins V) provides the primary funding source for CTE programs. Perkins V defines Special populations as,

Individuals with disabilities, low-income youth and adults, individuals preparing for nontraditional fields, single parents, including single pregnant women, out-of-workforce individuals, English learners, homeless individuals, youth who are in or have aged out of the foster care system, and youth with a parent who is an active member of the armed forces and is on active duty. (Alliance for Excellent Education, 2019, p. 1)

For my review of the literature, I focused on research for CTE participation, the marketing of CTE programs, CTE Policy and Practice, CTE Theory, Equity challenges in CTE, and Equity Gaps in CTE. This research helped me to gain a better understanding of who exactly is participating in CTE and what kinds of barriers they are facing.

CTE Participation

While researching who participates in CTE, I found a relationship between career academies and student participation and the extent that demographics, prior coursework in CTE and academic achievement have on participation (Cox et al., 2015). Findings indicated that more males than females participated in career academies, and White and Black students were more likely to join than Asian and Hispanic students. Additionally, students who participated in CTE coursework during middle school were more likely to participate in career academies during high school. Data also revealed that students who participated in career academies had higher mean scores in reading and mathematics on the state-wide comprehensive assessment test than students who did not participate in career academies (Cox et al., 2015).

Data from the U. S. Department of Education (2019) showed that 80% of male students were CTE participants compared with 73% of female students. Also, their data

reflected that White students were more likely to be CTE participants than Black, Hispanic, and Asian students. Further, data regarding CTE concentrators eight years after their expected high school graduation date revealed that the median annual earnings of students who did not attend college but did focus on CTE courses while in high school was higher than that of students who did not attend college and were not CTE concentrators while in high school.

Additionally, Defoe (2015) researched why students take CTE classes, their career goals, their knowledge of CTE careers, and if their CTE coursework aligned with their career goals. His data revealed a lack of career knowledge among high school CTE students, along with a lack of commitment to a specific career goal (Defoe, 2015). The results of this research led me to consider CTE programs' marketing.

CTE Marketing

Donovan and Lakes' (2017) research offered insight into the marketing for specialized secondary programs such as International Baccalaureate Programmes and career academy programs. These authors analyzed school choice programs marketed within communities and the marketing of the values of choice school programs through language and materials. The researchers were able to gain valuable feedback from marketing efforts through presentations at parent information nights and data gathered from interviews with school administrators. Data revealed that students and their parents believed they could benefit from the programs marketed as excellent programs and offered unique opportunities to students (Donovan & Lakes, 2017).

Advance CTE (2021) conducted a study *Communicating Career Technical Education: Learner-centered Messages for Effective Program Recruitment* on effective

recruitment strategies for CTE. Their research recognized the importance of school leaders being informed about CTE program offerings to recruit those programs effectively. The study also recognized the importance of Google and school website searches as sources for prospective students and their families to obtain information on CTE programs in order to make informed decisions regarding program enrollment opportunities (Advance CTE, Communicating, 2021, pp. 12-13).

Additional research led by Kitchel (2015) focused on addressing the current lack of research on school administrators' perceptions of CTE programs' value and their contributions to school goals and objectives. Kitchel analyzed school leaders' perceptions of the contributions of CTE programs to STEM education within their schools and their perceptions of the importance of CTE programs to the school's educational goals. Data revealed that overall, principals felt that STEM and career readiness were important for the school's learning goals and contributed to curriculum objectives. This research led me to wonder about the policies and practices of CTE.

CTE Policy and Practice

Analysis of the implications for policy and practice through research studies provided a better understanding of participation in secondary career and technical education in the 21st century. Aliaga et al. (2014) observed U. S. public high school students' CTE credit-taking experience, with two main questions guiding this study. First, what does the CTE credit-taking experience look like among public high school students? And second, what are CTE participation patterns among public high school students, demographically, and concerning the ongoing interest in STEM course taking? Data revealed a new pattern of CTE participation in high school, indicating students from

higher socioeconomic status groups participated at higher rates whereas, in the past, the trend was more participation by economically challenged, minority, and underachieving students (Aliaga et al., 2014).

In 2017 the U. S. House of Representatives held a hearing to discuss strengthening Career and Technical Education (CTE) and the need to reform, improve, and modernize current law so that more students can experience the power of CTE. The hearing addressed the crucial need for updating CTE policies and updating the Perkins Act, which had not seen updates in over a decade. One benefit of this hearing included a better understanding of the vital role legislation plays in ever evolving 21st century reforms that affect CTE programs (U. S. House of Representatives, 2017).

CTE certification and licensure preparation requirements for CTE administrators have become an area of concern as well. Zirkle and Jeffrey (2017) examined CTE administrative teams to determine if a decline existed in state CTE administration credentialing. The authors of this study focused on educational leadership standards developed by the Educational Leadership Constituent Council (ELCC) that serve as the national standards that guide school administrators at all educational levels. There are no specific standards directed at CTE requiring specific skills or knowledge, which has sparked areas of concern. Data collection included web searching, email, and phone calling to officials in all 50 states. Data revealed that all 50 states implemented policies that required some form of certification or licensure for school administrators, ranging from director to superintendent, including CTE administration.

In the last few years, there has been support for CTE in education policy. In 2018 the Strengthening Career and Technical Education for the 21st Century Act was signed

into legislation, updating the Carl D. Perkins Career and Technical Education Act. This policy revised practices relating to accountability and transparency practices in CTE programs, shifting more authority to state and local levels. “Perhaps more direct evidence on the skills offered in CTE programs and their alignment to local employment needs would influence policy decisions, as could more work on the political dynamics of how CTE policy is implemented at the local level” (Blissett, 2020, p. 11). Hopefully, the new legislation will help address workforce gaps and oversight and strive to align CTE programs to local industry needs with these changes. To better understand policy and practice in CTE, it is essential to consider CTE Theory.

CTE Theory

There are many commonly used theories in CTE research. Schmidtke (2017) investigated published CTE research to identify those theories most commonly employed as a theoretical framework and described their major components and concepts. He then proposed a potential core theory base for CTE derived from the findings and discussed how this core grounds itself through the intersection of different theories.

Schmidtke analyzed the most commonly used theoretical and conceptual frameworks in CTE research and the components that constitute a CTE theory base in CTE research. He utilized a state-of-the-art literature review method of analysis to identify frameworks used in articles published in three major peer-reviewed journals relevant to CTE research. The overall findings yielded 76 different theories used, with adult learning theory and human capital theory proving to be the only ones used by authors in all three of the major journals (Schmidtke, 2017). Malcolm Knowles developed the adult learning theory in 1968 based on the way adults learn and how their

distinctive learning styles differ from the way children learn (Knowles et al., 2005). Gary Becker introduced the human capital theory in 1964 based on the amount a person invests in training and education for a particular job and the return on wages earned from it (Becker, 2009, p. 11). From Schmidtke's case analysis, both of these theories proved to be popular conceptual frameworks used by researchers of CTE to guide them in their studies.

Equity Challenges in CTE

Understanding equity challenges in CTE helped me better understand how to overcome these challenges to provide equity and access for all students in CTE. Research revealed that some of the challenges learners face stem from barriers based on their race, gender, socioeconomic status, or disability. *Advance CTE: State Leaders Connecting Learning to Work* (Advance CTE, 2018) is a brief supported by national civil rights organizations, state CTE directors, and local leaders. This brief is the first in a series regarding this topic and sheds light on CTE biases that impact program enrollment and participation. Examples of these biases include those affecting groups categorized as learners of color, economically challenged learners, females, and learners with disabilities. The research revealed these groups tracked into low-quality CTE programs without being offered the opportunity to participate in CTE programs that were more rigorous and resulted in more lucrative career opportunities.

I found further research addressing criteria for access and equity in high-quality CTE programs utilizing the Association for Career and Technical Education's (ACTE) *12 Elements of High-quality CTE within the Quality CTE Program of Study Framework* (Imperatore, 2019). This framework consists of seven criteria describing the program of

study promotion, student recruitment, and strategies supporting equity and access for all learners regardless of gender, race, socioeconomic background, or disability. While this report did not include any research questions or methods, it did highlight some essential elements regarding equity and access in CTE. For example, the researchers of one study mentioned in this report conducted an equity environmental scan. This scan consisted of gathering information regarding the organization to identify strengths and weaknesses related to providing equitable opportunities for students. They also administered student surveys. The results from this research enabled program staff to gain insight into why there was a lack of young women participating in manufacturing courses, which turned out to be due to protective gear simply being too large for them to wear comfortably and safely.

The Obstacles we Face in Career and Technical Education, while not specifically research, is an excellent speech given by C. Keith Waugh, Ph.D., during the 2017 Association for Career and Technical Education Research (ACTER) Presidential Address at Valdosta State University. In this speech, Dr. Waugh addressed the obstacles that stand in the way of growth opportunities for career and technical education. He further explained that educators must do a better job of “telling our story,” meaning sharing the positive outcomes of CTE. Society often perceives CTE as “not worthy of parity in academia” (Waugh, 2017, p. 4). However, Waugh went on to say that this is changing as more politicians, industry leaders, and celebrities such as Mike Rowe, host of the Discovery Channel series *Dirty Jobs*, advocate for the need to close the skills gap in high-demand industries. The strengths of Waugh’s speech included optimism that the negative stigma of CTE will soon dissipate, and program growth will continue to flourish.

Another excellent document is a report in which the authors focused on increasing access and equity through a whole-school approach to connect education and careers (Winkler & Warren, 2019). The authors focused on research conducted by the Southern Regional Education Board (SREB). This research shed light on the belief that programs consisting of a blend of CTE and college-preparatory academics will increase readiness, attainment of post-secondary education, career advancement, and economic stability for all races, genders, socioeconomic backgrounds, and ability levels. The SREB utilized a school improvement framework in their research, focusing on high-quality instruction that infuses CTE with high-level academics and critical thinking skills to prepare all students for the 21st Century workplace. While there were no research questions evidenced in this report, the SREB did reveal how the school improvement frameworks can help schools identify and support each student's unique needs. Their research also revealed how rigor in academics could increase academic achievement for all students and prepare all students for college-level coursework. To better understand equity challenges, it is also essential to comprehend equity gaps.

Equity Gaps in CTE

Bragg (2017) presented solutions for equity gaps in her *Case For Evaluating Student Outcomes And Equity Gaps to Improve Pathways and Programs of Study*. In this study, Bragg described the need for new approaches in CTE program evaluation. Recommendations included ensuring that CTE assesses outcomes for all learner groups and focuses on program improvements and higher accountability measures for all learners. Bragg also found vast inequities among student groups and recommended ten essential components that support the implementation of CTE programs of study. Those

components are legislation and policies, partnerships, professional development, accountability and evaluation systems, college and career readiness standards, course sequences, credit transfer agreements, guidance counseling and academic advisement, teaching and learning strategies, and technical skills assessments. The author also noted that this framework does not address equitable outcomes for student subgroups, stating,

Without student subgroup analysis, it is nearly impossible to create an accurate picture of program performance overall or at the student subgroup level. What happens to diverse student groups should be an essential element of any evaluation of career pathways and programs of study. (p. 4)

The researcher then took on a critical reconstructionist approach that focused on social reform to include equitable outcomes for all subgroups in CTE education.

Adams (2019) followed one teacher's journey to narrow the achievement gap by documenting how that teacher increased certification rates in his auto mechanics classroom just by utilizing a few strategies to achieve equitable instruction and narrow the achievement gap in his classroom. The teacher's first step towards achieving equity in the classroom was recognizing and believing that all students can grow despite the systemic problems of generational poverty, gender, and racial discrimination (pp. 2-3).

Sych (2016) researched the divide between vocational and academic education and how educators might be able to repair the rift. Sych, a credentialed hairstylist, conducted this study following her transition to a CTE high school teacher as she attempted to compare and contrast variables within both academic and vocational education. In addition, Sych self-reflected on her own skills as a credentialed hairstylist and noted that not only did she need to possess the skills of a hairstylist, but she also

needed to be competent in managing business operations such as cash flows, scheduling, and marketing, as well as being knowledgeable in anatomy, biology, chemistry, art, design, and communication.

Conclusion

The theory behind equity and access in Career and Technical Education is that all students will have equitable access to quality CTE programs that prepare students for career pathways leading to high-skill, high-wage jobs. By researching who participates in CTE programs, CTE program marketing, policy and practice in CTE, CTE theory, equity challenges in CTE, and equity gaps in CTE, I better understand what literature is currently available in these areas. I also gained a better understanding of what is still needed to add to the body of literature that will help further the advancement of equity and access for all students in career and technical education programs.

Chapter Three: Methodology

Through this program evaluation, I considered equity and access in CTE programs for students identified as economically challenged, students with disabilities, or English language learners. I analyzed barriers these student groups faced to program enrollment, participation, and completion of CTE programs. I used a mixed-methods approach by collecting both qualitative and quantitative data. In this chapter, I described the procedures I used for collecting and analyzing my data.

Research Design Overview

My methodology for research included three types of evaluation. First, I used the evaluation of diversity focus to study various perspectives and program experiences. Diversity focus is an option for evaluation focus that “gives voice to different perspectives on and illuminates various experiences with a program” (Patton, 2008, p. 301). This focus is a good fit for evaluating CTE programs as there is no one-size-fits-all. Next, I used an effectiveness focus evaluation to examine whether CTE programs were effective and if there were any additional needs to make them more effective. Lastly, I used an impact focus to evaluate the direct and indirect impact of participants and the community over time. The impact focus evaluation aligned with my research as CTE education should provide students with the skills sought out from the local industry and community leaders (Patton, 2008, pp. 301-302).

Participants

The key participants for my research were CTE teachers. There was no physical interaction with students in this study, but I used extant student industry certification data collected from the school district. Additionally, I surveyed teachers from various high

school CTE programs for this evaluation and conducted interviews with CTE teachers. There are 16 career clusters in CTE. These include Agriculture, Food & Natural Resources; Architecture & Construction; Arts, A/V Technology & Communications; Business Management & Administration; Education & Training; Finance; Government & Public Administration; Health Science; Hospitality & Tourism; Human Services; Information Technology; Law, Public Safety, Corrections & Security; Manufacturing; Marketing; Science, Technology, Engineering & Mathematics; and Transportation, Distribution & Logistics (Advance CTE, *Career Clusters*, 2021). I surveyed participants to gather quantitative data from School District X's CTE teachers who were teachers for subjects in one of these career clusters. I asked these teachers for their participation while in attendance at the district CTE contact day training. I also sought out five volunteers from this group to participate in one-on-one interviews to gather qualitative data.

Data Gathering Techniques

I collected both quantitative and qualitative data for my program evaluation. The various data sets contributed to an overall understanding of equity and access for the district's CTE programs. I gathered quantitative data by arranging with the district CTE director to be included on the winter contact day agenda where all district CTE teachers were present for training. I presented a brief PowerPoint pertaining to my study and asked for volunteers to participate in my survey. I provided electronic links for both the survey and consent forms and paper copies of both for participants who did not have devices with them. During district contact day training, everyone submitting a survey received a small token of appreciation (a small gift box of Hershey kisses and a note of thanks). I further sought out volunteers from the teachers present at district contact day

training to participate in an interview session at a later date to collect qualitative data for my study. I chose the first five high school CTE teachers who responded to my request for an interview.

Teacher Survey

I developed a participant survey to collect data from CTE teachers regarding how they were providing equity and access for all students within their CTE programs. The survey consisted of seven Likert Scale questions and five open-ended questions for a total of 12 survey questions (for a copy of the survey, see Appendix A). My goal was to gain insight into the overall effectiveness of providing equity and access for all students in CTE programs for School District X, as seen from the teachers' perspective. I offered all CTE teachers who were present at the district contact day training with the opportunity to participate in the survey. I presented all who participated with informed consent forms, along with the survey questionnaire. Participants had to acknowledge consent to be included in the study.

Interviews

At district contact day training, I solicited from those present for volunteers to participate in one-on-one interviews. The volunteer participants were CTE teachers who taught subjects from one of the 16 CTE career clusters previously mentioned. My goal of the interviews was to understand better the extent of equity and access provided in their CTE classrooms. I invited all teachers of high school CTE programs in School District X to participate voluntarily in the interview process. The volunteers were chosen based on who volunteered first, ensuring I did not duplicate any of the 16 career cluster fields. The final selection of teachers for the interview process included an agriculture teacher, an

aerospace teacher, a medical academy teacher, a culinary teacher, and a robotics teacher. I conducted interviews at a later date based on the schedule of the volunteers. I conducted interviews face-to-face or over the telephone (Appendix B). Participants acknowledged their consent to be included in the study. I also gained participant permission to record and transcribe the interviews for accuracy. The qualitative data gathered from the interview process provided valuable insight from the CTE teachers' perspective on a more personal level.

Extant Data

To gain additional insight into School District X's CTE programs, I requested extant data from the CTE director regarding industry certification outcomes linked to career-themed courses. These data were compiled annually from CTE teachers. Teachers were required to report pass/fail results for all students attempting an industry certification exam or skill attainment assessment at any given time during the school year. I further requested extant data regarding who participated in CTE programs, along with a demographic breakdown of participants. As this information was a public record, I did not have to request the information formally. The CTE director was able to send the information to me electronically.

Data Analysis Techniques

Data and program improvement are among the 12 elements of high-quality CTE programs (Imperatore & Hyslop, 2018). Evaluating programs and using the data to drive decisions for program improvement will help educators transform their CTE programs into high-quality programs of study. Patton (2016) stated that there are several fundamental concerns for focusing a program evaluation, such as the purpose of the

review, the utilization of the information gathered, what is learned from it, and what actions will be needed based on the findings of the evaluation (p. 297). He further recognized that while various types of evaluations focus on different purposes and pose different questions, various focus options are often used together within the same program evaluation to gain better insight (p. 301). My process for analyzing the data from my study included three methods of evaluation: diversity focus, effectiveness focus, and impact focus.

Diversity Focus

I used a diversity focus evaluation to assess the strategies used by CTE instructors in their classrooms. With CTE teachers having a diverse body of students, they must address the learning needs of all students with various strategies of differentiation. Students have different learning styles, with some students learning more effectively through hands-on activities, while others through modeling or student grouping. It is essential teachers identify each student's abilities to know how to focus instruction for each learner. In diversity focus evaluation, there is no right or wrong way to evaluate experiences. Further, each of the diverse perspectives observed is taken into consideration for the overall program evaluation.

Effectiveness Focus

I used an effectiveness focus evaluation in conjunction with the diversity focus evaluation to examine CTE programs. The effectiveness focus evaluation helped me better understand how CTE programs were effective in providing equity and access for all students and what, if anything, was needed to make them more effective. Utilizing an effectiveness focus evaluation helped me to understand the extent of a program's

effectiveness in attaining the program goals and determining what else was needed to make the program more effective.

Impact Focus

I used an impact focus evaluation to assess the direct and indirect impact of the CTE programs on participants and the community over time. CTE programs offer students the opportunity to learn skills for high-wage, high-demand jobs that community leaders desire. Through my evaluation process, I gained a better understanding of the impact partnerships between CTE programs and community leaders can have on students and the community for years to come.

Ethical Considerations

I included data gathered from all participant surveys and interviews in the program evaluation. I maintained anonymity throughout the evaluation process. All participants gave their informed consent for survey and interview participation. Through the informed consent form, I gave full disclosure of data collection methods, data usage, and the right to abstain from the study. There were no anticipated risks to participants in this program evaluation beyond that of everyday life. Participants who took part in this study may benefit by contributing to future implementations and decisions regarding the district's CTE Programs.

I sought permission from the school district to use extant industry certification data in my program evaluation. Additionally, I provided the district CTE director and participating school principals with an informed consent form requesting permission to conduct research with CTE teachers. I provided participating CTE teachers with an informed consent form to participate in the survey. I also provided CTE teachers with an

informed consent form for participation in the interview. I made sure all participants were aware that their participation was voluntary and could be discontinued at any time without penalty or bias. Further, I informed participants that identities, including the school and the district, would be kept confidential and not attached to any data.

Limitations

The program evaluation limitations included my biases for providing equity and access for all students through my personal experiences as a CTE teacher. I already believed that CTE teachers go above and beyond their job requirements to provide equity and access for all students in various ways before I conducted this study; I just was not sure about the strategies they used. Further limitations of this study included the size of the study, as I evaluated only one school district. While the school district that I assessed for this study offered a wide variety of CTE programs for students to explore their career interests, the study did not fully encompass what teachers across the nation were doing to provide equity and access for all students in their CTE classrooms.

Conclusion

In this chapter I described the plan for gathering both quantitative and qualitative data for this research project. Additionally, I examined all ethical considerations and any limitations throughout the process of my data collection procedures. In the next chapter, I described the quantitative and qualitative data results and provided my judgments and recommendations.

Chapter Four: Results

The findings from my program evaluation provided answers to my research questions based on feedback from Career and Technical Education (CTE) instructors and their experiences with students in their classrooms. I analyzed responses from the seven Likert Scale questions posed on surveys and the four open-ended questions posed on surveys related to personal experiences with students identified as economically challenged, students with disabilities, or English language learners. I further analyzed responses to the seven questions from interviews conducted with teachers from culinary, medical, aerospace, robotics, and agriculture programs in School District X. I also reviewed extant data from 2018-2019 CTE programs throughout School District X.

