

ABSTRACT

From Their Eyes: A Deeper Analysis of Career and Technical Education
During Secondary School

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The focus of this study was to gather the viewpoints and perspectives from secondary students currently enrolled in career and technical education (CTE). The use of a focus group and surveys were the main mediums of data collection in this cross-sectional mixed methods study. The research questions were 1. What are the characteristics of the students enrolled? 2. If any, what are the benefits of enrolling in CTE? And 3. What are the current students' viewpoints of the CTE program? The majority of the sample was Hispanic and was representative of the school's population. The future plans of the students, family college history, and full demographics are in the results section. Results indicated that students favor CTE and 100 percent of participants provided reasoning of how the program is beneficial. These reasons are that CTE provides valuable experience, it prepares students for their future careers with certification, and a high amount of learning takes place.

From Their Eyes: A Deeper Analysis of Career and Technical Education
During Secondary School

by

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A Thesis

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DEDICATION

To my mother, father, and sister in Arizona who have all undeniably supported me every single day during my academic adventure. The encouragement and love all of you gave me kept me optimistic of the future and motivated me to push through the stresses of this journey

CHAPTER ONE

Introduction

Motivating secondary school students to stay in school is a challenge that continues to exist. For the state of Texas, the dropout rate for the year 2012-2013 was 6.6 percent in Texas public schools (Texas Education Agency, 2014). More than 320,000 students enrolled in the class of 2013, but over 21,000 of those students dropped out:

A total of 21,634 students in the class of 2013 Grade 9 cohort dropped out. Of these, 71.2 percent dropped out in the third or fourth year of the cohort. Of students who dropped out in the fourth year (2012-13), 48.9 percent had not reached Grade 12 (Texas Education Agency, 2014).

Dropout prevention continues to be a focus in education, providing tools for students such as mentoring, college readiness programs, active learning, vocational training, and science technology engineering and mathematics (STEM) academics (Texas Education Agency, 2014). Opportunities such as these engage the student and aid in lowering dropout rates. Some schools may also offer dual credit options in which the student enrolls in a college level course but earns both high school and college credit at completion (Dual Credit Texas, n.d.). This assists in an easier transition to college courses further allowing the student to gain awareness on how post secondary education will compare to secondary.

One of the many reasons students drop out is because of their socioeconomic status. According to the United States Census Bureau, the poverty rate for the United States in 2013 was 14.5 percent—45.3 million people (DeNavas-Walt & Proctor, 2014).

For some high school students, working and earning an income to help their family trumps staying in school.

In 2012, the average salary of someone with less than a high school diploma was \$22,900 and for a high school graduate was \$30,000 (National Center for Education Statistics, 2014). Those with a two-year degree earned \$35,700, while those with a four-year degree earned on average \$46,900 per year (National Center for Education Statistics, 2014). Significant differences in salary related to educational level highlight the need for education beyond a high school diploma. Employers often require advance credentials and at times a substantial amount of previous experience. But what about those who cannot attain further education? What about students that desire to work immediately after graduation? This is when career and technical education (CTE) demonstrates value to the public school system. Vocational certification programs offered in high school may not only help motivate students to stay in school, but also enable better career opportunities. Nevertheless, this form of education is certainly not limited to any particular group or type of student—anyone with any type of future plan can reap the benefits. Gains from participating in such a program may include enhanced job availability, increase in salary, more experience in one’s choice of field, and or preparatory knowledge for additional schooling.

The Evolution of Career and Technical Education

Vocational education is “training for a specific occupation in agriculture, trade, or industry through a combination of theoretical teaching and practical experience” (Merriam-Webster Online, n.d.). It has been implemented in high school curriculum since 1914 and received funding starting with the Smith Hughes Act in 1917. This act allotted

over one million dollars to vocational education and required the making of the Federal Board for Vocational Education (Friedel, 2011). The time period of 1929 to 1946 underwent various laws titled the George Acts. These acts continually increased the amount of federal funding for vocational education and eventually mandated that the amount of funding be reviewed before each year (Friedel, 2011). The Vocational Education Act of 1963 then altered the focus to specific populations. It delegated funding also be allocated towards vocational programs specified for those who were of low socioeconomic status or handicapped in some form (Friedel, 2011). Amendments to this act included the abolition of sex discrimination in the programs and allowed the federal funding to be allocated towards both secondary and postsecondary students (Friedel, 2011). The Carl D. Perkins Vocational Education Acts of 1984 and 1990 expanded the access to special populations and additionally concentrated on what was best for the future economy. These acts made funding more flexible and integrated more academics into the programs. In 2006, The Carl D. Perkins Career and Technical Education Act changed the name of vocational education to career and technical education. It also instructed that the curriculum is more rigorous and to have more standardized assessments (Friedel, 2011). The Perkins Act continues to be reauthorized. Funding is still provided along with continuous improvement of the curriculum to fit the 21st century's needs. Each state receives a certain amount of funding and then decides how to allocate it appropriately. For example, for the fiscal year of 2014, Texas received \$91,961,161 from the Perkins Basic State Grant distributed by the Texas Education Agency Office for Grants and Federal Fiscal Compliance (ACTE, 2014). This funding is for both secondary and post secondary career and technical education [CTE] with 70

percent allotted to secondary and the remaining 30 percent to postsecondary (ACTE, 2014).

Past vocational education in high schools included classes such as woodshop, home economics, and other basic industry trades. This training was designed to prepare students for careers that did not require a post secondary degree. As previously mentioned, this educational training evolved, and is now commonly defined as career and technical education—“a term applied to schools, institutions, and educational programs that specialize in the skilled trades, applied sciences, modern technologies, and career preparation” (Hidden Curriculum, 2014). Several of these courses do not offer certification programs at completion. However, there are other programs that do include certifications for welding, cosmetology, computer science, and fire fighting. These programs provide opportunities for high school students to obtain certain certification along with their regular high school diploma. Such educational tracks are similar to school-to-work programs, which aim to connect students and schools with employers (Donaldson, Hinton, & Nelson, 2006). The emphasis is on applied learning and the school developing relationships with organizations and businesses. The primary goal of school-to-work programs is to aid more with combining the school curriculum with careers and to provide work-based activities with possible employers—mentoring and shadowing, (Yan, Goubeaud, & Fry, 2004).

