

2010-01-01

A Comparison Of Career Technical Education - 16 Career Pathway High School Participants With Non-Participants On Academic Achievement, School Engagement, And Development Of Technical Skills

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A COMPARISON OF CAREER TECHNICAL EDUCATION – 16 CAREER PATHWAY
HIGH SCHOOL PARTICIPANTS WITH NON-PARTICIPANTS ON ACADEMIC
ACHIEVEMENT, SCHOOL ENGAGEMENT, AND DEVELOPMENT OF TECHNICAL
SKILLS

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Dean of the Graduate School

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DEDICATION

My dissertation research is entirely dedicated to my grandson Julian Daniel Orozco. His unforeseen arrival gave me an entirely new perspective of life. His presence gave me mental and physical strength to continue persevering through my doctoral journey. Julian Daniel has become my inspiration to push myself and further realize the importance of my work. I can only hope that through my endeavors, obstacles, professional and personal triumphs he will be able to realize that anything in life is possible.

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by

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DISSERTATION

Presented to the Faculty of the Graduate School of

The University of Texas at El Paso

in Partial Fulfillment

of the Requirements

for the Degree of

DOCTOR OF EDUCATION

Department of Educational Leadership and Foundation

University of Texas at El Paso

August 2010

ACKNOWLEDGEMENTS

To my family, friends, and colleagues who afforded considerable amount of support, understanding, and assistance through my doctoral journey; thank you. My accomplishments would not have been made possible without your encouragement. To my dissertation committee members, I genuinely appreciate the time and dedication you have given to make my dream a reality. Your specialized areas of scholarship provided valuable insight to my work. I am grateful for the many encouraging words you gave as I navigated through this difficult endeavor. I would like to recognize my husband Salomon Isaac Orozco and my children Aida Natali Orozco, Salomon Isaac Orozco Jr., Aeon Victoria Orozco, and Reu Jacobo Orozco for enduring with me the sleepless nights and rigors of a doctoral program, to my special friend and colleague, Dr. Lourdes Sanchez-Contreras who encouraged and inspired me to begin and complete my journey through a doctoral program, Alexandra Moss-Salinas for accompanying me as I wrote and reached out every time I needed support.

ABSTRACT

A COMPARISON OF CAREER TECHNICAL EDUCATION – 16 CAREER PATHWAY HIGH SCHOOL PARTICIPANTS WITH NON-PARTICIPANTS ON ACADEMIC ACHIEVEMENT, SCHOOL ENGAGEMENT, AND DEVELOPMENT OF TECHNICAL SKILLS

The objective of this research was to compare Career Technical Education- 16 Career Pathway high school participants with non-participants on academic achievement, development of technical skills and school engagement. Academic achievement was measured by Exit Level Math and English Language Arts Texas Assessment of Knowledge and Skills (TAKS) 2008-2009 scale scores. Development of technical skills and school engagement was examined through a developed survey using the High School Survey of Student Engagement (HSSSE) as a reference. TAKS scale scores employed to measure academic achievement was obtained from secondary data and perceptions regarding development of skills and school engagement were obtained through students' response of survey who attend high school institutions in a border city.

A non-experimental quantitative design was used as the study did not administer any type of treatment (Slavin, 2007). Descriptive Statistics are presented to provide demographic information regarding the population and sample used in the research study. Analysis of Co Variance (ANCOVA) test was applied to compare mean scale Exit Level Math and ELA TAKS scores of students in Programs of Study (POS) and

those not enrolled in Programs of Study (Non-POS). Survey response data was collected to analyze proportion differences of students in POS and Non-POS perceptions of school engagement and development of technical skills.

Literature regarding educational movements from the 1800s to present, economic movements, career technical education's role, and accounts of experiences with the 16 – Career Pathway Curriculum initiative was organized to provide a sequence of educational events that lead to the purpose, results, and conclusions of this research.

In assessing the outcome of data, the ANCOVA test is suggestive that POS participants scored significantly higher than Non-POS students in the Exit Level Math and ELA TAKS while controlling for ethnicity, socio-economic, status, gender, and campus. Furthermore, high school seniors who voluntarily participated in this research survey instrument were composed of students enrolled in POS and those not enrolled. POS respondents perceive themselves more engaged in school than Non-POS respondents. In regards to technical skills, POS respondents perceive to have developed more technical skills and confidence in obtaining a job after high school

Results of analysis show positive outcomes for students enrolled in programs of study, but limitations do exist in this study. Secondary data obtained by school district did not include particular variables that may have an effect on student performance on standardized exams. Furthermore, the number of program of study survey respondents was substantial than non-programs of study respondents. Hence, this study does not make any inferences regarding causality between CTE – 16 Career Pathway

Curriculum, academic achievement, school engagement, and development of skills.

Regardless of the study's limitations, results are motivating and merit further investigation.

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CHAPTER 1

INTRODUCTION

“education through occupations consequently combines within itself more of the factors conducive to learning than any other method”

John Dewey, *Democracy and education: An introduction to the philosophy of education* (1916b, ch. 23)

The search for best instructional practices is an ongoing process for educators in the United States. Secondary level reform initiatives such as dual credit, early college high schools, and advanced placement programs are useful, but tend to attract students who are already likely to be academically successful. Reform efforts targeted to at-risk students have not been broadly successful in closing achievement gaps. What is needed is development of programs targeting students at risk of failing or dropping out of secondary schooling. What should be done by the federal and state agencies and school districts to address such heated concerns and promote change? How can we foster the importance of academic achievement and the development of necessary skills within students? Numerous schools throughout the nation have investigated the driving forces that lead students to be motivated and are followed by actions that assist in the retention and engagement of students (Cotton, 2001). One promising reform strategy is Career Technical Education.

Career Technical Education (formerly known as Vocational Education) has re-organized its objectives and strategic actions to promote academic achievement and technical skills (Lewis, 1998). Career Technical Education (CTE) faces stringent mandates from the No Child Left Behind (NCLB) Act of 2001. The NCLB Act holds CTE

accountable for demonstrating that its educational programs enhance student growth in the areas of technical and academic abilities. In order for CTE to maintain its alignment with the expectations of NCLB it must continually enhance its current curriculum initiative, 16 Career Pathway, in order to maintain the effectiveness of CTE's goals and objectives that are geared to address the needs of the 21st century economic landscape (D' Amico, 2003).

Analyzing past philosophies regarding the purpose of education in America, we find that the public strongly believed that educational institutions main objective was to prepare students for the rigors of higher education and for those not bound for college, to prepare for vocations (Daggett, 2003). The consequence, seen since the early 1900s was the development of a dual system of schooling in which primarily the emerging middle and upper classes received an academic education for leadership and the working class received a vocationally oriented education for followership (Tyack & Cuban, 1995). Evidently as seen in recent and emerging trends, the latter point no longer is sufficient to be successful in today's economy (Steinberg & Allen, 2002). The complexities of our global economy brought by demographic and social changes are forcing employers to integrate knowledge, skills, and abilities of all workers in order to develop a competitive advantage (HR Magazine, 2009).

Focusing on only developing student knowledge in academics has translated to graduating students from secondary and postsecondary schooling lacking technical and communication skills, the ability to apply knowledge in a real-life work setting, and the ability to think critically. Prestwich and Thu-Mai (2007) affirm the latter statement by

illustrating that in postsecondary institutions, undergraduates are not taught the necessary skills to perform duties associated with emerging positions in the new economy. It is recommended that development of technical skills be integrated in undergraduate curriculums.

Interestingly, the approach of educating individuals utilizing pedagogy that is relevant and useful to individuals is not an original reform initiative or idea. Education saw a similar framework in John Dewey's philosophy regarding the techniques to be implemented in an educational setting. This philosophical framework will be discussed further in the review of literature.

As the workforce industry began to reveal their dissatisfaction with the quality of the labor force educational institutions were providing, CTE has integrated within its program the objective of making certain that every student in the program possess fundamental skills such as communication, computer application, decision making skills, and knowledge. According to A Digest of the World's Work-life News, employers such as Deere, Boeing, and Baystate Health (2009) reveal that there is a preference to retaining employees who display characteristics of maturity in the knowledge they possess. Survey respondents, comprised of 108 human resource professionals and managers, confirmed that the following performance traits in line, middle, and senior workers were paramount: ethical awareness:, self-motivation:, verbal abilities:, writing skills:, creativeness:, and problem solving (Lange and Houran, 2009). Therefore, the impact that CTE must have on developing crucial employability skills is eminent.

Most importantly students should have the ability to transfer skills in a rapidly changing economic environment (D' Amico, 2003). It is important that administrators, educators, and other stakeholders not only provide students with choices of what they are able to embark on in postsecondary education or in the workforce, but have the ability to provide those same choices within their secondary experience through programs of study (Gray, 2004). The focus of this study is geared to compare the academic achievement, school engagement, and development of technical skills of high school participants with those of non-participants of CTE -16 Career Pathway Curriculum. The 16 Career Pathway Curriculum initiatives have been developed with the goal to engage students in continued learning, enhance academic performance, and provide necessary tools to make successful transitions to the work environment by developing critical thinking skills through bridging academic and elective courses.

Since the inception of the federally adopted 16 Career Pathway reform initiative, every state has been given the task to implement the program throughout high schools. The state of Texas has adopted this initiative as Achieve Texas. Achieve Texas is the name given to represent the 16 Career Pathway reform initiative. The underlying goal of Achieve Texas is to promote and assist school districts on how to implement the 16 Career Pathway Curriculum in a high school setting. Most importantly is that all high schools have well informed administrators, counselors, educators, students, and parents regarding the 16 Career Pathways. This will enable students to begin thinking of future educational or career paths and the resources available to assist in reaching their future goals.

SCISD's implementation of the 16 Career Pathway Curriculum intends to satisfy a federal mandate and provide students with a comprehensive educational experience. Therefore, every student at the eighth grade is introduced to the 16 Career Pathways and is given the opportunity to explore all avenues of careers through a Career Cruising or Career Investigations course. This translates to these eighth grade students commencing their freshmen high school year with a graduation plan called a program of study. A program of study provides students with a guide on a sequence of courses that is recommended to follow during their freshmen, sophomore, junior, and senior year in high school.

Embedded in students' programs of study are course electives that support students' academic or career plans. SCISD administration has decided that in addition to providing students with a program of study, they must also engage in a work based learning program (WBLP) in order to meet graduation requirements. Participation in a WBLP entails students engaging in a work environment to fulfill the required hours of internship for graduation. This immediate strategic move on behalf of the district will assist students in identifying pathways that will ultimately lead them to pursue education beyond secondary schooling and promote lifelong learning (Lynch, 2000). The connecting of academics with work experience provides students with the opportunity to participate in activities that will drive students to evaluate their experiences in order to mature as young and professional adults (Kinman and Kinman, 1997). In essence, students participating in the 16 Career Pathway Curriculum, take on academic core requirements for all students, electives associated with their selected career pathway,

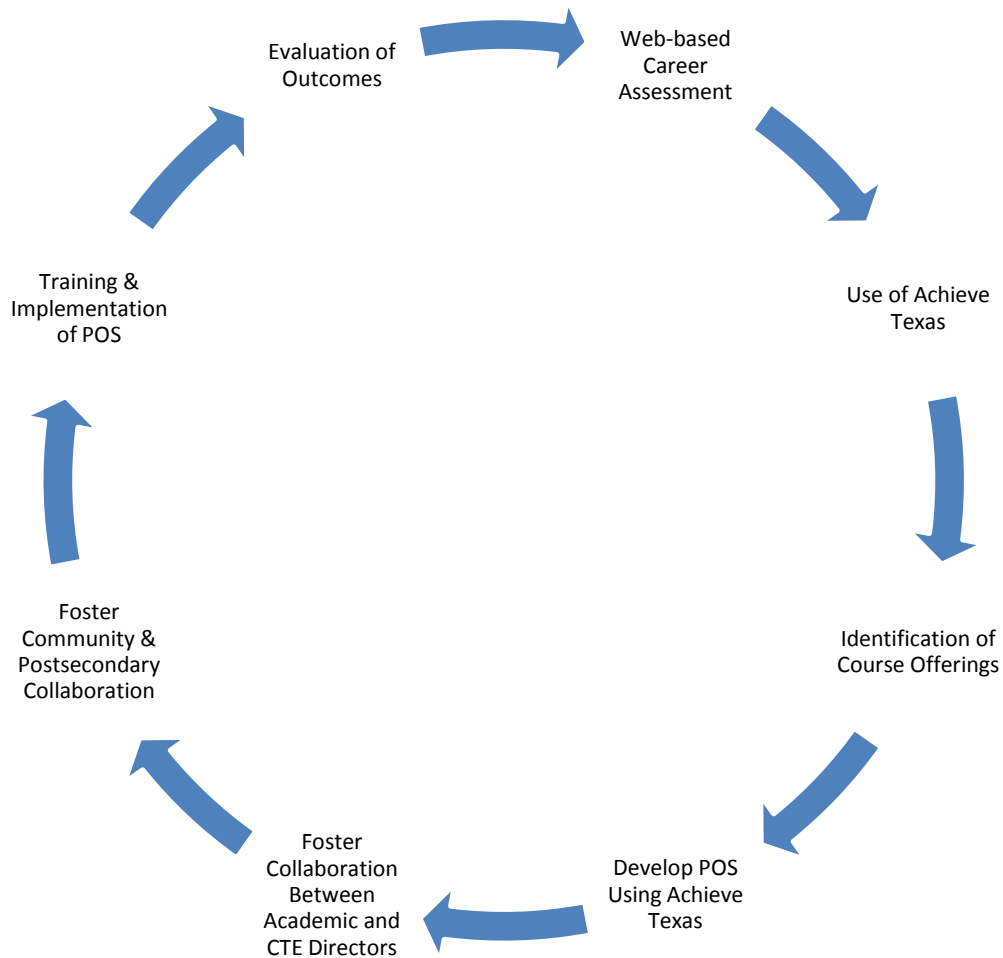
and work based learning intended to facilitate academic and elective course work in an environment that promotes critical thinking and further skill development.

A critical element that exists for researching the 16 Career Pathways Curriculum is the limited number of research studies done to compare high school participants with non-participants on academic achievement, school engagement, and development of technical skills. There have been no formal research studies on CTE's new curriculum in a predominately Hispanic student population. The far west Texas region is an ideal location for studying CTE'S 16 Career Pathways Curriculum among a student population that is predominately Latino and low income. The prominent characteristic that accentuates the importance of this study is that El Paso, Texas and the surrounding region is a binational, bicultural, and relatively low income area. El Paso's population accounts for 76.62 percent Hispanics, 23.28 percent White not of Hispanic Origin, and 10 percent other. In addition, 56.8 percent of students are eligible to participate in the free or reduced lunch program. These demographic characteristics are important as literature reveals that students categorized low income or minorities perform lower academically than their counterparts.

The 16 Career Pathways Curriculum implemented in eleven high schools found in one of the largest school districts (SCISD) in the state will be examined. These eleven high schools provide a diverse pool of students as participants will be from magnet, comprehensive, and technical high schools. Initiating a research study that focused on comparing student participants with that of students not participating in a pathway curriculum on academic achievement, technical skills and school engagement

will provide valuable data on a heavily concentrated population of minority students and to all having an interest in such a program.

Figure 1



16 Career Pathway Curriculum Elective Program Model

The above model depicts the sequence as to how the district was to implement their pathway curriculum program. The program sequence begins with web based career assessment during 8th grade followed by career pathway selection and

development of a high school matriculation plan. The study of this particular program will focus on the performance of students enrolled in CTE's curriculum in math and reading (TAKS scores), school engagement, and technical skill development. The outcomes of the study will be used as a preliminary basis to initiate discussion concerning CTE's goal attainment.

CTE - 16 Career Pathways have been organized into 84 programs of study (POS) which incorporate occupation options, standards for each occupation, and assessment guidelines for each of the 84 pathways (Sclafani, et al., 2005). A career pathway consists of various occupations that are representative of a specific career cluster based on similarities. SCISD has implemented all of the 16 Career Pathways. All of the pathways offered provide students with the opportunity to embark on a specific career pathway. Hence these career pathways are fortified through the development of a program of study that organizes a student's course of study throughout secondary schooling.