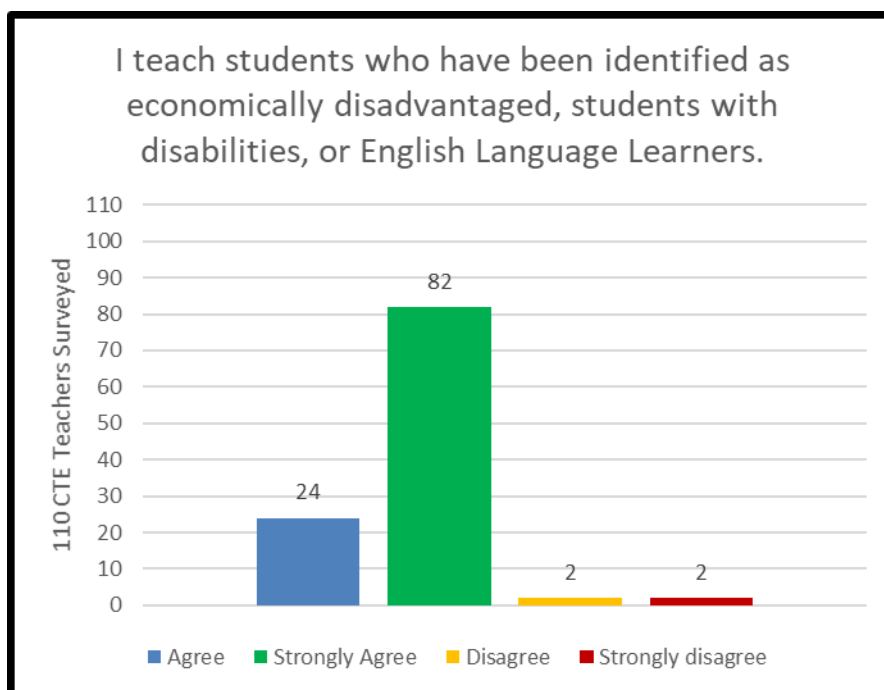
Findings

I separated my findings into three areas, surveys from CTE teachers, interviews with CTE teachers, and extant CTE data from the 2019 school year outlining CTE program outcomes for the year. I divided the surveys into two parts using the Likert Scale as well as open-ended questions that provided opportunities for participants to give feedback based on their experiences in their CTE classrooms. The first seven questions consist of Likert Scale-type statements regarding the experiences of teachers and their students in their CTE classrooms. Teachers rated each one by indicating if they agreed, strongly agreed, disagreed, or strongly disagreed with the statements. The last four questions on the survey consisted of open-ended questions that allowed teachers to give any additional information on a more personal level.

Quantitative Data

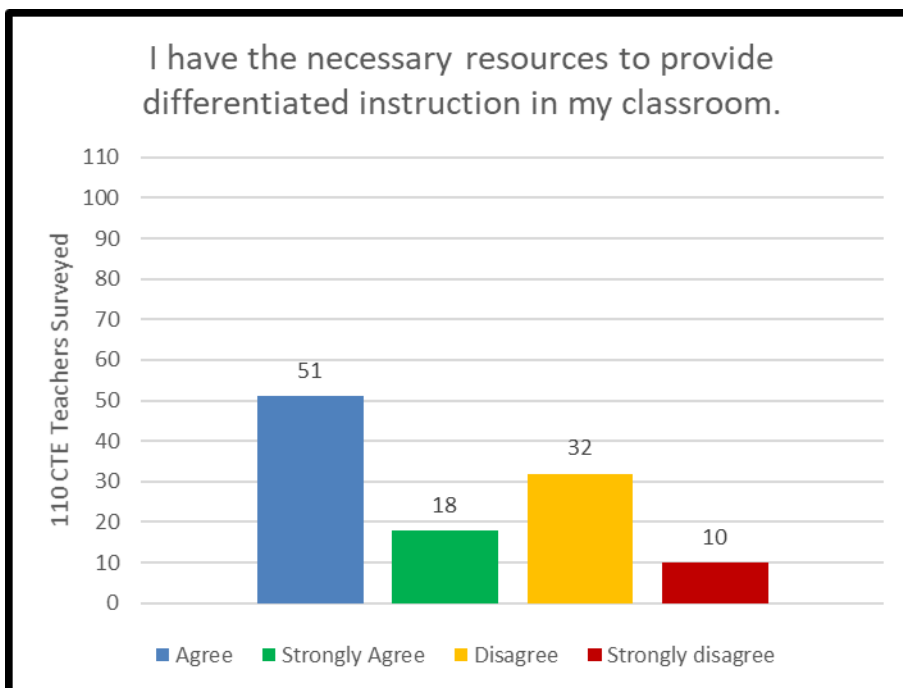
The sections below refer to survey information collected from CTE teachers concerning their personal experiences in their classrooms. I presented teachers with questions related to their interactions with students identified as economically challenged, students with disabilities, and English language learners. I also asked if teachers could foresee any barriers they felt these students faced regarding CTE program enrollment, participation, and completion.

Teacher Surveys. I initiated one survey for all CTE teachers (See Appendix A) based on those who returned a signed consent form to participate for a total of 110 survey participants. On Statement 1, teachers reported that they agreed, strongly agreed, disagreed, or strongly disagreed that they taught students who identified as economically challenged, students with disabilities, or English language learners. Over 96% of the teachers surveyed agreed or strongly agreed, with 24 teachers agreeing and 82 strongly agreeing that they taught students who identified as economically challenged, students with disabilities, or English language learners. Only 3.6% of teachers surveyed disagreed or strongly disagreed, with two who disagreed and two who strongly disagreed, as indicated in Figure 1.

Figure 1*Survey Statement 1*

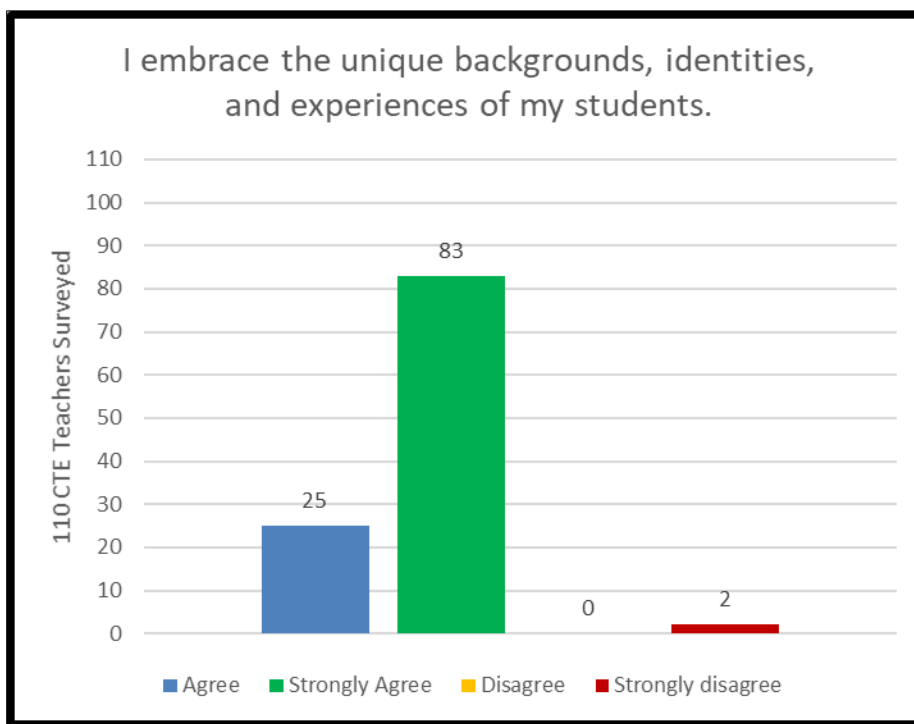
Note. Results of the responses to survey Statement 1 (n=110)

On Statement 2 of the survey, I gave CTE teachers a prompt about whether they felt they had the necessary resources to provide differentiated instruction in their classrooms. Tomlinson (2017, p. 10) described a differentiated classroom as “one where the teacher proactively plans and carries out varied approaches to content, process, and product in anticipation of and response to student differences in readiness, interest, and learning needs.” Of the 110 teachers surveyed, 62% (69) responded that they felt they had the necessary resources to provide differentiated instruction in their classrooms, with 51 (46%) agreeing and 18 (16%) strongly agreeing. In contrast, 38% (42) indicated that they did not feel they had the necessary resources to provide differentiated instruction in their classrooms, with 32 (29%) disagreeing and 10 (9%) strongly disagreeing with this statement, as indicated in Figure 2.

Figure 2*Survey Statement 2*

Note. Results of the responses to survey Statement 2 (n=110)

DiFranza (2019) outlined the need for educators in today's classrooms to not only be able to recognize their students' diverse social, ethnic, gender, economic, or other identities, but also to prioritize modifying their approach to instruction for these groups accordingly. On Statement 3 of the survey, teachers reported if they felt they embraced their students' unique backgrounds, identities, and experiences. Over 98% of teachers felt they did embrace their students' unique backgrounds, identities, and experiences, with 25 agreeing and 83 strongly agreeing. Less than 1% disagreed with this statement with two teachers responding that they strongly disagreed that they embraced their students' unique backgrounds, identities, and experiences, as indicated in Figure 3.

Figure 3*Survey Statement 3*

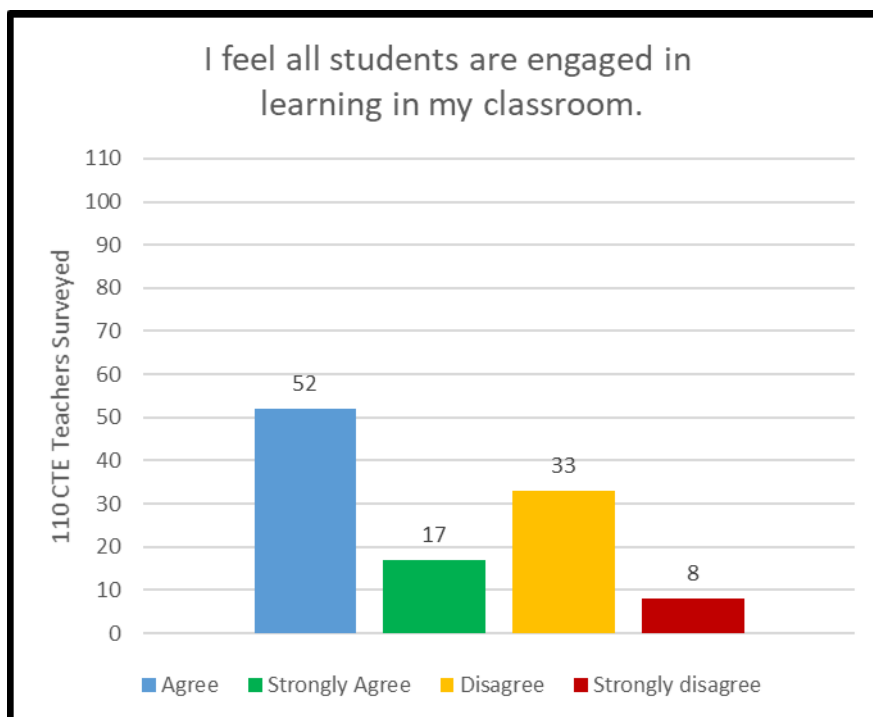
Note. Results of the responses to survey Statement 3 (n=110)

On Statement 4 of the survey, teachers reported that they felt that all students were engaged in learning in their classroom. One definition of engagement came from Ben-Eliyahu et al. (2018, p. 87) who stated, “the intensity of productive involvement with an activity.” Engagement also refers to the level of attention or interest that students show during classroom instruction and their motivation for participation in activities. Over 63% of teachers felt that all students were engaged in learning in their classroom, with 52 respondents agreeing and 17 strongly agreeing. In contrast, 37.2% disagreed or strongly disagreed, with 33 (30%) disagreeing and eight (7%) strongly disagreeing that all students were engaged in learning in their classroom, as indicated in Figure 4. This

number seemed high, and I plan to explore further the reasons why teachers feel they are struggling with student engagement.

Figure 4

Survey Statement 4



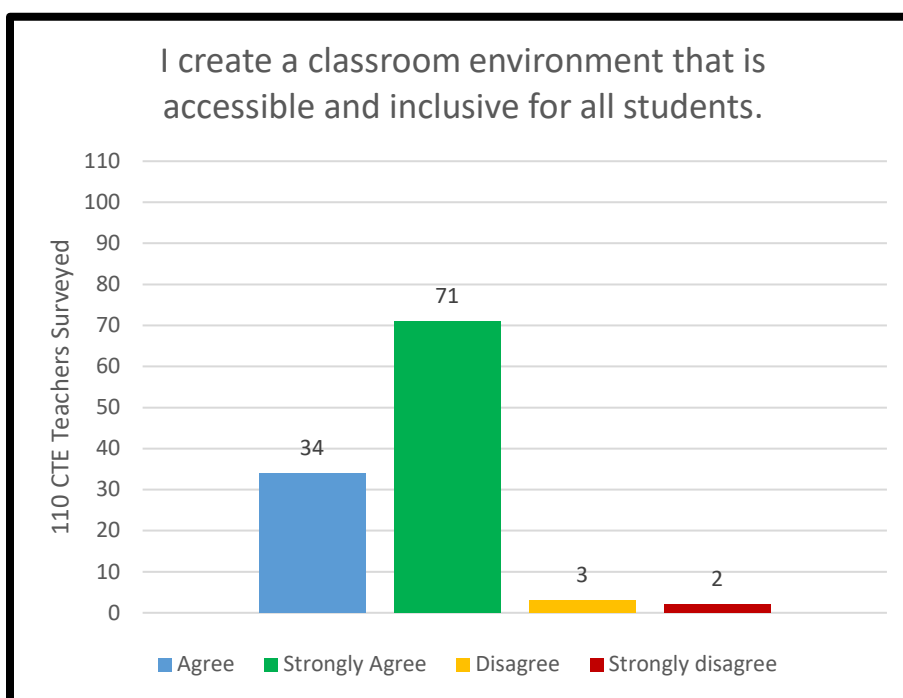
Note. Results of the responses to survey Statement 4 (n=110)

On Statement 5 of the survey, teachers responded as to the extent they felt they created a classroom environment accessible and inclusive for all students. Research shows that when teachers encourage students to share their own interests and express their individuality, they promote inclusivity in their classrooms. Unlu (2017) acknowledged that for students in an inclusive school or classroom environment to be successful they must feel like they are genuinely part of the school community. Over 95% (105) of the teachers surveyed felt that they created a classroom environment accessible and inclusive for all students, with 34 (30%) agreeing and 71 (64%) strongly

agreeing with that statement. Only 4.5% (5) disagreed or strongly disagreed, with three (2.7%) respondents disagreeing and two (1.8%) strongly disagreeing that they created a classroom environment accessible and inclusive for all students, as indicated in Figure 5. While these data are positive, with the majority of teachers agreeing they create an accessible and inclusive classroom environment for students, I wish to explore further the 4.5% who do not.

Figure 5

Survey Statement 5



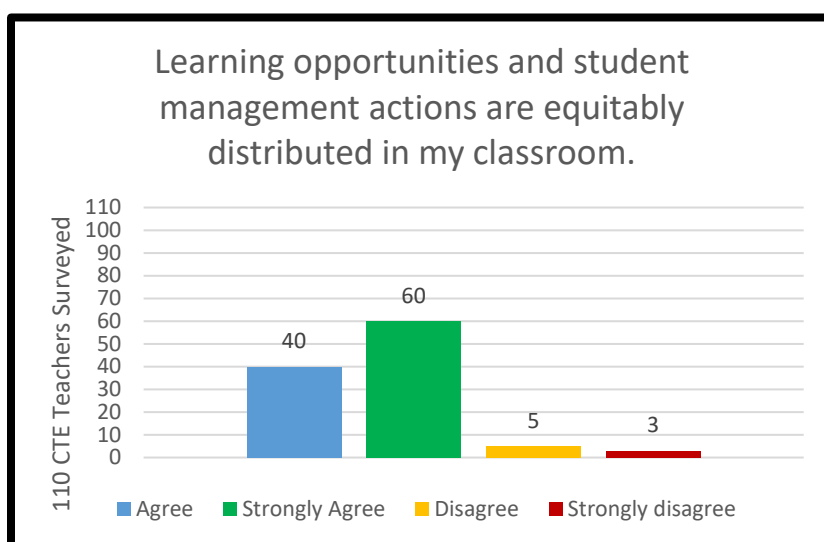
Note. Results of the responses to survey Statement 5 (n=110)

It is crucial for learning opportunities and student management actions to be equitably distributed in classrooms. Kline's research (2016) supports educators putting forth every effort to prevent discriminatory and ineffective disciplinary action from affording students equitable access to and participation in high-quality learning experiences (p. 99). Teachers responded to Statement 6 of my survey indicating their

agreement with feeling learning opportunities and student management actions are equitably distributed in their classrooms. Over 90% (100) of teachers agreed with this statement, with 40 (36.3%) agreeing and 60 (54.5%) strongly agreeing. Five (4.5%) respondents disagreed, and three (1.8%) strongly disagreed, as indicated in Figure 6. While data indicated most teachers agreed the learning opportunities and student management actions were equitably distributed in their classrooms, I wish to explore further the 6.3% who disagreed or strongly disagreed and why they felt this way.

Figure 6

Survey Statement 6



Note. Results of the responses to survey Statement 6 (n=110)

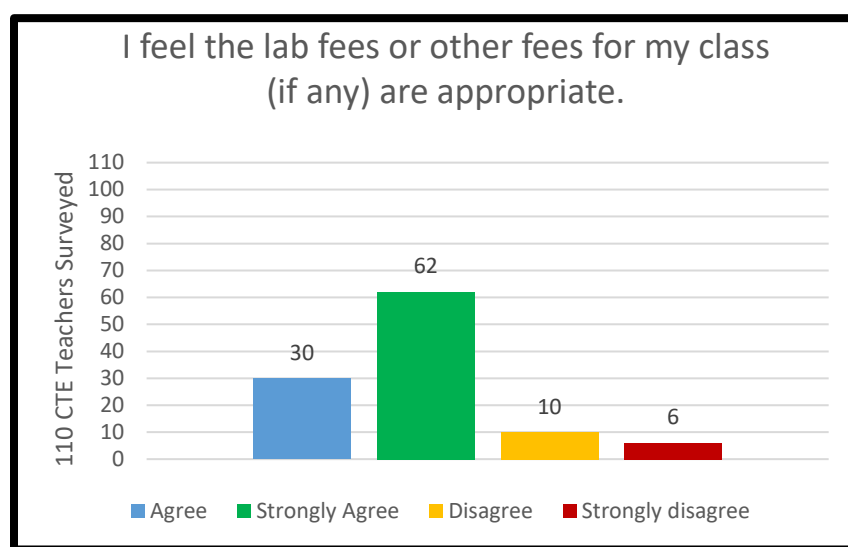
CTE classrooms utilize technology such as computers, simulators, and other forms of high-tech equipment, resulting in lab fees for students, often proving to be overwhelming for some participants (De La Rosa, 2019). On Statement 7 of my survey, teachers responded to the extent they felt their lab fees for their class (if any) were appropriate. Over 83% (92) agreed that their lab fees were appropriate, with 30 (27%) respondents agreeing and 62 (56%) strongly agreeing that their lab fees were appropriate.

While most of the teachers surveyed agreed or strongly agreed that their lab fees were appropriate, there were 14.5% (16) who did not agree, with 10 (9.1%) disagreeing and six (5.4%) strongly disagreeing that their lab fees were appropriate, as indicated in Figure 7.

While the majority of the teachers felt their lab fees were appropriate, I wish to explore further the reasons why 14.5% did not feel their lab fees were appropriate.

Figure 7

Survey Statement 7



Note. Results of the responses to survey Statement 7 (n=110)

Qualitative Data

Teacher Surveys. I asked teachers three open-ended questions based on their classroom experiences. On the first open-ended question, Question 8, I asked teachers to explain how they created a culture of high expectations for students identified as economically challenged, students with disabilities, or English language learners. I received 81 responses and categorized them into six recognized themes of the six most common responses to the question. The six themes are listed below. Responses were grouped by theme and are available in Table 1.

