

**THE INFLUENCE OF CAREER PREPARATION COURSES ON STUDENT  
ACHIEVEMENT AS REPORTED BY HIGH SCHOOL RECORDS AT  
MACARTHUR HIGH SCHOOL IN NORTH EAST INDEPENDENT  
SCHOOL DISTRICT, SAN ANTONIO, TEXAS**

A Record of Study

by

JAMES WALKER TODD

Submitted to the Office of Graduate Studies of  
Texas A&M University  
in partial fulfillment of the requirements for the degree of

DOCTOR OF EDUCATION

December 2006

Major Subject: Educational Administration

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Approved by:

Chair of Committee,	Stephen L. Stark
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## **ABSTRACT**

The Influence of Career Preparation Courses on Student Achievement as Reported by  
High School Records at MacArthur High School in North East Independent

School District, San Antonio, Texas. (December 2006)

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This study examined the influence of career preparation courses on student achievement at MacArthur High School, San Antonio, Texas. MacArthur is the only high school in the district to use the 6.5 scaled registrar's grade point average (RPA) system, as opposed to the standard 4.0 scaled grade point average. Final computations were converted to the standard 4.0 scale for uniformity. The intent of the study was to determine if there was a relationship between enrollment in career preparation courses and grade point averages, absenteeism, and dropout rates.

Moreover, the study sought to determine the relationship between students enrolled in career preparation courses and students not enrolled within these three areas of investigation. Data were collected from the student records of the population of the study, which consisted of 532 students, and was used in conjunction with descriptive and co-relational statistics, including ANOVAS and Scheffes. The results of this study support that career preparation students in the study possessed a higher grade point average. Additionally, this study supported the literature review regarding career

preparation student absenteeism and dropout rates. The career preparation students spend more time at school, which enhances their propensity for learning.

The study also compared career preparation students to students not enrolled in career preparation courses by grade point average at MacArthur High School. The results of this portion of the study showed that the non-career preparation students, the health occupation students, as well as the trade and industry students, all possess a higher grade point average than do the business and marketing students. This is attributable for the most part to skill sets needed for scientific definitions, higher math skills, and enhanced scientific knowledge. Further study should be done to ascertain the extent of individual factors in determining success in other district high schools.

## ACKNOWLEDGEMENTS

I chose this topic for my record of study because I believe in career and technology education. I am a product of “vocational education” from Robert E. Lee High School in San Antonio, Texas. The teachers who led my classes were wise, not just academically, but they had the real world skills that could assist young people in making wise choices for their future. Several of those instructors are still my dear friends, and one has become my surrogate mother. I have learned many life lessons from Mrs. Jean Pearson, both as student, and now as her “son.” I count these supporters as invaluable in my educational growth.

My support group naturally includes my wife, Faye, who has supported my endeavors for almost 50 years, since we became childhood sweethearts. Through thick and thin, “down or flush,” she has been by my side, always whispering gentle words of encouragement along the way. My children, Elizabeth and Jonathan, are both very supportive of my “adventures.” Of course, my group would not be complete without the many friends and colleagues who often wondered why, I am sure, but none-the-less urged me on toward my goal.

If they were still living, I know I could count on my Mom and Dad. Mom was educated, a teacher, and spent her life teaching Hispanic kids in the Edgewood School District. She would be proud! As for my Dad, he was my first teacher. He was a man who, with little formal education, limited resources, and more than his share of responsibility, did all he could do with the tools available to him. Men are measured by

many standards. Some standards are important, while others are not. When Dad's accomplishments are stacked up, money will not top the list, education will not garner honorable mention, and social standing will not be rated very highly. But loving children, grandchildren, great grandchildren, and loving friends who mourned his passing and still celebrate his life will surely tip the scales to the balance mark!

Naturally, I could not begin to thank my professors both at Southwest Texas and at Texas A&M. From Marianne Reese and Dr. Gordon through those at A&M who urged me on...I cannot say enough! Dr. Stephen Stark, my Chair, has been more than just an instructor to me. He has been a faithful friend and advisor who led me through the labyrinth of classes, methods, professors, and now, success! Dr. Cliff Whetten, who began as my Chair and still corresponds with my family, was instrumental in getting me started and encouraged me in those early semesters, when I had more on my plate than I could slice up, let alone digest. Dr. Zellner gave me great insight into what it takes to be a great administrator. Dr. Hoyle gave me good counsel on my research and, like Dr. Alvin Larke, stepped up to help when my committee needed some new members.