The development of CTE has transformed from teaching basic trade skills to preparing students for long-life careers. With an enhanced rigorous curriculum, and strict qualifications for CTE teachers, this form of education is making headway into more and more schools. Such schools include comprehensive high schools, shared or part-time

technical high schools, and community colleges (Brand, Valent, & Browning, 2013).

High schools may provide the CTE program on site or have a program that enables the student to spend part of the day at the CTE site and the other part of the day at their high school. The curriculum is reshaping to 21st century professions, applying further technology, and incorporating more academic subjects.

Current Study

The aim of this study was to focus on a program in the central Texas area and describes the various factors of what this program is, the curriculum, current students, and administration from the program. It assesses the views of those directly involved such as students and faculty, and analyzes the pros and cons of enrolling. If students choose to enroll in the CTE program, then they spend half of the school day at their high school campus and the other half at the program facility. Students have the option to attend with the morning cohort or the afternoon section and can enroll in one of three programs; welding, electronics and robotics, or metal manufacturing. The student to faculty ration is 18 to 1 with a projected enrollment of 450 for fall semester, 2015. Both males and females are eligible and the school's administration encourages any student to apply. An advantage of completing the program is that students will receive a certification and eligibility to enter the workforce. While many students have chosen to go on to further post secondary education after certification, other graduates have gone to work for companies such as Caterpillar, Behlen Manufacturing, and Central Texas Iron Works. A further unique advantage of enrolling in this specific program is the free tuition. Typically, CTE programs can be costly just as any other educational avenue.

However, these students do not pay any sort of tuition for the program; instead each district covers their fees.

The project coordinator for this program describes it as a place of success for all students and the program “strives to develop successfully competitive students who are workforce and college ready” (S. Harper, personal communication, December 10, 2014). No matter which of the three specific programs the student enrolls in, each student will at least acquire a forklift certification in addition to the specific training he or she completes. Students who graduate from this program “will have the ability to go straight to work, attend a two year community college or technical school, or attend a four year college or university” (S. Harper, personal communication, December 10, 2014).

The curriculum for each program covers an array of math and science courses incorporated with technical training. The class time is usually divided into two parts: the first half is lecture and the second half is application. The lecture explains the theory behind techniques and where they come from while the application part allows the student to immediately apply the theories. A critical component of the school’s curriculum is teaching soft skills—being on time, how to communicate with coworkers, employers, and clients, and overall professionalism. The director of the school stressed the importance of holding the students to the same standards as businesses would such as, incorporating similar write up policies if the students are late (B. Cope, personal communication, January 30, 2015). The goal of teaching both soft skills along with technical skills is to make the student more marketable to employers (B. Cope, personal communication, January 30, 2015). Recent studies have discussed the concept of employers want more than simply job skills. For example, a study conducted in Ohio

surveyed 18 manufacturing companies in regards to their hiring criteria for recent college graduates, all of which claimed these graduates do not have the desired skills employers are looking for (Sullivan, 2012). Many of the employers surveyed see a lack of experience in recent graduates and believe graduates need more practice with teamwork and building relationships prior to entering the workforce (Sullivan, 2012). These skills are additionally desired in other countries such as India where employers of corporations declared successful workers have a positive attitude and those with a know-it-all attitude show little room for growth (Rao, 2014). It is evident that soft skills are an important aspect of curriculum and will aid in providing more opportunity for employment.

Importance of Current Study

This research contributes weight to the current understanding of CTE and expands the knowledge of potential educational tracks. It will allow school districts, educators, and curriculum developers to improve secondary learning. The need for this study comes from the responsibility to provide diverse outlets of schooling for the student population. There is no “one-size-fits-all” type of education and therefore, all conceivable options demand analyzing and review.

If schools provide more options, additional opportunities, and further support for the students’ future, then the possibilities for all populations could be endless. However, it is important that the programs offered reflect labor market demands and are designed to stay relevant. There is minimal research involving current CTE students’ viewpoints of CTE education. It is essential that feedback from multiple students be collected to either emphasize or deemphasize the concept of CTE and to provide awareness on any areas that may need improvement. This research provides further description of this type of

education and deeper insight from those going through the program. Obtaining students' input offers new enlightenment on how to aid in the process of transforming CTE for the 21st century. Research questions for this study include:

1. What are the characteristics of the students enrolled in these programs?
2. If any, what are the benefits of enrolling in these programs?
3. What are the current students' viewpoints of the CTE program?

CHAPTER TWO

Literature Review

Vocational schools have been prevalent in European countries such as Finland and Germany for quite some time. However, vocational schooling in the U.S. often comes with a stigma that suggests only low performing and troublemaking students end up in such schools (Bidwell, 2014). Nonetheless, this form of education may be a favorable gateway to further and better opportunities for students. The research on career and technical education outside of the United States suggests that this type of education can be valuable for all students and boost the economy. A major benefit of vocational training in Europe is it promotes social inclusion. This training allows the disadvantaged or the soon to be socially excluded populations function in society (Cedefop, 2011). The European Centre for the Development of Vocational Training (Cedefop) discusses that those who participate in vocational training will have more employment opportunities, better health, and improved quality of life (Cedefop, 2011). One's self esteem may also improve by gaining employment, and prevent them from participating in crime related activities. Cedefop additionally acknowledges economic growth, employee productivity, and motivation as further benefits of vocational training (Cedefop, 2011).