1. Pairing English language learners with native language speakers, providing them with dictionaries and worksheets in their native language
2. Providing IEP accommodations such as giving extended time as needed
3. Obtaining sponsorships for economically challenged students
4. Motivating students through the use of rewards and incentives
5. Requiring daily participation and holding students to a higher standard
6. Utilizing cooperative learning, problem-based learning, hands-on learning, and small group instruction

Table 1

Question Eight: Six Themes Identified and Categorically Grouped Teacher Responses by Theme in Response to Question Eight of CTE Teacher Survey, which Asked Responders to Give an Example of How a Culture of High Expectations is Created for Students Identified as Economically Challenged, Students with Disabilities, or English Language Learners

Theme 1	Theme 2	Theme 3	Theme 4	Theme 5	Theme 6
Pairing English language learners with native language speakers, providing them with dictionaries and worksheets in their native language	Providing IEP accommodations such as giving extended time as needed	Obtaining sponsorships for economically challenged students	Motivating students through the use of rewards and incentives	Requiring daily participation and holding students to a higher standard	Utilizing cooperative learning, problem-based learning, hands-on learning, and small group instruction
Availability of resources in other languages	Academy fees	Lack of transportation to competitions	Unable to stay after school	It is a technically challenging academy and students without the base knowledge of working on computers can feel overwhelmed	Getting business partners is very hard
Assign work in groups with native speakers of English	Allow extended time for assignments	All students have the same expectations – I find a way to get sponsors for students - but expect them to do the work	Positive high energy motivational re-enforcement	I think I motivate all students to do their best and show that everyone can be successful with their best effort	Computer Literacy Strategies
Select software that has been proven effective for the purpose of using content to enhance language development	Provide research and tools necessary for engagement for all students	We try to outfit students in required uniforms thru donations	I provide incentives for the students who pass their certifications	Students are required to participate daily in the learning environment. Deadlines for projects or assignments are strict, and students are held to a higher standard to take accountability for their learning	Teach through modeling rather than giving directions
One-on-one Interaction/Google Translate/Accommodations	As needed in any situation	Mandatory attire due to state law, those that cannot supply their own are provided for		All Students must participate in all classroom and lab activities	Students are expected to lead their groups within the kitchen, all are expected to participate and take advantage of all opportunities offered

Table 1. CONTINUED

Theme 1	Theme 2	Theme 3	Theme 4	Theme 5	Theme 6
Work with ELL students - pair them with other students	IEP accommodations			Have student surpass his/her own previous record rather than the score achieved by a rival	I give the student hands-on experience and they work hand and hand with small groups
Paraeducators	Extended time			Students are expected to be dressed appropriately for physically hazardous projects, and students are given notification in advance to have these outfits prepared	I have a relaxed environment, and provide all tools required
Seat ELL's with others who speak their language and can help disabled where they have easy access and can hear or see	Through inclusion and allowing them to explore multiple ways to access information so they can choose which way will allow them to be successful			All students are treated equally	I'm very encouraging and I instruct by example
Sit with students who speak their language	I actively work with them to identify needs			I hold them to similar learning standards but provide them with more support to reach that threshold	Continually challenging all students with higher order thinking
				High vocabulary - 400 new terms or different meanings	Students working with those they are not familiar with
As students that are English Language Learners can have access to dictionaries and sometimes worksheets designed with terminology in their native language	I try to identify my students' strengths			Mediocracy is not accepted; students are given opportunity to correct low performance	Give students projects that challenge their creativity and ability to think outside the box
	I believe every student can achieve if you connect to the way they learn best			Respect - I give it and only accept it	Grouping students with students from advanced courses or with similar students
				All students are expected to pass industry certification	

On the second open-ended question, Question 9, I asked teachers to list any barriers to CTE program enrollment, participation, and completion that they felt students who identified as economically challenged, students with disabilities, or English language learners faced. I received 81 responses and categorized those into six recognized themes of the six most common responses to the question. The six themes are listed below, and responses were grouped by theme in Table 2.

1. Technical challenges/ limited access to at-home computer programs/lack of programs for English language learners
2. Students unable to pay academy fees, join academy clubs, purchase appropriate clothing or uniforms
3. Students unable to participate in competitions due to finances, transportation issues, etc.
4. Students' inability to stay after school or participate in afterschool activities
5. Low academic levels of students, especially in reading and mathematics
6. Programs are unable to keep or secure business partners

Table 2

Themes Identified from Question Nine of CTE Teacher Survey about the Barriers to CTE Program Enrollment, Participation, And Completion

Theme 1	Theme 2	Theme 3	Theme 4	Theme 5	Theme 6
Technical challenges/ limited access to at-home computer programs/lack of programs for English language learners	Students unable to pay academy fees, join academy clubs, purchase appropriate clothing or uniforms	Unable to participate in competitions due to finances, transportation issues, etc.	Students' inability to stay after school or participate in afterschool activities	Low academic levels of students, especially in reading and mathematics	Programs are unable to keep or secure business partners
Availability of resources in other languages	Academy fees	Lack of transportation to competitions	Unable to stay after school	It is a technically challenging academy and students without the base knowledge of working on computers can feel overwhelmed	Getting business partners is very hard
Students with physical handicaps will have somewhat limited opportunities in the industry I teach	Lab fees	Financial difficulties	I make specific time 2 x's a week in class and keep my class open before and after school but students who are bus riders are often unable to take advantage of it	Students feel overwhelmed and under-prepared for technology programs	Unable to take them to make business partnership connections
Access to at home computer programs in their respective language or in more simple language	Costs of dues/lab fees	For transport of students to clinical experiences	Joining clubs, appropriate clothing, language barriers with parents.	Most CTE program material is written on a higher level, and students have a difficult time reading	Not enough support from business partners

Table 2. CONTINUED

Theme 1	Theme 2	Theme 3	Theme 4	Theme 5	Theme 6
Technical challenges/ limited access to at-home computer programs/lack of programs for English language learners	Students unable to pay academy fees, join academy clubs, purchase appropriate clothing or uniforms	Unable to participate in competitions due to finances, transportation issues, etc.	Students' inability to stay after school or participate in afterschool activities	Low academic levels of students, especially in reading and mathematics	Programs are unable to keep or secure business partners
ELL's have issues with coursework in that it is all online and there is no translation.	Lab fee payments	I have personally supplemented many, many, many students with lab fees and competition fees	Unable to participate in afterschool activities	Students with learning disabilities struggle to engage and show interest in the program.	The curriculum would benefit from input from a business partner
Having appropriate materials in the ELL native language. Our textbook is not available in Spanish. ELL's - the coursework is written at an 11th grade level, as are certification exams, and no translations exist. Some barriers exist for SWD who are low level readers	Many students can't afford the basic PPE (personal protective equipment)	transportation	Bus riders cannot stay after school	Some students simply are not interested or are enrolled without the request of the student.	Difficulty getting business partners
With 32 students, if I spend 10 min with special students, I cannot get to all the other students	I will waive lab fees for students that express difficulty with fees.	Can't afford competition registration fees	Many students have to watch younger siblings after school	Difficulty with Tier 3 vocabulary terms, reading industry current documents (MSDS sheets, fertilizer labels, etc.)	No business partner connections

Table 2. CONTINUED

Theme 1	Theme 2	Theme 3	Theme 4	Theme 5	Theme 6
Technical challenges/ limited access to at-home computer programs/lack of programs for English language learners	Students unable to pay academy fees, join academy clubs, purchase appropriate clothing or uniforms	Unable to participate in competitions due to finances, transportation issues, etc.	Students' inability to stay after school or participate in afterschool activities	Low academic levels of students, especially in reading and mathematics	Programs are unable to keep or secure business partners
Not enough translators for difficult languages	Cost of CTE related activities		Certification is strictly written and we cannot use		
Language skills, challenging curriculum	I try to identify my students' strengths		The math skills need to be improved		
Certifications offered only in English	financial barriers that limit ability to buy supplies		Whereas my students are ESE their low reading, math, and writing abilities is a huge barrier		
Students economically challenged do not have technology at home	Unable to afford uniforms		Too many students that DO NOT want to be in the CTE program are placed in the class “ When difficulties arise in their abilities students tend to shut down and do not attempt to learn anything.		

On the third open-ended question, Question 10, I asked teachers if they could foresee any solutions to the barriers previously identified. I categorized the responses I received into six recognized themes listed below and grouped them by theme in Table 3.

1. Requiring basic computer knowledge and math skills prior to program enrollment
2. Providing funding for necessary resources and establishing business partnerships

3. Providing textbooks and other materials in native languages for English language learners
4. Hiring paraprofessional support for CTE classrooms and teachers
5. Providing more in-depth program information to Guidance Counselors to better assist with scheduling students and seeking feedback from students prior to enrolling
6. Enlisting more involvement from the community and parental involvement

Table 3*Themes Identified from Question Ten of CTE Teacher Survey*

Require students to have basic academic skills before program enrollment	Provide funding for necessary resources and establish more business partnerships	Provide textbooks and other materials in native language for English language learners	Paraprofessional support for CTE classrooms and teachers	Provide more in-depth program information to guidance counselors to better assist with scheduling students and seek feedback from students prior to enrolling	Enlist more involvement from parents and the community
One solution would be to monitor students from the beginning to the end of the year for growth	Teacher Lead funds and my own funds help support Business Partners	More curriculum in other languages Provide books and tests in native language	Smaller classes of under 25 or adding paraprofessional assistance Our school has an English teacher that was ESOL who can help address the needs without a separate class	Ask more questions, ask for help if they need it Have counselors meet with students before they enroll Student interest surveys to find out what programs and careers they are interested in	More involvement from the community Parental involvement Community outreach and group participation in community events
Try to highlight achievement not only to student but the class	Update curriculum	Computer software in other languages	Hire para support	Counselors do CTE classroom walkthrough observations to understand CTE programs better	Invite community participation
Learning basic skills in earlier stages of their education	Title I funds should be available for these students		Assistance from ESE teachers and ELL teachers	Schedule students into courses at their appropriate academic levels	
Require higher reading levels to comprehend material					
Math skills	Fundraising to help cover fees				

For the final open-ended question, Question 11, I asked teachers to share anything else they would like me to know. I received responses from 20 teachers for this question.

Some of their responses included:

- “The programs could be amazing, but they get treated as an elective dumping ground for behavior students.”
- “We need new buildings that are wheelchair accessible.”
- “Just because someone is in poverty does not mean they are disadvantaged towards education. Teachers can change the track these students take if they invest time, respect, and love!”
- “We need more involvement from the community and parents.”

I did not realize just how many CTE teachers felt their programs were used as elective dumping grounds. This realization and the remaining feedback from the 110 CTE teachers who participated in the survey were incredibly beneficial to my study. This information helped me prepare a change plan to eliminate barriers that students identified as economically challenged, students with disabilities, and English language learners faced to CTE program enrollment, participation, and completion.

Interviews. I selected teachers from various CTE programs that included culinary, medical, aerospace, robotics, and agriculture for one-on-one interviews. I asked each of them the same set of seven questions that focused on their thoughts regarding equity and access for all students in their classrooms. These questions further addressed their views on learning needs, curriculum, and recommended program improvements for educating students identified as economically challenged, students with disabilities, or English language learners.

For Question 1, I asked, “Do you feel you have the tools you need to meet the needs of students with disabilities, English language learners, and economically challenged students? Please explain.” The culinary teacher described some unique obstacles, such as a \$50.00 culinary lab fee that hindered economically challenged students, having students in wheelchairs who struggled to maneuver around in the culinary kitchen, and having students with dwarfism who struggled with participating in cooking lab activities. She stated that she found ways to accommodate them using adaptive equipment, such as modified chairs to accommodate the physical needs for students of smaller size and stature, as indicated in Figure 8 and Figure 9.

Figure 8

Photo of Adaptive Equipment Chair with Step Stool



Figure 9

Photo of Adaptive Equipment Higher Seat Chair with Built-in Step



The medical academy teacher stated that she felt the school and the school board provided all of the necessary tools to aid her students to success. The aerospace teacher shared that he had the tools that he needed for his program in some ways, but in other ways, he did not. He explained more specifically that while he did have a curriculum that included built-in differentiation strategies, he did not have materials for students with language barriers translated into their native language. The robotics teacher shared that his program provided everything that all students needed, so cost was not an issue for economically challenged students; however, he stated that he sometimes struggled with meeting the needs of English language learners due to the language barriers. The agriculture teacher shared that she felt she had what she needed for the economically challenged students. She explained that her program had donors who provided funding for students, including dues, class fees, and jackets for students in need; however, the agriculture teacher did not always have what she needed for the students with disabilities or the English language learners. She further explained that she often did not have access to 504 plans or IEPs for her students to know what accommodations they required, nor did she have any resources for English language learners.

On Question 2, I asked, “What resources are available to you to help you meet the needs of the students listed above?” The culinary teacher stated that she sometimes went to the guidance counselors to seek advice or reached out to the Exceptional Student Education (ESE) and English Language Learner (ELL) teachers for assistance as needed. She also explained that the district resource specialist helped provide accommodations for the students with dwarfism and wheelchairs by having shop classes build steps and other physical accommodations to assist these students. The medical academy teacher shared how she could provide accommodations for a student born with no arms, pictured in Figure 10.

Figure 10

Photo of Medical Academy Student Born With No Arms



Note. Photo used with permission.

When the instruction focused on learning to take blood pressure, performing CPR, and even drawing blood, this student received support from district occupational therapists who tried to provide assistive devices. The student did not wear any prostheses as she never liked them. Still, the occupational therapists tried multiple times, unsuccessfully, with the student feeling the prostheses were more in the way than helping. The medical academy teacher stated,

I think since she was born that way, she just never missed it because she never

had arms, and then the prosthetics would get lost or damaged or broken, so she went without, and now she's learned to do everything with her feet.

The medical academy teacher then showed me a small table that looked more like a small bench that fit under the classroom table. She explained that the small table served as the student's writing desk. The student sat in a chair at the larger classroom table with the smaller table positioned by her feet. The medical academy teacher put the student's paper on the smaller table and gave her a pencil or pen, and the student completed written assignments in that manner. The writing table is pictured in Figure 11.

Figure 11

Photo of Writing Desk for Student Born With No Arms



The medical academy teacher further described how she researched and found surgical gloves for this student's feet, so she could learn to draw blood. Without them, the student could not have participated in this exercise and would have only been an observer. The teacher also arranged for the student's mother to join as the student's patient, thus avoiding possible liability issues for the school and the program. Figure 12 shows the gloves designed for feet, and Figure 13 shows the actual blood withdrawal activity. By providing access to the writing desk and gloves for this student, the medical academy teacher was able to offer equitable opportunities for this student giving her the

ability to participate in program activities with all of the other students.

Figure 12

Photo of Surgical Gloves Designed For Feet



Figure 13

Photo of Student Born with No Arms Drawing Blood Using Feet



The aerospace teacher explained that his curriculum, provided by the aircraft Owners and Pilots Association (OPA), was free of charge and included lesson plans with embedded differentiation strategies. He could utilize these strategies with students who struggled to understand the concepts of the lessons. The robotics teacher explained that he had built up his own inventory of resources, including equipment and parts for

building and repairing robots. He also provided notebooks, pens, and pencils for students who were unable to provide their own. He shared that his program had a few donors who assisted with competition fees for students who could not pay. The agriculture teacher explained that she utilized the school's Spanish-speaking guidance counselor and Haitian Creole-speaking paraprofessional to assist with parent communications when language barriers existed. She also sought input from ESE teachers on accommodation strategies for any students with disabilities. She further shared that she had numerous donors supporting the needs of the students who were economically challenged.

On Question 3, I asked, "Do you modify the CTE program's curriculum that you teach to accommodate students' learning needs? If so, please provide details." The culinary teacher stated that she tried to meet the needs of students with disabilities based on what each required in their IEP. She also shared that while she had not made any adjustments to the curriculum, she often utilized the help of students in their third and fourth years of the culinary program to assist with the other students at lower levels. She also had paired bilingual students with other students who may have language barriers. She further shared that during the 2020-2021 school year, instruction required "thinking outside the box" to make modifications due to the COVID-19 pandemic. Because of the COVID-19 pandemic, temporary restrictions prevented culinary students from cooking food for student consumption. To teach cooking skills, the teacher adapted her instruction and taught students cooking skills by making dog treats, depicted in Figure 14. The teacher later donated them to a local animal shelter, shown in Figure 15.

Figure 14

Students Making Dog Treats

**Figure 15**

Donating Treats to Local Animal Shelter



The medical academy teacher stated that she did the best she could to meet the needs of all students. She explained that there does come the point, after much struggling to prepare students for a career in the health profession, if students cannot physically perform crucial job tasks, they may need to rethink their career choices. She elaborated more thoroughly as she explained how she once had a paraplegic student who could not stand or bear any weight. The student had always dreamed of becoming a nurse. Unfortunately, due to the severity of her paraplegia, this was not an option for her. The

teacher was able to share other options with the student, and this former student went into the career of medical billing and coding. The student shared with her that she enjoyed her job greatly for various reasons. One reason was that she loves to read, and this career allows her to read all of the gory stories, which she also loves. Another reason was that it gives her the opportunity to read the medical terminology and science that she loves as well. The teacher said the student added that she was also earning an excellent income.

The aerospace teacher stated that he did not need to modify his curriculum as it already had differentiation strategies built in. He shared that when he noticed a student struggling, he had always been able to try one of the numerous strategies listed in his curriculum guide. He stated that, so far, he had always been able to assist students in the needed areas.

The robotics teacher shared that he never was given an official curriculum. He received samples to help with initial lesson planning, but they did not cover the required teaching standards, leading him to develop his own curriculum. He stated that he adjusted the curriculum as needed each year and had continued to do so over his 25 years of teaching in CTE. He further shared that his self-created curriculum was project-based for the most part, and he modified as he went along to meet the individual needs of each student. He found that each student needed help at different points throughout the project as some steps were easier to grasp for students than others. He stated that he assisted everyone as needed, regardless of what step they were on in their projects.

The agriculture teacher explained that sometimes she could not modify projects students were working on but instead modified the assignment, especially for safety purposes, by helping with tools or changing the project altogether. She elaborated further,

describing how she once taught a student with dwarfism who did not have the strength to operate power tools such as the router, for example, as it jumps around a lot. So instead, she had the student work on planting seeds and plants for her project assignment. Hearing these teachers describe the various strategies they used to modify their curriculum for all students to achieve success was remarkable. It was clear to see that each of these teachers genuinely cared about their students and went above and beyond to help them with their educational goals.

On Question 4, I asked, “What suggestions do you have for future curriculum and instructional needs for this CTE program to better meet all students’ educational needs?” The culinary teacher shared that she felt the curriculum needed to be more aligned with what was happening in the industry and the real world. She stated, “We need to be able to provide current quality lessons to be used in today’s food establishments. Students don’t necessarily need to know how to make aspic anymore.” The real-world alignment would include learning to use professional-grade equipment as well as the science of nutrition in the 21st century restaurant and hospitality industry. She further recommended providing all students with devices, such as laptops or tablets, as the program transitions more towards an online curriculum platform. The medical academy teacher shared that she would recommend providing middle school students with anatomy and physiology classes in the seventh and eighth grades. Then, when students later transitioned to high school and entered her program, they would arrive with the anatomy and physiology knowledge needed. Giving students this foundation during their middle school years, which she stated consisted mainly of memorizing medical terminology, anatomy, and

abbreviations, would escalate students in the program, as instruction could then focus on other valuable skills.

When asked about suggestions for future curriculum and instructional needs to meet all students' educational needs, the aerospace teacher did not have any suggestions for future curriculum and instructional needs. He stated that he felt the lessons, PowerPoints, and videos included within his program curriculum did a great job of meeting the needs of all his students. The robotics teacher said that he would recommend giving any new teacher coming into the program an actual written curriculum that met the required standards for the course. He elaborated that his current curriculum and lesson planning were primarily in his head from over 25 years of teaching, and when he retires, they will retire with him. The agriculture teacher stated that facilities needed to be updated to accommodate her program. She was only able to complete small-scale projects and horticulture on site. Anything regarding animals, such as equestrian studies, had to be done off-site because the school was not equipped with facilities for housing animals. She also stated that it would be beneficial to have some agriculture courses as honors elective classes rather than agri-science classes. She explained that honors students did not need additional science classes but were always looking for other honors classes to raise their GPAs. She felt that creating honors elective opportunities in the agriculture program would boost program enrollment. I felt this would be a good strategy, as well, and I would like to look further into what the requirements would be for implementing such a course.

On Question 5, I asked, "What improvements do you feel could benefit the CTE program for student success overall?" The culinary teacher shared that she felt that proper

equipment would be a vast improvement as some of the high schools in the district did not even have commercial kitchens. She explained that her school was fortunate to have a commercial kitchen and six residential kitchens in the culinary classroom, but other culinary teachers in the district were not so fortunate. She also shared that she felt internships for students planning to pursue careers in the culinary field would be beneficial. She gave an example from an experience she had the previous year when she received an invitation to take a few students to the state capital. She selected three of her top students to serve at a reception held in the Capitol Complex with legislators, business leaders, and local government officials in attendance. She stated that this was a great hands-on learning experience for those students and one that they would build on forever and would not soon forget. She also added that it would be helpful for culinary programs to partner with local restaurant owners and managers and others who worked in the industry.

The medical academy teacher shared that having a connection with the local middle school feeding into the medical academy program would benefit students tremendously. As she previously stated, having students begin learning anatomy and physiology, even if it were a “watered down” version, would significantly improve the high school’s program and accelerate students’ preparation for employment in the medical field. The aerospace teacher shared that he felt access to more technology in the classroom would benefit the students the greatest. He shared that he had struggled the most with his average class sizes of 25 or 30 students each while only having two flight simulators for all to share like the one depicted in Figure 16.

Figure 16

Photo of Flight Simulator Like the Ones Used in the Aerospace Classroom



That meant while one student was on the simulator, there were five students or more gathered around that one student. Of course, the aerospace teacher realized that more technology would require more space and there was not enough room for expansion in the current facility. He did share that one of the things he had implemented to accommodate students waiting their turn on the simulator was to instruct students in flying drones, which were much cheaper than simulators. He had students navigate the drones through hoops hanging around the classroom, as depicted in Figure 17.

Figure 17

Photo of Drone Instruction in the Aerospace Classroom.



The robotics teacher shared that he felt the district needed to work harder to keep other robotics teachers supplied with updated equipment and provide the necessary funding for their robot repairs. He explained that typical robot brains alone cost approximately \$250 each. He stated that when robotics programs were just starting up, the district provided the teacher with a robot kit and said, “Okay, we’re done.” But then after that, the teacher constantly needed to replace parts, as electronics go bad rather quickly, and repairs are expensive. As a result, robotics teachers found themselves left without the necessary equipment needed for instruction in their programs.

The agriculture teacher shared that her program would benefit from trips to offices of veterinarians, cattle ranches, or other animal facilities. She explained that the current school facilities did not have provisions for animals to be kept on the premises. She also felt that internships with opportunities for exposing students to working with animals would be highly beneficial to the program.

On Question 6, I asked, “Do you believe this CTE program had a positive effect on all participants? If so, in what ways?” The culinary teacher responded that she felt her program provided students with direction for their future while giving others the essential tools they needed to provide for themselves to some degree. She also stated that even though some students may have been put into culinary class only because they needed a credit, they often moved forward to seek a career in the industry once they went through the program. She shared that even though some students did come into the program reluctantly, they often learned that they were interested after being in the program for a while and decided they liked being there.