Programs of study provide students with a visible break down of courses that should be taken starting their freshmen to senior year. These programs of study incorporate all the state mandated core classes needed to meet graduation requirements and provide students with options of electives that should be taken each year based on the career pathway they have chosen. At SCISD, Career Pathways and Programs of Study (POS) have been integrated in all high school campuses.

Description of SCISD Implementation of Achieve Texas

It is important to review how the district structured and implemented the program. The forefront of this curriculum is identified as 16 Career Pathways. The initiation of this program began by first assessing eighth grade students' career interests through a web-based career assessment tool (e.g. Career Cruising). As a student's career interests are identified, counselors at the campus level utilize the recommended Achieve Texas guidelines to structure programs of study. Educators teaching in core and non-core classes and all other faculty are provided with staff development that focuses on the 16 Career Pathway Curriculum. The staff development is comprised of disseminating objectives and goals of this program. Furthermore, POS are introduced to faculty as a means to demonstrate the various sequence of courses students can pursue based on career and postsecondary goals.

As students register for courses, the program is designed to actively involve students in participating in the decision process of core and elective courses to be taken. This entails that students, parents, counselors, and administrators work collaboratively to ensure that the student is enrolled in appropriate courses that would assist him/her in reaching academic achievement, technical skill, and school engagement. Counselors then adhere to the district's CTE elective course offerings that would best suit a student's interest. Students at any time may change their POS if career interests change during their secondary schooling. POS have been designed following postsecondary degree plans, where students are required to fulfill core classes and narrow their course taking based on the major/minor they pursue.

Statement of the Problem

Today's economic landscape is expected to require shifts in the knowledge and skills of the labor force to meet the needs of America's employers. Global competition has fostered the immediate need to have a more skillful and competent workforce. No longer is a two or four year degree sufficient to secure employment in the United States (Meeder and Couch, 2006). Employers readily demonstrate their dissatisfaction with the competency and skills that currently reflect today's workforce. All too often employers are discovering that individuals who enter the workforce after secondary or postsecondary schooling lack the necessary skills, abilities, and knowledge to be effective and productive workers. Employers have reached out to community, secondary and postsecondary institutions and government agencies to disclose the urgency of placing reform initiatives that will assist in closing the gap found in the labor market.

A primary goal of schooling is to prepare students with the necessary knowledge and skills that are required by our current economic conditions (Hughes & Karp, 2004). Despite the objectives of CTE, the release of the National Commission on Excellence in Education (NCEE, 1983) report addressed serious issues regarding the level of preparedness shown by American students. The report, *A Nation at Risk*, revealed the shocking fact that American students placed last in 19 academic exams compared to various industrialized nations.

As a result, reform was initiated within educational policies at all levels of government. The adoption and re-authorizations of the Carl D. Perkins Act have refined the purpose, goals, and objectives of what is now Career Technical Education (CTE). Also in direct response, former President Bush endorsed and signed into law the No Child Left Behind Act of 2001 (NCLB). Under the NCLB Act, initial programs founded by the Elementary and Secondary Education Act of 1965 (ESEA) were reauthorized (Debray, McDermott, & Wohlstetter, 2005). Consequently, the reauthorized ESEA act continued to be the main tool in developing and leading America's educational reform efforts through re-directing its focus on various areas of academics (Daggett, 2003).

In some ways the report *Nation at Risk* was misleading. If only U.S. schools serving middle and upper classes are compared to the performance of other nations (a reasonable comparison given the international variation of public education policies) - the U.S. is close to reaching top performance. Conversely, given the historical neglect in the U.S. of the poor and minorities, schools serving these populations have poor academic performance. Unfortunately, *Nation at Risk* condemned public schooling in general rather than targeting schools which were truly in need of assistance. The policy initiatives begun with *Nation at Risk* were followed by the standards and accountability movements, and integrated by NCLB with sanctions. While there has been considerable debate and concern regarding the unintended negative effects associated with the coercive nature of NCLB policies, one positive outcome of NCLB is the

requirement for states and individual school districts to disaggregate and examine academic performance by race and class groups.

Despite the classification given to CTE as an elective program, NCLB has clearly had a direct impact on the role this educational program has at the high school level. In order for CTE to continue its existence in an educational setting, it is imperative that the goals embedded in the program are in alignment with NCLB's educational reform initiative. CTE is now held accountable for not only advancing academic achievement, but it must demonstrate and provide evidence that students' academic performance is improving. CTE continues to enhance its current practices, goals, and objectives in order to meet the needs of today's workforce demands.

According to Greenspan (2001) the role of CTE is critical in providing students with the ability to think critically, analyze and synthesize information, and the ability to communicate with others through the use of technological advancements. The latter skills identified are now demands exerted by our nation's employers along with a strong academic foundation. Assisting students in developing a strong academic foundation with the integration of technical abilities and knowledge of careers assists them to be prepared for the workplace and postsecondary success.

CTE at SCISD targets every type of student in secondary education. It is important to state that the composition of students found in CTE programs have diverse goals after secondary education. The guiding premise behind CTE is to place emphasis on core academic subjects concurrently with the teaching of skills related to a student's

elected career pathway. The expectation of CTE is that through such integration students will perceive their education to be more relevant and therefore students will be more motivated, will achieve at a higher level, and will be more likely to complete high school programs. This is particularly important given variations in high school completion rates by racial/ethnic groups. The completion rate for Whites is 90.2 percent; Black 81.4 percent; and Hispanics 62.8 percent (Institute for Development Research & Alternatives, 2009). A large percentage of students, who do enter postsecondary education, require remedial courses and do not complete the requirements to obtain a degree (Bottoms, 2008). The importance of CTE in secondary schooling and the implementation of the nationally accepted 16 Career Pathway program is now the vehicle used to guide students in particular career pathways and eventually to be involved in a work based learning program.

Purpose of the Study

The advancements of CTE are taking place to foster academic achievement, school engagement, and development of technical skills as means to cultivate critical thinking ability and transferability of skills to postsecondary or workforce environments is an attractive phenomenon for study. As stated earlier, CTE has captured considerable support by educational and political leaders, employers, and community members but does not fail to experience resistance as an approach to meet the socio-economic needs of our country. The lack of research studies on CTE – 16 Career Pathway Curriculum in SCISD or similar school districts in Texas or the region instigate the need to do so as Texas, one of many states, is actively endorsing this reform initiative.

Outcomes of research studies on CTE – 16 Career Pathway Curriculum conducted in other states will be discussed in the review of literature.

Study Limitations

Certain limitations of this study merit discussion. The use of secondary data has certain limitations for the analysis. The data made available for this study was limited to ethnicity, socio-economic status, student enrollment in CTE's curriculum, gender, campus, and Exit Level Math and English Language Arts TAKS scale scores. It should be noted that other factors such as English Language Learners, level of courses taken, special education, and grade point average may contribute to differences between POS and Non-POS participants and may have affected TAKS scores. Other differences may exist between POS and Non-POS participants that could not be controlled for in this study, given that CTE participation is a self-selected variable and access to student information was limited in this study. Therefore, no inferences were made regarding the casual effects of CTE Programs of Study interpreted with regard to TAKS scores. Differences between groups were interpreted with regard to the constraints of the study. Nevertheless, this study remains important. If participants in CTE 16 Career Pathways have no positive mean TAKS score differences than non-participants, then the CTE Curriculum is called into serious question. Conversely if higher mean differences are found then more detailed causal analysis is warranted.

The use of a developed survey titled High School Student Engagement and Technical Skill (Appendix B) creates certain limitations. The survey is an independent

collection instrument. Survey respondents are not able to be linked to the secondary data base thus eliminating the association between survey responses to TAKS scores. The number of survey respondents (330) compared to the total number of the student sample (3951) gave rise to a disparity. Also, there were more than four times as many POS respondents (279) as Non-POS (51) respondents.

This study concentrated on comparing CTE - 16 Career Pathway Curriculum participants with non-participants on: 1. academic achievement (measured by state mandated Exit Level Math and ELA TAKS scores) 2. development of technical skills (measured through survey instrumentation), and 3. school engagement (measured through survey instrument) in SCISD. The focus on TAKS scale scores was selected because standardized test scores are a commonly used indicator of academic success. Surveys of technical skill development and engagement are an attempt to gather about student motivation and course relevancy based on CTE status to suggest areas for possible further study.

Relevancy allows students to make connections with the content being taught. The ability to apply knowledge gained inside the classroom to real life questions fosters interest and engagement. The understanding and learning of mathematics is crucial to uncover solutions to questions brought upon everyday life. According to TEA, math courses develop students' ability to communicate and use common sense for reasoning in order to generate understanding of events occurring in the world (Texas Education Agency, 2009).

The Exit Level Math and English Language Arts (ELA) TAKS are formal assessments administered to all secondary students classified as juniors. These state mandated exams along with Exit Level Science and Social Studies TAKS are critical elements for meeting the requirements to graduate from high school in Texas. The use of the Exit Level Math and ELA TAKS to measure academic achievement is founded on the need to draw upon a standardized exam that assesses multiple facets of students' abilities, knowledge and skills.

The Exit Level Math TAKS is structured to assess students using 10 objectives. These objectives stem from mathematical concepts that have been taught since elementary schooling. In order for students to be successful in mastering the TAKS objectives, students are instructionally guided by the Texas Essential Knowledge and Skills (TEKS). The TEKS serve as a tool to foster essential skills that are needed in everyday life. These skills are identified as the following: reading to understand, writing, critical thinking, problem solving, reasoning, analyzing, evaluating, synthesizing. The ability to apply all of the above skills in real-life problems is found in the Exit Level Math TAKS (Texas Education Agency, 2009).

The Exit Level English Language Arts TAKS is structured to assess students using 3 reading and 3 writing objectives. ELA integrates reading and writing skills in its assessment with the intent to show a connection between both skills. Objectives tested in this standardized exam stem from concepts that students have been taught since their elementary schooling. Texas Essential Knowledge and Skills (TEKS) also guide instructional practices in reading and writing. The use of ELA scores in this study is

essential as the ability to read effectively is an integral component of every student's education. Furthermore, the inability to develop critical reading skills will inhibit a student from performing well in the area of mathematics. According to the Texas Education Agency, students who develop strong reading skills transform into fine thinkers which enables them the opportunity to enrich employability, educational, and personal opportunities (Texas Education Agency, 2009).

Research Question

The overarching question for this study follows: Is there a difference between SCISD CTE – 16 Career Pathway Curriculum senior high school participants and non-participants on academic achievement, development of technical skills, and school engagement of high school senior students? This question is supplemented by the following sub-questions:

Question 1:

Is there a significant difference between SCISD Programs of Study participants and non-participants on academic achievement, as measured by Exit Level Math TAKS, controlling for SES, gender, ethnicity, and campus?

Question 2:

Is there a significant difference between SCISD Programs of Study participants and non-participants on academic achievement, as measured by Exit Level Math TAKS, controlling for SES, gender, ethnicity, and campus?

Question 3:

Is there a significant difference among low SES Programs of Study participants enrolled in different campuses , as measured by English Language Arts TAKS scores?

Question 4:

Are Programs of Study participants' perceptions regarding school engagement and development of skills distinct from those of non-participants, as measured by the High School Student Engagement and Technical Skills survey?

Significance of Study

The Center for Evaluation and Education Policy (CEEP, 2005) conveyed the results of the High School Survey of Student Engagement (HSSSE) administered in excess of 90,000 high school students across America. The results of the survey signaled the importance of integrating relevancy in students' educational experiences. The implications of CTE's innovative reform initiative (16 Career Pathways) on high school students' experiences need to be sustained through formal study results. Silverburg et al. (2004) specifies that students engaged in large amounts of core courses and partake in CTE programs demonstrate readiness for postsecondary education and occupations when compared to students who only engage in core courses or CTE programs.

The outcome of the study's analyses can be construed as a preliminary foundation that provides educational professionals with initial findings regarding differences found between students enrolled in CTE – 16 Career Pathway Curriculum in

school engagement, academic achievement, and development of technical skills of high school students at SCISD. At the state level, policymakers will have a current resource as to differences found between students participating in Achieve Texas (Career Pathways) regarding the latter factors in one of the state's largest school districts. The value of this study will be significant as "employers in business and industry are the beneficiaries of the educational system" (Whitaker 2008 p 23). The federally mandated 16 Career Pathway reform initiative will provide school districts with the ability to improve student academic achievement, technical skills, and school engagement. By better preparing students for postsecondary schooling, universities will possess the ability to reduce monies spent on developmental courses. In the long-run, universities will be in a position to maintain higher student enrollment and completion rates.

Definitions

Achieve Texas: Name given to the 16 Career Pathways reform initiative in Texas.

Association for Career and Technical Education (ACTE): A national association that dedicates its efforts in preparing students and adults for the workforce.

Association of College and Employers (NACE): An association that collects data on multiple employment assignments secured by college graduates.

Career Technical Education (CTE): Formerly known as vocational education focuses on developing students' skills and enhancing academic achievement for entry into the workforce or postsecondary education.

16 Career Clusters/Career Pathways: A category that encompasses a group of similar job occupations in various employment settings.

Improving America's School's Act (IASA): An Act developed to enhance children's educational experiences through new instructional strategies, reform, and holding institutions accountable for promoting high standards.

National Association of State of Directors of Career and Technical Education (NASDCTE): An association composed of Career Technical State Directors who oversee CTE developments.

National Occupational Competency Testing Institute (NOCTI): An institute that provides educational facilities with occupational ability assessments for secondary and postsecondary students. <http://nces.ed.gov/surveys/ctes/>

Programs of Study (POS): Resembles a postsecondary degree plan which incorporates a sequence of classes a student should embark on based on career aspirations.

Secretary's Commission on Achieving Necessary Skills (SCANS): A commission that disseminates information on necessary skills and competencies that students should master in order to be successful in a working environment.

Work Based Learning Programs (WBLP): Programs designed for secondary students to gain work based experience that assist in their transition into postsecondary education or the workforce.

CHAPTER 2

REVIEW OF THE LITERATURE

“Industry at the present time undergoes rapid and abrupt changes through the evolution of new inventions. New industries spring up, and old ones are revolutionized. Consequently an attempt to train for too specific a mode of efficiency defeats its own purpose. When the occupation changes its methods, such individuals are left behind with even less ability to readjust themselves than if they had a less definite training.”
John Dewey, *Vocational Education* (1916a, p. 119)

Introduction

United States economic restructuring, beginning in the 1970s, poses a great challenge for students to be well prepared for the global transformation of the work force. The urgency of educating students utilizing a globalization mindset is imperative. The term globalization can be defined as the “economic, political, and cultural force that dominates the developed and developing worlds” (Nordgren, 2002).

Despite repeated efforts to develop necessary skills and knowledge within students, deficiencies are still observed. The evolution of customer expectations, advances in technology, and continuing developments in business processes are generating adverse effects on worker readiness for employment and higher education. A surplus exists of individuals wanting to be employed in a competitive global landscape that lacks the availability of job openings. Concurrently, the workforce is populated by individuals who lack necessary skills or knowledge for the available jobs. “Far too many of those available are not prepared to perform today’s job duties...let alone the duties of the jobs that will emerge in the future. Consequently, schools need regular briefings on what’s happening in the world of work, support on curriculum design and knowledge resources to bring the evolving designs to life” (Herman et al., 2003). To hold such vital

information is crucial to the transformation of existing pedagogy in America's educational institutions.

Transformations are needed to meet the demands of the work force. It is unfortunate that currently too many high school students graduate without the ability to engage in critical thinking, problem solving abilities, self-sufficiency, and personal qualities. These elements would enable students to acclimatize to ongoing organizational changes and assume responsibility for their actions (National Commission on the High School Year, 2001; Steinberg & Allen, 2002).