Apprenticeships and vocational schooling are especially popular in Germany with its dual system model of in-class education along with an apprenticeship (Hummelsheim & Baur, 2014). This system allows early involvement in the workplace but yet still includes traditional class time. A driving force behind the apprenticeship framework is to decrease the youth unemployment rate. In 2011, the average youth unemployment rate

for the European Union was 21 percent (Hirche, 2012). However, in 2011 Germany had one of the lowest youth unemployment rates of 8.9 percent (Hirche, 2012). The significant difference in these rates is likely related to the number of apprenticeships offered: in 2008 alone, 500,000 apprenticeships were provided in Germany whereas the United Kingdom offered just over 181,000 in 2011 (Hirche, 2012). Many other countries, particularly in Asia, want to copy the German model to improve employment rates, economic growth, and to fix agricultural issues (Wang & Ross, 2013). While vocational education still has low acceptance in China, the employment rate of vocational school students is higher than college graduates—95 percent compared to 90.6 percent (Wang & Ross, 2013).

Similarly, researchers in the U.S. have also placed an emphasis on socioeconomic factors and poverty. Students in poverty are at risk for failing or dropping out of high school. Reasons leading to failing or dropping out involve the students experiencing less stimulating activities outside of school, which can lead to poor grades, or tiredness from familial and neighborhood issues that lead to stress and more absences (Balfanz, 2012). A crucial component of education reform is the development of strategies designed to help those in poverty become college and career ready: CTE may likely be one such strategy. Researchers discovered that in poverty stricken areas, those with learning disabilities who participated in CTE improved their employment opportunity after high school allowing them to escape low socioeconomic status (Rabren, Carpenter, Dunn, & Carney, 2014). Consequently, such employment opportunities provide high possible earnings for those in poverty that choose to partake in CTE. In 2013, the average salary for a welder was close to \$40,000 (U.S. Bureau of Labor Statistics, 2014). This figure represents the potential

income for a high school graduate who completes a CTE program without pursuing post secondary education.

CTE additionally provides opportunity for students who are at risk and may improve graduation rates. According to the Association For Career & Technical Education website, 81 percent of dropouts believe relevant education such as CTE may have kept them in school: the graduation rate for those who are in these certification programs is 90.18 percent (ACTE, 2014). Another major factor that leads to dropping out of school is disengagement. In a longitudinal study, researchers found that 10th graders with more CTE involvement not only had better achievement in school but also were more on track to graduate than their non CTE counterparts (Castellano, Sundell, Overman, & Aliaga, 2012). Another study suggests that a combination of CTE courses along with regular academic classes supports the least risk of dropping out of school (Plank, DeLuca, & Estacion, 2008). The blending of CTE and standard academics may be a key factor in not only motivating students to stay in school, but also in encouraging them to pursue post secondary education.

In regards to other studies, researchers stress the impact of the curriculum and how it influences future employment and college enrollment. One concern with CTE is that employers and universities report CTE graduates do not have the necessary math skills required for jobs, especially in the business and technology courses. A study was conducted in which a math teacher worked with CTE instructors to incorporate not necessarily more math concepts, but more applicable ways to integrate mathematics into their curriculum. The results demonstrated that students who had the math-enhanced courses performed better on standardized tests such as the ACCUPLACER, than those

without the new curriculum (Stone, 2008). Furthermore, researchers at Johns Hopkins University found CTE students had two or three times greater odds of completing Algebra I, Algebra II, and geometry than their non CTE counterparts (Neild, Boccanfuso & Byrnes, 2013). Completing this math sequence better prepares students for advanced math classes in post secondary education. The purpose of an additional study, conducted with over 110,000 students within Virginia high schools, was to compare achievement and graduation rates of CTE completers and non-CTE completers (Blowe & Price, 2012). The results indicated that the students enrolled in the CTE programs not only excelled further on the math and English portions of the standardized test, but also had a 96 percent graduation rate compared to the 87 percent rate of their non-CTE counterparts (Blowe & Price, 2012). These findings discount the argument that CTE does not provide enough mathematic curricula. Conflicting research describes that when some states have raised class requirements for a CTE student, it resulted in fewer students enrolling and that in the past 49 years there has not been statistically significant improvement in 17 year olds reading and math scores (Manley, 2012). These opposing views raise questions about the effectiveness of more rigorous courses.

Teaching styles and learning strategies are two components frequently connected to student success. Understanding learning and defining the most effective teaching methods have long been a psychological focus. Humans can learn in many ways and while some techniques are more effective than others, it is difficult to pin point the best way. One of the first learning theories developed from a behaviorist perspective called conditioning, in which people learn from experiencing things from the environment (Ormrod, 2015). Alternatively, cognitive theorists describe learning through information

processing theory in which the human brain is compared to a computer “processing information.” This theory explains how the mind sorts and analyzes information extracted from the environment (Ormrod, 2015). Social cognitive theory is a combination of both cognitive and behaviorist views in which humans learn through observation and interacting with others (Ormrod, 2015). These various theories help clarify why there are several methods of teaching today. It is often understood that simple lecture and regurgitating information may not be the most successful teaching tactic. Instead, other means such as hands-on, group work, and example-based learning are being incorporated in several classrooms. Some educational reform promotes the idea of cognitive active learning. This is in contrast to the educational approach of hands-on learning and rather emphasizes “minds-on” learning. Cognitive active learning is likely to involve critical thinking activities, group discussions, and problem-based learning with teachers using strategies such as recalling on prior knowledge and elaboration of subjects (Swiderski, 2011). A study conducted at a middle school compared problem-based learning and lecture-based learning for a science course. The results indicated that students who participated in problem-based learning had better retention of the course content than those in the lecture-based course (Wong & Day, 2009). A similar study conducted with a class of pharmacy students revealed when the class format was changed from lecture-based to active learning, the students retained the information better (Lucas, Testman, Hoyland, Kimble, & Euler, 2013). These studies help support the importance of student engagement and the potential effectiveness of active learning.