The medical academy teacher shared that one of the biggest things she instilled in

her students was personal responsibility. She showed me a sign on her wall that hung above a mirror and said, “This is the person responsible for your grade.” She stated that she strived to teach all her students about personal responsibility, even if it was as simple as receiving a supply delivery. She taught her students the importance of putting supplies away correctly. She explained that staff had to handle the supplies and equipment in the medical field even if they were not using it on a patient, yet they were doing more than just putting the supplies on a shelf and organizing them. Students learned about each item as they read the labels and paired them with similar items on the shelves while discovering how an inventory system works.

The aerospace teacher shared that his program was filling a void in an industry that needed some help. He felt the program would have a significant impact on the lives of his students. He gave an example, stating,

Some students see the big fences as they drive by an airport and never think about how you get inside. And now, this program is providing that ability to get inside those gates and see what there is to offer.

The robotics teacher shared that his students developed problem-solving skills and found they were not afraid to fail. He stated that his students quickly learned how to make repairs to the robots they had built, thus building their self-confidence as problems arose and they discovered how to fix them on their own. He further stated that he firmly believed that when a student was working on a project, they needed to be allowed to fail and learn to pick themselves up and fix the problem. The agriculture teacher shared that her program often gave students a reason to come to school because they might get to touch horses when they went to the equestrian rescue each week, or learn about animals,

or even grow plants. For others, the life skills they learned from working with a living being that may or may not want to work with them could be eye-opening. She stated,

We are all going to face that in the future. We are all going to face people that don't want to work with us, and we've got to figure a way to make it happen without getting ugly, or abusive, or just giving up. Every horse is different, so students must learn situational awareness and make judgments and decisions constantly, which challenges them for the real world.

She further stated that students learned decision-making skills, critical thinking skills, and observational skills as they worked with the horses and paid attention to their needs.

On Question 7, I asked, "Is there anything else you would like me to know about the CTE program that you teach? The culinary teacher stated that her program taught students some essential life skills, such as cooking, which students will need to use all of their lives. She also taught employability skills, such as how to greet people, make eye contact, work in groups even if the students did not like some of the group members, and public speaking. She stated, "It's a whole lot besides just learning how to cook!"

The medical academy teacher stated that even though her students did a considerable amount of work and learned so much, she also tried to make it fun. She shared that she told her students, "If you can't have fun in what you're doing, what's the point?" She also taught them that working in health care often means spending holidays with your work family and sometimes not seeing your own family for days. She further shared how health care workers learn to pull a holiday meal together by everyone taking food to work, just like one would with their family at home, and making it fun. She also stressed to her students that they had to enjoy the people they were with while also

enjoying their holiday. She also told her students that they needed to have a sense of humor when working in health care because there was just too much stress. She further stated,

I can't tell you how many times I've been in a stressful life-or-death situation, and somebody cracks a joke, and if anybody else were listening, they would think we were the most heartless, horrible, people. And that is what you would think, really, but it broke the tension, and we were able to continue working. You can't lose it in the middle of a code, or the patient will die. You know you can't lose it, and you've got to finish what you're doing. After the patient moves to the next unit, then you can lose it, but you can't lose it until they're gone.

The aerospace teacher shared that he was excited because he had just found out the program was receiving a \$25,000 grant. He also shared that several students had earned scholarships to flight school, and they could become pilots even before finishing the aerospace program. The robotics teacher shared that his program was not for everyone, as it was an engineering program. He further stated that just by the nature of it being at a high level, frequently, students struggled. He shared that one of the biggest challenges for students was that the robotics program required a strong work ethic, as it was project-based. He elaborated further by stating that he told students,

I'm not going to give you a vocabulary test, but you are going to learn vocabulary because we will use it every day. If you come up to me and ask me for a part and you are using the wrong name, I'm not going to know what you are talking about, so it isn't for everyone; it takes work ethic.

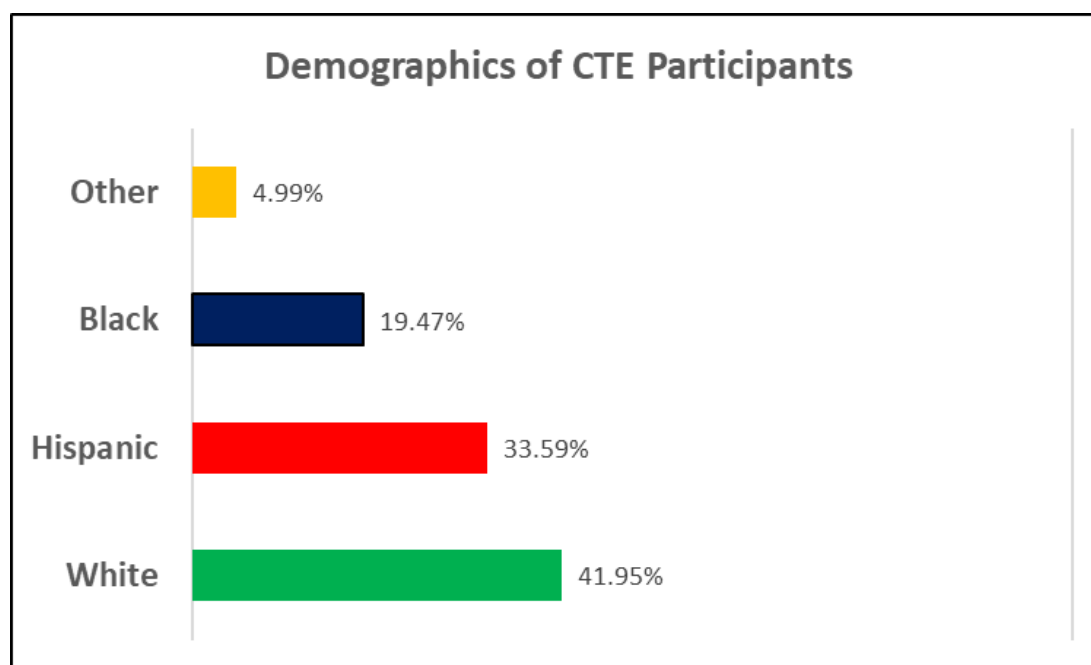
The agriculture teacher shared that her program was small compared to other agriculture programs across the school district. She also shared that her program was the only agriculture program in the school district with no middle school feeder programs. For this reason, she felt like she was starting from scratch each year, exposing students to going out and working with animals or growing plants.

Extant Data

To better understand CTE programs for School District X, I reviewed the extant data that included CTE program data for the 2018-2019 school year. The first element of data outlined the demographic make-up for students participating in CTE programs. Data showed 41.95% White students, 33.59% Hispanic students, 19.47% Black students, and 4.99% marked as Other for their racial designation, as indicated in Figure 18.

Figure 18

Demographic Data of CTE Participants for School District X



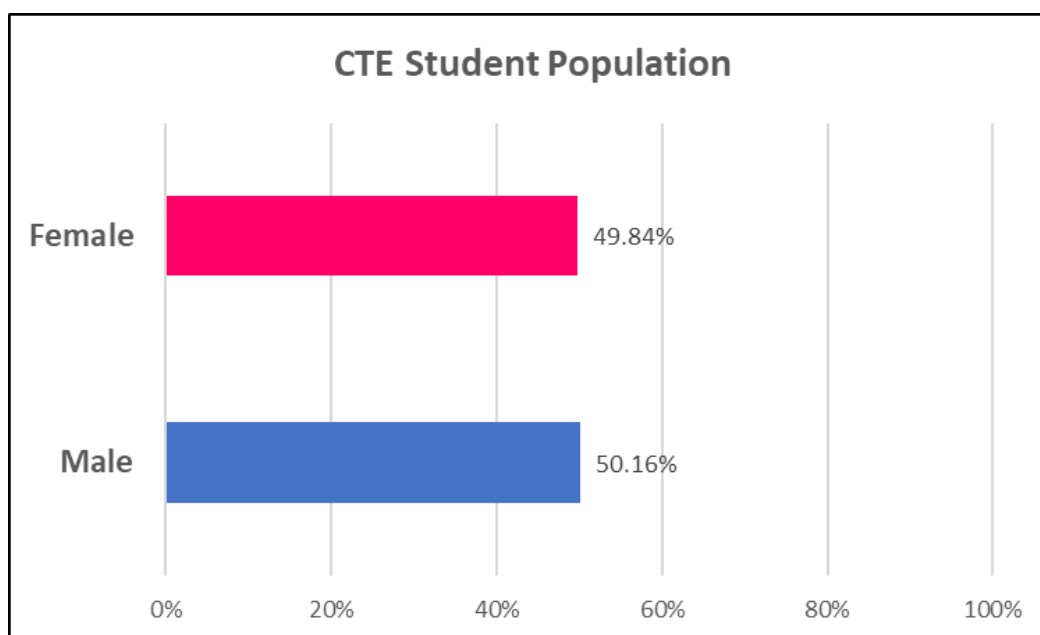
The next set of data shows the percentage of CTE participants categorized by male and female participants. As depicted in Figure 19, the data show that 49.84% of the CTE student population were females, and 50.16% were males, as depicted in Figure 19. This number was almost an equal balance and a significant improvement, showing just how far CTE had evolved over the past decade compared to a 2011 report from the National Coalition for Women and Girls in Education. The report on the Perkins Act and Women in Career and Technical Education stated,

Women and girls make up a small percentage of students enrolled in the majority of programs funded by the Perkins Act that provide job training in high-paying fields – a pattern that only intensifies in the transition to postsecondary education.

(p. 1)

Figure 19

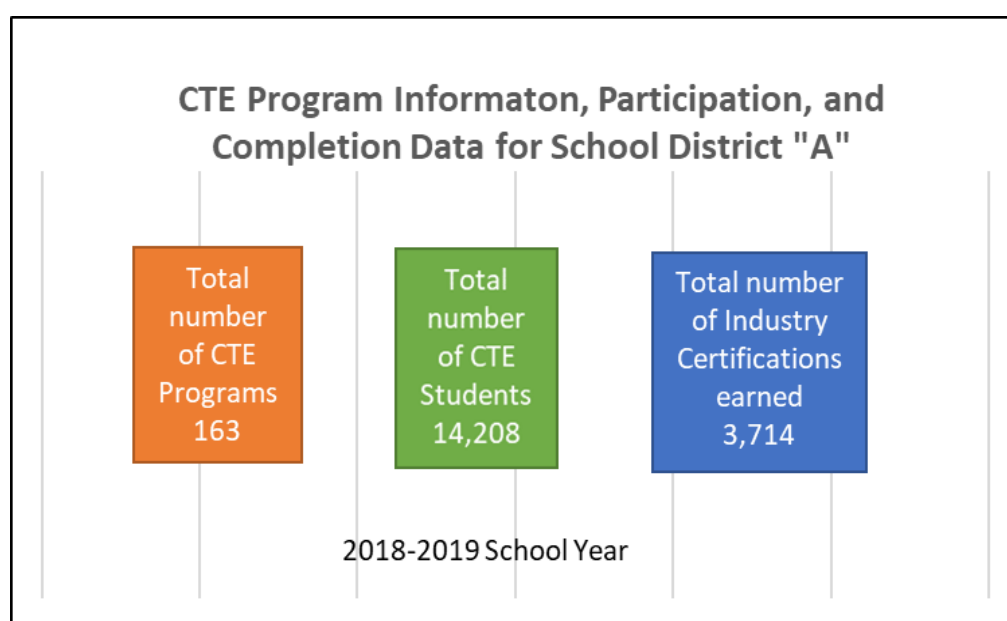
CTE Student Population by gender for School District X



The next set of extant data shows program information, participation, and completion rates. The total number of CTE programs in the observed district was 163. The total number of students participating in CTE programs was 14,208. The total number of industry certifications earned for the 2018-2019 school year was 3,714, as depicted in Figure 20.

Figure 20

CTE Program Information, Participation, and Completion Data for School District X



The next set of extant data provides a three-year overview of CTE participation for School District X broken down by categories for participants identified as students with disabilities, English language learners, and economically challenged students. The participation rate of students identified as students with disabilities (including both learning and physical disabilities) was 85.29% for the 2016-2017 school year, 87.77% for the 2017-2018 school year, and 91.62% for the 2018-2019 school year, showing an increase for each year listed. The participation of students identified as English language learners was 85.29% for the 2016-2017 school year, 76.19% for the 2017-2018 school

year, and 69.23% for the 2018-2019 school year, showing an increase the second year followed by a decline the following year. The participation of students identified as economically challenged was 20% for the 2016-2017 school year, 76.19% for the 2017-2018 school year, and 69.23% for the 2018-2019 school year, showing an increase the second year followed by a decline the following year. Additional research is needed to determine why the percentage for the 2016-2017 school year was so much lower than the percentages for the subsequent years. Figure 21 outlines this data.

Figure 21

Three-Year CTE Participation of Special Populations for School District X

Three Year CTE Participation			
TOTALS	2016-2017	2017-2018	2018-2019
Students with Disabilities	85.29	87.77	91.62
English Language Learners	0	76.19	69.23
Economically Challenged	20.00	82.08	86.71

Note. Data are presented as percentages.

As-Is Framework

The findings of this research brought to light the context, culture, conditions, and competencies (Wagner et al., 2006) related to the responses of CTE teachers and their experiences in their classrooms to assist all students in attaining 21st century skills. Using information gathered from my research, I categorized the data into the four arenas of change for the context, culture, conditions, and competencies. I based my categorizations on the current AS-IS status for each area in relation to the CTE programs for School District X. (For a complete AS-IS organizational Chart, see Appendix C).

Current Contexts

Wagner et al. (2006) described context as the skill demands students need to become successful providers, learners, citizens, and productive members of society within the families and communities that their school district serves (p. 104). CTE programming has become a strong presence in School District X through the implementation and expansion of numerous career academies over the years. School District X had the second-highest number of National Career Academy Coalition (NCAC) accredited career academies in the nation at the time of this study, with thirteen programs recognized as model career academies and ten recognized as certified career academies. Further data revealed that 56% of high school students participated in an academy across School District X during the 2019 school year (citation withheld to maintain the confidentiality of School District X).

For all students to achieve success in learning the 21st century workforce skills these programs have to offer, equity and access for all students must be considered. In academia, there has been a great deal of research showing the need for equity and access for all students in education over the years (Brookover et al., 1981; Butler et al., 2007; Castelli et al., 2012; Eggins, 2010; Hertzog, 2005; Kemp et al., 1992; Lee, 2002; Murphy & Hallinger, 1989; Sayers, 1995). However, more recently, trends in the research for equity and access in education have carried over into the realm of CTE (Advance CTE, 2018; Aliaga et al., 2014; Bragg, 2017; Cox et al., 2015; Defoe, 2015; Imperatore, 2019; Sych, 2016; Waugh, 2017; Winkler & Warren, 2019, Zirkle & Jeffrey, 2017). While this research brought a critical issue to light, it still gave minimal insight into what CTE teachers were doing to achieve equity and access for all students in their classrooms.

Considering this to be a contextual challenge, I planned to bridge the gap by adding to the body of existing research. I wanted to shed light on the strategies teachers use in their CTE classrooms to provide equity and access for all students and identify and eliminate barriers students face for program enrollment, participation, and completion to achieve success.

Current Culture

Wagner et al. (2006) defined culture as “the shared values, beliefs, assumptions, expectations, and behaviors related to students and learning, teachers and teaching, instructional leadership, and the quality of relationships within and beyond the school” (p. 102). There were several cultural challenges revealed through the course of my study. One of the challenges CTE teachers stated they faced was an outdated curriculum that did not align with 21st century industry needs or the diversified needs of all students. Because workforce changes happened so frequently, CTE teachers had to keep up with revised curriculum as needed. Unfortunately, budgets did not always allow for purchasing an updated curriculum, so teachers often revised it themselves, which was not always effective or practical.

Another challenge felt by CTE teachers was that their programs had become elective dumping grounds rather than programs for training all students in 21st century workforce skills. Enrollment counselors created student schedules basing academic course enrollment on the graduation requirements for students to meet. Often times students were placed into elective courses based on enrollment numbers and available seats rather than students’ career interests. CTE teachers felt that counselors continuously enrolled students in their classes who had no interest in their course content, resulting in

students not putting forth any effort to learn the skills and instruction offered.

Relationships between CTE teachers and enrollment counselors were affected negatively as a result.

A recurring shared belief felt by numerous CTE teachers was that counselors enrolled students into their programs who often lacked basic academic skills such as reading, writing, and math, which were necessary for understanding their often rigorous program curriculum. One teacher stated, “Most of the programs used in CTE are written on a higher level, and students have a difficult time reading material.” Other teachers shared that students often came into their programs reading at an elementary school level or barely able to read at all. I experienced this valid concern of CTE teachers, myself, in my own CTE classroom. With this enrollment practice continually occurring in CTE programs, the culture could be affected as tensions developed among relationships between CTE teachers and students, and CTE teachers and enrollment counselors.

Current Conditions

Wagner et al. (2006) defined conditions as “the external architecture surrounding student learning, the tangible arrangements of time, space, and resources” (p. 101). The data I collected indicated several barriers affecting student enrollment, participation, and completion of CTE programs. I have broken them down into categories of time, space, and resources to better understand how they relate to current conditions.

Time. Barriers to student enrollment, participation, and completion included teachers feeling that counselors enrolled many students into CTE programs without taking time to find out student career interests prior to enrollment. As a result, students

would shut down or become behavior problems, affecting the overall learning conditions of the classroom. Unfortunately, counselors were limited in the time they could allot to meeting with every student.

Additional barriers identified by teachers included the lack of parent and community involvement. The majority of parents worked full-time, with some even working two jobs, and they struggled with having available time to participate in their child's education. Teachers also struggled with finding time to make connections with business partners. Missing out on opportunities for establishing partnerships was detrimental to both teachers and students as they lost out on the benefits partnerships would provide their programs and business partners lost out on establishing a pipeline of potential employees to meet their future workforce needs.

Space. Other barriers included the lack of physical space to accommodate the necessary tools and equipment for meeting the physical needs of students with disabilities. Teachers shared that CTE classroom environments were not always accessible and inclusive to all students. One teacher shared that physical disabilities were sometimes nearly impossible to accommodate due to the nature of the profession being taught or related to the CTE course. The teacher further shared there were physical building limitations for students with disabilities as well. In addition, learning opportunities and student management actions were not always equitably distributed in classrooms. Teachers described having overcrowded classrooms, making it difficult to control behavior issues, which further affected students' motivation levels.

Resources. Financial barriers further limited students from participating in CTE programs. Teachers felt that lab fees were often a challenge for some students. Teachers

shared that while they tried to seek out donors or provide fundraising opportunities, program fees often became barriers for economically challenged students. For example, culinary students who could not afford to pay the cooking lab fees could only observe during cooking activities. Other teachers shared that students often had to go out into the workforce before they had the opportunity to complete their program for financial reasons. Another barrier was students were unable to participate in after-school CTE clubs and events. Many students could not stay after school because they had to ride the bus home and did not have other transportation or were responsible for caring for younger siblings after school.

Teachers shared they lacked the resources needed to provide differentiated instruction in their classrooms. They felt that their classrooms were overcrowded and cramped or did not have the necessary books, materials, or equipment. Teachers also felt that because not all students had access to technology or internet access from home, they could not give homework assignments that required technology. Further, teachers felt that their curriculum lacked provisions for differentiation strategies or was too difficult to use or implement. Barriers included the lack of resources to provide translators and other materials needed in the native languages of English language learners.

Current Competencies

Wagner et al. (2006) described competencies as the repertoire of skills and knowledge that influences student learning (p. 99). Challenges to competencies included the struggles some CTE teachers faced in embracing their students' unique backgrounds, identities, and experiences. One teacher shared that students with language barriers were often limited to learning due to not having someone to interpret instructions. She further

detailed how she usually had other students assist, but they became generally worn out from helping. Teachers also felt that students' low reading, math, and writing abilities were huge barriers. One teacher stated, "Oftentimes, I've seen students with learning disabilities struggle to engage and show interest in the program. When difficulties arise in their abilities, students tend to shut down and do not attempt to learn anything."

Another challenge included struggles students faced with program completion. Technology teachers felt that many students lacked a base knowledge of technical skills and struggled to complete their computer-based assignments. Students often felt overwhelmed and under-prepared for their programs. They further shared that their programs required students to pass three industry certification exams in one year to complete their program. Many students failed to meet these strenuous requirements and ended the school year without finishing the program.

Interpretation

Based on the quantitative results of my survey, most teachers, but not all, said they felt that they had the appropriate tools in their classrooms to meet the equity and access needs of students. Likewise, they believed their students were engaged and that they embraced their students' uniqueness. Teachers listed numerous examples of how they created a culture of high expectations for all students. Examples included setting high expectations for all students while providing extra help as needed, treating all students equally, providing sponsorships for economically challenged students, looking for students' strengths, weaknesses, and background knowledge.

Almost all the teachers surveyed responded that they created an accessible and inclusive environment in their classrooms and that learning opportunities and classroom

management actions were equitable for their students. Examples of how they achieved this included teaching through modeling rather than giving directions, assigning work in groups with native speakers of various languages, and continually challenging all students with higher-order thinking. Additionally, teachers gave students opportunities to explore multiple ways of accessing information and encouraged students to surpass their previous record rather than the score achieved by a rival.

Almost all teachers felt that their lab fees and other classroom fees were reasonable. Several teachers shared that their lab fees were not mandatory, or they had waived lab fees for students who expressed difficulty. One teacher even commented, “Just because someone is in poverty, does not mean they are disadvantaged towards education. Teachers can change the track these students are taking if they invest time, respect, and love!”