In response to the pressures placed by the changing business landscape, an educational pillar was installed to alleviate the concerns of the work force. Career Technical Education (CTE), was established to arrange a system whereby students would have the ability to transform themselves into global thinkers and competitors. Today, CTE has developed various programs in secondary schools to assist the work force in developing the needed qualities and traits that students should possess to meet the demand of the market place.

The content of this chapter is structured to provide information regarding major occurrences that have transpired in the field of education. The chapter focuses on four critical partitions that explicate events that led to the inception of vocational education (now identified as Career Technical Education). Following are the four descriptors that make up the chapter: 1. historical relationship between schooling and the economy, 2.

economic restructuring and globalization, 3. description of CTE as an attempt to re-connect schooling with contemporary economy, and 4. Impact of programs of study.

Historical Relationship between Schooling and Economy

The following provides a thumbnail sketch of the historical development of schooling in general and vocational education (from which CTE emerged) in particular. The roots of the United States public educational system can be traced to Thomas Jefferson, and his vision of strengthening America's democratic climate by means of educating the citizenry eligible to vote. Jeffersonian ideologies focused on utilizing public educational institutions as a tool to assist low income populations, reduce economic inequalities and most importantly to ensure that the masses possessed the knowledge necessary for informed democratic participation (Friedman, 2007, Oakes, 2005).

Jefferson's belief in the necessity of public schooling in order to meet the needs of a developing democratic society went largely unheeded until the emergence of the common school movement in the early to mid 18th century. The rhetoric supporting the common school emphasized literacy development, considerable evidence exists that schools were seen as the best means to counter the "Catholic Menace" represented by the immigration of significant numbers of Irish Catholics and the working class English (Tyack, 1974; Cremin, 1988). These immigrant groups, like many to follow, tended to reside in the cities. The result was the inevitable rise of fears of social disorder associated with the concentration of poor, often marginally employed, and generally

illiterate citizens. What was seen even more of a threat to the established social order was that many of these immigrants were Catholics who turned to the church for social and economic support and were also integrated into the ward system of political patronage. The rise of the common schools was in part a humanitarian gesture and in part an attempt to “Americanize” these new immigrants to accept the prevailing institutional structures previously developed by a white Anglo-Saxon and Protestant elite.

As the United States developed throughout the 18th century a strong class bias marked public schooling. The primary purpose of public schooling was to provide basic literacy skills, and to socialize and acculturate the working class and immigrant groups to the prevailing social institutions. These institutions perpetuated class, race, and gender inequalities which were considered both natural and inevitable. The excess of economic stratification and upper class privilege (symbolized by the Gilded Age of the 1880s) continued to threaten economic growth and challenge the status quo. At the conclusion of the nineteenth century the greater part of schools in America heavily focused on traditional academic courses and failed to recognize the aptitudes needed to function in the workplace (Grubb & Lazerson, 2004).

The Progressive Period of the early 20th century embodied the gradual ascension of modernism as the guiding logic of social development (McGerr, 2003). The basic principles of modernism included the basis of authority was reason rather than birthright, power, or position. Reason was to be manifested through the development of rational organizations and institutions directed by experts who obtained positions of

authority on the basis of merit. The mechanistic metaphor of the “clockworks universe” was employed to guide institutional development, and the metaphor of “social engineering” guided reform efforts (Kolko, 1963; Weinstein, 1968). The good and progressive society was considered one in which the citizenry knew their place in the social order and performed their various functions with technical precision.

The primary targets of progressive reform efforts were the politics, economy, urban disorder and schooling. Within the political system the primary challenge was seen as eliminating the ward system and the corruption with which it was associated. This was to be accomplished through municipal elections of officials and management by hired public administration experts. During the late 1800s and into the early 1900s, the economy underwent rapid cycles of boom and bust. Income distribution created a small economic elite, growing middle class, and massive number of working poor. Economic reforms mainly focused on regulating businesses in order to stabilize markets. Social disorder was addressed by: expanding schools to socialize, acculturate, and train the next generation of workers; Installation of “living wage” as a means to bring stability and security to families (McGerr, 2003).

Schooling was a primary institution that became a great interest for reformers. The Progressive educational agenda comprised of two principles: equity and social efficiency. John Dewey is commonly associated with the democratic equity strand of progressivism. He sought to advance curriculum and pedagogy that was community centered, involvement in community by students, and encouraged the integration of academic and vocational education. Charles Eliot is commonly associated with the

social efficiency strand of progressivism. He believed in the inevitability of a class-based society that attempts to enhance the lives of the working class through education were both futile and inefficient. Vocational education was Eliot's mean to serve the working class and the nation. He believed that schools should provide vocational preparation for the working class and academic preparation for the middle and upper class. Despite Dewey winning the rhetorical debate, the institution of schooling evolved with the beliefs delineated by Eliot (Tozer, Violas & Senese, 2004). The consequence of the latter evolution was that education in the early 1900s developed two dualities. First was a division of races brought upon by school segregation, the second was the division of classes. To a large extent, the history of education in the 20th century was marked by efforts to overcome these initial injustices.

Educational policies developing during the Progressive Period can be seen as an attempt to respond to two different sets of conditions. One response attempted to target the rapid increase of immigration, urbanization, and industrialization. Throughout 1906-1910 approximately 4.5 million immigrants arrived to the U.S. from Eastern Europe countries with a limited number speaking English. Upon arrival, they began to populate cities along with other rural and urban migrants. Migrants began to leave their farms to industrial jobs in the cities. In 1870 only 26 percent of the population resided in cities, by 1920 the number had risen by 50 percent. These changes were all associated with perceptions of significant social change and fear of impending social disorder. In addition, manufacturing was increasing at a rapid pace. From 1870-1920 a major shift took place in regards to the number of jobs found in various labor markets.

Manufacturing jobs rose from 17 in 1870 to 26 percent in 1920. People working in mines rose substantially. Those working in the construction labor market tripled (Tozer, Violas, & Senese, 2004).

In addition to these general social changes, the nature of the organization of work also was changing. In the mid 18th century, manufacturing tended to be organized by owner/managers engaged in direct supervision of employees and who assumed a paternalistic interest in employee's welfare. The late 18th century, however, saw the rise to dominance of industrial corporations. Ownership became diffused in the sense of equity ownership meanwhile management hired administrators responsible to shareholders and board of directors. Organizational command and control was no longer grounded in personal relationships but had become "rationalized" and depersonalized consistent with principles of Weberian bureaucratic organization and Taylor's system of scientific management.

The perceived need at the time was to socialize immigrants and re-socialize migrants to life in an urban society but also to socialize workers to life in a modern industrial environment. To meet these needs, progressive reformers turned to schools. Under the influence of the "Administrative Progressives" who took the modern industrial corporation as their ideal, the factory model of schooling emerged. Schools, especially those serving the working class, were to be rationally organized, highly disciplined, and tightly controlled. The first step was to expand support for compulsory attendance laws. Between 1889-1900 public schools experienced tremendous growth, approximately to 350,000 students. Second, the traditional academic curriculum with its emphasis on

Greek, Latin, philosophy, and classic literature was declared obsolete. In its place, the modern curriculum was advocated and organized into academic disciplines such as English, social studies, math, and science. This was the preferred curriculum for the sons and daughters of the rising professional/managerial middle class of progressive reforms.

For students of the working class who were not presumed to be academically or socially able to attend college, the alternative was the development of vocational education which emphasized on basic literacy and employable trade skills. Behind and supporting either form of the formal curriculum was the “hidden curriculum” in which the structure and social relations governing schooling emphasized that students should be passive, obedient, and compliant recipients of information (Carnoy and Levin, 1985). Through these policies the expectation was that society could control social disorder, provide limited pathways for social mobility, and meet the demands by industry for skilled industrial workers and middle managers. This is the structure of schooling that has prevailed throughout most of the 20th century.

Legislative support for vocational education is found primarily in the Smith-Hughes Act of 1917. This act held provisions mandating the federal government to afford funding to vocational education programs and divert funds to developing students’ job skills for employment that did not require postsecondary education. The act gave the federal government authority to impact the progress and expansion of vocational education (Lynch, 2000). The amount of influence the federal government exerted on vocational education created an imbalance, as the amount of federal funding

provided to vocational educations was less than that provided to other federal agencies. Not only did an imbalance exist in regards to funding, but a disparity of equity between students of differing genders, races, classes, and color existed. Vocational education was to be seen as an opportunity for all types of students. Reality showed that the various vocational tracks were saturated with students from minority and working class backgrounds (Lucas, 1999). The consequence was that vocational education became associated with lower status compared to general and college preparation programs. That is, vocational education was seen by many as a program for students unable or unwilling to participate in a “real” secondary education program.

Economic Restructuring and Globalization

As part of post World War II foreign policy, the U.S. government, both directly and indirectly, supported investments in industrial development in Europe and Japan. The belief was that through creating relationships of global economic interdependency the likelihood of future world wars would be diminished. Subsequently industrial development monies also were extended to third world and developing nations. While such investments was often successful in bringing stability and increased prosperity to a variety of nations there was to emerge a significant unintended negative consequence. Specifically, by the 1960s there emerged a global oversupply of manufactured products relative to consumption capacity, this in turn led to declining profits, stagnation of wages, and increased unemployment. While these trends were only beginning to be felt in the 1960s, by the late 1970s many economists had come to realize that rather than being a short-term phenomenon associated with the normal business cycle, these were

signs of an impending epochal shift in economic structure. We were leaving the Industrial Age and entering the postindustrial, knowledge-work and service oriented economy (Reich, 1991; Johnston, 1993).

Between 1959-1984 America's labor force in the manufacturing sector saw a decline of jobs of 12 percent; the service sector experienced an increase in jobs from 40 to 72 percent (Gershuny & Miles, 1983). Ninety percent of new jobs created during this period were in the service sector about half of these jobs were low skill and minimum wage and the other half were higher skill and wage jobs. The job increase of the service areas is attributed to the creation of new positions and the increase of female entry into the workforce (Silvestri, Lukasiewicz, & Einstein, 1983). In addition, the middle class group was on a decline, between 1960-1970 the middle class declined about 3 percent, and between 1970-80, and declined another 6 percent. Political and economic leaders became increasingly concerned whether the U.S. would be able to maintain its position of global political and economic dominance (Johnston, 1993).

By the 1980s perceptions of crisis were becoming more widespread, but there was little consensus about the exact nature and causes of the crisis. The 1983 report, *A Nation at Risk* served to define the crisis as a failure of the schools to have created a skilled labor force of scientists, mathematicians, and engineers sufficient to meet the needs of a transformed economy. *A Nation at Risk* served to launch a sustained critique of the public schools with repeated calls for reforms to meet higher academic standards. While many scholars challenged the initial specification of the crisis of economic restructuring as result of public schools failing or systemic inadequacies of

the labor force, (Berliner & Biddle, 1996, Johnston, 1993, Rothstein, 2004) educational reforms from the excellence movement associated with A Nation at Risk, through the Standards movement associated with the Bush and Clinton administrations, and including NCLB, all associate future prosperity with reform of educational systems.

In light of previous assumptions, there are scholars who contest these elements as the basis to promote educational reform. Spencer (1985) argues that the demand for a collective set of skills has had no change. He attributes this to the upgrade and the downgrade of needed skills; which ultimately have no effective change. Rumberger (1987) indicates that despite the advances seen in technology and growth of jobs in technological industries, the lack of job supply does not merit the need to initiative educational reforms. Carnoy and Levin (1985) concluded that a surplus of highly educated job seekers exists. The supply of jobs though is not enough to efficiently utilize the knowledge and the skill set of job seekers.

Declining profits, capital flight, centralization, division of labor, income earned by differing classes, races, and gender are central to a service economy. Grubb and Wilson (1989) emphasize the distribution of income in the service sector has created great inequalities. Service sector characteristics have been theorized to be the culprit of America's economic crisis.

Employment projections made by Silvestri and Lukasiewicz for the year 2000 indicated there would be substantial increase in demand for occupations that require both low and high levels of education. Positions requiring higher levels of education

such as professional, management, and specialized jobs were increasing dramatically in relative numbers, but because the base number of these positions is low they constituted a relatively small fraction of total job growth. In absolute number of new jobs created the fastest growing sectors were janitorial, retail sales, clerks, and food service.

Work force 2000: Workers for the 21st Century was the result of a comprehensive study conducted by The Hudson Institute (1987). This particular study drew attention to various demographic elements that clearly have an effect on the US labor market in the 21st century. The elements identified by the study comprised of the following: increasing numbers of women and minorities entering the work force: four-year college degree will only be required for 30 percent of jobs available:, one to three years of training or postsecondary schooling will be required for 22 percent of jobs available.

The movement of placing emphasis on vocational education through integrating general curriculum, civic education, and work based learning programs brought “vocational tracking” (Grubb & Lazerson, 2004, p.30). Regardless of student enrollment in comprehensive high schools, students were segregated or were treated in distinct ways based on tracks they followed.

The transformation of our economy to a highly technological environment would demand highly skilled and productive individuals (Hogg, 1999). Grubb & Lazerson (2004) indicated that in the year 2000, 28.8 percent of individuals in the job market were educated beyond high school. The percentage is said to increase minimally to approximately 30.5 percent by the year 2010. Today, 34.7 percent of jobs require short-

term site training. The percentages of the amount of schooling to be employable are very approximate to what Hogg indicated. Only 30.2 percent of students will need schooling beyond high school and 27.1 percent will require some type of training. This data is an indication that high paying jobs will require individuals to embark on schooling beyond the secondary level but not necessarily obtain a baccalaureate degree (Hartley et al., 1996).

Analyzing the future needs of school attainment, it can be deducted that educational reforms initiated during the 1980's did not take equity as a concern. Improving or increasing the level of students' skills among minority, low socio-economic, and urban students does not eliminate income stratification or inequalities they face in educational institutions.

The constant drilling of basic skills in environments that are highly structured readily fails to instill needed attitudes and critical thinking practices that are crucial to the success in a postsecondary institution or the workforce. The characteristics of public schooling seen in the 1800's and today (memorization, lecture, etc.) should be replaced with curriculums and pedagogy that drive students to higher-order thought processes.

Aside from characterizing public schools with the above attributes, they have made available minimal degrees of training to masses of students while providing affluent and academically inclined students enhanced educational opportunities. Advanced educational opportunities need to be made available to all student populations (Johnston, 1990). The adoption of demanding curricula and instructional

methodologies would evidently impose structural changes within schools (Reissman, 1991).

CTE – An Attempt to Re-connect Schooling with Contemporary Economy

Critics of Career Technical Education consider it a variation of traditional vocational education for those not wanting or capable of pursuing higher education rather than as an authentic academic alternative. Proponents emphasize CTE's capability to successfully prepare secondary students in making transitions to universities, community colleges, technical education facilities, or the workforce. CTE's purpose today is parallel to the thoughts of John Dewey. Dewey's philosophies regarding vocational education was to align core subject matter with applicability to real life work settings without dividing varying class of students.

The driving force behind CTE is the Association for Career and Technical Education (ACTE). This association is responsible for ensuring that CTE is provided with unambiguous responsibilities towards secondary schools. The guidelines and tasks delineated by ACTE to CTE programs should make evident how student involvement in CTE course work affords the needed skills and proficiencies needed to be effective ongoing learners in our society. The recommendations made by ACTE on CTE programs should undertake the following actions:

- ◆ CTE educators need to make evident, assistance in developing student's comprehension level in arduous core material, ability, practices, and approaches.

The support of CTE programs will enhance a student's knowledge base in order to effectively perform in post-secondary institutions and transform themselves into competent workers.

- ◆ Make available to students the opportunity to explore career educational experiences in order to make educated decisions on forthcoming career objectives or goals.

By involving students in the acquisition of knowledge related to real life career educational experiences, students' will come to realize the necessary education or training needed to embark in their respective area of career interests.

- ◆ Train students through CTE programs who elect to penetrate the work force after secondary schooling.

These expectations of ACTE on CTE programs are imperative to follow as students need to be provided with the necessary skills and knowledge to enhance their productivity levels in a specific career pathway. Through rigorous training, students receive in CTE programs, they will be prepared to transfer learned skills within specific careers.