The “college for all” movement is slowly dissipating while more school districts are realizing other educational pathways may be equivalent alternatives. Therefore, the

research on CTE does not strictly focus on a specific population. While studies support the use of CTE for at risk students, researchers acknowledge that other students such as those labeled gifted and talented might benefit as well from CTE (Gentry, Hu, Peters, & Rizza, 2008). The researchers explain that this population is often overlooked in CTE and similar to how at risk and learning-disabled students receive accommodations, so should the gifted and talented (Gentry et al., 2008). They believe CTE to be a viable option for the gifted student because the program can further develop his or her talents and skillsets (Gentry et al., 2008). The literature also includes studies on CTE for incarcerated youth and correctional facilities. Researchers examining a New York City county jail system concluded that implementing CTE in the jail education program delivered positive improvement (DelliCarpini, 2010). The researcher noted incarcerated youth often feel isolated and become disengaged in their schoolwork however, compared to the previous year, there was a 21 percent increase in the time students spent engaged in class after putting CTE into practice (DelliCarpini, 2010). These studies support the effectiveness of CTE for multiple populations.

Moreover, researchers analyzed transforming CTE. Development of CTE counseling for students and career exploration is an essential component for CTE student success. One study found that many high school counselors lacked the proper knowledge of the CTE programs available and still viewed CTE as less rigorous—not a place for advanced students (Stipanovic & Stringfield, 2013). The findings established that many counselors are given tasks unrelated to career guidance and therefore have little time to sufficiently interact with students about their future (Stipanovic & Stringfield, 2013). The researchers concluded that the schools with counselors more involved in the students’

career development are better prepared for post secondary education, career opportunities, and are more engaged in the classroom (Stipanovic & Stringfield, 2013). Adding to these findings, other researchers found that students were more likely to seek a school counselor's guidance for college if they knew the counselor had high expectations for their post secondary future (Bryan, McCoy, Thomas, & Vines, 2009). These conclusions suggest that counselors who form positive relationships with students and demonstrate their aspirations of the students may be a significant factor in education reform. Other literature clarifies many different school sites shared the same thoughts and challenges of CTE. For example, each school representative felt that there needed to be more support for these students and a stronger connection between the school and the district administration (Siri, Zinner, & Lezin, 2011). Furthermore, researchers in Idaho gathered the principal's perspectives of CTE teachers and what elements of the classroom are critical. The concluded top five priorities for CTE teachers were: 1.) Motivate the students, 2.) Teach the students critical thinking skills, 3.) Be able to write grants, 4.) Develop digital-age learning assessments, and 5.) Be able to teach learning disabled students (Cannon, Tenuto, & Kitchel, 2013). However, the main concern of both teachers and principals was the concept of motivating students (Cannon, Tenuto, & Kitchel, 2013). Overall other factors for CTE improvement included involving the business community, attract higher achieving students, connect more high schools with CTE programs, and making CTE a pathway for all individuals (Jackson & Hasak, 2014). These elements in addition to leadership from administration and guidance from counselors may be key components in CTE transformation.

Benefits of Career and Technical Education

The literature cites many sources that demonstrate the benefits of CTE. For example, hands-on learning and being immersed in career-oriented material may help students who are struggling to stay focused and interested in regular academics. The lack of attentiveness in learning is often referred to as the engagement gap and usually happens to students during their high school years (Resource Area for Teaching, 2013). According to the Resource Area for Teaching (2013), hands-on learning can re-stimulate a student's focus along with improving communication and critical thinking skills. The Board of Cooperative Educational Services (2010) places value on CTE helping students make the connection between the curriculum and application in the workforce. Once students visualize the relationship between what they are learning and their future, they may be more motivated to pursue post secondary education and obtain an economically stable career.

CHAPTER THREE

Method

There is limited available data on current students' perspectives of CTE programs. Therefore, this cross-sectional mixed methods study aimed to assess the beliefs and attitudes of present students participating in a secondary school CTE program. Particularly, the following research questions were examined:

1. What are the characteristics of the students currently enrolled?
2. If any, what are the benefits of enrolling in a secondary CTE program?
3. What are the current students' viewpoints of the CTE program?

This chapter describes the method used to answer these questions in five sections—the research design rationale, participants, instrumentation, procedure, and data analysis.

Research Design Rationale

Quantitative and qualitative data were collected using a focus group and a survey instrument (see appendix). The focus group strictly provided qualitative data and the survey provided both quantitative and qualitative data. “Focus groups allow researchers to look beyond the facts and numbers that might be obtained via survey methodology—researchers can learn or confirm the meaning behind the facts” (Leung & Savithiri, 2009, p. 219). The group setting permitted participants to discuss topics with one another and build off of each other's thoughts and ideas. It additionally provided a relaxed environment enabling the participants to discuss freely their opinions. The survey allowed the researcher to collect data directly related to the research questions from

multiple participants. The open-ended survey questions permitted opportunity for the participants to describe freely their thoughts in their own words.

A phenomenological approach was used for the qualitative portion of the study. Meaning, it focused on the commonalities between various participants' experience in a phenomenon: the CTE program (Creswell, 2007). This involved collecting data from several participants, reducing the data to significant statements, combining those statements into themes, and developing descriptions of the participants' overall experiences (Creswell, 2007). The focus group was conducted in a private room at the school site, directed one time, and was videotaped. The study lasted approximately one hour. To differentiate participants in different programs, participants wore distinctive colored signs with a number from 1 to 6 written on the sign to avoid the use of names. Each color represented the program the participant was enrolled in: welding, robotics, or metal manufacturing. The numbers allowed the participants in the focus group to direct conversation to one another without the use of names. This color and number coding aided in the transcription of the data, keeping confidentiality.

The uses of content and thematic analyses were the main methods of evaluation of the data, in which the researcher was the sole coder. Taking elements from phenomenology, the main concern of analysis was to gather accurate ideas and viewpoints from participants. Hence, the process of member checking took place: That is, the researcher went back to the focus group participants after analysis to confirm the accuracy of the findings (Creswell, 2007). This aided in establishing validity.