The qualitative data showed that teachers, while they may not always have had the necessary tools their programs required, went out of their way to provide a wide variety of methods for differentiating instruction in their CTE classrooms. For example, the aerospace teacher went above and beyond to obtain funding for classroom drone instruction, which was much more affordable than the unobtainable funding needed to provide more flight simulators in the classroom. Likewise, the medical academy instructor went above and beyond to find surgical gloves for her student’s feet, who was born with no arms, to participate in drawing blood.

Through my research, I revealed that CTE teachers, or at least the ones I interviewed, genuinely cared about their students and went out of their way to meet their students’ needs. All of the teachers interviewed were highly passionate about their CTE

classes and their students. They each shared with me personal stories from their classrooms, revealing the compassion they possessed for their students, as well as the profession. These teachers understood that students do not all learn the same way and recognized the importance of providing flexibility within their classroom instruction in various forms for all students to succeed.

Judgments and Recommendations

The 110 teachers I surveyed, and the five teachers I interviewed for this study shared feedback on how they met the diverse needs of their students. They also shared their thoughts on barriers that students faced in CTE programs and possible solutions to eliminate those barriers. Feedback from teachers answered the first research question of what CTE teachers are doing in their classrooms to provide equity and access for all students. Answers included providing extended time for assignments, holding all students equally accountable, diversifying instructional methods, providing hands-on experiences and small-group instruction, and identifying each student's learning strengths and modifying instruction as needed. Additionally, teachers found ways to provide tools and materials to meet the physical needs of students with disabilities such as using modified chairs and desks to accommodate students of short stature and providing surgical gloves made for feet for a student born with no arms. They gave English language learners access to dictionaries and materials translated into their native languages and paired them with students who spoke the same language. They sought out scholarships and donations for students unable to pay lab fees and other costs such as competition registration fees and uniforms.

Feedback from teachers answered the second research question of foreseen barriers to CTE program enrollment, participation, and completion faced by students identified as economically challenged, students with disabilities, or English language learners. Their responses included students' inability to keep up with rigorous coursework due to low reading and math levels, causing students with learning difficulties to shut down or become behavior issues. There was a lack of resources in other languages for ELL students, program costs for economically challenged students, students unable to stay after school to participate in clubs and events, and counselors enrolling students into CTE programs in which they had no interest.

The study results were positive as they brought light to what teachers were doing in their classrooms to provide equity and access for all students. The results also highlighted the challenges students faced for CTE program enrollment, participation, and completion, especially for students identified as economically challenged, students with disabilities, and English language learners. I used the study data to develop recommendations for providing equity and access for all students in CTE programs for School District X.

First, School District X leaders must find a way to provide additional funding, possibly through Perkins grant funds or business partnerships, so that lab and classroom fees are no longer a barrier for students. Next, School District X leaders must provide a curriculum for each CTE program that also meets the needs of the English language learners. The curriculum department leaders may try working with CTE instructors and textbook vendors to find books and other materials in the native languages of all students. Also, school district leaders should provide translation dictionaries for all students facing

language barriers. They should further consider purchasing translation software or working with district staff in the department supporting the English for Speakers of Other Languages (ESOL) initiatives to provide translators or translations of materials for students.

Further, I recommend the leaders of School District X continue to maintain facilities to meet the physical needs of students with disabilities. In conjunction with American Disabilities Act (ADA) compliance specialists, district leaders should ensure all classrooms and facilities are handicapped-accessible and in compliance with ADA specifications. They should further ensure the physical needs of students are met by providing adjustable classroom desks and chairs to accommodate the size and stature of all students.

Additional recommendations for School District X include refraining from random CTE program enrollment. District administrators must monitor the work of counselors to ensure they do not overcrowd CTE classrooms with students who will become behavior problems for the teacher. I recommend allowing students to apply for CTE courses. Students should have the opportunity to select CTE classes each year through a registration process that enables them to rank their choice of electives. Enrollment counselors can then enroll students based on their interest rankings.

Finally, I recommend that School District X leaders create foundational courses for students with low achievement levels on reading, writing, and math standardized tests. Once the foundational courses have been completed, students can then be better prepared for enrollment into CTE programs with rigorous coursework. Two nonprofit organizations at the forefront of CTE are Advance CTE and the Association of Career

and Technical Education (ACTE). Both organizations recommend that middle school programs provide rigorous instruction that will prepare students for the high-quality coursework of high schools before entering into the students' freshman year of high school. For example, the research of Benner and Sargrad (2020) showed that Algebra I is offered in only 54% of middle school eighth-grade classrooms, with just 24% of students enrolling (Benner & Sargrad, 2020). For students entering high school who are not proficient in basic academic skills, their chances of being prepared for the rigorous coursework of high-quality, high school CTE programs are unlikely. Options for these students could include enrollment in lower-level CTE programs that are less rigorous such as level 1 business, agriculture, and culinary classes. Once students achieve successful completion in these courses, counselors can then consider enrolling them into higher-level courses.

Conclusion

In this chapter, I focused on the findings of both quantitative and qualitative data. The data answered the first research question of what CTE teachers are doing in their classrooms to provide equity and access for all students. Feedback from teachers revealed that they were implementing various strategies to provide equity and access for all students in their classrooms. The data also answered the second research question of barriers to CTE program enrollment, participation, and completion faced by students identified as economically challenged, students with disabilities, or English language learners and identified by teachers. The study results proved positive as I used the data gathered to develop recommendations to provide equity and access for all students in CTE programs for School District X. The next chapter will offer a more detailed

description of the data findings and further focus on a change leadership plan that will benefit all stakeholders.

Chapter Five: To-Be Framework

Throughout this program evaluation, I identified various barriers faced by students identified as economically challenged, students with disabilities, or English language learners. Addressing strategies to overcome these barriers could lead to a significant change in future CTE program participation outcomes. My plan for change leadership incorporates encouraging program instructors to utilize techniques to increase commitments to access and equity in CTE programs (Imperatore, 2019, p. 11). By committing to identify the challenges that exist for all students and any barriers preventing access to high-quality programs of study, School District X leaders can implement changes to address those issues. As a result, the outcome will be more opportunities for all students to succeed within their CTE programs.

Envisioning the Success To-Be

My vision of the To-Be framework for the school district's CTE programs includes ideal contexts, culture, conditions, and competencies (Wagner et al., 2006) (for a complete To-Be organizational chart, see Appendix D). In my To-Be organizational analysis, school district leaders will realize the importance of conducting routine equity environmental scans along with annual or bi-annual student surveys for all CTE programs. These strategies will help identify the barriers students face and address how to overcome each one identified. The results will be increased student program outcomes and all students enrolled in CTE programs will be able to attain 21st century skills without any barriers.

A great deal of research exists on the importance of equity and access for all in CTE (Advance CTE, 2018; Aliaga et al., 2014; Bragg, 2017; Cox et al., 2015; Defoe,

2015; Imperatore, 2019; Sych, 2016; Waugh, 2017; Winkler & Warren, 2019, Zirkle & Jeffrey, 2017). However, minimal research addresses what CTE teachers are doing in their classrooms to provide equity and access for all students. In my To-Be vision, I will address this challenge and add to the existing body of research by sharing the results of my study.

Future Contexts

Historically, CTE programming has had a strong presence in School District X through career academies. At the time of this study, School District X had the second-highest number of National Career Academy Coalition (NCAN) accredited academies in the nation, with thirteen recognized as model career academies and ten recognized as certified career academies. Data revealed that in the 2019 school year, 56% of high school students participated in an academy across School District X (citation withheld to maintain the confidentiality of School District X). In my To-Be vision, School District X will have the highest number of NCAC accredited academies in the nation. At least fifteen will be recognized as model career academies, and at least twelve will be recognized as certified career academies.

Further, in my To-Be vision, at least 70% of high school students will participate in an academy across School District X. The numbers were solid in 2019 and will be even better in the future. Additionally, in my To-Be vision, the percentage of students identified as economically challenged, students with disabilities, and English language learners participating in CTE programs will mirror the percentage of these subgroups enrolled in the district. In the 2019 school year, 54.2% of students in School District X were economically challenged, 14.6% were students with disabilities, and 12.3% were

English language learners; therefore, in my To-Be vision, 54.2% of students participating in CTE programs will be economically challenged, 14.6% will be students with disabilities, and 12.3% will be English language learners. This will demonstrate equity and access to all students regarding enrollment in CTE programs and will further mirror the percentage of subgroups across the district for students identified as economically challenged, students with disabilities, and English language learners. In my To-Be vision, the instructors for the CTE programs of School District X will ensure that equity and access to enrollment, participation, and completion are attainable for all students, especially those identified as economically challenged, students with disabilities, or English language learners.

Future Culture

Some of the challenges revealed through my analysis of the culture of the school district under study focused on CTE teachers' concerns that curriculum was outdated and not aligned with 21st century industry needs or all students' diversified needs. In my To-Be vision, the future culture will include a revised and updated curriculum aligned with the current skills desired by business and industry leaders in the 21st century workforce. According to research conducted by the Seattle Jobs Initiative, "More than 75 percent of employers surveyed said that soft skills were as important as, or more important than technical skills in securing entry-level employment" (Beggin & Vaughn, 2017, p. 20). In my To-Be vision, CTE teachers will help their students learn a wide range of skills, such as the soft skills of communication, time management, and problem-solving, as well as knowledge gained through hands-on experiences such as labs and classroom projects to equip students with the skills employers are seeking in the 21st century workforce.

Students will leave their programs feeling confident that they have gained the necessary skills and qualifications to master the real-time actions, tasks, and functions they will encounter in their future careers. This vision also includes district CTE leaders reaching out and connecting with local industry leaders so that all district CTE programs are evaluated, revised, and replaced as necessary to ensure they align with the local workforce needs. Also, accommodations will be made along the way, ensuring equity and access exist to meet all students' educational needs.

Additional cultural challenges I identified in my research included CTE teachers' perceptions that CTE programs were elective "dumping grounds" rather than programs for training all students in 21st century workforce skills. In my To-Be vision, the placement of students into programs will be based on their interests and desire to learn more about specific career fields.

Although CTE students go on to success in a wide variety of careers, and many pursue some form of higher education, a common perception of CTE is that it is a dumping ground for students who lack a promising future. (Jordan et al., 2016, p. 1)

My vision is for high school guidance counselors and administrators to recognize that CTE has evolved from the previous stigma of second-class vocational education to career programs that lead to high-wage, high-skill, high-demand employment opportunities. Further, they will acknowledge that 21st century CTE programs are much more academically rigorous than vocational programs of the past and now focus on skills previously attained only through an associate's or bachelor's degree program.

Further cultural challenges I identified in my research included the concerns of CTE teachers that students were often in CTE programs but lacked basic academic skills such as reading, writing, and math, making it difficult for them to follow the rigorous program curriculum. This point is supported by De La Rosa (2019) who stated, “Career and Technical Education now requires nearly as much ELA and math as any other degree” (p. 43). For students to be successful in career programs, they must first learn basic academic skills at a level that will allow them to comprehend the rigorous coursework that CTE programs require. Additionally, as 21st century careers become more infused with technology, CTE teachers must train students in STEM and communications skills to meet the needs of 21st century employers. Students are thus required to possess higher-order thinking skills to be evaluative, creative, and innovative.

My To-Be vision will have students meeting reading and mathematics requirements through passing scores on state assessments and end-of-course exams. Students who do not meet these requirements but desire to participate in CTE programs will have an opportunity to take foundational courses specifically designed for CTE programs that will teach basic reading skills and focus on basic science, technology, and mathematics skills. Upon completion, students will then be prepared to participate in CTE programs the following year, possessing the necessary skills to understand and follow the rigorous CTE program coursework without feeling left behind.

Future Conditions

The data I collected revealed additional challenges for students identified as economically challenged, students with disabilities, or English language learners. These challenges included barriers to student program enrollment, program participation, and

program completion. As stated in the previous section related to cultural challenges, students often lacked the basic reading and mathematics skills to succeed in CTE Programs. In my To-Be vision, students lacking in these skills will begin their CTE program pathway by enrolling in prerequisite coursework to attain these skills, thus eliminating the barrier of coursework being too rigorous. Additionally, special population students will receive necessary accommodations in their prerequisite coursework, thus achieving success for a CTE program pathway of enrollment, participation, and completion.

An additional challenge of current conditions that surfaced in my research included teachers' concerns regarding a lack of resources needed to provide differentiated instruction in their classrooms. All educators have a legal obligation to provide accommodations for students with disabilities, and even more so regarding technology offered in CTE programs.

Section 508 of the Rehabilitation Act of 1973 highlights the legal obligation to make information technology accessible to people with disabilities. But the need for, and rewards of, accessible content is far greater than the law can state, especially when it comes to student success. (Nerio & Batson, 2020, p.16)

In my To-Be vision, teachers will have access to all necessary resources to provide differentiated instruction. Resources include professional development opportunities for CTE teachers to meet the needs of their diverse learners. CTE teachers need to be able to identify the academic needs of all students and provide the necessary tools and accommodations to help them achieve success.

Future Competencies

Challenges to competencies that my research demonstrated included the struggles some CTE teachers faced in embracing their students' unique backgrounds, identities, and experiences. CTE teachers must recognize and acknowledge their own cultural identities to understand their students' cultural identities better. They must strive to create a classroom environment with respect and appreciation for diverse backgrounds, opposing perspectives, varied life experiences, and values (Bullock & Pack, 2020, pp. 10-11). In my To-Be vision, all teachers will receive professional development to help them successfully create a classroom environment that embraces their students' unique backgrounds, identities, and experiences. Teachers will learn to use diversity as a learning opportunity for all students. DiFranza (2019) acknowledged that teachers of diverse classrooms consisting of various races, genders, and ethnicities must strive to create an environment where students can understand and learn from the differences of others. When diversity is represented, powerful learning opportunities can occur in the classroom, and having a classroom of diverse learners will be advantageous for CTE educators as they embrace the uniqueness of each student and utilize those characteristics to help students learn from each other's differences, cultures, and life experiences.

Further challenges acknowledged within competencies included CTE teachers' concerns that classroom environments were not always accessible and inclusive to all students. Research shows the benefits of CTE education for students with disabilities and the role CTE can play in helping students with disabilities gain valuable life skills.

“Through CTE programs, students with disabilities can develop independent living skills,

including personal skills, workplace skills, and people skills” (National School Boards Association, Center for Public Education, 2020, p. 1).

School districts must create facilities that incorporate planning and design for 21st century CTE classrooms to meet all students’ needs and any physical limitations students may face. Frequently, facilities are inadequate or consist of defective or obsolete equipment or equipment that students with disabilities cannot utilize. Some facilities also have a shortage of adequate space for all students to work together safely, creating an unsafe environment for instruction and student learning. In my To-Be vision, CTE classroom design will accommodate all students, regardless of physical limitations, providing plenty of space for everyone. Additionally, classrooms will contain required equipment that is in good working order and meets all students’ needs. All students will have access to a safe classroom environment that accommodates all physical limitations.

Another challenge recognized within competencies included teachers’ concerns that learning opportunities were not always equitable in classrooms. “All too often, learners are counseled into careers based on assumptions about their abilities and preferences. Counselors, teachers, and other staff must receive training to recognize and counteract bias whenever it does show up” (Advance CTE: State Leaders Connecting Learning to Work, Education Strategy Group, & Council of Chief State School Officers. 2018, p. 7). Stereotypes that exist in CTE programs can have an impact on enrollment and placement decisions. These outdated stereotypes can impact enrollment, such as only placing females into secretarial-related courses or only placing males into mechanical classes, or students with disabilities not being enrolled at all, for example.

Research shows a relationship between students with disabilities and numerous benefits from participation in CTE programs. These programs offer hands-on, project-based opportunities along with real-life connections that motivate students of special populations who might otherwise feel disconnected in their education or struggle to be in traditional classroom environments (Advocates for Children of New York, Inc., 2016, p. 4). In my To-Be vision, all students of special populations will be allowed to participate in CTE programs regardless of disability or challenges faced in their learning. Further, the steps outlined in the Individual Education Plan (IEP) will encourage CTE participation.

Finally, an additional challenge recognized within the arena of competencies included CTE teachers' concerns that lab fees were often challenging to pay for some students. The qualitative data I collected revealed that some students struggled with paying the lab fees or other required fees. For example, in one culinary program, the lab fees were \$50 for the year. Being a Title I school, there were numerous students whose families could not afford to pay this fee. Students who did not pay their fees could not participate in cooking and attended as observers only. The agriculture teacher shared that some students in her program could not afford the costs to purchase jackets for Future Farmers of America (FFA). Students participating in competitive events and conferences had expectations of wearing an FFA jacket during these events. Students who did not have jackets felt inadequate to enter competitions or attend FFA conferences and would often forego participation for this reason. In my To-Be vision, CTE programs will partner with business and industry leaders who will fund any program costs, including materials such as uniforms and jackets, for all students to participate regardless of their income

status. Additionally, these partnerships will create opportunities for all students to work with and receive mentoring from prospective employers to learn the skills the employers are seeking. Students will gain the necessary skills without facing any financial barriers or other obstacles due to a lack of access to needed equipment, materials, and supplies.

Conclusion

I discovered various barriers to CTE program enrollment, participation, and completion faced by students identified as economically challenged, students with disabilities, or English language learners throughout my research process. Addressing methods to overcome these barriers will lead to a significant change in future CTE program participation outcomes. My To-Be vision gives insight into my change leadership plan of providing all students access to high-quality CTE programs that result in all students achieving success. In the next chapter I bridged my As-Is and To-Be conceptualizations through various strategies and actions based upon research and best practice in organizational theory, professional development, leadership strategies, and communication strategies.

Chapter Six: Strategies And Actions For Change

Considering the conceptualizations I described previously concerning equity and access for all students in CTE programs, I recognize the numerous barriers identified through my “As is” analysis diagram in contrast to my vision for success perceived through my “To-Be” diagram. To begin a plan of action to make this vision a reality, I analyzed the barriers hindering CTE enrollment, participation, and completion (see Appendix C). Following this analysis, I can visualize a perfect version of successful CTE programming that has conquered the numerous barriers preventing equity and access for all students (see Appendix D). This action plan includes a series of strategies and steps based upon research and best practice to help School District X achieve that vision (see Appendix E).

Strategies and Actions

Kotter (2012) outlined an 8-step process for initiating change within organizations. His steps include establishing a sense of urgency, creating a guiding coalition, developing a vision and strategy, communicating the change vision, empowering broad-based action, generating short-term wins, consolidating gains and producing more change, and anchoring new approaches in the culture (p. 23). I recommend school district leaders follow Kotter’s 8-step model to initiate the changes needed for School District X’s CTE programs. By applying these strategies and related actions, they will transform CTE programming to provide equity and access for all students, including those labeled as economically challenged, students with disabilities, and English language learners. It will further help to eliminate barriers students face concerning enrollment, participation, and completion.

Establish a Sense of Urgency

According to Kotter (2012), transformation begins by generating a sense of urgency (p. 38). Creating a sense of urgency within the school district will be my first strategy and requires initiating a conversation with CTE district leaders. In this conversation, I must include a review of the data from my research showing the barriers CTE educators feel hinder them from achieving equity and access for all students in their classrooms. Once leaders become aware of the barriers students face with enrollment, participation, and completion of CTE programs, they will realize the urgency to create solutions by developing a change plan. Carpen (2021) recognized that leaders must have transparent and honest discussions regarding the consequences of continuing on the current path versus implementing change to create urgency. The leaders with whom I will speak are from the workforce education department of School District X, to include the director for career pathways, the director for multiple pathways, the Perkins Grant compliance specialist, and the program specialists for the department. This group will become the leadership team to guide School District X in implementing organizational changes.

Create a Guiding Coalition

As conveyed through Kotter's (2012) second step for leading change, forming a leadership team with the right membership to direct a change effort is essential for creating an effective guiding coalition (p. 59). Forming this guiding coalition is also the second strategy in my plan of action. I will form the guiding coalition, which will serve as the nerve center of the 8-step change process. Being comprised of a diverse group of leaders of various levels and functions, this team will be better able to generate various

strategies and ideas for change from several perspectives. Each team member supports CTE programming in different yet essential ways through their leadership positions within the workforce and multiple pathways departments for School District X.

The role of the director of workforce education is to design, develop and deliver quality workforce development programs while providing leadership, management, and marketing strategies for those programs. The role of the director of multiple pathways is to coordinate the development and implementation of programs for the district's multiple pathways, including career, technical and adult education; ESE centers; alternative education centers, drop-out retrieval programs, Department of Juvenile Justice programs; and GED administration and testing. The Perkins Grant compliance specialist facilitates and monitors the conformance of workforce and multiple pathways CTE programs to the specifications of Perkins grant funding. The program specialists for agribusiness, business, family and consumer science, industrial art, and technology connect with and assist CTE teachers in their programs with planning and instruction while helping to ensure performance standards are consistent with curriculum frameworks.

By serving on the guiding coalition, the expertise each of these members offers will prove invaluable in leading change for School District X. Thompkins (2021) acknowledged that a diverse leadership team could provide multiple viewpoints and experiences. Each member of this guiding coalition will have unique points of view on how to implement organizational change. Further, the program specialists can communicate with CTE educators as they have already established relationships with CTE instructors, making them feel more at ease to address their concerns. The program specialists can, in turn, share feedback with the directors and collaborate to begin creating

specific solutions for the CTE instructors' concerns regarding barriers to enrollment, participation, and completion of their programs. The team will also be instrumental in developing a change vision, as outlined in Kotter's third step.