The goals established by ACTE provide clear expectations on the impact CTE programs should have on students. Students exposed to CTE programs should walk away with the ability to embark in any type of opportunity available at the post-secondary level, have the ability to meaningfully contribute to the work force, possess

the necessary skills and knowledge for employment advancement, and become active participants in America's society through civic engagement.

The structure (theoretical framework) of CTE programs is to provide students with the opportunity to have career-related experiences during their secondary education. The practice of integrating a work-based learning program within CTE allows for the three main goals of ACTE to be satisfied. The effects that CTE has on student academic progress and career awareness become factors that are crucial. The effects of CTE on student preparedness for post-secondary education and demands of our contemporary economy are discovered through the literature. Hence, the legislative history of vocational education and its evolution into career technical education provides transparent mandates that culminate the current expectations on CTE in promoting and developing critical thinking skills in academics and electives that are transferrable into a work or higher education environment.

Legislative History

The Vocational Education Act of 1963 initiated three crucial initiatives that heavily impacted CTE in public education. The initiatives developed targeted the following areas: connections between academics and work:, development of programs that assist students in securing part-time employment:, installation of an advisory board committee that represents vocational education:, granting of funds to construct vocational facilities (Doolittle & Camp, 1999).

The Vocational Act installed became the initial piece of legislation that granted educational assistance to individuals that suffered from disabilities or economic disadvantages. The re-authorization of the 1968 and 1976 Vocational Education Acts allowed for federal funds to be apportioned to students that were classified as at risk, English language learners, learning disabilities, and adolescent parents (Rojewski, 2002).

The end result of the legislation passed in regards to vocational education was to call attention to two crucial elements of America's economic landscape. Legislative efforts were two-fold in responding to the labor needs of employers and the development of students possessing necessary skills and knowledge in order to be effective in a work environment.

Powerful alterations in the economic, academic, and social factors embedded in CTE education began to take place in the late 20th Century and have streamed into the 21st Century. The alterations were instigated by the reauthorization of various acts: Perkins Vocational Education Act of 1984, Carl D. Perkins Vocational and applied Technology Education Act of 1990, School-to-Work Opportunities Act of 1994, Carl D. Perkins Vocational and Technical Education Act of 1998, and the Carl D. Perkins Career and Technical Education Improvement Act of 2006. The authorization of these acts organized to provide a foundation for educational reform initiatives and establish provisions to draw upon federal monies to assist in the improvement of academic performance (Lynch, 2000).

Carl D. Perkins legislation was a response to America's social concern of making CTE programs accessible to the general population including those needing special needs. The Carl D. Perkins Vocational Education Act of 1984 was the effect of students lacking necessary skills to meet economic stipulations. The Perkins Act was to be used as a mean to prepare the student population with explicit viable skills in order to satisfy the expectations of America's economic environment. In order to ensure that the Perkins Act of 1984 met its goals, Congress explicitly reserved federal funds to assist school districts in satisfying the objectives placed by the Act for students categorized as having special needs.

In order to expand the scope of CTE responsibilities, accountability measures for academia were included in the Carl D. Perkins Vocational and Applied Technology Education Act of 1990 (Perkins II). The amendments made to the Perkins 1990 Act (Perkins II), highlighted specific policies to support CTE. The NAVE Interim Report to Congress (2002) reported the following policies for CTE:

- ◆ Development of coherent sequence of course and CTE education in order to merge academics with vocational instruction.
- ◆ Enhance the function of CTE as a means to educate students on varying industries and requisites for specific careers.
- ◆ Fortification of bridges in order to connect secondary and postsecondary institutions through technical preparation and supplementary tactics.

Following the Perkins II Act of 1990, the Carl D. Perkins Vocational and Technical Education Act of 1998 (Perkins III) was passed. This act maintained the previous provisions placed by the Perkins II act. What distinguishes Perkins III is the increased accountability measures placed on school districts.

On August 14, 2006 the reauthorization of Carl D. Perkins Vocational and Technical Education Act of 1998 was installed into law. This newly installed law was also identified as Perkins IV which was approved up until the end of Fiscal Year 2012. The revisions made to the Perkins IV law affected three key elements:

- ◆ “Vocational Education” was substituted with the new phrase of “Career and Technical Education”
- ◆ Tech Prep was organized as an independent program
- ◆ Distribution of administrative state grants

The newly installed Carl D. Perkins Vocational and Technical Education Act incorporated obligations on CTE programs of study. These obligations consisted of bridging academic and technical instruction within secondary and postsecondary institutions. Along with changes made to instruction, accountability measures were intensified for state and local educational institutions.

Accountability measures obliged states and local institutions to report the outcome of performance indicators. Secondary institutions are now required to measure academic attainment through state academic assessment authorized through NCLB regulations. An institutions graduation rate was also an element to report under

NCLB guidelines. Lastly, at the secondary level, technical proficiency is to be reported based on technical achievement through technical assessments that are highly associated with the standards provided by the industry. Postsecondary institutions were to be assessed in slightly varying criteria. These institutions were not mandated to report on academic attainment, but held the same requirement as secondary schools in the area of technical achievement.

Postsecondary institutions were obliged to report on the outcomes of placing students into occupations or professions that entailed elevated skills, wages, and demand. The placement of such rigid accountability measures at the secondary and postsecondary level was to ensure that CTE programs enrich student readiness and preparedness for the demands of the labor market.

The response taken by CTE activists to such rigid accountability measures and a report released by the National Commission on Excellence in Education was to develop reform initiatives that affected vocational programs. The National Commission on Excellence in Education (1983) heavily criticized vocational education. Accordingly vocational education did not have a distinctive effect on schools' curriculum (Lewis, 1998). The release of the latter national report and others to follow further pushed vocational education to re-structure its role in public education.

National Reports

The National Commission on Secondary Vocational Education (1984) issued a publication titled *The Unfinished Agenda*. This report indicated that focusing on specific

driven academic areas should be substituted by the enhancement of general education with the development of students' personal abilities. According to Lewis (1998), CTE was credited in this report as having the ability to address the following difficulties seen in America's public educational system:

- ◆ Developing students' personal abilities and attitudes
- ◆ Instruction in precise occupational skills
- ◆ Development of a career plan and continued learning
- ◆ Enhance students' ability to be employed
- ◆ Development of computer and technology proficiencies

Following *The Unfinished Agenda* report, Parnell (1985) developed *The Neglected Majority* report. This report emphasized the development of a new initiative named tech prep. Tech prep was designed to focus on students he identified as "neglected majority." This new initiative was described by the Office of Vocational and Adult Education (OVAE, 2006) as a program of study that followed a sequence. This sequence entailed two years of secondary schooling followed by two years of postsecondary study.

The emergence of globalization in the 1990's brought abrupt technological changes. The U.S. immediately realized the needed action to remain competitive, students had to have vocational training (Rojewski, 2002). At this point in time, educational institutions began to emphasize the importance of integrating crucial workforce elements that would allow students to be successful in a global environment.

In order to undertake such critical reforms, *SCANS and America's Choice* reports were delivered.

The Secretary's Commission on Achieving Necessary Skills (SCANS, 1991) reported the necessities of the current work force and the capabilities that students needed to have. Based on the commission's research, it was discovered that students leaving public schools lacked knowledge or skills essential to the security of employment.

This report delineated the needed aptitudes and basic skills expected to become efficient employees, acceptable competencies, evaluation methods to determine level of competencies, and the implementation of strategies to assist public schools, families, and businesses in developing students aptitude to enter a global work force. The Secretary's Commission report provided the following competencies that students should possess once they are ready to enter a global work force (Frantz, 1997):

- ◆ Resources: Students' ability to allocate time, money, materials, space and staff.
- ◆ Interpersonal Skills: Students' ability to work in teams, educate others, provide customer service, leading, negotiating, and work well with individuals from diverse cultural upbringings.
- ◆ Information: Students' ability to obtain and evaluate data, organizing and maintenance of files, interpretation, communication, and the use of computer systems.

- ◆ Systems: Students' ability to comprehend organizational, social and technology systems.
- ◆ Technology: Students' ability to identify appropriate equipment and tools, utilizing appropriate technology to complete tasks, and maintain/troubleshoot technology.

In order for the above competencies to be developed by any individual, underpinning abilities must be possessed. According to the SCANS (1991) report the possession of needed abilities are as follows:

- ◆ Basic Skills: Students need to know reading, writing, arithmetic, and mathematics, speaking and listening.
- ◆ Thinking Skills: Students need to think creatively, make decisions, solve problems, knowing how to learn and reason.
- ◆ Personal Qualities: Students' need to have individual responsibility, self-esteem, sociability, self-management, and ethical behavior.

America's Choice is a report published by the National Center on Education and the Economy's Commission on the Skills of the American Work force (1990). In this report suggestions were made on how to make productivity improvements within our country's work force. The recommendations provided by the report assisted in sustaining the new methodologies implemented to bridge education and work. Following are the recommendations provided by the *America's Choice* report:

- ◆ Standards should be established through the implementation of high benchmarks.
- ◆ States need to be held accountable for ensuring the achievement of Certificate of Initial Mastery by all students.
- ◆ A curriculum that is comprehensive for technical and professional certification, availability of associate's degrees to meet student demands who do not decide to engage in baccalaureate studies.
- ◆ Enticement and support for employers through encouragement of continued education practices and training of employees.
- ◆ Monitoring of school-to-work programs and training by establishing employment and training boards by federal, state agencies, and business/educational leaders.

American schools have always had the responsibility to prepare students for jobs. The approach to this task was through developing basic proficiencies such as writing, arithmetic, and reading, and civic responsibilities. The rise of powerful corporations has shifted the ways education approaches the preparation of students (Grubb & Lazerson, 2004). An innovative wave on the structure and function of vocational education has materialized over the past ten years. This wave is an effect of previous legislations impacting school-to-work programs, and the reauthorization of the Carl D. Perkins Act (Perkins IV). These changes provided modern Vocationalism with a precise focal point to assist student's transition to postsecondary or the workforce.

Based on uneventful employment experiences by individuals having higher levels of education, it is obvious that other qualifications are needed. The human capital theory no longer suffices the needs of the 21st century. The belief that the latter theory is not an effective mean of obtaining a well paying job is contradicted by the results of a census taken in 1940. The census entailed the collection of levels of education and earnings of the American population. The data showed individuals who possessed higher levels of education had relatively higher median paying jobs. Data for the 2000 census continued to show the same trend of earnings based on levels of education (Grubb & Lazerson, 2004).

As the level of education was not the only qualifying element needed to secure employment or high paying jobs, the Carl D. Perkins Act (Perkins IV) addressed the emerging trend. The focal points that had to be addressed were to develop needed skills within students, provide quality services to employers, integration of academia, vocational instruction provided by the SCANS Report (1991), the promotion of higher order/critical thinking, and the evolvement of interpersonal skills.

Social and economic issues have re-directed CTE programs to reorganize the methods used to groom students for postsecondary readiness, attainment of skills, career awareness, and critical thinking abilities (Lynch, 2002). It is imperative that secondary schools establish as their mission to assist student's understanding of the importance of possessing academic and technical skills in order to avoid hardship inside the work force (Breaking Ranks, 1996).

The reauthorization of the Carl D. Perkins (Perkins IV) and its stipulations are a representation of the modern vocationalism ideologies. Perkins IV revealed its role in public education by enforcing three vital factors in general education's curriculum:

1. academic and technical education should be integrated, 2. existence of articulation between secondary and postsecondary courses, 3. real life connections between school and work. CTE curriculum must be developed to ensure that students gain mastery in rigid work force standards, held to high academic expectations, and the existence of relativity between general education and workforce skills (Lynch, 2002).

There were concerns regarding CTE's ability to integrate content into the general curriculum. Concerns surfaced as CTE programs were at its infancy stage of development. Many of the questions that surfaced regarding the function of CTE in secondary and postsecondary education follow: 1. would the programs only focus on particular industries, 2. career clusters, 3. work practices, 4. skills needed for life (Rojewski, 2002). Upon the arrival of the 21st century, CTE was once again forced to re-direct its focus on differing demands exerted by the economy. Data was collected that supported the changes taking place in education formerly initiated by reform initiatives (Levesque et al., 2000). Therefore, the occurring changes taking place had to be addressed by re-aligning the CTE curriculum in order to reflect the needs and demands of students and the labor market.

The underlying goal or objective of CTE programs is to provide a curriculum for students that allows for the development of technical skills alongside with academic ability (EdSource, 2007). In order to fully develop and prepare students, CTE has

developed various work based learning programs that assist students applying academic knowledge in work settings. This important feature of CTE is the factor that allows students to develop their working skills in order to be competitive in a global working environment. Work based learning programs will now be discussed in the literature.

Work Based Learning Programs

Career Technical Education set the stage for implementing a work-based learning (WBL) program. WBL programs are organized in ways that reflect the objectives and goals of CTE. These goals and objectives have been identified as the following: career exploration and planning; promotion of reaching academic achievement and the desire to learn; development of work knowledge and skills in order to transfer to the labor market; and installation of career pathways that enable individuals to participate in life-long learning (Lynch, 2000).

One of the many goals of CTE was to set the stage for educational programs that would facilitate students into apprenticeships, service learning, internships, and school enterprise programs. The objective for these programs is to incorporate working experiences with general academics. Assimilating these two functions, would assist students in developing personal skills and needed knowledge through reflective thinking (Kinman & Kinman, 1997).

Adolescents in the United States have had greater difficulties in making successful transitions into the workforce. The barriers that adolescents face when

entering the workforce can be the cause for irreversible obstacles in securing a job. Results of a study reveal that 25 percent of students who drop out of high school had the inability to retain a job lasting more than a year and by the age of 29 and were not capable of maintaining a job for at least two years (Klerman & Karoly, 1994).

A differing opinion exists amongst other researchers in regards to the structure of work based learning programs. Varying researchers believe that career pathways set out for high school students are deficient in providing structure (Blustein, 1999; Mortimer, Zimmer-Gembeck & Holmes, 2002). Other researchers point out that regardless of students' aspirations of pursuing postsecondary education or entering the workforce all must possess high skills in order to enter into a global working environment. "Even if students have college plans, they must still prepare for work. All career plans should include multiple options, particularly for students who have poor likelihood of completing college" (Rosenbaum, 2002, p. 14).

We readily see that many of America's youth are placed in educational tracks based on socio-economic status, level of attained social skills, and cultural capital. These factors are said to also account for the success of students transitioning from school into the work force (Lewis & Cheng, 2006).

In trying to develop the work skills students need, WBL programs provide students with the prospect of acquiring real life working experiences that ultimately materialize into educational and vocational advantages (Stern, 1997). The scope of

programs under the WBL umbrella is quite large. Despite the numerous programs, they all include mutual goals found in WBL opportunities.

Research suggests that students who participate in WBL programs display improvement in graduation rates, grades, and attendance. Supporters of CTE argue that students who participate in WBL programs display signs of motivation hence translating to enhanced academic achievement. This was attributed to the connections that students made with academic content and real life experiences (Wills, 1998). Furthermore, the ability of students to sustain acceptable grades translated to obtaining grade point averages comparable to or superior to that of other students. This suggestion is considered in the subsequent studies:

- ◆ Students who engaged in intense work-based mentoring programs had higher grade point averages when compared to students who did not (Linnehan, 1998).
- ◆ Student participation in career academies saw an increase in students' grade point average. This finding was derived from comparing students that did not participate in the career academies within the same school district (Maxwell & Rubin, 2000).
- ◆ Student's academic achievement increased as more time was spent in career academies. This study focused on comparing student marks pre and post enrollment in the academies (California Academies, 1996).
- ◆ National and state surveys suggest that students who were participants of WBL programs participated in more rigorous course work and had similar

grades to those students not participating in WBL programs (Bishop & Ruiz-Quintilla, 2000).

- ◆ California students in academies obtained comparable grade point averages with those students enrolled in magnet programs within the same institution (Hanser & Stasz, 1999).