Participants

Initially, criterion sampling was used to gather an appropriate sample. The participants were recruited from students currently in their junior or senior year of high school enrolled in one of the three programs offered at the CTE location. Parental consent and student assent forms were required from all participants. All participants were between the ages of 16 and 19. Of the approximately 100 consent forms distributed, 40 were signed and returned and 35 of those 40 participated. Of the five that did not participate, one student decided not to partake in the study and the other 4 students were absent on each of the days the survey was administered. Due to time constraints and school scheduling, the researcher did not continue to go back to the CTE site to administer the survey to the 4 absentees. Table 1 represents demographic characteristics of the participants according to race, and sex.

There was one focus group conducted consisting of six students, four from the welding cohort, one from the robotics cohort, and one from the metal manufacturing cohort. All participants were given a survey that included closed-ended and open-ended questions. All names and personal information remained confidential. The risk for harm in this study was minimal and participation was voluntary.

Instrumentation

The researcher collected data through the recording of a focus group and a survey instrument. The dialogue and answers from the participants in the focus group were analyzed for common themes and significant input about the participant's current CTE program. Important remarks and statements appear in the results section. The focus group aimed to answer these specific questions:

1. Why did you decide to apply to this program?
2. Do you feel this program has benefitted you? If so how?
3. Do you see weaknesses in the curriculum or the program? If so what?
4. Do you see strengths in the curriculum or the program? If so what?
5. Would you apply again? Why or why not?

The survey instrument is composed of questions designed to collect quantitative data in addition to qualitative open-ended responses. Using a short survey of 15 questions, the main focus was to grasp underlying themes between students and their thoughts about CTE. It was designed to measure the participants' viewpoints on their experience in the CTE program and was a paper-based survey completed in one sitting. The open-ended questions allowed the researcher to measure the student's personal beliefs of the CTE program, and the remaining questions allowed the researcher to more fully understand the characteristics of the students enrolled. The data collected from the survey provided additional input and allowed for a larger sample size in addition to the focus group.

Procedure

In order to complete this research, the researcher proceeded through multiple steps. After building rapport with the research site director and gaining approval to conduct the study, the research proposal was submitted and gained IRB approval. The researcher then went to the research site and distributed parent permission and consent forms to potential participants in both the morning and afternoon cohort. The primary researcher went to classes of each program: welding, robotics, and metal manufacturing, and briefly discussed what the consent and assent forms meant and what the study would

entail. The students were allowed to return the forms to their teachers; the researcher went back and forth over the course of ten days to the site to collect the returned forms in person.

Once the forms were returned, the researcher entered all of the names into the software program Excel to randomize participants. Participants were then stratified by program; welding, robotics, and metal manufacturing and by cohort; morning or afternoon. Using the function =RAND(), Excel then assigned each name a number between 0 and 1. Then, the participants were randomized in each column and the top two participants of each column of the morning cohort were invited to the focus group and to take the survey. All other participants were solely invited to take the survey. One of the selected students chose not to participate in the focus group; therefore the next person on the list in Excel was invited to participate.

The focus group was conducted in a conference room at the research site and was video recorded. After the focus group, the researcher transcribed the session and started thematic analysis. The researcher first looked for the same or similar words for each question. Then, the researcher looked for patterns and similar ideas for each question, which then developed into themes. Next, the researcher went back to the research site to meet with focus group participants to conduct member checking for validity of results. The researcher showed the focus group participants the transcription and the themes that were derived from the transcription. Participants agreed with the themes and felt that their views were portrayed accurately.

The next step was administering the survey. This was conducted for both morning and afternoon cohorts over the course of three days. It was administered in the school

cafeteria. Afterwards, the researcher conducted quantitative summative content analysis for the open-ended survey questions. The researcher counted the amount of times a certain word or set of words was in each response before compiling responses into themes (Hsieh & Shannon, 2005). Thematic analysis was then conducted for the open-ended survey questions. The quantitative data from the survey instrument was entered into the software program SPSS and ran for descriptive statistics. The results and discussion sections of the thesis were then written.

Data Analysis

Quantitative Data

Descriptive statistics from the use of SPSS were provided for quantitative data collected from the survey. This information is used to describe the students in the CTE program. The researcher performed content analysis, counting the presence of certain words or specific content, for the open-ended survey questions (Hsieh & Shannon, 2005).

Qualitative Data

All participants in the focus group were encouraged to respond to the questions and voice their opinions. Comments between focus group participants and comments from the open-ended survey questions were analyzed to identify themes. The primary researcher transcribed the focus group data as a descriptive dialogue and conducted thematic analysis: pinpointing common themes, comments, and patterns (Creswell, 2007). The researcher then further compared the morning cohort survey data and the afternoon cohort survey data along with comparing the different academies: welding, electronics and robotics, and precision metal manufacturing.

CHAPTER FOUR

Results

The purpose of the current study was to describe secondary CTE programs, possible benefits of such programs, and gather the viewpoints of current CTE students in secondary school. The research questions for this study were:

1. What are the characteristics of the students currently enrolled?
2. If any, what are the benefits of enrolling in a secondary CTE program?
3. What are the current students' viewpoints of the CTE program?

The results are arranged by first listing participant demographics such as sex, age, and race. Next, other information about the participants is described such as their future plans and family college history. Then, the results of content and thematic analyses are ordered, followed by a summary of the qualitative findings.

Demographic Information

Selection Criteria

For this study, the sample consisted of participants in their junior or senior year of high school enrolled in the CTE program. Consent forms and parent permission forms were required for participation.

Demographic Characteristics

A total of 35 students who met the criteria participated in the study and completed the survey. There were 4 females in the study and 31 males. The sample of this study is

representative of the total population at the CTE site. Of the current students enrolled at the CTE site, the majority is Hispanic. Out of the 147 students enrolled, 84 (57%) are Hispanic, 13% are African American, and 30% are Caucasian. Full demographics of the participants in the current study are provided in table 1.