Develop a Vision and Strategy

My third strategy for implementing change in CTE programs is for the guiding coalition to develop a strategic vision and initiatives as outlined in Kotter's (2012) third step for leading change (p. 69). Developing a vision and strategies will involve the implementation of district-wide operational policies and procedures for CTE programs. "With the right policies, systems, and attitudes, CTE can be a powerful tool for closing achievement and opportunity gaps" (Estes & McCain, 2019, p.14). First, the guiding coalition must envision the needed changes for CTE programs. They must develop strategies to overcome the barriers and obstacles students face who identify as economically challenged, students with disabilities, or English language learners.

I will recommend that the guiding coalition develop an operational policy requiring prerequisite courses for students struggling with basic academic skills such as reading comprehension and mathematics skills prior to enrollment into CTE programs that consist of rigorous coursework. "High-quality CTE programs and pathways ensure that coursework is simultaneously aligned to rigorous academic standards and postsecondary expectations and informed by and built to address the skills needed in specific career pathways" (College and Career Readiness and Success Center, 2013). When students cannot keep up with the rigorous CTE coursework, they may shut down or become behavioral issues for the teacher. The district must implement the operational policy developed by the guiding coalition of prerequisite course requirements before

enrollment counselors allow students to enroll in CTE programs to prevent this from happening. Further, these students should have the opportunity to receive tutoring along with their prerequisite coursework to ensure they are becoming prepared for future enrollment into CTE programs.

I will also recommend creating procedures to initiate and establish community outreach resulting in partnerships with local business and industry leaders. CTE leaders already have established connections with local business leaders. They can evaluate the needs of CTE programs and make connections with business partners and industry leaders who can best meet those needs. By connecting business and industry leaders with schools and programs of study in their industry fields, they can help develop their future workforce by ensuring that CTE program instruction aligns with their workforce needs. Additionally, business leaders can provide job-shadowing opportunities, work-based learning opportunities, serve as mentors for students, donate equipment, materials, and supplies, and serve as program advisors. According to Murphy (2016), organizational changes typically occur due to circumstances involving social, legal, cultural, ecological, political, economic, or technological situations (p. 4). In CTE, any one of these situations can occur at any given time, as CTE continues to evolve, and legislation continues to reform as well.

Communicate the Change Vision

Kotter's (2012) fourth step is to communicate the change vision (p. 87). With that in mind, my fourth strategy is to recommend the guiding coalition to recruit CTE educators to assist with the Comprehensive Local Needs Assessment (CLNA) process, which will further lead School District X towards building organizational capacity. In

2018, U. S. Congress passed the Strengthening Career and Technical Education for the 21st Century Act, which reauthorized and amended the Carl D. Perkins Vocational and Technical Education Act. The amended law took effect on July 1, 2019 (National School Boards Association, 2020). With this new legislation, all school districts, including School District X, must conduct a CLNA to utilize as the basis for future program decision-making. The CLNA involves data analysis, consulting with CTE stakeholders, improving local decision-making and planning, and identifying all budgetary needs for the next two years (Association for Career and Technical Education, 2019). The CLNA is required every two years to address any gaps between the way things are and how things should be. The first CLNA for School District X took place in the 2019-2020 program year, with the results incorporated into the 2020-2021 Perkins application. Federal and state grant administrators use the Perkins application to determine if requirements and protocols have been met by districts to award grant funding for CTE programs.

By including CTE educators in the CLNA process, not only will this collaborative effort help to build organizational capacity, but it will also allow stakeholders to feel ownership and a sense of belonging within the organization. With the implementation of this strategy, the barriers students face regarding CTE programs can be addressed, and CTE educators will be better able to help all students achieve success. The next step of the change leadership process, empowering broad-based action, will further help eliminate barriers to enrollment, participation, and completion of CTE programs.

Empower Broad-Based Action

Kotter's (2012) fifth step of leading change is empowering broad-based action by removing barriers (p. 105). With that in mind, my fifth strategy is first to engage the

guiding coalition to identify what the barriers are for students who identify as economically challenged, students with disabilities, or English language learners concerning CTE enrollment, participation, and completion. The CLNA process can also be utilized to help recognize additional barriers. With barriers identified, strategies can then be developed and implemented for overcoming those barriers. Based upon my research results, I anticipate that the more significant barriers will be CTE teachers' feelings that enrollment counselors use their programs as elective dumping grounds, academically low-level students cannot keep up with the rigorous CTE coursework, and lack of business partnerships between CTE programs and local industry leaders.

I will share with decision leaders the importance of allowing students to give input into CTE program interests prior to their enrollment. I will further share the need for enrollment counselors to review students' academic levels prior to their enrollment in CTE programs with rigorous coursework. I will also share the importance of establishing business partnerships with CTE programs and local industry leaders. As additional barriers are recognized, the guiding coalition can implement a plan to address these barriers and seek out possible solutions.

Generate Short-Term Wins

Kotter's (2012) sixth step of leading change is to generate short-term wins (p. 121). Removing barriers often involves significant changes that can take a great deal of time to achieve. Upon achieving short-term wins, no matter how big or small, my sixth strategy is to recommend that the guiding coalition, along with CTE educators, recognize their accomplishments and celebrate short-term wins as they happen. Tanner (2021) explains generating short-term wins as a necessity for keeping organizations engaged and

preventing loss of momentum. Rick (2014) described celebrating wins as an emotional uplift that gives a pat on the back to those who have worked so hard to achieve a vision.

I recommend celebrating wins for School District X by recognizing partnerships between schools and local business leaders and spotlighting them on their webpage and social media pages each month. This recognition will further help build relationships with the community through publicizing these essential connections. I further recommend recognizing and celebrating students who complete CTE programs through earning industry certifications. Industry certifications are credentials earned by passing exams given by certifying agencies indicating students have attained the skills and qualifications for employment in a particular industry (U. S. Department of Education, 2021). School sites can celebrate students by recognizing them on school news shows, school public address (PA) announcements, and social media posts. End-of-year celebrations can also include award ceremonies to present certificates to students. Further, the school site can post student certifications along hallways and other parts of the school to be viewed and celebrated.

Consolidate Gains and Produce More Change

Kotter's (2012) seventh step of leading change requires leaders to consolidate gains and produce more change through sustaining acceleration (p. 138). Often after celebrating wins, organizations may experience periods of regression. Once regression begins, building momentum can be extremely challenging (p. 139). The guiding coalition will avoid regression and sustain acceleration by continually monitoring schools to ensure no barriers exist to equity and access for all students to CTE program enrollment, participation, and completion. They will empower school leaders to hold enrollment

counselors accountable to follow implemented procedures for CTE program enrollment. Enrollment counselors will continue to seek input from students regarding interests and review student academic levels before enrolling them in CTE programs. Enrollment counselors will develop a spreadsheet to track student data towards admission into CTE programs. School leaders will review spreadsheets as part of their accountability protocol. Further, CTE administrators will be held responsible for establishing partnerships between CTE programs and local business leaders and ensuring they maintain productive relationships for both parties.

Kotter advised that when complacency becomes an issue, leaders should find new and relevant ways to discuss the overall purpose of implementing strategies to avoid communication of the vision growing stagnant (p. 145). With this in mind, the guiding coalition will need to vary communications with CTE teachers, school leaders, and district leaders frequently. Strategies for accomplishing this could include developing and presenting annual themes at the start of each school year to keep staff motivated to avoid becoming complacent. This will ensure School District X remains on track with acceleration for its change vision to provide equity and access for all students in CTE programs.

Anchor New Approaches in the Culture

Kotter's (2012) eighth step of leading change involves anchoring new approaches in the culture (p. 154). Culture is very influential on human behavior, challenging to transform, and difficult to address due to its near invisibility. When newly implemented transformation efforts lack compatibility with an organization's culture, that can lead to regression. Even after much effort to adapt, changes in an entire organization can fall

apart because the new approaches weren't anchored firmly in the organization's culture (Kotter, 2012, pp. 156-157). The guiding coalition must ensure all instituted change is fused into the culture of School District X for it to stick. Further, they must ensure the newly implemented approaches indeed work to achieve organizational success. CTE teachers will see increased student participation and program completion due to enrollment counselors implementing new program enrollment practices. CTE teachers will see increased program alignment with local industry needs due to established and effective partnerships with local business leaders.

Assessing the Effectiveness of the Strategies and Actions

I will create a plan to evaluate the effectiveness of the strategies and actions for my change plan. Wagner et al. (2006) recommended enacting whole-system change by utilizing data to assess the effectiveness of strategies (pp. 153-154). The guiding coalition will review program completion data to include enrollment information broken down demographically to determine if members of the subgroups for students who are economically challenged, students with disabilities, and English language learners were able to enroll and participate in CTE programs. Further, the guiding coalition will review data for students earning industry certifications to determine program participation and completion rates.

The guiding coalition will evaluate the shared accountability for continuous improvement of teaching and learning (Wagner et al., 2006, p. 155) by assessing the fidelity with which enrollment counselors sought input from student interests and academic achievement levels prior to enrolling students in CTE programs. Enrollment counselors will be required to show enrollment documentation outlining how students

provided input into their CTE program selection opportunities as well as their future career interests. Further, enrollment counselors must provide documentation showing a review of student state assessment scores for reading and mathematics. Additionally, CTE administrators will provide documentation outlining efforts to establish partnerships with CTE programs and local business leaders. They will further provide documentation outlining successful partnerships highlighting the ways they have achieved success.

Wagner et al. (2006) further recommended trust-based relationships for continuous improvement in teaching and learning (p. 157). As CTE teachers begin to acknowledge that their programs are not being utilized as elective dumping grounds and students actually want to be in their classrooms, the relationships between enrollment counselors and CTE teachers will prosper. Further, as CTE teachers realize that CTE administrators are striving to provide effective partnerships with local business leaders, the relationships between CTE teachers and CTE administrators will likewise prosper. This last phase of enacting change will go a long way towards achieving Kotter's (2012) Step 8 of anchoring the changes to the organization's culture (p. 156). As these relationships of trust between enrollment counselors, CTE teachers, CTE administrators, and business leaders are formed and cultivated, they will develop into a continuous commitment to School District X's overall vision and mission.

Community Involvement Strategies

The development of business partnerships already outlined within the strategies and actions for change should make it easier to involve the community through establishing connections with local business and industry leaders. CTE administrators already have established many connections with local business and industry leaders

through networking events such as Chamber of Commerce memberships, Education Foundation memberships, and Academy Advisory Boards. Establishing partnerships with local business leaders will enable teachers to align their program curriculum to the 21st century skills that industry leaders seek for high-wage, high-demand jobs. Established partnerships will allow community business partners to provide input into the skills they desire from potential hires. Partnerships can further help develop internship programs and opportunities for students to move directly into the workforce or even have access to hands-on training, mentoring, and job shadowing opportunities to prepare them for high-demand high-wage jobs while still in school.

Conclusion

I outlined the various strategies and actions needed that include the comprehensive development of district operational policies. I also described procedures for implementing, managing, aligning, and sustaining long-range goals while anchoring new changes to the organizational culture. I shared how organizational capacity supports continual and sustainable improvement by utilizing CTE educators to assist with the CLNA. I further shared how local community business and industry leaders will assist in providing input for instruction and providing mentoring and job shadowing opportunities for students. I described how actions will address and potentially remove barriers facing students identified as economically challenged, students with disabilities, or English language learners throughout my research process. I discussed further implementing strategies to attain a significant change in future CTE program participation outcomes resulting in all students achieving success.

In the next chapter, I will focus on implications and policy recommendations to address the barriers faced by students identified as economically challenged, students with disabilities, and English language learners for enrollment, participation, and completion of CTE programs. I will address the reasons for the suggested policy recommendations and future visions of the policy implementation. Additionally, I will contemplate the anticipated effectiveness of student learning resulting from the policy implementation.

Chapter Seven: Implications and Policy Recommendations

School district leaders are proposing a new school board policy to make equity and access to Career and Technical Education (CTE) programs for all students a reality. School district leaders are striving to remove the barriers faced by students labeled as economically challenged, students with disabilities, or English language learners related to enrollment, participation, and completion of CTE programs. Policy solutions to these barriers include requiring enrollment counselors to obtain feedback from all students prior to their enrollment in CTE programs to ensure it will be a good fit for them.

Additionally, enrollment counselors review all student state assessment scores prior to CTE course enrollment to ensure students' academic levels are sufficient for the rigorous CTE coursework. Enrollment counselors require students who do not meet adequate academic levels to enroll in intensive reading or intensive math courses before enrolling them in CTE programs to ensure that they succeed in all courses. A few high school CTE courses, such as level 1 technology, agriculture, and culinary classes, are not as rigorous and could prove to be a better fit for students with lower academic levels. Counselors can present these options to students to see if they would be interested in pursuing them. These CTE courses with less rigorous coursework may be attainable for participation and completion to students who struggle academically. Upon successful completion of their level 1 courses, counselors can then present them with enrollment opportunities for more rigorous CTE programs.

Final policy recommendations include requiring the district CTE department to assist school site program leaders with business partnership connections with local business and industry leaders in the community. Business partners will ensure instructors

are current on the employment needs and skills they desire potential employees to possess. Business partners also help provide tools and materials needed by instructors to teach students the skills adequately that industry leaders seek.

Policy Statement

The new policy I am proposing is specific to all district CTE programs and is three-fold. First, it requires enrollment counselors to receive feedback from students regarding their CTE program and career interests prior to enrolling them in CTE courses. Feedback is gathered from CTE registration request forms or from documented discussions between students and enrollment counselors. I recommend this portion of the policy because I found in my program evaluation that CTE teachers felt like their classrooms were being utilized as elective dumping grounds, resulting in classroom behavioral issues and students acting out because of not wanting to participate in the program. This policy eliminates student enrollment into CTE courses in which they do not have an interest nor plan to pursue a related career.

Next, my policy requires students to have achieved a level 3 or higher on state assessments for reading and mathematics to enroll in rigorous CTE courses. Student levels for state assessments are based on a scale of 1-5, with a level of 3 indicating satisfactory performance. Students scoring below a level 3 will be required to complete a CTE foundational course that incorporates building upon students' reading, writing, and mathematics skills. Students must pass the course with a final grade of 70% or higher as a prerequisite to enroll in more rigorous CTE programs the following year. This will give students the opportunity to enroll in less rigorous foundational CTE offerings such as level 1 business, agriculture, and culinary courses while also improving their basic

academic skills. As students successfully complete the level 1 courses, they will then be better prepared for enrollment into higher-level CTE courses. I recommend this portion of the policy because I found in my program evaluation that CTE teachers felt that many students struggled to follow along with the rigorous curriculum of their programs.

The final portion of this policy requires the district CTE department to assist CTE teachers with securing business partnerships with the local community and industry leaders. I recommend this portion of the policy because I found in my program evaluation that many CTE teachers felt that they did not have the proper tools and materials to provide training to meet the needs of the local employers and industry leaders. CTE administrators have community connections that most CTE teachers do not have and can help bridge this gap. Further, by establishing effective business partnerships, teachers will feel better supported through community involvement, and business leaders will have input on the training that potential employees are receiving. This partnership makes a reciprocal win-win for both parties.

Analysis of Needs

In the following subsections, I analyzed my policy recommendation through the lenses of six distinct disciplinary areas, including educational, economic, social, political, legal, and ethical considerations. This allows me to provide a deeper understanding of how my policy proposal will impact all stakeholders, and more importantly, enable all students to have equity and access to quality CTE programs that will lead to overall student success.

Educational Analysis

In my evaluation of the data I collected in my study, I found that CTE teachers often felt that their classes were being utilized as elective dumping grounds, as counselors were enrolling students into their programs who did not request the course or were not interested in learning the skills their programs offered. Teachers felt that the lack of interest led to lower class participation, behavior problems, and less focus on classwork. Hodges (2016) stated that when students are interested in a subject, they tend to be more attentive, put forth more effort, and try harder to understand their teacher's instruction. Harackiewicz et al. (2016) found that students are more motivated and energized to learn when they are interested in their academics. Additional research shows that students look forward to attending class, have fewer absences, are engaged, are more attentive, and perform better academically when interested in a course topic (Hidi & Harackiewicz, 2000). Suppose counselors allow students to give input into the selection of their CTE courses. In that case, students become better engaged in their CTE course, possibly resulting in a path to a successful high-wage, high-demand career.

I also found that CTE teachers felt that students could not follow their instruction because they lacked basic academic skills to keep pace with the rigorous CTE coursework. Brand et al. (2013) pointed out that the CTE curriculum for teaching the skills needed for the 21st century workforce aligns to rigorous academic standards. Suppose counselors review students' scores from state assessments prior to enrolling them into CTE courses. Counselors could then enroll students who fall in the lower percentiles on their assessments into foundational CTE courses that will also provide training in basic reading, writing, and math skills. Once they successfully complete these

foundational courses, they will then be better prepared for enrollment into the more challenging CTE courses, thus gaining a better chance of understanding the rigorous curriculum, resulting in a better chance of success. Giving students this extra academic boost can address the potential barriers to program enrollment, participation, and completion.

CTE teachers will benefit from having a community business partnership connected to their program. King (2016) stated, “By establishing relationships with industry partners, schools can better prepare students with in-demand skills and provide pathways to rewarding careers” (p. 19). Advance CTE (2016) uncovered two purposes in their case study for employers desiring to become engaged in education. One was to show support within their communities, and the other was to establish a pathway for obtaining future knowledgeable and proficient employees (p. 12). CTE teachers do not have the connections with the community that CTE administrators have. Educators often feel uncomfortable establishing relationships with potential business partners or conclude that they do not have the proper network connections to build effective partnerships (Pawlowski, 2016, p. 15).

On the other hand, District CTE administrators can attend networking events such as Chamber of Commerce meetings and advisory board meetings to establish connections with potential business partners. Suppose CTE administrators took it a step further and arranged for CTE teachers to join them at networking events. This includes providing funding to cover expenses for substitute teachers for classrooms so teachers can attend events occurring during the school day if needed. This strategy will assist CTE administrators in connecting local business leaders with CTE programs that relate to the

teacher's industry field. Partnerships can potentially address the barriers that programs face concerning funding issues that hinder economically challenged students and help to make student achievement possible by overcoming this obstacle.

Economic Analysis

The economic impact of my policy proposal will result in numerous benefits. Allowing students to provide input into their CTE enrollment will provide them with a sense of ownership and belonging within their CTE program, thus resulting in increased participation and higher success rates. When students' academic levels are on track, they are more likely to succeed in their CTE program participation and completion, including earning industry certifications. When students achieve success through earning industry certifications, schools are awarded additional funding through a state funding program (information and citation withheld to maintain the confidentiality of School District X). This funding also awards bonuses to CTE teachers for each industry certification earned by their students each year. Students earning industry certifications may also qualify for state-funded scholarships, with eligibility dependent upon the credit hours the industry certification articulates for college credits (information and citation withheld to maintain confidentiality of School District X).

Certifications earned also have an impact on school grades in the state of the district under study. When schools show improvement in their school grades from year to year, they receive monetary awards through the school recognition program. The School Advisory Committee can elect to award bonuses to staff members and purchase materials and equipment for the school with the recognition funds. Even without earning industry certifications, there is a beneficial economic impact. A 2004 National Assessment of Vocational Education (NAVE) report revealed that CTE students, even those who did not

acquire credentials, earned a higher annual salary than high school graduates who did not take CTE courses (Silverberg et al., 2004). This study showed that seven years after graduating from high school, students earned almost 2% more for each extra CTE course they took in high school than students who did not take CTE courses.

Having district CTE administrators establish connections between business partners and CTE programs results in students' potential for employment opportunities following program completion by CTE students. These agreements are also beneficial to potential employers. Rhodes (2014) stated, "Companies are also looking at CTE courses as a way to lower training costs for new hires as they negotiate cooperative agreements with local high schools" (p. 40). The relationships established through partnerships not only benefit companies but also benefit the community. Companies are helping the community by hiring local residents and can offer their goods and services at a lower cost due to the minimized training costs.

Social Analysis

The social impacts of my policy proposal include increasing student achievement, instilling in students a sense of pride, and positively impacting the overall culture of the community. Research shows that CTE students are less likely to drop out of school due to their interest in their coursework, helping them be more motivated to stay in school and feel more connected to the real world (Conneely & Hyslop, 2018). Students also will feel a sense of pride, realizing that the skills they have learned in their CTE programs are valuable. "Career and technical education plays a significant role in fostering a spirit of innovation and creativity in students—skills needed to foster economic development" (Rhodes, 2014, p. 41).

Further, CTE instructors teach students more than skills required for specific careers; they also teach essential soft skills that all employers seek. Of one group of employers surveyed, 73% responded that they struggled to find qualified candidates with soft skills, including paying attention to detail, communication skills, and critical thinking skills (Brooks, 2019). No matter what career field students seek, soft skills are in high demand by potential employers. Employers are looking for employees who can communicate effectively and can problem-solve effectively and efficiently. Even if a CTE student does not go into the workforce immediately following graduation, they can take these valuable skills with them wherever life may lead.

The social impacts of my policy proposal through business partnerships include creating a positive impact on the culture of the community. While students are the primary beneficiaries in business partnerships, everyone benefits. The support provided by business partners can significantly impact the day-to-day school operations and services provided to students through donations and volunteering of their time to school CTE programs. Businesses that partner with schools can better build strong relationships within their companies through increased morale of participating employees. Within their communities, word-of-mouth advertising spreads quickly, creating invaluable marketing benefits when businesses are shed in a positive light. By partnering with schools, industry leaders generate goodwill within their communities to build a more substantial company reputation throughout the community (National Center for College and Career Transitions, 2013).