The importance of acquiring or developing working skills while attending an academic setting is an opportunity that has no extrinsic value. The inability of recent secondary graduates of finding jobs increases if no exposure or opportunities in internship, special training or real life work programs are given (Brown, 2001).

Reality reveals that in today's labor market, employers are hesitant to hire secondary or postsecondary graduates without any kind of experience. According to economist Schuyler Porce, member of an educational not-for-profit organization, suggests that students who complete secondary education will have a difficult time securing employment if they do not possess any type of specialized skill. He indicates that if individuals acquire or develop special skills and experience, employment prospects will readily be available.

Students enrolled in a WBL programs should be involved in assignments that are relevant to a sequence of courses taken in school. Not only are students able to have meaningful connections (between academics and work) but also allow the development of skills. This motivates employers to assist students in learning to adjust to organizational changes and transferability of skills (Jacobs & Hawley, In Press). The

importance of bridging academics, elective courses, and application of critical thinking skills in a practical setting are eminent. The Association of College and Employers (NACE), reports that 44 percent of student interns are extended employment following graduation.

In order to channel the outcome of internship programs with educational achievement, the explanation of academic knowledge and proficiency needs to be addressed. Advocates of WBL programs indicate that students gain knowledge to read, write, multiply, divide, subtract, and add. Students also gain knowledge in problem solving such as algebraic equations, recollection of important historical events, computer skills, and developing strategies to solve problems that are readily found in standardized exams (Hughes et al, 1999). As students use these learned skills from an educational setting, then it is realistic to suggest that the use of these same skills are transferred to the work environment. Since the transfer of these skills are done into the work place, then it would only be rational to determine to what degree do the above skills assist student interns in academic achievement. The previous statement can be used as a basis to determine knowledge gained by high school students in courses, e.g. math, English, CTE courses, internships, or career planning programs in SCISD high schools. Hence, the installation of the Texas Assessment Knowledge Skills (TAKS) exam was placed as a requirement for all high school students in Texas.

Assessment

Academic skills have been identified as elements/possessions of individuals that can be measured. The instrument used to assist in measuring academic skills has been identified as academic achievement exams. Acceptance by many to use the latter tool for measuring student academic knowledge and skills, there are researchers that refute this type of measurement. The arguments made against academic achievement exams are their inability to measure knowledge and skills within an environment that has no relevancy (Stasz & Brewer, 1998).

Under NCLB the number of academic courses students must satisfy has increased as well as the expected rigor of said courses. Emphasis placed by NCLB on the latter expectation, CTE courses are being replaced by classes that are categorized as remedial. Unfortunately, when students finally make their transition from secondary to postsecondary schooling, they demonstrate the lack of a strong foundation in academics and CTE classes (Elliot and Deimler, 2007).

According to SERB (2006), the solution to decreasing the need of students to be enrolled in remedial courses, secondary and postsecondary must collaboratively work together in order to define what college readiness is, assist students in developing those college readiness skills, and the integration of CTE in the curriculum.

Students' educational experience should incorporate a component of learning skills that will be required by employers (Secretary's Commission on Achieving Necessary Skills, 1991). CTE has an obligation to provide students with transferable

skills and abilities (Finegold & Wagner, 2002, Rojewski, 2002). By integrating the teaching of skills and competencies within a curriculum will afford students the ability to become competent in their studies, beneficial workers, enter postsecondary schooling, and be productive citizens.

Literature indicates that students exert higher levels of engagement in learning which could translate to fewer students dropping out of secondary school and more likely to pursue postsecondary schooling if engagement is experienced (Castellano et. al., 2002). Despite the importance of CTE in secondary schooling, a differing opinion indicates that heavy concentration of CTE in secondary education may divert students from enrolling in postsecondary institutions and enter directly into the workforce (De Luca et. al., 2006).

Many of the initiatives driving CTE are grounded by the need to meet the educational standards set by the federal government. Every state has been given the mandate to ensure that every educational institution integrate within their structure the nationally adopted 16 career pathways.

Career Technical Education – 16 Career Pathways

CTE's conceptual framework has been established to address the following: defining of which students are considered CTE:, tracking system of students' progress in varying career pathways from grades nine through fourteen:, indicators that are measurable on levels of student success must be construed:, and student's transitions from school to work should be incorporated into the model.

Currently, many secondary institutions offer their students various pathways. The first element that needs to be mentioned is the NCLB pathway, which indefinitely focuses on academic courses. Second, the vocational pathway is available for students who only concentrate on CTE classes and programs. Lastly, the integration of both previous pathways mentioned can be formed to represent the CTE pathway (Kotamraju, 2007).

The CTE pathway can be described as one where students pursue academic course taking simultaneously with CTE courses that are guided by CTE's programs of study. In the following section, a description on how the state of Texas has undergone the implementation of the 16 career pathways and particularly how SCISD CTE division began to incorporate the nationally recognized 16 career pathways in its curriculum.

During the last twenty years after the revelation of *A Nation at Risk*, CTE directors, coordinators, and educators have been given the task to ensure that all or various elements of the standards initiative, mandated testing, and models that target career education (school-to-career, school-to-work, applied academia, and Tech Prep) are integrated into programs (Willis, O'Neil, & Norwood, 2005).

In addition to ensuring that the latter requirements stated are integrated in programs, CTE divisions are now faced with utilizing career pathways as a mean to lead students into a structured sequence of courses. Current literature reveals that transitions occurring in America's educational system have directed its focus on postsecondary and work readiness (ACT, 2004; Byrd, 2005; Dounay, 2006). The

implementation of this component becomes an integral role for all CTE divisions as part of their funding comes from the Carl D. Perkins Act. One of the stipulations set forth by the re-authorized Carl D. Perkins Act is to have in place career pathways in order for CTE to utilize funds provided by the act. Currently, there are more than forty states that have begun the integration of career pathways into CTE programs (NASDCTE, 2005c).

Career pathways formerly named career clusters are a representative of various occupations that are grouped together based on commonalities (NASDCTE, 2005c). This particular reform initiative structures classroom instruction around career pathways and also integrates the requirements that need to be satisfied for particular occupations. An important aspect of career pathways is that educators also provide career guidance as one of the components of this school reform.

Career pathways have been designed as the means to reform secondary education and improve CTE programs. The elements found in career pathways are the following: academic and career related activities:, career guidance:, and work based learning programs. These elements allow for students to simultaneously follow a coherent sequence of courses and gain experience or knowledge on relevant occupations (Wonacott, 2001). Through this reform initiative school districts are able to structure their curriculum around career pathways and have the capacity to provide contextual knowledge and instruction (Hudis, 2001).

Development of Career Pathways

The Office of Vocational and Adult Education (OVAE) was the fundamental agency that began to fund the Career Pathway reform initiative. In conjunction, the National Association of State of Directors of Career and Technical Education Consortium (NASDCTEc) became the coordinating office for the Career Pathway initiative.

The NASDCTEc indicates that the Career Pathway reform effort offers a strong framework for re-structuring CTE programs that support high levels of academic achievement, assists students in being better prepared to directly enter the workforce or postsecondary education, provides knowledge on varying careers, allows students to develop necessary knowledge and skills needed in today's workforce, and provides an assessment tool to meet requirements of accountability and the collection of data (ACTEonline, 2004).

The Career Pathway framework is organized to display the needed knowledge and skills needed for each of the 16 career pathways. Each pathway contains ten identical foundations that are needed for work readiness, problem solving, communication skills, critical thinking skills, the use of technology applications, academic achievement, leadership skills, collaboration, ethical behavior, and technical skills. In order for these ten foundations to be implemented, CTE is assessed in order to determine its effectiveness in developing the latter skills. In collaboration with the NASDCTEc, the National Occupational Competency Testing Institute (NOCTI)

developed the *Workplace Readiness Assessment tool* in 2004 (Green and Stacey, 2004).

Research on Programs of Study

Career Pathways, a comprehensive secondary national reform effort, is heavily being pushed by individual states onto all school districts. The availability of formal research studies done to compare participants and non-participants of Career Pathways is limited. Therefore, to report the results of some studies done on Career Pathways is relevant to the nature of this study.

In October of 2007, the National Research Center for Career Technical Education conducted a comprehensive study on career-based reform initiatives. The focus of the study was to see the impact of Career Pathways on disadvantaged youth minority students. The study used quantitative and qualitative methods as instruments to define outcomes of the reform initiative.

The study focused on examining two high schools, one located in a large urban area in the West and the other in an agricultural area in the Pacific Northwest. Academy High School located in the West and Pathways High School located in the Pacific Northwest was divided into subgroups. Subgroups represented a comprehensive and career oriented high schools. The relationship between kinds of reforms implemented and student achievement, engagement, and movement to postsecondary institutions was examined. In addition case studies were developed through participant observations and interviews throughout a four year period.

The outcome of study suggests that student engagement and achievement was equal or higher for Academy High School (comprehensive high school in the West) than C- Academy High School (career oriented high school in the West) students. Also no difference was seen in the number of students dropping out for both schools. Students attending Academy High School earned further math credits than students at C-Academy High School.

Engagement and achievement measures showed to be lower at Pathways High School (comprehensive high school in the Pacific-Northwest) than at C- Pathways High School (career oriented high school in the Pacific-Northwest). The study revealed that students in C- Pathways High School surpassed Pathways High School students in all measures. In regards to movement into postsecondary institutions, Pathways High School graduates measured greater in having postsecondary plans and acceptance into four-year college institutions. Noticeable results were observed in regards to needs to remediation courses. Pathways High School students need to take remedial courses was less than C- Pathways High School students (Castellano, Stone III, Stringfield, Farley-Ripple, Overman, and Hussain, 2007).

A similar study done in North Carolina used Career Pathways to investigate how and if this curriculum produces race and class-based stratification. The study focused on all 2005 graduating high school seniors enrolled in courses of study in the state of North Carolina. Enrollment patterns in courses of study by school and students were analyzed. The study's purpose was to unveil any relationship between school demographics such student race and their placement in courses of study.

The findings of the study suggest that the majority of North Carolina high school students do enroll in courses of study programs. The results of the study show that the race variations enrolled in differing courses of study programs affirm social class stratification. It is to say that students coming from affluent families, 77.1 percent enroll in courses of study that ultimately leads them to postsecondary schooling whereas 56.8 percent of students categorized economically disadvantaged enroll in College Tech Prep programs. It is also important to report that 62 percent of students enrolled in schools that serve low income populations failed to attain North Carolina's standardized exam's minimum proficiency level (Mickelson and Everett, 2008).

In the state of California, the implementation of the 16 Career Pathways has been given the name of California Partnership Academies. School districts have embraced the new curriculum as a mean to provide students who get lost in comprehensive high school structures an opportunity to re-engage in their educational careers. EdSource (2009), reports that disengagement by many students throughout secondary schooling has become a problem and ultimately leads to high drop- out rates. California Partnership Academies have been implemented with the objective of offering students core and college preparatory courses, career technical electives, ability to challenge certification exams, and participate in co and extra-curricular activities.

An analysis conducted by ConnectEd and Career Academy Support Network show that California Partnership Academies tend to have optimistic outcomes. Student's who by choice enrolled in California Partnership Academies were more prone

to succeed in meeting California's High School Exit Exam (CAHSEE) first administration in 2004-2005. This particular research data revealed that 82 percent of African American, 79 percent Hispanic, 86 percent Asian, and 92 percent White not of Hispanic Origin sophomores enrolled in California Partnership Academies passed the state's ELA exam. Whereas, 65 percent African American, 65 percent Hispanic, 86 percent Asian, and 89 percent White not of Hispanic Origin not enrolled in California Partnership Academies passed the ELA exam.

Further data also showed 90 percent of White not of Hispanic Origin, 88 percent of Asian, 73 percent Hispanic, and 71 percent African American sophomore students enrolled in California Partnership Academies passed the math exam. Hence, 92 percent Asians, 87 percent White not of Hispanic Origin, 62 percent Hispanic, and 55 percent African American students not enrolled in California Partnership Academies passed the math exam (ConnectEd 2009).

The outcomes of academic achievement on standardized exams for students involved in California Partnership Academies suggest that career pathways foster student engagement and academic success (ConnectEd 2009). Excitement in the re-alignment of traditional comprehensive high school curriculums is positively changing California's view on CTE. In general, CTE demonstrates mixed results in outcomes seen in latter studies on student academic achievement.

Conclusion

History reveals that Career Technical Education has endured numerous transformations. These transformations have taken place due to varying ideologies/philosophies regarding the role of education and the changes our economic system experiences. Through reform initiatives and the goals/objectives found within these initiatives, we can deduct that America's educational system has modified practices from a societal standpoint to one that incorporates the ongoing changes occurring in economic landscape.

The occurring transformations taking place within the economic landscape of America, has led politicians, businesses leaders, and educators to modify educational practices in order to meet the demands of industries and instigate the development of student social skills. As these demands are exerted by industries, public education is made accountable by complying with demands through the repeated re-authorizations of the Perkins Act.

With each re-authorization, the function and outcomes of Career Technical Education becomes more critical as students prepare themselves to enter the labor market in the 21st century. Vocational education has taken an expansive view on the objectives it is to accomplish. Extreme importance has been placed on preparing students academically and the provision of offering a comprehensive career menu for students to explore (Levesque, Lauren, Teitelbaum, Alt, & Librera, 2000).

The new direction taken by vocational education has now urged CTE's integration with academics, implementation of secondary and postsecondary programs, and classroom instruction bridged with work-based programs (Rojewski, 2002). This is done to ensure that academics and CTE elective classes are bridged by critical thinking skills which are to be transferred to postsecondary schooling and the workforce.

CHAPTER 3

METHODOLOGY

Introduction

The accountability pressures of developing America's youth into high academic achievers and skillful employees has every state in the nation focusing on Career Technical Education's – 16 Career Pathways initiative. This reform effort has been identified as a means to solve deficiencies seen in high school students' academic and career skills. Some aspects of this study's research questions have been identified as critical by other researchers who suggest that academic achievement can be enhanced and the number of high school dropouts can be reduced by providing academic relevancy (Norris, Pignal, & Lipps, 2003). In order for high school students to be engaged in school, relevancy of what they are learning to real life applications needs to occur (Cotton, 2001). As students' engagement develops in academic courses, achievement increases and students develop work related skills (Bottoms, 2003).

This study was also influenced by a lack of research which looks at comparisons of high school participants and non-participants of CTE- 16 Career Pathway Curriculum on academic achievement, development of technical skills, and student engagement. This chapter is organized to reveal the purpose, research design, instrumentation, research questions, hypothesis, population, collection of data, analysis of data, and conclusions.

Purpose

The intent of this study was to analyze differences between SCISD high school participants and non-participants of CTE- 16 Career Pathway Curriculum on academic achievement, skill development, and school engagement. The interest in such a study is to initiate contributions to the body of research of CTE-16 Career Pathway participation differences in academic achievement, school engagement, and development of technical skills. There have been no studies done to report differences of participants in CTE-16 Career Pathway Curriculum on academic achievement, development of technical skills, and school engagement in SCISD or similar school districts in Texas or the region. Critical decision making can be employed to continue the improvement of implementing CTE's Curriculum, in a manner that strengthens academic achievement, school engagement, and development of technical skills.

Research Design

This study employs a non- experimental quantitative design. To address the research questions, secondary data was accessed with permission from the associate superintendent in charge of the district's research and evaluation department. Data consisted of ethnicity, socio-economic status, gender, campuses, Exit Level Math and ELA TAKS scores, and participation or no participation in Programs of Study (POS or Non-POS). The secondary data was used to analyze differences between POS and Non-POS participants on academic achievement by means of an Analysis of Covariance (ANCOVA). In addition, quantitative survey research methods were applied

to determine the proportions of students' (POS and Non-POS participants) perceptions of school engagement and development of technical skills using the Chi-Square test.

The collection of varying forms of data (secondary data and survey responses) that represent the sample population can provide valuable information or inconsistencies in the collection process (Patton, 2002). The use of questionnaires is considered to be effective for gathering individuals' perceptions that can be quantified for purposes of presenting descriptive and inferential data (Anderson, 2001). For this research, the secondary and survey data represent two independent data sets. The survey responses are not associated with individual student profiles found in the secondary database. Students who responded to the survey belong to the district's high school senior class and are either participants or non-participants of CTE's Curriculum.