Table 1.0

Demographics of participants

Race	Male (n)	%	Female (n)	%	Total (n)	%
Hispanic	14	40	0	0	14	40
White	11	31.4	2	5.7	13	37.1
African American	3	8.6	2	5.7	5	14.3
Other	3	8.6	0	0	3	8.6
Total	31	88.6	4	11.4	35	100

Future Plans of Participants

From the survey instrument, frequencies were gathered about each participant's plan after high school. Although most participants were expected to report plans to enter the workforce, the data show over a third of participants (37.1%, n=13) plan on going to the local vocational school after graduation, and 34.3 percent of the participants plan to enter the workforce. This could be due to the fact that the current students are obtaining dual credit with the local technical college as they continue the CTE program. The other third of participants were distributed between attending a community college, a four-year university, and entering the military.

Family College History

When asked which of his or her family members had attended post-secondary education, 42.9% (n=15) stated he or she had a cousin that attended post-secondary education and 37.1% (n=13) had a sibling that attended. Twenty percent (n=7) of participants stated no one in his or her family had attended post secondary education. Table 2 shows the data in frequencies.

Table 2.0

Frequency table of participants' family members who attended post-secondary education

	Grandparent	Dad/Step dad	Mom/Step mom	Sibling	Aunt/ Uncle	Cousin	None
Number	5	8	11	13	11	15	7
Percent	14.3	22.9	31.4	37.1	31.4	42.9	20

Qualitative Results

Survey Content Analysis

After first conducting content analysis for each open-ended survey question, the results were as follows:

Question 1: Why did you decide to apply to this program?

The results of this question were evenly distributed over three common responses amongst participants. First, 13 of the 35 participants claimed they applied because of the career focus of the program. Another 13 participants explained they wanted the experience of the program, while another eight students mentioned they had a prior interest in one of the subjects (i.e., welding or electronics and robotics) and wanted to

learn more about said subject. Additionally, two students declared the hands on environment enticed them to enroll.

Question 2: Do you feel this program has benefitted you? Why or Why not?

All participants stated this CTE program has been beneficial in some way. Only three participants lacked specific reasoning and stated the program was overall beneficial. Specifically, 18 stated the program was beneficial because of the work skills and experience that they obtained in the program. Fourteen expressed the amount of things they learned at the CTE site was far greater than what they had learned in previous agriculture classes at their home campus.

Question 3: Do you see any weaknesses in the curriculum (program)? If so what?

Fourteen of the 35 participants did not list any weaknesses within the CTE program. However, the main weakness that 12 participants did explain was at times the certain materials needed for welding do not arrive on time, which delays projects. The other nine participants responded with weaknesses related to adjusting to new administration.

Question 4: Do you see any strength in the curriculum (program)? If so what?

All but two participants provided strengths within the CTE program. Twelve participants described the experienced teachers as the main strength of the program. With that, 10 expressed the fact that the program provided work skills and that it was career oriented were major strengths. Additionally, 4 participants mentioned the hands-on learning aspect as a strong point and the other seven participants listed the facility and overall classes as strengths.

Question 5: Would you recommend applying to this program? Why or why not?

Without constraint, 30 participants would recommend others apply to this CTE program for similar reasons as the previous questions including it is hands-on, career focused, and educational.

Question 6: Would you apply to this program again? Why or Why not?

Directly, 26 students stated they would apply again to this program; however, the researcher felt this number was not as high as possible due to misunderstanding by some participants. Five participants explained they would not apply again because they are graduating high school. If the question did not prompt this confusion, more or fewer students may have responded differently. Explanations of why he or she would apply again included the experience, the certification feature, and to learn more about welding, robotics and electronics, or metal manufacturing. Furthermore, one student was undecided on this question and the other three did not especially favor the program.

Survey Thematic Analysis

After conducting thematic analysis for the open-ended survey questions, the main themes were:

1. Students value the work skills and experience offered
2. Students appreciate the aspect of hands-on learning
3. Substantial learning took place throughout the program

Theme 1: Students value the work skills and experience offered

This type of education delivers certain work skills and experience for the workforce and certain career fields. The training and learned techniques provided allows students to add such experience and skills to a resume for a job or for further education.

Participant 8: "It will help me get a good welding job in the future."

Participant 27: “(Name of School) opens up doors to a well off future as well as teaching new things, techniques, and experiences.”

Participant 29: “It gives you a better future and new experiences.”

Participant 31: “I learned a lot of new things so that I can work better and faster after college.”

Theme 2: Students appreciate the aspect of hands-on learning

Hands-on learning practices can aid in one’s understanding of a topic and supports the CTE site’s teaching philosophy of matching theory with practice. On multiple survey questions, students expressed their fondness of the hands-on learning aspect of the program.

Participant 2: “The curriculum here allows some flexibility so that you can really focus on what you are interested in and work hands on with high tech equipment.”

Participant 6: “The strength in the program is the ability to work with our hands.”

Participant 7: “This program helps those who are hands-on or visual learners.”

Theme 3: Substantial learning took place throughout the program

One of the main takeaways from the survey results is that many of the participants mentioned they learned a great deal because of the program. Not only the necessary skills they need, but they also learned more about themselves. This theme emerged from multiple questions and demonstrates the value of CTE.

Participant 1: “It made me a better welder and a better person in the real world.”

Participant 10: “It teaches you something different that you don’t learn at your home campus.”

Participant 26: “I have learned so much more about what I want to do with my life.”

Participant 34: “You will learn skills applicable in real life.”

Focus Group Results

To recap, the five questions discussed amongst focus group participants were:

1. Why did you decide to apply to this program?
2. Do you feel this program has benefitted you? If so how?
3. Do you see weaknesses in the curriculum or the program? If so what?
4. Do you see strengths in the curriculum or the program? If so what?
5. Would you apply again? Why or why not?

Out of the hour-long discussion, three main themes seemed to emerge after thematic analysis.

1. Obtaining the experience was an driving factor when enrolling
2. This CTE program is good preparation for the future
3. Experienced teachers are of major importance for success in such program

Theme 1: Obtaining the experience was a driving factor when enrolling

This theme depicts an agreement amongst participants that gaining experience in CTE was a main factor when deciding to enter this program. It was strongly agreed that this experience would expand his or her realm of knowledge and lead to more career opportunities.