This program has been very rewarding for me. I have met so many great people in classes, seminars, and workshops. But, acquiring knowledge is not always about a diploma or a title in front of your name. If a man has charity, respect for others, seeks to aid the feeble, guide the blind, raise up the downtrodden, shelter the orphan, guard the altar, honor morality, promote learning, love your fellow-man, fear God, and implore His mercy, then you are indeed in possession of true knowledge.

## TABLE OF CONTENTS

		Page
ABSTRACT .....		iii
ACKNOWLEDGEMENTS .....		v
TABLE OF CONTENTS .....		vii
LIST OF TABLES .....		ix
CHAPTER		
I	INTRODUCTION .....	1
	Statement of the Problem .....	4
	Purpose of the Study.....	5
	Research Questions .....	5
	Operational Definitions .....	6
	Assumptions .....	8
	Limitations.....	8
	Methodology.....	8
	Significance Statement .....	10
	Organization of the Record of Study .....	11
II	REVIEW OF LITERATURE .....	12
	Historical Background of the Adolescent Workforce .....	14
	Present Day Conditions .....	21
	Student Success and the Workplace: The Need for Hard Skills .....	26
	Student Learning, Motivation, and Achievement in Schools .....	31
	Career Academies and Other Career Preparation Programs .....	38
	Literature Review Summary .....	57
III	METHODOLOGY .....	62
	Population.....	63
	Instrumentation .....	64
	Procedures .....	65
	Data Analysis.....	66

**TABLE OF CONTENTS (continued)**

CHAPTER	Page
IV	PRESENTATION OF FINDINGS ..... 68
	Research Question 1 ..... 73
	Research Question 2 ..... 76
	Research Question 3 ..... 80
	Research Question 4 ..... 82
V	SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS ..... 86
	Summary ..... 86
	Conclusions ..... 87
	Recommendations Based on This Study ..... 95
	Recommendations for Further Study ..... 97
	REFERENCES ..... 99
	VITA ..... 110

## LIST OF TABLES

TABLE	Page
1	Frequencies and Percentages of Sample Population’s Gender Distribution Disaggregated by Enrollment in Career Preparation Courses, Illustrated With Non-Career Preparation Enrollment for Comparison, According to Student Records at MacArthur High School in North East Independent School District ..... 70
2	Frequencies and Percentages of Sample Population’s Grade Level Disaggregated by Enrollment in Career Preparation Courses, Illustrated With Non-Career Preparation Enrollment for Comparison, According to Student Records at MacArthur High School in North East Independent School District ..... 71
3	Frequencies and Percentages of Sample Population’s Ethnicity Disaggregated by Enrollment in Career Preparation Courses, Illustrated With Non-Career Preparation Enrollment for Comparison, According to Student Records at MacArthur High School in North East Independent School District ..... 73
4	Summary of Sample Population’s Grade Point Average (RPA) Disaggregated by Enrollment in Career Preparation Courses, Illustrated With Non-Career Preparation Enrollment for Comparison, According to Student Records at MacArthur High School in North East Independent School District ..... 74
5	Analysis of Variance (ANOVA) of Sample Population’s Grade Point Average (RPA) and the Influence of Career Preparation Course Enrollment According to Student Records at MacArthur High School in North East Independent School District ..... 75
6	A Post Hoc Test, the Scheffe, of Sample Population’s Grade Point Average (RPA) and the Influence of Career Preparation Course Enrollment According to Student Records at MacArthur High School in North East Independent School District ..... 76
7	Descriptive and Inferential Statistics of Absences and the Influence of Career Preparation Course Enrollment, Disaggregated by Enrollment in Career Preparation Courses, According to Student Records at MacArthur High School in North East Independent School District ..... 77

**LIST OF TABLES (continued)**

TABLE	Page
8	Analysis of Variance (ANOVA) of Sample Population of Absences Among the Student Populations and the Influence of Career Preparation Course Enrollment, According to Student Records at MacArthur High School in North East Independent School District ..... 78
9	A Post Hoc Test, the Scheffe, of Sample Populations of Absences and the Influence of Career Preparation Course Enrollment, Disaggregated by Enrollment in Career Preparation Courses, According to Student Records at MacArthur High School in North East Independent School District ..... 79
10	Cross-Tabulation of Sample Population's Dropout Rate by Enrollment in Career Preparation Courses, Illustrated With Non-Career Preparation Enrollment for Comparison, According to Student Records at MacArthur High School in North East Independent School District ..... 80
11	Pearson Chi-Square of Sample Population's Dropout Rate by Enrollment in Career Preparation Courses, Illustrated With Non-Career Preparation Enrollment for Comparison, According to Student Records at MacArthur High School in North East Independent School District ..... 81
12	Descriptive and Inferential Statistics of Grade Point Average (RPA) and the Influence of Career Preparation Course Enrollment, Disaggregated by Enrollment in Career Preparation Courses, Illustrated With Non-Career Preparation Enrollment for Comparison, According to Student Records at MacArthur High School in North East Independent School District ..... 83
13	ANOVA of Sample Populations of Grade Point Average (RPA), Which Illustrates Absences Among the Student Populations, and the Influence of Career Preparation Course Enrollment, According to Student Records at MacArthur High School in North East Independent School District ..... 84