The associate superintendent of the research and evaluation office granted approval for the administration of this study's online survey. The director of Career Technical Education along with his administration facilitated the survey administration process by creating direct links on district computers for immediate access by students. Students were asked to voluntarily participate in the study's survey. District administrators were provided with IRB documentation and consent letters.

Instrumentation

The High School Survey of Student Engagement (HSSSE), a survey developed by the Indiana University School of Education, was used as a reference to create this study's survey titled High School Student Engagement and Technical Skills (Appendix

B). HSSSE was not developed to measure student academic achievement or the level of success of schools mandated by NCLB. Alternatively, the HSSSE is a tool that augments performance based exams. The survey is used to provide information that standardized exams fail to do, such as educational practices which are associated with exam outcomes (Center for Evaluation and Education Policy, 2006). NCLB's mandate to measure academic achievement does not allow the ability to discover the range of learning experiences that promote test outcomes. The HSSSE is an instrument that indicates students' views on their engagement in learning, and assists in identifying what factors of their schools either augment or hinder their engagement (Yazzie-Mintz, 2007).

The Center for Evaluation and Educational Policy at Indiana University has administered the survey to an excess of 134,000 students belonging to 223 different high schools across the nation since 2004. The HSSSE has provided valuable information to school districts that may assist schools to implement individualized reform strategies based on students' needs. Despite the HSSSE producing vital data on engagement at the high school level there is a limitation to this survey (The Center for Evaluation and educational Policy, 2004). The amount of data available on student engagement in urban high schools that employ a CTE curriculum is narrow. Researchers such as Castellano, et al. (2002) and Silverburg, et al. (2004) indicate that a need exists for further research of CTE's impact on student engagement in secondary schools. Students of Hispanic origin are highly underrepresented in the HSSSE

respondent databases. This study provided an excellent opportunity to capture a significant number of Hispanic student engagement views.

In order to examine statistical differences between students who participate in Programs of Study and those who do not on academic achievement measured by Exit Level Math and English Language Arts TAKS scale scores, Analysis of Covariance (ANCOVA) test was used. Chi-Square Test was used to determine proportions of POS and Non-POS participants' perceptions on school engagement and development of technical skills.

Seven questions on the survey (Appendix B - questions one, two, four, five, seven, eleven, twelve, thirteen, fifteen, sixteen, and seventeen) related to engagement and technical skills. Students were grouped as either engaged or not engaged for questions pertaining to school engagement. The grouping of students into the engaged category was done by responses that included "always", "often", "sometimes", and "plans to continue education past high school". Students responses of "sometimes", "never", and "plans to not complete", "only complete", or "obtain GED" were grouped into the not engaged category. Students were also grouped into categories of confident, somewhat confident, and not confident for questions on development of technical skills. Students in the "confident category" answered four of the technical questions with three confident responses; students grouped into the "somewhat confident" category answered "confident" in two of the questions and other two with "sometimes confident"; students categorized into "not confident" answered at least two questions with "not confident" and the other two "somewhat confident".

This study concerned the following research questions:

Question 1:

Is there a significant difference between SCISD Programs of Study participants and non-participants on academic achievement, as measured by Exit Level Math TAKS, controlling for SES, gender, ethnicity, and campus?

Question 2:

Is there a significant difference between SCISD Programs of Study participants and non-participants on academic achievement, as measured by Exit Level English Language Arts TAKS, controlling for SES, gender, ethnicity, and campus?

Question 3:

Is there a significant difference among low SES Programs of Study participants enrolled in different campuses , as measured by English Language Arts TAKS scores?

Question 4:

Are Programs of Study participants' perceptions regarding school engagement and development of skills distinct from those of non-participants, as measured by the High School Student Engagement and Technical Skills survey?

The following hypotheses were examined:

Hypothesis 1:

Students enrolled in POS will have significantly higher scores than Non-POS students on the Exit Level Math TAKS, controlling for SES, gender, ethnicity, and campus.

Hypothesis 2:

Students enrolled in POS will have significantly higher scores than Non-POS students on the Exit Level ELA TAKS, controlling for SES, gender, ethnicity, and campus.

Hypothesis 3:

A significant difference between SES Programs of Study participants enrolled in differing campuses and counterparts exists, as measured by Exit Level English Language Arts TAKS.

Hypothesis 4:

POS participants' perception of school engagement and development of technical skills is proportionally greater than Program of Study non-participants, as measured by the High School Student Engagement and Technical Skills Survey.

Population and Sample

The school district chosen for this study is the largest district found in the Texas Education Agency (TEA) Region 19 Service Center. The district houses more than 63,000 students in ninety-two schools. SCISD is the seventh largest school district in Texas and the fifty-seventh largest in the United States.

The district administers thirteen high schools. This study focused on eleven of the district's high schools. The name of the school district has been substituted with "Sun City Independent School District" (SCISD). The name substitution was done with the intent to keep the school district's confidentiality requirements. The names of the high schools in this study were not revealed; instead a number was assigned to individual campuses.

From the SCISD database, the study used 3,653 individual student profiles (represents all high school juniors enrolled in SCISD for the 2008-2009 school year). The individual student profiles used was less than the total population of 3,931 due to the following: 258 student profiles lacked either Exit Level Math or ELA TAKS scores and 60 student profiles represented homebound students. Student profiles for this study were collected by the research and evaluation department at the end of their junior year in high school. The junior class of the 2008-2009 school year was chosen as the sample for this study. This particular class of students have satisfied Texas Education Agency's requirement to take the Exit Level Math and ELA TAKS. This requirement is crucial as it determines the eligibility of students to graduate from high school. This sample of students enables the study to generate more credible results, as

all individuals within the sample (now seniors) have had the longest period of time to access CTE-16 Career Pathway Curriculums.

Data Analysis

Variables

Independent Variables

Independent variables identified for this study were gender, ethnicity, socio-economic status, campus rating by Texas Education Agency, and participation in POS for research questions one, two and three. In this study “Ethnicity” is represented through the use of three categories: Hispanic, White-Not of Hispanic Origin and Other (African American, Asian/Pacific Islander, and American Indian/Alaskan Native). Socio-economic status was defined using two categories: students receiving free or reduced lunch, and those not receiving free or reduced lunch.

Campus rating has been identified by Texas Education Agency’s standards: Exemplary, Recognized, Academically Acceptable, and Academically Unacceptable. Individual campuses are assigned a rating based on meeting academic standards measured by all TAKS exams administered by the school, school completion rate, and student dropout rates. The assignment of a ranking by the Texas Education Agency is contingent upon a campus satisfying an established percentage standard on each criteria stated above. All high school campuses were grouped based on TEA’s academic ranking. Two of the district’s magnet campuses were clustered together to construct a larger sample size representing magnet high schools.

The variables controlled for their influence on TAKS scores were: ethnicity, socio-economic status, campus, and gender. Valenzuela (2005) further affirms that historical and current data reveal that Mexican American and African American students in Texas tend to be retained and do poorly on achievement exams, compared to White students. Also, a study by Jimerson and Kaufman (2003) shows that male students of minority backgrounds have higher rates of not being academically successful as measured by standardized tests.

Dependent Variables

The dependent variables for the first three research questions are the Exit Level Math and ELA TAKS scale scores. A student obtaining a score between 2100 and 2400 has met academic achievement standards. Any score below a 2100 on the Exit Level Math or ELA TAKS does not satisfy the academic achievement standards. A score of 2100 meets state standards and scores of 2400 or above is at the commended level. The Exit Level Math and English Language Arts (ELA) TAKS are formal assessments administered to all secondary students classified as juniors. These state mandated exams along with Exit Level Science and Social Studies TAKS are some of the critical elements embedded in meeting the requirements for students to graduate from high school in Texas. The use of the Exit Level Math and ELA TAKS to measure academic achievement is founded on the need to draw upon a standardized exam that assesses multiple facets of students' abilities, knowledge and skills.

The Exit Level Math TAKS is structured to assess students using 10 objectives. These objectives stem from mathematical concepts that have been taught since

elementary schooling. In order for students to be successful in mastering the TAKS objectives, students are instructionally guided by the Texas Essential Knowledge and Skills (TEKS). The TEKS serve as a tool to foster essential skills that are needed in everyday life. These skills are identified as the following: reading to understand, writing, critical thinking, problem solving, reasoning, analyzing, evaluating, synthesizing. The ability to apply all of the above skills in real-life problems is found in the Exit Level Math TAKS (Texas Education Agency, 2009).

The Exit Level English Language Arts TAKS is structured to assess students using 3 reading and 3 writing objectives. ELA integrates reading and writing skills in its assessment with the intent to show a connection between both skills. Objectives tested in this standardized exam stem from concepts that students have been taught since their elementary schooling. Texas Essential Knowledge and Skills (TEKS) also guide instructional practices in reading and writing. The use of ELA scores in this study is essential as the ability to read effectively is an integral component of every student's education. Furthermore, the inability to develop critical reading skills will inhibit a student from performing well in the area of mathematics. According to the Texas Education Agency, students who develop strong reading skills transform into fine thinkers which enables them the opportunity to enrich employability, educational, and personal opportunities (Texas Education Agency, 2009).

Conclusion

This chapter focused on presenting the research methodology, sample population, data collection instrumentation, and the quantitative techniques to answer

this study's research questions. An explanation was also given as to the validity and reliability of using the Exit Level Math and ELA TAKS scores to measure academic achievement. The use of the HSSSE survey as a reference for the development of this study's survey was explained in order to capture students' views on school engagement and development of technical skills.

This chapter also provided insight regarding the analysis of data to take place for this study. Identification of variables was provided and how these would be used in the analysis. Descriptive statistics of sample population, differences in participants and non-participants and, differences of POS and Non-POS participants' performance on Exit Level Math and ELA TAKS scores, and proportions of students in POS and Non-POS perceptions regarding school engagement and development of technical skills are reported in chapter four.

CHAPTER 4

RESULTS

Introduction

The purpose of this study was to compare high school CTE participants with non-participants on academic achievement, measured by Exit Level Math and ELA TAKS, and the proportions of students in POS and Non-POS on their perceptions regarding school engagement and technical skills. This chapter presents descriptive statistics identifying the demographic composition of the sample population, and an analysis of differences seen in high school student participants with that of non-participants on Exit Level Math and ELA TAKS score means. Furthermore, proportions of students' perceptions regarding their school engagement and development of technical skills are presented. Students' views were captured through a survey for this study using the HSSSE as a resource for school engagement and technical skill questions.

Demographic Statistics

The number of student profiles used in this study was $N = 3,931$. The gender composition of secondary data obtained for this study is revealed to be $n = 1,939$ males and $n = 1,992$ females. See Appendix A (Table 1). Male students enrolled in POS and Non-POS are 49.0 and 50.0 percent, respectively. Female Students enrolled in POS and Non-POS is 51.1 and 50.4 percent, respectively.

The ethnic composition of students obtained from secondary data show that Hispanic students make up 80.2 percent of the total profiles, whereas 13.6 represent White, Not of Hispanic Origin, and 6.1 percent represent other ethnicities. See

Appendix A (Table 2). Hispanic students enrolled in POS and Non-POS are 81.0 and 80.0 percent respectively. Not of Hispanic Origin students enrolled in POS and Non-POS is 12.9 and 14.1 percent. Other ethnicities enrolled in POS and Non-POS are 6.2 and 6.0 percent.

In order to determine differences on academic achievement, students were grouped into two categories: POS and Non-POS students. These categories represent the main independent variable used in the study and was previously discussed. All 3,931 student profiles were either identified as POS or Non-POS participants. Students enrolled in a program of study represent 42.3 percent, whereas those not enrolled in a program of study is 57.7 percent of the total student profiles. See Appendix A (Table 3).

In regards to socio-economic status, SCISD students are classified as economically disadvantaged if they qualify for free or reduced lunch. Therefore, students who do not meet the above criteria are categorized as “not identified as economically disadvantaged”. Student profiles used for this study show that 56.8 percent are economically disadvantaged whereas 43.2 percent are identified as not economically disadvantaged. See Appendix A (Table 4). Student participants in POS are 57.5 and 42.5 percent “economically” and “not economically disadvantaged” respectively. Students not participating in POS are 56.2 and 43.8 percent “economically” and “not economically disadvantaged”, respectively.

Results

The results of this study are presented using descriptive and inferential statistics for POS and Non-POS students. Statistics presented consist of means, standard deviations and the outcomes of ANCOVA tests.

POS vs. Non-POS Participants

Exit Level Math TAKS Descriptive Statistics

The sample size for POS participants ($n = 1,597$) and Non-POS participants ($n = 2194$) reported here is distinct from the total number of participants reported earlier. There were 140 student profiles with missing Exit Level Math TAKS scores. Explanation for missing scores is the following: students leaving district before administration of standardized exam or absences. Exit Level Math TAKS mean scores and related standard deviations for POS and Non-POS participants are presented. POS participants ($M = 2272.12$, $SD = 204.35$) scored higher than Non-POS participants ($M = 2204.43$, $SD = 187.54$) in the Exit Level Math TAKS. See Appendix A (Table 5).

Exit Level ELA TAKS Descriptive Statistics

The sample size for POS participants ($n = 1,621$) and Non-POS participants ($n = 2192$) reported here is distinct from the total number of participants reported earlier for POS and Non-POS. There were 118 student profiles that lacked Exit Level ELA TAKS scores. Explanation for missing scores is the following: students leaving district before administration of standardized exam or absences. Exit Level ELA TAKS mean scores and related standard deviations for POS and Non-POS participants are presented.

POS participants ($M = 2296.57$, $SD = 146.67$) scored higher than Non-POS participants ($M = 2261.71$, $SD = 144.69$) in the Exit Level ELA TAKS. See Appendix A (Table 6).

ANCOVA Statistical Measure

The first three hypotheses: *Students enrolled in POS will have significantly higher scores than Non-POS students on the Exit Level Math TAKS and Students enrolled in POS will have significantly higher scores than Non-POS students on the Exit Level ELA TAKS* were analyzed using the Analysis of Covariance (ANCOVA) quantitative statistical procedure with an alpha level of .05.

ANCOVA test was used as opposed to regression due to the following motives: 1. all predictor variables are categorical which would have to be “dummy coded” to proceed with a regression test, 2. predictor of interest was CTE participation and other variables are included to control for effects on TAKS scores, and 3. the study’s interest was on the degree of mean differences between POS and Non-POS TAKS scores. The results of the analysis will not be interpreted to mean that CTE Curriculum has a casual impact on TAKS scores, but only mean differences between groups were noted for the sample.

The ANCOVA suggests $F(1, 3789) = 119.08$, $p = 0.00$ are indicative that a statistically significant difference exist between POS and Non-POS participants in their Exit Level Math TAKS scores. See Appendix A (Table 7). Students participating in programs of study scored higher than students not participating in programs of study in the Exit Level Math TAKS.

Ethnicity, Socio-Economic Status, Gender, Campus Rating Variables

The independent variables identified previously: ethnicity and socio-economic status, gender and campus rating were treated as covariates within the ANCOVA test to control for their effects on the Exit Level Math TAKS. Results show that ethnicity ($F(1, 3789) = 13.29, p = .00$), socio-economic status ($F(1, 3789) = 78.24, p = 0.00$), gender ($F(1, 3789) = 5.22, p = .02$), and campus rating ($F(1, 3789) = 2.0, p = .16$). See Appendix A (Table 7).

It is evident that the F values for ethnicity, socio-economic status, and gender show a statistically significant mean difference in performance on the Exit Level Math TAKS. The appropriate decision to control for the latter four variables is supported through earlier literature evidence. The results of the ANCOVA show that POS participation had a unique mean difference on the Exit Level Math TAKS, distinct from the three variables controlled (ethnicity, socio-economic status, and gender).