Participant 1W: "I would even do it another year just to have that experience."

Participant 3W: "Yea to just have some experience and learn to weld."

Participant 5W: "I feel like I uh didn't know what I wanted to be, this door opened up welding and I like welding I like building things and hands on so I decided I'm joining it and give it a try and here I am now."

Participant 6M: "I joined because it was my senior year and wanted new experience and uh to broaden my horizons."

Theme 2: This CTE program is good preparation for the future

This theme centers on the career-focused aspect of the program. It was made clear by all participants that the information and skills they learned will aid in their future career. The welding participants especially expressed the certification was an advantage and would make them more marketable in the workforce. However, the electronics and precision metal participants agreed that the skillset they have learned alone would aid in future job searches. Participants further declared they feel they have learned far more in the CTE program than they did in their previous basic agriculture classes.

Participant 2W: “There’s like so much more you can learn by like when you go to a school like this it’s (the subject matter) all you learn about instead of just like if you’re in AG (agriculture).”

Participant 3W: “We make mistakes also in here so that it prepares us for the real, real world and for college as well.”

Participant 4R: “I feel if once you actually go to this manufacturing academy you start learning more about what you plan to further going to be in the future, you start to see the world in a new light, you start to analyze everything that has been built”

Participant 1W: “I think if we didn’t do this and just went off based on what we learn in AG then we wouldn’t know nothing”

Participant 2W: “There’s like so much more you can learn by like when you go to a school like this it’s all you learn about instead of just like if you’re in AG or whatever at your school”

Theme 3: Experienced teachers are of major importance for success in such program

A main factor the participants emphasized was the knowledge of the teachers greatly impacted the amount of learning that took place. The students felt they could trust that the teacher knew what he or she was talking about and that he or she was far more helpful because of his or her prior experience in the field. The teachers’ prior involvement in the specific industry enables them to draw from personal experiences and to serve as a mentor to their students. The teachers’ understanding of the topics allowed the students to better grasp the different concepts.

Participant 2W: “Well our teachers know a lot about what they teach so they are good at teaching and getting that point across so it’s easier to learn from someone that knows what they’re doing.”

Participant 4R: “I like the fact that our classes are hands on and you can a teacher can put you in a desk and teach you about what you need to learn but to actually work with what you learn I better understand it.”

Participant 6M: “He (the teacher) has uh a whole lot of patience and he understands what’s going on with the kids and he’ll try to work it out with you I think that’s a big selling point.”

Summary

Demographic data and both quantitative and qualitative data revealed insight on student perspectives of CTE. Overall feelings of admiration for the program indicate that this form of education may suit to be a positive option for students.

100 percent of participants responded that the CTE program was beneficial and 85 percent of participants would recommend others enroll. With emerged themes such as the experience is valuable, the program prepares students for the future, and students feel they learned a substantial amount throughout the program, it is clear that CTE is a positive experience for students.

After analysis, it was concluded there were no significant differences in responses from those in the morning or afternoon cohort along with no significant differences between the three programs. While the majority of participants were in the welding division, based on the responses, the conclusion can be made that all participants have similar viewpoints.

CHAPTER FIVE

Discussion

Policy makers and the government have been trying to enhance education for years. In 2002, the No Child Left Behind Act (NCLB), an updated version of the 1965 Elementary and Secondary Education Act, aimed to close achievement gaps and serve students from low income families (U.S. Department of Education, n.d.). Continuing improvement of NCLB, in March 2015, the Obama Administration requested to increase the budget of the education department by two percent (U.S. Department of Education, 2014). Although acts such as these aid in funding, teacher development, and education standards, the answer to how to improve education may lie within the students.

The data from the open-ended survey questions and focus group provide insight into the thoughts and feelings of current CTE students. All participants found aspects of the CTE program beneficial and the majority of participants valued the overall experience. With recurring responses from multiple participants, multiple themes developed in analysis. This inside perspective lays a foundation for future research on CTE and education reform.

Research Question 1

The students were 16-19 years of age currently in their junior or senior year of high school. The majority of the students were male and most were enrolled in the welding program. Refer to table 1 for demographics. The majority of the sample had a cousin that attended PSE (42.9%) with the minority having a grandparent that attended

PSE (14.3%). However, 20% of the sample did not have anyone in their family that attends/has attended PSE (refer to table 2 for full statistics).

Unexpectedly, 88.6% of the sample disclosed plans to attend a form of PSE. This percentage includes vocational school, community college, and a four-year university. About a third (34.3%) of the sample revealed plans to enter the workforce after high school graduation, which is supported by data from the NCES. In 2006, 78.7% of CTE graduates enrolled in PSE within two years after graduating while only 20% of graduates entered the workforce (NCES, 2006).

Research Question 2

From the results, there are evident benefits of this type of education: the integration of hands-on learning, the potential for career certification, a strong depth of knowledge is learned, and the opportunity to learn from teachers with specific field experience.

The potential certification to enter the workforce gives students not planning on attending PSE a chance for a career and in some cases to potentially escape poverty. With 70 percent of the research site's students being on free and reduced lunch, a high paying job straight out of high school may aid students in that escape of poverty. The certification can also assist in the overall unemployment rate as of 2014 at 5.6 percent (United States Bureau of Labor Statistics, 2014). Field experienced teachers not only have a broad spectrum of knowledge about a subject but can also serve as a mentor to students interested in a particular field. In Germany, the apprenticeships involve such mentorship for the workplace, which has potentially aided in their low youth unemployment rate. Additionally, researchers in California found that adult mentors had

a positive influence on the academic engagement of CTE students (Loera, Nakamoto, Oh, & Rueda, 2013). Each of these benefits of the CTE program further acknowledges the value of providing educational options for students.