Political Analysis

With the Strengthening Career and Technical Education Act signed into legislation in 2018, policymakers generated renewed public interest in CTE. Blissett (2020) shared that this new legislation focused on the skills gap, with employers reporting a shortage of skilled workers to fill in-demand positions (p. 6). CTE programs offer high school students the opportunity to participate in work-based learning experiences to prepare them for the 21st century workforce. CTE programs also provide rigorous classes that prepare students for future careers. However, it is often challenging to meet the needs of local workforce demands while schools struggle to balance student interest and enrollment (Gonser, 2018). With my policy proposal, enrollment counselors will be better able to balance student interest with CTE course enrollment, enroll students into courses in which they are interested, and be more likely to attain successful participation and completion. Additionally, when counselors strive to ensure students' academic abilities are sufficient for the rigor of CTE coursework, this will further help eliminate the educational barriers to successful program participation and completion. The political impact of a policy proposal to require enrollment counselors to enroll students based on their interests and academic preparedness will further help School District X through the implementation of this new policy to align with the expectations of the new CTE legislation.

To bridge the skills gap that exists, school leaders must focus on generating student interest in the career fields that are in high demand for skilled workers. Local industry leaders can help accomplish this by partnering with schools and local CTE programs, building relationships with potential student hires, while also giving input into

the curriculum to ensure students learn the skills they seek (Frattarola, 2019). Business partnerships between local industry leaders and school CTE programs will go a long way toward bridging the skills gap. With CTE administrators having connections already established within the community, it only makes sense to utilize them to help establish partnerships with schools and businesses. One of the central tenets of the reauthorized Strengthening Career and Technical Education Act is establishing meaningful engagement with business and industry (National School Boards Association, 2019). The political impact of a policy proposal to require CTE administrators to develop business partnerships between CTE programs and local industry leaders will further help School District X align its goals with the expectations of the new CTE legislation.

Legal Analysis

School district leaders must consider legal implications for a policy proposal that requires enrollment counselors to be aware of student career interests prior to enrolling them into CTE programs. Likewise, they must also ensure student academic levels are sufficient for the rigorous CTE coursework. According to the state statute regarding the enrollment of students into CTE programs, schools are required to ensure students complete an entry-level examination within the first six weeks after admission into the program (citation of state statute withheld to maintain the confidentiality of the state and the district). The purpose of the assessment is to determine if students have the basic skills necessary to succeed in the chosen CTE program (citation of state statute withheld to maintain the confidentiality of the state and the district). Additionally, according to state statute regarding CTE programs and business partnerships, each school district should take the initiative to work with local workforce boards, local business and industry

leaders, and postsecondary institutions to establish partnerships for the purpose of creating career education courses or a series of courses that meet the requirements set forth in the statute (citation of state statute withheld to maintain the confidentiality of the state and the district). The legal implications of a policy proposal requiring enrollment counselors to enroll students based on their interests and their academic preparedness and requiring CTE administrators to develop business partnerships between CTE programs and local industry leaders will further help School District X align its goals with state statutes.

Moral and Ethical Analysis

The barriers imposed by not allowing students to give input into their career interests in CTE courses can lead to a students' lack of motivation to participate in and complete CTE programs. Further, CTE instructors may perceive their CTE courses as elective dumping grounds for students who have no interest in their programs. "Badly mishandled CTE programs can also become a dumping ground for problem students" (Green, 2019). Additionally, enrolling students who are unprepared academically for the rigor of CTE coursework imposes additional barriers for participation and completion of CTE programs. It is crucial to identify and eliminate barriers and implement strategies that support students to access, participate, and complete CTE programs (Advance CTE, *Statement on Equity*, 2021). The educators of School District X have a moral and ethical obligation to provide equity and access for all students, especially those identified as economically challenged, students with disabilities, or English language learners. They can further eliminate barriers to CTE program enrollment, participation, and completion by implementing my proposed policy.

Additionally, barriers imposed from the failure of CTE programs to establish business partnerships include ineffective programs that do not meet the workforce needs of local industry leaders. Further, students miss out on opportunities to make connections with potential employers, and instructors miss out on the chance to gain valuable input on curriculum to include teaching the skills that industry leaders are seeking. Greene (2019) hit the nail on the head when he stated that “CTE programs are most effective when schools partner with relevant industries, but that partnership can’t be one-sided.” School District X can eliminate this barrier by implementing my policy proposal to require CTE administrators to help establish business partnerships between CTE programs and local industry leaders.

Implications for Staff and Community Relationships

My policy proposal will help to strengthen relationships with students, staff, and the community. By requiring enrollment counselors to seek input from students regarding their career interests and ensuring students are prepared academically for rigorous CTE coursework by implementing foundational courses prior to enrollment into the more rigorous CTE courses, students will be more motivated to participate and have a better chance for successful completion. Further, relationships will be strengthened between CTE teachers and enrollment counselors as CTE teachers will be less likely to feel their programs are elective dumping grounds. The National Association of State Directors of Career and Technical Education Consortium (2017) recognizes that students benefit greatly when CTE teachers and counselors work together. Relationships will also be strengthened between teachers and students, as there will be fewer behavior issues in the classroom once students have become engaged in their instruction. Jacques (2015) noted

that when students choose their CTE courses based on specific career path interests, CTE teachers tend to go out of their way to provide student-centered instruction. She further noted that students will also take responsibility for their own learning through collaboration on project-based learning.

Additionally, by requiring CTE administrators to assist CTE programs with establishing partnerships with local industry leaders, community relationships will grow as business leaders become more involved in the education process and school leaders make valuable connections within the community. Wisconsin's state superintendent, Carolyn Stanford Taylor, recognized the importance of partnerships and community relationships and stated, "The unique partnerships between educators, businesses, and organizations help students gain the knowledge, skills, and abilities needed for lifelong success. For CTE to continue its growth and positive results, those relationships within communities must be strengthened" (Wisconsin Department of Public Instruction, 2021). My policy will lead to positive connections established through business partnerships between CTE programs and local industry leaders. In turn, these connections will help strengthen the relationship between CTE programs, local business leaders, and the community as a whole.

Conclusion

School district leaders can remove the barriers to CTE student enrollment, participation, and completion by implementing a new policy. The new policy will allow students to voice their career interests prior to enrollment in CTE programs, thus avoiding enrollment in programs in which they have no interest. The new policy will also eliminate students feeling overwhelmed and frustrated by ensuring they are academically

prepared for the rigorous CTE coursework prior to enrollment into CTE courses. Finally, requiring CTE administrators to help establish partnerships between CTE programs and business leaders will result in connections that will lead to student achievement as students learn high-demand skills. In the next chapter, I concluded my dissertation with a discussion of my evaluation of equity and access for student enrollment, participation, and completion of CTE programs for School District X, along with the leadership lessons I learned throughout the course of my study.

Chapter Eight: Conclusion

I evaluated a school district's high school CTE programs that were designed to equip students with the knowledge and skills to meet the needs of the 21st century workforce. My program evaluation informs my future vision for how CTE programs provide equity and access for all students, specifically those identified as economically challenged, students with disabilities, or English language learners. Additionally, my program evaluation informs my future vision for overcoming barriers to CTE program enrollment, participation, and completion faced by students identified as economically challenged, students with disabilities, or English language learners. I hope that school district leaders will realize the impact enrollment counselors have on ensuring students are interested in and prepared academically for CTE programs prior to student enrollment. Additionally, I am optimistic that school district leaders will realize the impact CTE administrators have on establishing and maintaining effective partnerships between CTE programs and local business leaders.

Discussion

The purpose of my study was to determine what CTE teachers were doing in their classrooms to provide accommodations for equity and access for all students, specifically, those identified as economically challenged, students with disabilities, and English language learners. I evaluated CTE programs of School District X to determine barriers that exist for program enrollment, participation, and completion faced by these subgroups. I presented a survey to district CTE teachers and received 110 responses to the survey. I also interviewed five CTE teachers of various fields of instruction, including an aerospace teacher, an agriculture teacher, a culinary teacher, a medical academy

teacher, and a robotics teacher. These teachers all shared exciting strategies they used to provide equity and access for all students in their classrooms, such as the aerospace teacher incorporating drone instruction into the curriculum to make up for the lack of program funding to provide additional flight simulators. The medical academy teacher shared how her student, who was born with no arms, was able to participate in the blood drawing activity. The student used her feet to manage all of her essential day-to-day activities, and the teacher went above and beyond the call of duty to find a company that made surgical gloves for feet.

Through my evaluation process, I was able to gain valuable feedback from CTE teachers. This feedback brought to light some barriers recognized by CTE teachers, including feeling their programs were often utilized as elective dumping grounds. Teachers felt that enrollment counselors were not seeking input from students regarding their CTE program interests and future career aspirations before enrolling them into their programs. CTE teachers additionally felt students often lacked the academic skills to follow along and keep pace with the rigorous coursework their programs afforded. These issues often resulted in a lack of participation from students, as they had no interest in the subject material or were not academically able to understand the subject material. Frequently this would result in students acting out and becoming behavior problems for the teachers. Students' failure to participate and a lack of comprehension for the CTE curriculum resulted in missed opportunities for student program completion and the opportunity to learn valuable skills to prepare students for high-wage, high-demand jobs. Students were missing out on additional opportunities as partnerships were lacking

between local business leaders and CTE programs that would allow business partners to share input into the curriculum to ensure it aligned with their industry needs.

Through my evaluation, I created steps for change based on Kotter's (2012) change leadership process, which included creating a guiding coalition to initiate strategies to address identified barriers. The guiding coalition will serve as the nerve center for the change process (Wagner, 2006). They will implement the operational policy of requiring enrollment counselors to seek input from students regarding their career interests prior to enrolling them into CTE programs. The guiding coalition will also implement the operational policy of requiring prerequisite courses for students who have not reached adequate levels of achievement on state assessments for reading and mathematics. They will further implement procedures requiring district CTE administrators to establish partnerships between CTE programs and local business leaders. Implementing these policies will address the issues that caused teachers to feel their programs were being used as elective dumping grounds, and it will further help eliminate the barriers students face for enrollment, participation, and completion of CTE programs. The partnerships with business leaders will help CTE teachers better prepare students with the skills that local industry leaders desire and help students develop connections with mentors in their selected field of interest.

I recommend these policies and procedures because their implementation will lead to successful student enrollment, participation, and completion of CTE programs, especially for students identified as economically challenged, students with disabilities, and English language learners. Implementing these policies and procedures will further

help direct students on pathways for success by equipping them with the knowledge and skills that 21st century industry leaders seek.

Leadership Lessons

One leadership lesson I learned through personal experience in my study is the role CTE teachers play in equipping students with the knowledge and skills potential employers seek in the 21st century workforce. I recognized that most CTE teachers genuinely care about their students and will go above and beyond to help them achieve success, as the medical academy teacher did. Taking the time to research and find gloves for her armless student's feet to participate in learning how to draw blood provided this student with an opportunity she will not soon forget.

Another leadership lesson I learned is the method of approaching a change leadership initiative through Kotter's eight-step process for leading change (Kotter, 2012). His process gave me a new appreciation for understanding the importance of each step, from initiating conversations with the right people who will create a sense of urgency for implementing changes, down to ensuring the changes that are made are anchored into the organization's culture. As I contemplate these eight steps, I am reminded of the importance this process plays in affecting change for CTE programs. Through this process, the decision leaders of School District X will be able to create policies and procedures that will result in students being able to give input into their CTE program interests prior to their enrollment and ensure they are prepared academically for the rigorous coursework of CTE programs. They will further be able to implement procedures that will lead to the establishment of business partnerships between CTE programs and local industry leaders, resulting in better alignment of programs with 21st

century high-wage, high workforce demands. Overall, these actions will help remove the barriers that exist for student enrollment, participation, and completion of CTE programs and result in student success.

Additional leadership lessons I have learned include developing my ability to apply scholarly research when considering potential solutions to situations, as I did for identifying the barriers that existed in CTE program enrollment, participation, and completion. I have also developed my written communication skills as a result of the processes of this dissertation. Putting my research in writing on what CTE teachers are doing to provide equity and access for all students in their CTE classrooms has allowed me to effectively express my ideas and views for overcoming recognized barriers. I have further developed leadership skills through the ability to analyze and evaluate data through my review of the feedback from the 110 surveys that I received in response to my research and the data I gathered from the five interviews conducted during my CTE program evaluation of School District X.

Conclusion

CTE programs have an essential role in helping students learn the knowledge and skills to prepare them for the 21st century workforce leaders are seeking. CTE programs must accommodate the learning needs of all students to help them achieve success, despite the many barriers that students labeled as economically challenged, students with disabilities, or English language learners face. Successful CTE programs provide ways for all students to achieve success through enrollment, participation, and completion.

References

- Adams, S. (2019). Equitable instruction: How one teacher narrowed the achievement gap. *Techniques: Connecting Education & Careers*, 94(3), 20–25.
- Advance CTE. (2021). *Career clusters*. <https://careertech.org/career-clusters>
- Advance CTE. (2021). *Communicating career technical education: Learner-centered messages for effective program recruitment*.
https://cte.careertech.org/sites/default/files/AdvanceCTE_CommResearchReport_042721.pdf
- Advance CTE. (2021). *Statement on equity in career technical education*.
<https://careertech.org/career-technical-education-equity-statement>
- Advance CTE. (2020). *The state of career and technical education: An analysis of states' Perkins V priorities*.
https://cte.careertech.org/sites/default/files/files/resources/State_CTE_PerkinsV_2020.pdf
- Advance CTE. (2016). *In their words: Why business leaders support CTE, career pathways, and career academies*.
https://cte.careertech.org/sites/default/files/files/resources/InTheirWords-BusinessSupportCTE_Final_0.pdf
- Advance CTE: State Leaders Connecting Learning to Work, Education Strategy Group (ESG), & Council of Chief State School Officers (CCSSO). (2018). *Understanding the equity challenge in CTE. Making good on the promise*. In *Advance CTE: State Leaders Connecting Learning to Work*. Advance CTE: State Leaders Connecting Learning to Work.

- Advocates for Children of New York, Inc. (2016). Obstacles and opportunities: Creating career and technical education pathways for students with disabilities. https://www.advocatesforchildren.org/sites/default/files/library/cte_obstacles_opportunities.pdf?pt=1
- Aliaga, O. A., Kotamraju, P., & Stone III, J. R. (2014). Understanding participation in secondary career and technical education in the 21st century: Implications for policy and practice. *High School Journal*, 97(3), 128–158.
doi:10.1353/hsj.2014.0002
- Alliance for Excellent Education. (2019). *Perkins career and technical education primer special populations*. https://all4ed.org/wp-content/uploads/2019/09/Perkins-CTE-Special-Populations_FINAL.pdf
- Association for Career and Technical Education. (2019). Maximizing Perkins V's comprehensive local needs assessment and local application to drive CTE program quality and equity. https://www.acteonline.org/wp-content/uploads/2019/03/Local_Tool_Needs_Assessment_FINAL_3.18.2019.pdf
- Becker, G. S. (2009). *Human capital: A theoretical and empirical analysis, with special reference to education*. University of Chicago Press.
- Beggin, S., & Vaughn, K. (2017). Reporting the success of the whole student: Assessing career and employability skills. *Techniques: Connecting Education & Careers*, 92(6), 18–23. <https://web-s-ebsohost-com.nl.idm.oclc.org/ehost/pdfviewer/pdfviewer?vid=5&sid=831df159-24bb-4b0a-81e7-2f45a00b10e1%40redis>

- Ben-Eliyahu, A., Moore, D., Dorph, R., & Schunn, C. (2018). Investigating the multidimensionality of engagement: Affective, behavioral, and cognitive engagement across science activities and contexts. *Contemporary Educational Psychology, 53*, 87–105. <https://doi.org/10.1016/j.cedpsych.2018.01.002>
- Benner, M., & Sargrad, S. (2020). *Creating strong building blocks for every student: How middle schools can lay the foundation for rigorous high school pathways*. Washington, DC: Center for American Progress.
<https://www.americanprogress.org/issues/education-k-12/reports/2020/08/05/488493/creating-strong-building-blocks-every-student/>
- Blissett, R. (2020). Why Career and Technical Education? Exploring policymakers' expressed motivations for supporting Perkins V.
<https://files.eric.ed.gov/fulltext/ED606248.pdf>
- Bragg, D. (2017). The case for evaluating student outcomes and equity gaps to improve pathways and programs of study. *New Directions for Community Colleges, 2017*(178), 55–66. <https://onlinelibrary.wiley.com/doi/abs/10.1002/cc.20253>
- Brand, B., Valent, A., & Browning, A. (2013). How Career and Technical Education can help students be college and career ready: A primer. <https://www.aypf.org/wp-content/uploads/2013/04/CCRS-CTE-Primer-2013.pdf>
- Brookover, W., & Lezotte, L. (1981). Educational equity: A democratic principle at a crossroads. *The Urban Review, 13*(2), 65-71.
- Brooks, A. (2019). The most in-demand skills: Why soft skills are rising to the top.
<https://www.rasmussen.edu/student-experience/college-life/most-in-demand-skills/>

- Bullock, D. K., & Pack, J. A. (2020). The untapped potential of culturally responsive teaching in CTE. *Techniques: Connecting Education & Careers*, 95(7), 10–11.
<https://web-s-ebshost-com.nl.idm.oclc.org/ehost/pdfviewer/pdfviewer?vid=7&sid=0b8c0b27-38e3-40c9-8028-3485269cb454%40redis>
- Butler, A., Lind, V., & McKoy, C. (2007). Equity and access in music education: Conceptualizing culture as barriers to and supports for music learning. *Music Education Research*, 9(2), 241-253.
- Carpen, K. (2021). Change management – Step 1: Creating a sense of urgency. *Viral Solutions*. <https://viralsolutions.net/change-management-step-1-creating-a-sense-of-urgency/#.YPLm6uhKiM8>
- Castelli, L., Ragazzi, S., & Crescentini, A. (2012). Equity in education: A general overview. *Procedia-Social and Behavioral Sciences*, 69, 2243-2250.
- College and Career Readiness and Success Center. (2013). How career and technical education can help students be college and career ready: A primer. *American Institutes for Research*. <https://www.aypf.org/wp-content/uploads/2013/04/CCRS-CTE-Primer-2013.pdf>
- Conneely, N., & Hyslop, A. (2018). *CTE: Education for a strong economy*.
<https://files.eric.ed.gov/fulltext/ED580923.pdf>
- Cox, E. D., Hernández-Gantes, V. M., & Fletcher, J. E. C. (2015). Student participation in career academies within a school district: Who participates, what makes a difference? *Career & Technical Education Research*, 40(1), 11–27.
<https://doiorg.nl.idm.oclc.org/10.5328/cter40.1.11>

- DeFoe, D. J. (2015). Why are you here? CTE students' enrollment motivations and career aspirations. *Career & Technical Education Research*, 40(2), 82–98. <https://doi-org.nl.idm.oclc.org/10.5328/cter40.2.82>
- De La Rosa, S. (2019). *Federal programs, partnerships can defray CTE costs*. <https://www.k12dive.com/news/federal-programs-partnerships-can-defray-cte-costs/560483/>
- DiFranza, A. (2019). 4 practices to promote equity in the classroom. *Northeastern University Graduate Programs*. <https://www.northeastern.edu/graduate/blog/equity-in-the-classroom/>
- Donovan, M. K., & Lakes, R. D. (2017). “We don’t recruit, we educate”: High school program marketing and international baccalaureate programmes. *Critical Questions in Education*, 8(3), 275–296. <http://search.ebscohost.com.nl.idm.oclc.org/login.aspx?direct=true&db=eric&AN=EJ1145377&site=ehost-live&scope=site>
- Eggins, H. (2010). *Access and equity: Comparative perspectives*. https://books.google.com/books?hl=en&lr=&id=WX0fEAAAQBAJ&oi=fnd&pg=PR3&dq=equity+and+access+in+education&ots=99M5EF_Dw0&sig=YKSz0C6PSvuZ295gSqijV10czDw#v=onepage&q=equity%20and%20access%20in%20education&f=false
- Estes, A., & McCain, B. (2019). Four strategies to address equity in CTE. *State Education Standard*, 19(3), 10. <https://files.eric.ed.gov/fulltext/EJ1229646.pdf>

- Frattarola, A. (2019). How manufacturers can attract and engage young talent? *The American Society of Mechanical Engineers*. <https://www.asme.org/topics-resources/content/how-manufacturers-can-attract-and-engage-young-talent>
- Gonser, S. (2018). *Revamped and rigorous, career and technical education is ready to be taken seriously: Map to the Middle Class, a Hechinger Report*.
<https://hechingerreport.org/revamped-and-rigorous-career-and-technical-education-is-ready-to-be-taken-seriously/>
- Green, P. (2019). *Is career and technical education good news or bad?*
<https://www.forbes.com/sites/petergreene/2019/03/10/is-career-and-technical-education-good-news-or-bad/?sh=5416e66b75c6>
- Harackiewicz, J. M., Smith, J. L., & Priniski, S. J. (2016). Interest matters: The importance of promoting interest in education. *Policy Insights from the Behavioral and Brain Sciences*, 3(2), 220–227.
<https://doi.org/10.1177/2372732216655542>
- Hertzog, N. (2005). Equity and access: Creating general education classrooms responsive to potential giftedness. *Journal for the Education of the Gifted*, 29(2), 213-257.
- Hidi, S., & Harackiewicz, J. M. (2000). Motivating the academically unmotivated: A critical issue for the 21st century. *Review of Educational Research*, 70(2), 151-179.
- Hodges, J. (2016). Interested students engage better in classes.
<https://juliannehodges.com/2016/09/11/interested-students-engage-better-in-classes/>