Performance on Exit Level Math TAKS by Ethnicity

The sample included the following ethnicities: Hispanic, White- Not of Hispanic Origin, African American, Asian/Pacific Islander, and American Indian/Alaskan Native. Results of Exit Level Math TAKS scale scores by ethnic group show that students identified as reflect White- Not of Hispanic Origin performed slightly higher ($M = 2317.91, SD = 218.75$) than Hispanics ($M = 2220.82, SD = 189.73$), African Americans ($M = 2172.52, SD = 190.78$), Asian/Pacific Islanders ($M = 2347.16, SD = 211.98$), and American Indian/Alaskan Native ($M = 2309.11, SD = 137.48$). Ethnicity $F(1, 3789) =$

13.29, $p = .00$ factor shows a statistically mean difference on student performance on the Exit Level Math TAKS. See Appendix A (Table 8).

Performance on Exit Level Math TAKS by Socio-economic Background

For socio-economic status also treated as a covariate in the ANCOVA test demonstrated students who are economically disadvantaged scored lower ($M = 2207.57$, $SD = 190.45$) than students who are not economically disadvantaged ($M = 2269.42$, $SD = 201.86$). See Appendix A (Table 9). Socio-economic status factor shows statistically significant mean differences of student performance on the Exit Level Math TAKS $F(1, 3789) = 78.24$, $p = .00$.

An ANCOVA was also performed to determine if a difference exists between the means of POS and Non-POS participants Exit Level ELA TAKS scale scores. The test indicates a statistically significant difference $F(1, 3812) = 58.02$, $p = 0.00$. See Appendix A (Table 10). Students participating in programs of study scored higher than students not participating in programs of study in the Exit Level ELA TAKS.

Performance on Exit Level ELA TAKS by Ethnicity

The Exit Level ELA TAKS scale scores suggest that White- Not of Hispanic Origin performed slightly higher ($M = 2304.50$, $SD = 151.32$) than Hispanics ($M = 2271.68$, $SD = 145.65$), African American ($M = 2257.42$, $SD = 131.45$), Asian/Pacific Islanders ($M = 2344.61$, $SD = 167.88$), and American Indian/Alaskan Native ($M = 2377.33$, $SD = 121.38$). See Appendix A (Table 11). Ethnicity factor shows statistically mean difference on student performance on student performance on the Exit Level ELA TAKS $F(1, 3812) = 15.33$, $p = .00$.

Performance on Exit Level ELA TAKS by Socio-economic Background

For socio-economic status also treated as a covariate in the ANCOVA, students who are economically disadvantaged scored lower ($M = 2272.11$, $SD = 145.16$) than students who are not economically disadvantaged ($M = 2276.75$, $SD = 148.86$). See Appendix A (Table 12). Socio-economic status factor shows no statistically mean difference on student performance on the Exit Level ELA TAKS $F(1, 3812) = 3.36$, $p = .07$.

Results

The outcome of the analysis leads to accepting hypotheses 1 and 2.

Hypothesis 1:

Students enrolled in POS will have significantly higher scores than Non-POS students on the Exit Level Math TAKS, controlling for SES, gender, ethnicity, and campus.

Hypothesis 2:

Students enrolled in POS will have significantly higher scores than Non-POS students on the Exit Level ELA TAKS, controlling for SES, gender, ethnicity, and campus.

Results revealed that ethnicity, socio-economic status, and gender have a statistically significant effect on student performance in the Exit Level Math TAKS. However, results clearly demonstrate that POS $F(1, 3789) = 116.57$, $p = 0.00$ has a

unique statistical significance. $F(1, 3812) = 54.25, p = .00$ from the above variables treated as covariates. Similarly, ethnicity, gender, and campus ranking has a statistically significant effect on student performance in the Exit Level ELA TAKS, but POS has a unique statistical significance.

Results

The outcome of the analysis drives to reject the third hypothesis.

Hypothesis 3:

A significant difference between SES Programs of Study participants enrolled in differing campuses and counterparts exists, as measured by Exit Level English Language Arts TAKS.

Results reveal that SES is not statistically significant, POS participation is statistically significant as noted earlier but enrollment in any of the four rated type of high school campuses (exemplary, recognized, acceptable, or unacceptable) is not statistically significant to the performance of Exit Level ELA TAKS $F(1, 3789) = 6.86, p = .06$.

Further exploration of variables related to the above hypothesis: (campus ranking, socio-economic status and participation in POS) merit discussion. Students who are participants of Programs of Study, identified as low SES, and enrolled in any of the ranked high schools had an average Exit Level ELA TAKS score of 2303.42 whereas students not identified as economically disadvantaged had an average mean score of 2303.61. Students not enrolled in Programs of Study, identified as low SES, and enrolled in one of the ranked high schools had an average mean Exit Level ELA

TAKS score of 2244.67 and those not identified as economically disadvantaged had an average mean score of 2302.36. See Appendix A (Tables 13 and 14).

Results

Hypothesis 4:

POS participants' perception of school engagement and development of technical skills is proportionally greater than Program of Study non-participants, as measured by the High School Student Engagement and Technical Skills Survey.

The chi-square analysis showed that 97 percent of students enrolled in programs of study perceive to be engaged in school, whereas 3 percent indicated not to be engaged. School engagement was perceived by 61 percent of students not enrolled in programs of study and 38 percent indicated not be engaged.

Further, the chi-square analysis showed that 59 percent of students enrolled in programs of study were confident regarding their development of skills while 36 percent were somewhat confident, and 5 percent perceived to have no confidence. Confidence in the development of skills was perceived by 73 percent of students not enrolled in programs of study while 15 percent were somewhat confident, and 17 percent perceived to have no confidence. See Appendix A (Tables 15 & 16).

The survey used to address the fourth hypothesis included 330 voluntary student respondents. Male respondents represented 45.4 and female 54.6 percent of the sample. There were 84.4percent of students who indicated to be enrolled in POS, and 16.6 percent indicated they were not.

Chi-square show a significant relationship between participation in programs of study and school engagement, $\chi^2 (2, N=317) = 79.95$. The test further shows that a significant relationship exists between participation in programs of study and development of technical skills, $\chi^2 (2, N=317) = 46.77$. See Appendix A (Tables 15 & 16).

A disparity of survey respondents in POS and Non-POS exists when compared to the study's sample population total of 3,971. Hence, the results of the survey based on the number of respondents in POS and Non-POS are weak. Nevertheless, survey responses are interesting and suggestive.

Conclusion

This chapter has presented differences between high school POS participants and non-participants on academic achievement, school engagement, and development of technical skills in SCISD. Restatement of the research questions and hypotheses were presented at the beginning of this chapter. Data analysis was presented including descriptive statistics and results of the ANCOVA.

The research questions driving this study were: *Is there a significant difference between POS students' academic achievement and Non-POS students as measured by Exit Level Math TAKS at SCISD? Is there a significant difference between POS students' academic achievement and Non-POS students as measured by Exit Level ELA TAKS at SCISD? Is there a significant difference between low SES Programs of Study participants enrolled in differing campuses and counterparts, as measured by Exit Level English Language Arts TAKS? and Are Programs of Study participants'*

perceptions regarding school engagement and development of skills distinct from those of non-participants, as measured by the High School Student Engagement and Technical Skills survey?

The following chapter is dedicated to presenting this study's conclusions, implications for practice, implications for policymakers, and implications for future research.

CHAPTER 5

ANALYSES AND DISCUSSION OF RESULTS

Study's Overall Conclusions

The objective of this research study was to determine if statistically significant differences exist between students participating and not participating in CTE – 16 Career Pathway Curriculum on student academic achievement, school engagement, and development of technical skills of high school juniors (currently seniors) for the academic year 2008-2009. A total of 3,931 high school junior (throughout all district's high schools) student demographic profiles were obtained from SCISD research and evaluation office. These data was used to determine the number of students participating in POS and Non-POS, gender, ethnic background, socio-economic status, campus rankings, and academic achievement measured by Exit Level Math and English Language Arts TAKS scores. All students categorized as high school seniors were eligible to participate in this study's web-based administered survey.

Web-based survey was made available for access to all high school campuses across the district. Participation in survey was strictly voluntary and required consent forms to be obtained for those who it pertained to before engaging in questionnaire.

The survey was developed in collaboration with the district's Career Technical Education department. District's CTE director and his administration provided their expertise in relevancy and feasibility of survey instrument to ensure that survey questions would capture responses in alignment with the objective of this study. The collection of responses was facilitated by a web-based survey tool (survey monkey).

The survey captured 330 student respondent's views on school engagement and development of technical skills. Of the 330 student respondents only 51 indicated to not be enrolled in programs of study whereas 279 are enrolled. Although a disparity exists with the total number of survey respondents belonging to both subgroups, the information gathered from survey responses is weak but suggestive and should not be considered to make assumptions or generalizations regarding the population.

Regardless of the weak number of survey respondents not enrolled in programs of study, the researcher found that the use of the survey instrument captured valuable perceptions regarding students' school engagement and development of technical skills. The High School Survey of Student Engagement developed by The Center for Evaluation and Educational Policy at Indiana University instigated a deep interest in capturing the latter perceptions of high school students who are predominantly Hispanic and economically disadvantaged. The need to investigate school engagement on urban Hispanic students is a need that was recognized by evaluation and education policy center in Indiana University. The survey instrument used for this study used the HSSSE as a reference to construct the questionnaire adding critical technical development questions to the instrument. Therefore, recommendations made by researchers such as Castellano, et al. (2002) and Silverburg, et al. (2004) to investigate differences observed between students participating in CTE's in student engagement in secondary schools was eminent for this study.

16 – Career Pathway Curriculum Theoretical Framework

Throughout vocational education's history, astounding developments have been made to the purpose, goals, and accountability expectations of this educational alternative made for all types of students. John Dewey's belief of integrating academics with activities that are relevant to students' lives has now become one of the driving forces of Career Technical Education. The design and implementation of Career Pathways has become an interesting and important curriculum alternative for all students. Charles Eliot's thoughts that vocational curriculum should only be embarked on by students who belong to low socio-economic groups and have no need to pursue postsecondary education is a practice that is being obliterated by economic and workforce shifts. CTE – 16 Career Pathway has become the curriculum alternative that is to bridge academics, electives, and development of technical skills to move students to higher order thinking skills and school engagement.

The review of data show motivating results in regards to the theoretical framework established for CTE – 16 Career Pathway Curriculum. The bridging of academic, elective, and relevant experiences brings forth development of higher order thinking skills. This translates to higher academic achievement, school engagement, and development of technical skills. Data suggests that students enrolled in Programs of Study significantly score higher in the Exit Level Math and English Language Arts TAKS than those who are not participants of Programs of Study.

Research Questions 1 and 2:

Is there a significant difference between SCISD Programs of Study participants and non-participants on academic achievement, as measured by Exit Level Math TAKS, controlling for SES, gender, ethnicity, and campus?

Is there a significant difference between SCISD Programs of Study participants and non-participants on academic achievement, as measured by Exit Level Math TAKS, controlling for SES, gender, ethnicity, and campus?

Analysis of Covariance test was employed while controlling for ethnicity, socio-economic status, gender, campus rating to determine if a statistical difference exists between means of Exit Level Math and English Language Arts TAKS scale scores. Results of this test indicate that a statistical difference exists between Exit Level Math TAKS scores of students enrolled in POS than those not enrolled in POS. The outcome indicates that POS students Exit Level Math TAKS scores are statistically higher than those in Non-POS.

Data further reveals that a greater statistical difference exists in Exit Level English Language Arts TAKS scores between students enrolled in POS than those not enrolled in POS. The outcome reveals that POS students Exit Level English Language Arts TAKS scores are statistically higher than those in Non-POS.

Research Question 3:

Is there a significant difference among low SES Programs of Study participants enrolled in different campuses , as measured by English Language Arts TAKS scores?

In spite of rejecting the hypothesis established for the above question, exploratory data revealed that low SES and participants of POS across the four ranked high schools had greater mean TAKS scores than their counterparts. This has a bearing on issues of equity. Results are intriguing as literature reveals that students who are economically disadvantaged perform lower academically than their counterpart.

Research Question 4:

Are Programs of Study participants' perceptions regarding school engagement and development of skills distinct from those of non-participants, as measured by the High School Student Engagement and Technical Skills survey?

To examine question four, a survey instrument was administered voluntarily to all high school seniors in SCISD. Multiple questions found in the survey assisted in deriving conclusions on student's school engagement and development of skills. In spite of the disparity or weakness of number of respondents enrolled in POS and Non-POS, student's perceptions captured by the survey can be suggestive. Students enrolled in POS perceive themselves to be more engaged in school than Non-POS participants. In regards to development of skills, POS students perceive to have developed more technical skills than Non-POS participants. The responses given by POS participants suggest being in alignment with Kinman and Kinman (1997) thoughts of integrating academics and electives to provide real life experiences. Hence the latter opportunities foster school engagement.

Conclusion of Results

The review of data provided intriguing results that should not be taken to make any concrete generalization regarding CTE – 16 Career Pathway Curriculum. Data is suggestive that programs of study may be a statistically significant factor that promotes academic achievement (measured by Exit Level Math and ELA TAKS). In particular data reveals that more than half of the student populations in SCISD high schools are of Hispanic background. Therefore the analysis done to compare Hispanics students in POS and Non-POS was done to identify if Exit Level Math and ELA TAKS scores within Hispanic students is statistically significant. Results show that Hispanic students enrolled in POS and Non-POS mean TAKS score are statistically significant. Hispanic students enrolled in POS have a greater mean score than those not participating in POS.

This outcome leads to two conclusions: Programs of Study may be seen as a suggestive factor that impacts student academic achievement and achievement gap of minority students is narrowing.

This study analyzed the differences of high school student participants with that of non-participants of POS on academic achievement demonstrate that stated objectives of the curriculum are being met (Madaus et al., 1983). Data suggests that academic achievement of minority students in SCISD is beginning to close for those who participate in CTE – 16 Career Pathway Curriculum. The differences seen in participants of POS with those not participating show great gains as Texas once

experienced 87 percent of high school students of Hispanic and African American descent who failed the Exit Level exams (Valenzuela, 2005).

The High School Student Engagement and Technical Skills survey made available to all current high school seniors provided valuable information regarding the perceptions that these students have regarding their school engagement and development of technical skills. Nevertheless respondents perceptions collected in this study are inadequate to make generalizations regarding POS and Non-POS views on school engagement and development of skills. Responses are suggestive that students enrolled in CTE's Curriculum experience school engagement and indicate to have developed more technical skills than those not enrolled.

Implications for Practice

The underlying goal of America's educational system is to ensure accessibility, equity, and a positive learning experience for all students. Educational reform initiatives instigated by *Nation at Risk* and *No Child Left Behind Act* have consistently re-introduced practices that unintentionally benefit certain classes and races. Minority groups repeatedly get left behind academically and fail to experience opportunities that may bring forth school engagement. Past and current social transformations have shifted the needs of our economic structure. The drilling and memorization of concepts commanded by educators as a means to raise scores on state assessments does not suffice the needs of students. Valenzuela's (2002) research sustains the latter statement with the declaration for schools to discontinue treating students and parents as "objects".

The standardization of schooling brought upon high stakes testing promotes a systemic indifference to cultural, personal and community individualities. In order for Programs of Study to be effective, those in practice should understand the objectives and implementation of the Curriculum. Further, realize that every individual possesses a differing learning style; thus empowering students to see the connectivity their lives have with the rest of the world (Valenzuela, 2005). The distinctiveness of CTE – 16 Career Pathway Curriculum is to facilitate the integration of academics, electives, and experiences of real-life applications promotes academic achievement, school engagement, development of skills, and higher order thinking as previously identified in the literature.

Implications for Policymakers

The intent of this study was to compare high school student participants with non-participants of CTE – 16 Career Pathway Curriculum on academic achievement, school engagement, and development of technical skills. The outcome of analysis done on secondary data that consisted of high school junior Exit Level Math and ELA TAKS, ethnicity, gender, socioeconomic status, and campus rating throughout SCISD should be taken as a probable moving indicator of CTE's Curriculum capacity to reach objectives set by the Office of Vocational and Adult Education. In spite of the attention drawn to Career Pathways for its distinctive design to educate students, it should not go unnoticed; the curriculum's structure is directed to all types of students. Hence, CTE – Career Pathways is not intended to benefit students pertaining to a specific class or race. This innovative reform initiative has been designed to involve all in order to

facilitate academic achievement through association of academic and elective studies and promoting the applicability of learned content through work based learning programs.