Research Question 3

The viewpoints from the current CTE students were overall positive about the program. Obtaining the experience through the program, the career-focused curriculum, and learning from experienced teachers were main focal points of the participants' responses. The participants' opinions were similar to those reported in the literature. For example, a previous study comparing gifted CTE students and general CTE students also found that the students appreciated the experienced teachers and the career connections students were able to make because of the teachers' experience (Gentry, Peters, & Mann, 2007).

Additionally, the students in the current study valued the amount of information that they learned and appreciated the hands-on learning style. The curriculum's stance on applying theory to practice allows the students to delve quickly into the experience of working in a field incorporating welding, electronics, or metal manufacturing. The fact that students valued hands-on learning supports the ideas posed by the Resource Area for Teaching and the Board of Cooperative Educational Services in which hands-on learning can re-focus a student's attention and connect application to the workforce.

Weaknesses the students mentioned were from the welding participants who expressed frustration when it came to materials getting to the school on time, however, that is most likely out of the school's control due to the fact that this is only the CTE

site's second year of operation. The other weakness mentioned was the difficulty adjusting to new administration.

New Perspectives

The findings from this study add to the scarce literature of student perspectives in a CTE program during secondary school. While research on the aspects of CTE and the incorporation of CTE is available, the viewpoint from current students is often overlooked. The breadth of knowledge and insight that these students are able to contribute is valuable feedback for the future of education.

College and career readiness at schools is a major focus for properly preparing students for life after secondary school. The participants in this study emphasized that CTE gave them necessary skills for the workforce and their future college career. CTE students not only learn the technical knowledge, but also the technical skills. This appeal of being trained and certified for a career after high school may lead to a lower dropout rate. The high school dropout rate for the U.S. in 2013 was 7 percent and 6.6 percent in Texas alone (National Center for Education Statistics, 2014; Texas Education Agency, 2014). Dropout prevention starts with engaging the students in their education and making what they are learning meaningful for the future. CTE is a form of engagement that can attract students of all populations.

Furthermore, with the 21st century workforce advancing, employers value abilities such as critical thinking, adaptability, and innovative and technology skills. As many of the participants mentioned, the curriculum in their basic agriculture classes did not measure up to the curriculum in their CTE program. Agriculture classes tend to focus on broader topics such as the environment and living sciences (National Agricultural

Literacy Curriculum Matrix, 2013). However, CTE implements specific work skills and knowledge that will be applicable in the student's future career plan or his or her continuation of education.

From former research previously mentioned in the literature review, it is apparent that employers want both technical and soft skills. Researchers agree that the workplace in the 21st century is changing and implementing certain skills into the CTE structure for success is pertinent. Researchers from the University of Georgia wrote how early career navigation, work ethic discipline, and innovative capability are three main themes that will support educational outcomes and will last throughout the century (Rojewski & Hill, 2014). With that, the Common Career Technical Core, an initiative in 42 states that sets standards for CTE students, created certain criteria for 16 different career clusters of what students should know after completing a certain CTE program (National Association of State Directors of Career Technical Education Consortium, 2012). Many of the requirements not only include the specific technical and academic knowledge, but also soft skills such as communication, responsibility, and productivity skills (National Association of State Directors of Career Technical Education Consortium, 2012). These concepts coincide with the current study's research site's approach to teaching soft skills and treating the students as a future employer would.

Limitations

There were limitations in this study that should be discussed. First, the data were collected from only one CTE site with a mostly male population. Future research should include other geographical areas and school sites to increase external validity.

Additionally, the sample was not representative of the precision metal manufacturing

program. Although the majority of the students at the CTE site are in the welding program, it is a minor concern that the sample did not reflect each program equally.

Further Research

Further research needs to be conducted to broaden the knowledge base of what current CTE students think about the educational programs. This future research should focus on socioeconomic factors and how such factors may impact a participant's response. Potential research questions could include, does economic class impact a student's decision about his or her future? Or is economic class related to a student's motivation to attend PSE? Additionally, future research should be longitudinal, possibly following graduates from such CTE programs measuring his or her success and any impact that the CTE program made on his or her future.

Conclusion

The secondary CTE program is an environment in which students can get workforce experience, certification, and a hands-on approach to learning. The collected data provide a voice for current students, allowing expression of their thoughts of CTE. In today's society, it is crucial to keep curriculum relevant and applicable to a student's future. Knowledgeable teachers are a vital component for a strong education and optimum learning. This style of education is not limited to one population and should be perceived as an option for all students: gifted and talented, learning disabled, college bound, workforce bound, and the general population. Obtaining current student feedback and viewpoints is crucial for enhancing CTE and bringing focus to a program's strengths

and weaknesses. In the effort of education reform, CTE programs including certification during secondary school may be a viable option for students from all populations.

APPENDIX

APPENDIX

Survey Instrument

1. Age _____

2. Male ___ Female ___

3. Grade level (11th or 12th): _____

4. **Please circle the racial category with which you most closely identify.**

- a. Asian or Asian American
- b. Black or African American
- c. Hispanic
- d. White or Caucasian
- e. Other

Place an “X” in the space(s) next to answer(s) that apply to you.

5. Which program are you currently in?

___ Welding

___ Metal Manufacturing

___ Robotics

6. What are your plans AFTER high school:

___ Graduate from high school and get a job

___ Enter the military

___ Attend a vocational/technical school (e.g., TSTC, ITT)

___ Attend community college (2-yr)

___ Attend four-year college/university

___ Other plans: _____

7. What subject(s) do you perform well in?

___ Math

___ Science

___ English

___ Other: _____

8. What subject(s) do you perform poorly in?

___ Math

___ Science

___ English

___ Other: _____

9. Please check all members of your family who have attended post-secondary education.

Grandparent Mother/Stepmother Father/Stepfather Sibling

Aunt or Uncle Cousin No one in my family has attended PSE

10. Why did you decide to apply to this program?

11. Do you feel this program has benefitted you? Why or Why not?

12. Do you see any weaknesses in the curriculum (program)? If so what?

13. Do you see any strength in the curriculum (program)? If so what?

14. Would you recommend applying to this program? Why or why not?

15. Would you apply to this program again? Why or Why not?

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