- Imperatore, C. (2019). Access and equity. *Techniques: Connecting Education & Careers*, 94(3), 10–11. <https://web-b-ebshost-com.nl.idm.oclc.org/ehost/pdfviewer/pdfviewer?vid=4&sid=9e0c522d-3a62-46d9-b067-59413f1c811b%40pdc-v-sessmgr02>
- Imperatore, C., & Hyslop, A. (2018). *2018 ACTE quality CTE program of study framework*. <https://www.acteonline.org/wp-content/uploads/2019/01/HighQualityCTEFramework2018.pdf>
- Jackson, N. M. (2014). Joining hands: CTE programs partner with employers for success. *Techniques: Connecting Education and Careers*, 89(1), 16-19. <https://www.acteonline.org/wp-content/uploads/2018/05/Techniques-January2014-CTEProgramsPartnerForSuccess.pdf>
- Jacques, C. (2015). What all educators can learn from CTE teachers. <https://www.air.org/resource/blog-post/what-all-educators-can-learn-cte-teachers>
- Jordan, J., Dechert, K., Seymour, D., & Heirholzer, A. (2016). Confronting the CTE stigma: Perceptions of CTE among Mississippi public and educators. <https://www.rcu.msstate.edu/Portals/0/Reports/CTE%20Perceptions%20Brief.pdf>
- Kemp, L., & Hall, A. H. (1992). *Impact of effective teaching research on student achievement and teacher performance: Equity and access implications for quality education*. [http://ERIC - ED348360](http://ERIC-ED348360) - Impact of Effective Teaching Research on Student Achievement and Teacher Performance: Equity and Access Implications for Quality Education., 1992

- King, A. (2016). The role of industry-education partnerships in creating career pathways. *Techniques: Connecting Education & Careers*, 91(3), 18–22.
<https://www.acteonline.org/wp-content/uploads/2018/06/Techniques-March2016-RoleOfIndustryPartnershipsCareerPathways.pdf>
- Kitchel, A. (2015). An examination of the contribution of career and technical education to stem education, student leadership, and career readiness. *Journal of Research in Business Education*, 57(1), 18–30. <http://search.ebscohost.com.nl.idm.oclc.org/login.aspx?direct=true&db=eue&AN=122574894&site=ehost-live&scope=site>
- Kline, D. M. (2016). Can restorative practices help to reduce disparities in school discipline data? A review of the literature. *Multicultural Perspectives*, 18(2), 97-102.
- Knowles, M. S., Swanson, R. A., & Holton, E. F. (2005). *The adult learner*, 6th ed. New York, NY: Routledge.
- Kotter, J. P. (2012). *Leading change*. Harvard Business Review Press.
- Lee, W. (2002). *Equity and access to education: Themes, tensions, and policies*. <https://think-asia.org/handle/11540/5499>
- Murphy, J. (2016). *Creating instructional capacity: A framework*. Corwin Press.
- Murphy, J., & Hallinger, P. (1989). Equity as access to learning: Curricular and instructional treatment differences. *Journal of Curriculum Studies*, 21(2), 129-149.
- National Association of State Directors of Career Technical Education Consortium. (2017). School counselors as CTE stakeholders. *American School Counselor Association*.
https://www.education.ne.gov/wp-content/uploads/2017/07/Counselors_as_CTE_Stakeholders.pdf

- National Center for College and Career Transitions. (2013). Win, win, win: How business/education partnerships work for students, schools, and businesses. *Connecting Employers, Educators, and Students for Workforce Success*.
https://nyctecenter.org/images/files/Industry_Partnership/Win-win-win_May_2013.pdf
- National Coalition of Women and Girls in Education. (2011). *The Perkins act and women in career and technical education*.
https://www.nwlc.org/sites/default/files/pdfs/ncwge_report_on_gender_gap_in_career_preparation.pdf
- National School Boards Association. (2020). *CTE and the law: What school boards need to know about the reauthorized Perkins Act*.
<https://www.nsba.org/ASBJ/2020/February/CTE-Law>
- National School Boards Association. (2019). *Come together: School and business partnerships are key to CTE*. <https://www.nsba.org/ASBJ/2019/October/Come-Together>
- National School Boards Association, Center for Public Education (CPE). (2020). Students with disabilities in career and technical education (CTE). IDEA Factsheet: #2. Center for Public Education.
<https://files.eric.ed.gov/fulltext/ED608895.pdf>
- Nerio, J., & Batson, L. (2020). Accessibility for all. *Techniques: Connecting Education & Careers*, 95(6), 14–19. <https://web-s-ebSCOhost-com.nl.idm.oclc.org/ehost/pdfviewer/pdfviewer?vid=4&sid=0b8c0b27-38e3-40c9-8028-3485269cb454%40redis>

- Patton, M. Q. (2008). *Utilization-focused evaluation*. Sage Publications.
- Pawlowski, B. (2016). Finding and engaging business partners. *Techniques: Connecting Education & Careers*, 91(3), 14–17. <https://web-b-ebshost-com.nl.idm.oclc.org/ehost/pdfviewer/pdfviewer?vid=7&sid=25baa3f9-aaa0-4509-9753-938973ec028b%40pdc-v-sessmgr02>
- Rhodes, W. W. (2014). CTE promotes prosperity. *Techniques: Connecting Education & Careers*, 89(4), 38–41. <https://web-a-ebshost-com.nl.idm.oclc.org/ehost/pdfviewer/pdfviewer?vid=10&sid=a8c7cbd0-b8b4-4577-9086-5ecefda82f8%40sessionmgr4007>
- Rick, T. (2014). Change management and the power of small wins. <https://www.torbenrick.eu/blog/change-management/change-management-and-the-power-of-small-wins/>
- Sayers, D. (1995). Educational equity issues in an information age. *Teachers College Record*, 96(4), 767-774. <https://www.tcrecord.org/books/Content.asp?ContentID=11>
- Schmidtke, S. (2017). Commonly used theories in CTE research: Toward a core theory base for CTE. *Career and Technical Education Research*, 42(3), 193. DOI: 10.5328/cter42.3.193
- Silverberg, M., Warner, E., Fong, M., & Goodwin, D. (2004). *National assessment of vocational education final: Report to Congress*. Executive Summary. Washington, DC: US Department of Education.

- Sych, S. M. (2016). The divide between vocational and academic education and how we might be able to repair the rift. *Journal of the Canadian Association for Curriculum Studies*, 14(2), 43–52. <http://search.ebscohost.com.nl.idm.oclc.org/login.aspx?direct=true&db=eue&AN=120562255&site=ehost-live&scope=site>
- Tanner, R. (2021). *Leading change (Step 6) – Generate short-term wins*.
<https://managementisajourney.com/leading-change-step-6-generate-short-term-wins/>
- Thompkins, A. (2021). *Diversity in leadership: 6 steps to make it happen*.
<https://www.insperity.com/blog/diversity-in-leadership/>
- Tomlinson, C. (2017). *How to differentiate instruction in academically diverse classrooms*. Washington, DC: ASCD.
- Unlu, V. (2017). *What does ‘inclusive practices’ mean and how can we ensure that all our classrooms and work environments are truly inclusive?*
<https://www.cambridge.org/elt/blog/2017/11/15/create-inclusive-classroom-environment/>
- U. S. Department of Education. (2021). *Industry-certification in high school*.
<https://nationalblueribbonschools.ed.gov/industry-certification-in-high-school/>
- U. S. Department of Education. (2019). *Bridging the skills gap: Career and technical education in high school*. <https://www2.ed.gov/datastory/cte/index.html#data-story-title>
- U. S. Department of Education Office of Career, Technical, and Adult Education. (2019). *Employability skills framework*. <https://cte.ed.gov/initiatives/employability-skills-framework>

- U. S. House of Representatives, Committee on Education and the Workforce. (2017). Providing more students with a pathway to success by strengthening career and technical education. *Hearing before the Subcommittee on Early Childhood, Elementary, and Secondary Education, Committee on Education and the Workforce, U. S. House of Representatives, One Hundred Fifteenth Congress, First Session (February 28, 2017)*. Serial Number 115-7. U. S. House of Representatives. <http://search.ebscohost.com.nli.idm.oclc.org/login.aspx?direct=true&db=eric&AN=ED592714&site=ehost-live&scope=site>
- Wagner, T., Kegan, R., Lahey, L., Lemons, R., Garnier, J., Heising, D., Howell, A., & Thurber Rasmussen, H. (2006). *Change leadership: A practical guide to transforming our schools*. Jossey-Bass.
- Waugh, C. K. (2017). The obstacles we face in career and technical education. *Career & Technical Education Research*, 43(1), 3–6. <https://doi-org.nli.idm.oclc.org/10.5328/cter43.1.3>
- Winkler, D., & Warren, S. (2019). Increasing access & equity: A whole-school approach. *Techniques: Connecting Education & Careers*, 94(3), 14–19. <http://search.ebscohost.com.nli.idm.oclc.org/login.aspx?direct=true&db=eue&AN=134839864&site=ehost-live&scope=site>
- Wisconsin Department of Public Instruction. (2021). *Strengthening community partnerships key to future of students: A guest editorial by state superintendent Carolyn Stanford Taylor*. <https://dpi.wi.gov/sites/default/files/news-release/dpinr2021-03.pdf>

Zirkle, C. J., & Jeffery, J. (2017). Career and technical education administration: Requirements, certification/licensure, and preparation. *Career & Technical Education Research*, 42(1), 21–33. <https://doi-org.nl.idm.oclc.org/10.5328/cter42.1.21>

Appendices

Appendix A: Survey Questions

Appendix B: Interview Questions

Appendix C: As Is 4 Cs Chart

Appendix D: To Be 4 C's Chart

Appendix E: Strategies and Action Chart

Appendix A

Survey Questions for Career and Technical Education Teachers

On a scale of 1-4, with 1 being strongly agree and 4 being strongly disagree, please provide feedback regarding how you feel about the CTE program you teach for statements 1-8.

1= Strongly Agree, 2 = Agree, 3 = Disagree, 4 = Strongly Disagree

Circle one:

1. 1 2 3 4 I teach students who have been identified as economically disadvantaged, students with disabilities, or English language learners.
2. 1 2 3 4 I have the necessary resources to provide differentiated instruction in my classroom.
3. 1 2 3 4 I feel all students are engaged in learning in my classroom.
4. 1 2 3 4 I embrace the unique backgrounds, identities, and experiences of my students.
5. 1 2 3 4 I create a classroom environment that is accessible and inclusive for all students.
6. 1 2 3 4 Learning opportunities and student management actions are equitably distributed in my classroom.
7. 1 2 3 4 I feel the lab fees or other fees for my class (if any) are appropriate.

Please provide written responses to questions 9 - 11.

8. Give an example of how you create a culture of high expectations for students identified as economically challenged, students with disabilities, or English language learners.

9. Please list any barriers to CTE program enrollment, participation, and completion that you feel students face who have been identified as economically challenged, students with disabilities, or English language learners.
10. Do you foresee any solutions to those barriers? If so, what are some possible solutions?
11. Is there anything else you would like me to know?

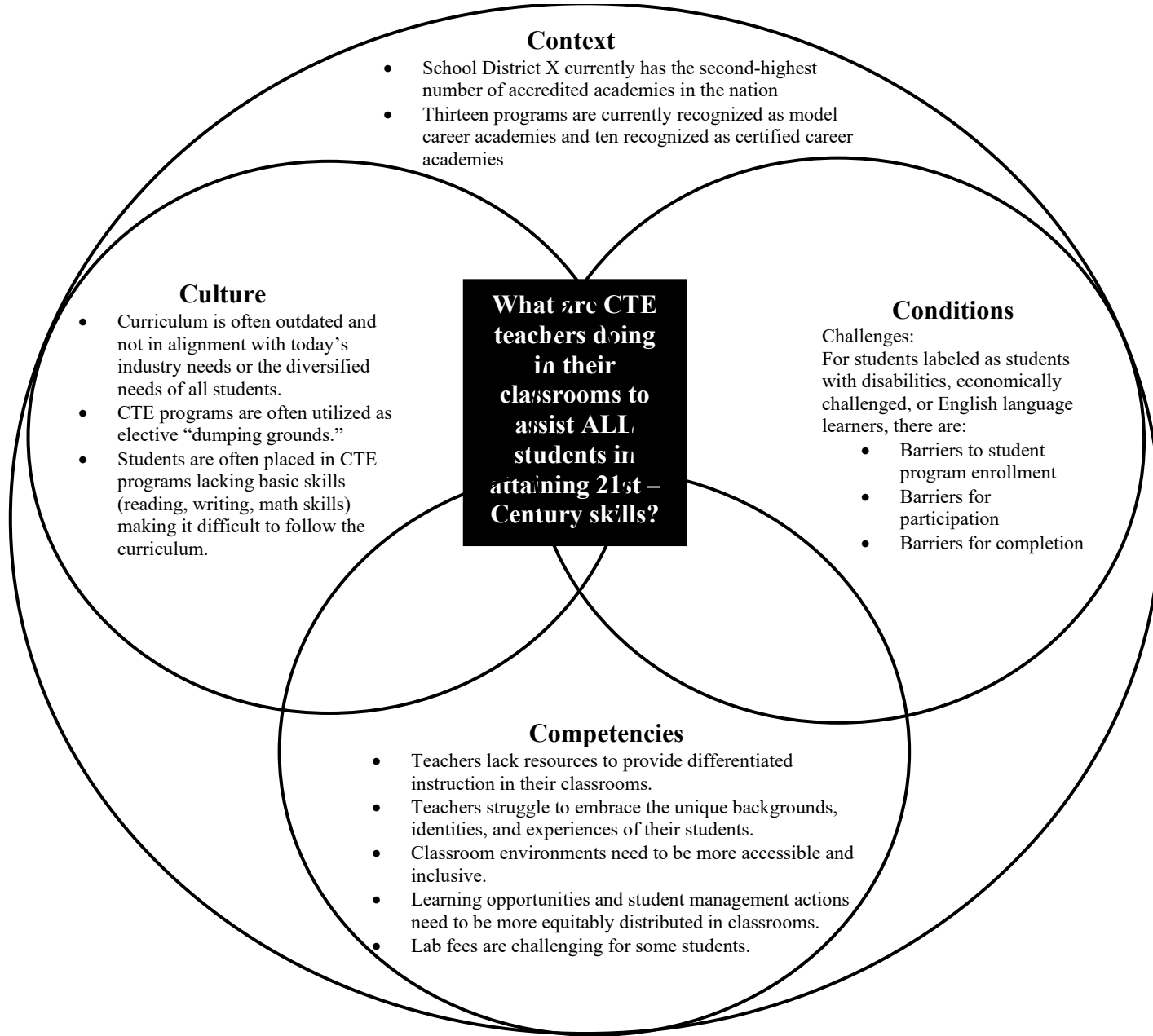
Appendix B

Interview Questions for Career and Technical Education Teachers

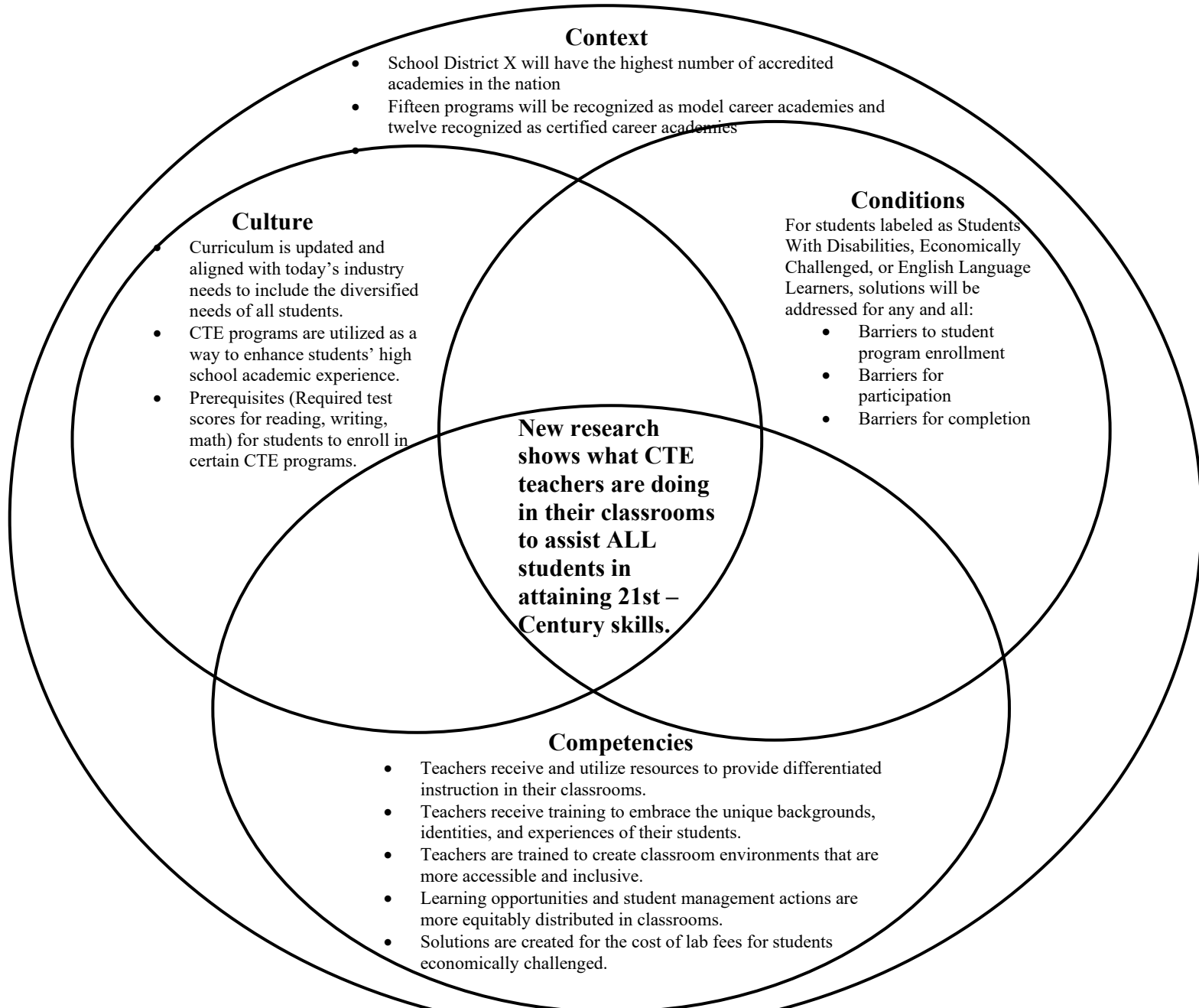
1. Do you feel you have the tools you need to meet the needs of students with disabilities, English language learners, and economically challenged students? Please explain.
2. What resources are available to you to help you meet the needs of students listed above?
3. Do you modify the curriculum provided for the CTE program that you teach to accommodate students' learning needs? If so, please provide details.
4. What suggestions do you have for future curriculum and instructional needs for this CTE program to better meet the needs of all students?
5. What improvements do you feel could benefit the CTE program for student success overall?
6. Do you believe this CTE program had a positive effect on all participants? If so, in what ways?
7. Is there anything else you would like me to know about the CTE program that you teach?

Appendix C

“As Is” 4 Cs Analysis for Equity and Access in Career and Technical Education



Appendix D: “To Be” 4 Cs Analysis for Equity and Access in Career and Technical Education



Appendix E

Strategies and Action Chart

Strategies	Actions
Establish a sense of urgency	<ul style="list-style-type: none"> • Initiate a conversation with CTE district leaders to include a review of the data from my research showing the barriers CTE educators feel hinder them from achieving equity and access for all students in their classrooms.
Create the guiding coalition	<ul style="list-style-type: none"> • I will establish a guiding coalition consisting of the director of CTE, the director of multiple pathways and the program specialists for each department. The guiding coalition will serve as the nerve center for the change process • Members will communicate with CTE educators while striving to provide specific solutions for their concerns.
Develop a vision and strategy	<ul style="list-style-type: none"> • Implement district-wide operational policies and procedures for CTE programs to outline its vision of what future CTE programs will look like. • Develop strategies to overcome the barriers students face who identify as economically challenged, students with disabilities, or English language learners. • Implement an operational policy requiring prerequisite courses for students struggling with basic academic skills such as reading comprehension and mathematics skills prior to enrollment in more rigorous CTE courses. • Implement procedures to initiate and establish partnerships with local business and industry leaders to ensure that CTE instruction aligns with the local business community's needs.
Communicate the change vision	<ul style="list-style-type: none"> • Recruit CTE educators to assist in the CLNA process. • Build organizational capacity.
Empower broad-based action	<ul style="list-style-type: none"> • Identify barriers to CTE enrollment, participation, and completion for students identified as economically challenged,

	<p>students with disabilities, or English language learners concerning enrollment, participation, and completion for CTE programs.</p> <ul style="list-style-type: none"> • Develop and implement strategies for overcoming those barriers.
Generate short-term wins	<ul style="list-style-type: none"> • The guiding coalition along with CTE educators recognize their accomplishments and celebrate short-term wins as they happen. • Recognize and celebrate CTE program/community business partnerships. • Recognize and celebrate students earning industry certifications and program completers. • Hold end of the year celebrations and award ceremonies to present certificates to students. • Post copies of student certifications along hallways and other high-traffic areas of schools where they can be viewed and celebrated.
Consolidate gains and produce more change	<ul style="list-style-type: none"> • The guiding coalition will monitor programs to ensure no barriers exist to equity and access for all students. • Empower school leaders to hold enrollment counselors accountable to follow implemented procedures. • The guiding coalition will hold CTE administrators responsible for establishing partnerships between CTE programs and local business leaders. • The guiding coalition will vary communications with change agents frequently to avoid the communication of the vision growing stagnant.
Anchor new approaches in the culture	<ul style="list-style-type: none"> • The guiding coalition will ensure all instituted changes are infused into the district culture.