Social changes transform into differing economic needs. This phenomenon is one that has continuously occurred in America. The labor industry has also encountered specific effects as a result of economic changes, which inevitably alters specific levels of education and skills needed by individuals. Today, students aspire diverse opportunities. Some hope to pursue postsecondary schooling and others seek to enter the workforce. In order for this to materialize, knowledge, high order thinking skills, and transferability of skills are qualities that individuals must develop in order to be effective and efficient in a global working environment. Rosenbaum (2002) affirms the latter claims as he points out that every student must be prepared for work whether they enroll in college or not. Therefore, support of career pathways is crucial to bring back equity and opportunity for all students.

Implications for Future Research

This study points to students enrolled in Programs of Study have a statistically significant higher Exit Level Math and ELA TAKS mean scores. Students in POS scored higher on both state assessments. POS have been developed to target specific student needs, one of them being academic achievement at the secondary level for a smooth transition into postsecondary schooling. Participants of POS show positive differences when compared to non-participants on academic achievement in regards to state assessment test scores. It would be logical to extend research on the impact that

POS have on students' achievement on college entrance exams (e.g. Accuplacer).

Employing this research will contribute further to the current body of literature. Results will determine if POS is accomplishing yet another focal objective: college readiness.

In addition, suggestive evidence was collected through surveys that indicate students enrolled in POS are more engaged in school and developed technical skills. Due to a weak number of survey respondents not enrolled in POS and other dynamics not considered in survey, further research is required to establish a compelling account of students' perceptions concerning academic achievement and development of technical skills.

The researcher recognizes limitations to the study. Results obtained from statistical analyses do indicate that differences in TAKS scores of POS compared to Non-POS students are statistically significant. Nevertheless, further research is needed to reveal the causes of those students who fall short in academic achievement and chose not to participate in CTE – 16 Career Pathway Curriculum. Investigation on the process taken by district administrators, campus level administrators, counselors, and educators in implementing CTE – 16 Career Pathways can be an important piece of evidence.

Future research on this study's positive findings should disaggregate data in an attempt to identify what components of the CTE- 16 Career Pathway Curriculum are fostering this study's results. Special attention should be given to the components of the curriculum such as: elective courses, work based learning participation, relevancy between core and elective program classes, and/or programs matriculation plan.

The population used for this research, only 2008-2009 high school juniors, can be expanded. Future research should focus on developing a data set incorporating variables which other researchers have identified as components related to academic achievement and school engagement. Variables that need to be drawn upon are English language learner status, level of school obtained by parents/guardians; type of graduation plan enrolled in, grade point average, and number of advanced/honors courses taken. Research in this area should consider using all high school grade levels as the population and random selection of students from each grade level who represent Programs of Study and Non-Programs of Study for development of data set. Applying the latter recommendations would enable an overall comprehensive analysis of CTE – 16 Career Pathway Curriculum.

Conclusion

Socio-political and economic dynamics persistently impact America's educational system. Reforms on education brought upon *Nation at Risk* and *No Child Left Behind* exhibit their inability to close the achievement gap, especially that of minority students. They prove to sustain ongoing opportunities for students who are most likely to succeed academically and attend higher education institutions. For those students belonging to minority groups, the latter reforms are deficient in providing an equitable educational experience. This study shows encouraging results regarding the academic achievement of students enrolled in Programs of Study. Further, the study identified important differences that exist between minority student and counterparts in regards to school engagement and development of technical skills. Results of research are

suggestive that CTE – 16 Career Pathway is having a positive bearing on students enrolled in such program. Further, it is seen that Language Art TAKS score gains is particularly encouraging given the context of CTE it moves away from traditional vocation to critical thinking education. Indirect evidence exists that CTE is making a contribution to critical thinking domains.

Education's history reveals differing practices used to teach children. Of these practices, some were influenced by individuals who believed that everyone should be afforded the opportunity to embark in studies of interest and educators need to foster student engagement by bridging academics with real life applicability-John Dewey. Others believed in educational tracking based on class and race-Charles Eliot.

Today, education's response to transformations taking place in our society has fostered the development of a unique Curriculum that is designed to reach all types of students. Furthermore, CTE's Curriculum draws upon John Dewey's philosophies.

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APPENDIX A

DESCRIPTIVE STATISTICS, ANCOVA, and ANOVA RESULT TABLES

Table 1

Descriptive Statistics- Gender Composition of Sample High School Students

Gender	<i>n</i>	Percent
Male	1,939	49.3%
Female	1,992	50.7%
Total	3,931	100%

Table 2

Descriptive Statistics-Ethnic Background of Sample High School Students

Ethnicity	<i>n</i>	Percent
Hispanic	3,154	80.2%
White, Not of Hispanic Origin	536	13.6%
African American	170	4.3%
Asian/Pacific Islander	53	1.3%
American Indian/Alaskan Native	18	.5%
Total	3,931	100%

Table 3

Descriptive Statistics-POS and Non-POS Participants In Sample

Participant Group	<i>n</i>	Percent
POS Participants	1,661	42.3%
Non-POS Participants	2,270	57.7%
Total	3,931	100%

Table 4

Descriptive Statistics- Socioeconomic Status of POS and Non-POS In Sample

Socioeconomic Status	<i>n</i>	Percent
Economically Disadvantaged	2,231	56.8%
Not Economically Disadvantaged	1,700	43.2%
Total	3,931	100%

Table 5

Descriptive Statistics- Exit Level Math TAKS Scale Scores

Participant Groups	N	Mean	SD
POS Participants	1597	2272.12	204.35
Non-POS Participants	2194	2204.43	187.54

Table 6

Descriptive Statistics- Exit Level ELA TAKS Scale Scores

Participant Groups	N	Mean	SD
POS Participants	1621	2296.57	146.67
Non-POS Participants	2192	2261.71	144.69

Table 7

Analysis of Co Variance for Exit Level Math TAKS Scale Scores

Source	df	<i>F</i>	<i>p</i>
Between Subjects			
Programs of Study	1	119.08**	.000
Ethnicity	1	13.29**	.000
Socioeconomic Status	1	78.24**	.000
Gender	1	5.22*	.020
Campus Rating	1	2.00	.160

p*<.05. *p*<.01

Table 8

Descriptive Statistics- Exit Level Math TAKS Scale Scores by Ethnicity

Ethnicity	N	Mean	SD	SE	95% Confidence Interval Mean	
					Lower	Upper
Hispanic	3,154	2220.82	189.73	3.44	2212.57	2226.07
White, Not of Hispanic Origin	536	2317.46	218.75	9.47	2298.85	2336.07
African American	170	2172.52	190.78	14.98	2139.43	2198.59
Asian/Pacific Islander	53	2347.16	211.98	29.68	2287.54	2406.78
American Indian/Alaskan Native	18	2309.11	137.48	32.40	2240.75	2377.48

Table 9

Descriptive Statistics- Exit Level Math TAKS Scale Scores by Socioeconomic Status

Socioeconomic Status	N	Mean	SD	SE	95% Confidence Interval Mean	
					Lower	Upper
Economically Disadvantaged	2155	2207.57	190.45	4.10	22197.81	2213.87
Not Economically Disadvantaged	1636	2269.42	201.86	.10	2258.87	2278.43

Table 10

Analysis of Co Variance for Exit Level ELA TAKS Scale Scores

Source	df	<i>F</i>	<i>p</i>
Between Subjects			
Programs of Study	1	58.02**	.000
Ethnicity	1	15.33**	.000
Socioeconomic Status	1	3.36	.070
Gender	1	7.22*	.007
Campus	1	6.86	.060

p*<.05. *p*<.01

Table 11

Descriptive Statistics- Exit Level ELA TAKS Scale Scores by Ethnicity

Ethnicity	N	Mean	SD	SE	95% Confidence Interval Mean	
					Lower	Upper
Hispanic	3,154	2271.68	145.65	2.63	2265.80	2276.11
White, Not of Hispanic Origin	536	2304.50	151.32	6.59	2291.95	2317.83
African American	170	2257.42	131.45	14.98	2237.71	2278.07
Asian/Pacific Islander	53	2344.61	167.88	29.68	2295.97	2388.56
American Indian/Alaskan Native	18	2377.33	121.38	28.61	2316.97	2437.70

Table 12

Descriptive Statistics- Exit Level ELA TAKS Scale Scores by Socioeconomic Status

Socioeconomic Status	N	Mean	SD	SE	95% Confidence	
					Interval Mean	
					Lower	Upper
Economically Disadvantaged	2158	2272.11	145.16	3.12	2265.38	2277.60
Not Economically Disadvantaged	1655	2276.75	148.86	3.65	2275.94	2290.27

Table 13

Descriptive Statistics-Campus Performance by POS, SES, Hispanic

Campus Rating	POS Participants	SES(free-reduced lunch)	Hispanic	ELA TAKS
Exemplary	98.2%	59.6%	87.7%	2347.90
Recognized	54.1%	80.8%	86.4%	2285.39
Acceptable	40.2%	53.4%	77.0%	2290.49
Unacceptable	28.5%	85.8%	97.9%	2289.90

Table 14

Descriptive Statistics-Campus Performance by Non-POS, Non-SES, and Hispanic

Campus Rating	Non-POS Participants	SES(no free-reduced lunch)	Hispanic	ELA TAKS
Exemplary	1.8%	40.4%	12.3%	2408.00
Recognized	45.9%	19.2%	13.6%	2248.88
Acceptable	59.8%	46.6%	23.0%	2283.44
Unacceptable	71.5%	14.2%	2.1%	2269.15

Table 15

The Proportion (in percentages) of POS and Non-POS Perceiving School Engagement

Participants	Engaged (n = 240)	Not Engaged (n = 27)	Total
Programs of Study	97%	3%	n = 265
Non-Programs of Study	61%	38%	n = 52

Statistic	Value	df	Asymp. Sig.
Pearson Chi-Square	76.95	2	.00

Table 16

The Proportion (in percentages) of POS and Non-POS Perceiving Development of Technical Skills

Participants	Confident (n = 195)	Somewhat Confident (n = 104)	No Confidence (n = 18)	Total
Programs of Study	59%	36%	3%	n = 265
Non-Programs of Study	73%	15%	17%	n = 52

Statistic	Value	df	Asymp. Sig.
Pearson Chi-Square	46.77	2	.00

APPENDIX B

1. High School Student Engagement and Technical Skills

This survey asks you questions about your high school experience, courses you have taken, future school plans, confidence in your classes, and your interest in your classes. The information gathered by your responses will help teachers, administrators, and others see what improvements can be made to help your learning and development of skills during your high school year.

We appreciate your time and thank you.

*Some of the questions were modeled from the High School Survey of Student Engagement 2005 a project from the Center for Evaluation & Educational Policy.
<http://www.indiana.edu/~ceep/hssse/html/team.htm>

1. Are you male or female?

☐ Male

☐ Female

2. Are you enrolled in a Program of Study?

☐ No

☐ Yes

3. What type of classes are you mostly enrolled in this year? (Only one response)

☐ Only General/Regular Classes such as Math, English, Science

☐ Only Career/Vocational Classes

☐ Only Special Education

☐ General and Career/Vocational Classes

☐ Only Dual Credit Classes

☐ Dual Credit and Career/Vocational Classes

☐ Only Honors/College Preparatory

☐ Honors/College preparatory and Career/Vocational Classes

4. Overall do your classes motivate you to go to school?

☐ Always

☐ Often

☐ Sometimes

☐ Never

5. Overall are you motivated to finish your school work?

☐ Always

☐ Often

☐ Sometimes

☐ Never

6. Do you study at least 5 to 7 days before you take a test for a class?

- ☐ Always
☐ Often
☐ Sometimes
☐ Never

**7. What are your future plans for school?
(One response only)**

- ☐ Will not finish high school
☐ Certificate of completion without a diploma (GED)
☐ High school diploma
☐ 2-year college degree (Associate's degree)
☐ 4-year college degree (Bachelor's degree)
☐ Masters degree
☐ PhD or an advanced professional degree (law, medicine, accounting, etc)
☐ I do not know

8. Which of the following activities have you done in high school?

	Yes	No
Traveled outside the state	<input type="checkbox"/>	<input type="checkbox"/>
Done community service or volunteer	<input type="checkbox"/>	<input type="checkbox"/>
Taken the PSAT, SAT, or ACT	<input type="checkbox"/>	<input type="checkbox"/>
Taken one or more classes at a college or university	<input type="checkbox"/>	<input type="checkbox"/>
Taken one or more Advanced Placement (AP) classes	<input type="checkbox"/>	<input type="checkbox"/>
Participated in an work based learning program/ co-op	<input type="checkbox"/>	<input type="checkbox"/>

9. How much have your high school classes helped you in the following?

	Very much	Quite a bit	Some	Very little
Learning work-related skills	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Speaking well in front of others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Thinking critically (deep thinking)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use of computers and information technology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Working well with other people	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Learning on your own	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Understand other people from different ethnic and racial backgrounds	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Solve real-world problems	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Having career goals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Preparing for college	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To understand yourself	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**10. How confident do you feel in the following classes?
(Only one answer per row)**

	Very Confident	Confident	Somewhat Confident	Little Confidence	No Confidence	Does not apply to me
English	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Math	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Science	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Social Studies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**11. How confident are you with Microsoft Skills?
(Only one answer per row)**

	Very Confident	Confident	Somewhat Confident	Little Confidence	No Confidence	Does not apply to me
Word	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Excel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Power Point	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Access	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Publisher	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**12. How confident are you with Internet Skills?
(Only one answer per row)**

	Very Confident	Somewhat Confident	Little Confidence	No Confidence	Does not apply to me
Surfing the Internet for Research Information	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

13. How confident are you with writing skills?**(Only one answer per row)**

	Very Confident	Somewhat Confident	Little Confidence	No Confidence	Does not apply to me
Composing formal letters	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Creating charts, flyers, newsletters	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

14. How confident are you with the work you turn in to teachers?**(Only one answer per row)**

	Very Confident	Somewhat Confident	Little Confidence	No Confidence	Does not apply to me
Your work is correct	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Able to work independently	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Take charge of your own work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Complete your work on time	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2.**15. Do your elective classes motivate you to want to learn more?**☐ Yes☐ No**16. Do your elective classes help you do well in your math, english, or other classes**☐ Yes☐ No**17. Do your elective classes motivate you to continue going to school?**☐ Yes☐ No**18. Do you believe you have the proper skills needed to get a job after high school?**☐ no☐ Yes

CURRICULUM VITA

Edith Aimee Orozco was born in Ciudad Juarez, Chih. Mexico. First daughter born to Victor R. Chavez, CPA and Leticia Alanis Chavez, graduated from Coronado High School, El Paso, Texas in June of 1991. She commenced her postsecondary studies at St. Mary's University in San Antonio, Texas as a pre-medical major. In the Spring of 1992, she returned to El Paso, Texas and enrolled at the University of Texas at El Paso earning her Bachelor's degree in Business Administration in the summer of 2001 and a Masters in Business Administration in the fall of 2002. Throughout her graduate and undergraduate studies she worked for a local accounting firm and became part of the management team at the firm. In 2005 she re-enrolled at the University of Texas at El Paso's alternative teachers' certification program with the intent to teach Accounting to high school students. Throughout the certification process, she assumed an elementary bilingual teaching position in a public school district in El Paso, Texas. Upon completion of the certification program she applied and was accepted to the Educational Leadership & Foundations Doctoral program in the spring of 2007. Beginning her third year of teaching, she was granted the opportunity to assume a high school business teaching position with the district's Career Technical Education division. She became the only accounting instructor, adviser for a co-curricular program (Future Business Leaders of America), first year teacher mentor, and department chair.