**LIST OF TABLES (continued)**

TABLE	Page
14 A Scheffe of Sample Populations Comparing Grade Point Average (RPA) and the Influence of Career Preparation Course Enrollment, Disaggregated by Enrollment in Career Preparation Courses, Illustrated With Non-Career Preparation Enrollment for Comparison, According to School Records at MacArthur High School in North East Independent School District .....	85

## CHAPTER I

### INTRODUCTION

For much of the 20<sup>th</sup> century, career and technology education programs, especially career preparation courses, have had one clear objective: preparing students for entry-level jobs in occupations that did not require additional education or training beyond high school. This is no longer true (U.S. Department of Education, 1998). According to the U.S. Office of Educational Research and Improvement, there are 11 million career and technology students involved in career and technology education (Alfeld, 2004). Subjects from business to technology information are offered at the comprehensive high schools, two-year community and technical colleges, and other postsecondary schools, according to the Bureau of Labor Statistics (2004). The increase in youth worker employment has caused many educators, researchers, policymakers, as well as parents, to question the value of student cooperative employment during high school (MacArthur, 1999).

According to Slavin (1987), there are two major theoretical perspectives related to cooperative learning—motivational and cognitive. The motivational theories of cooperative learning emphasize the students' incentives to do academic work, while the cognitive theories emphasize the effects of working together as an organization. In her book entitled *Teaching Workplace Skills*, Koffel (1994) argues that much time is spent

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The style for this record of study follows that of *The Journal of Educational Research*.

on the theoretical process, while career preparation courses, using contextual education, deliver the results that employers have been asking for, that of the ability to do something with the acquired knowledge.

A career preparation course, because of its ability to engage students hands-on, has long been thought to have a role in reducing dropout rates among high school students (Bottoms & Presson, 1999). Career preparation courses fill the gap between what students know and what they need to know to compete in a world economy and successfully fulfill basic adult life roles (Bond, 2004). Career preparation education, through the use of contextual learning, integrates academic subject matter such as science, math, and English, with applications in the workforce (Business-Higher Education Forum, 2003). Supporters of work experience programs point to the acquisition of employability skills, assumption of responsibilities, and integration into the world of work as positive effects of cooperative employment (Green, 1990). At the same time, however, critics of cooperative career preparation education are voicing concerns regarding negative effects of working on student educational performance, values, school attendance, and in-school behaviors Koffel (1994). Prior to 1970, very little literature was collected relating to high school student labor participation, especially in career preparation courses (Steinberg & Dornbusch, 1991). Proponents of career preparation courses cite the student's earning contributions to the family income or personal enjoyment with the opportunity to learn career and technology skills, proper attitudes, adult roles, and social skills (Crosby, 2002).

Opponents of career preparation education contend the content and environment of employment available to youthful workers does not provide the opportunity for skill acquisition, adult roles, or social maturity (Stone, 2004). Research on employment and academic achievement produces confusing results. For example, evidence shows that the number of hours worked has a greater effect than whether the student works during the school week (Barton, 1989). Some governmental efforts have resulted in changes in the student employment arena, as well (Workman, 1990).

Career and technology education provides a level of skill that can create a foundation for not only gainful employment during high school and college, but can also make the connection between employment and future occupational goals (Stone, 2004). There are also follow-up studies that show a significant difference in earnings of career preparation students versus non-career preparation students from the same high school environment (Reese, 2004).

Career preparation education can provide significant benefits to students with disabilities, as well (Wonacott, 2001). Limited English Proficient (LEP) persons—especially immigrants—often come not only from a different language background but also from a very different cultural background; so English-language instruction must often provide cultural, life skills, and workplace skills that define how people relate to others (Wonacott, 2001).

Recent educational approaches that have career and technology education (CTE) components, such as Tech Prep, High Schools That Work, and Career Preparation Courses, have striven to integrate work experience with traditional academics,

combining school-to-work activities, such as work-based learning (WBL), school-to-work (STW), and bridging activities (Reese, 2003). Perhaps the most important result of the establishment of career technology programs is the marked increase in the academic achievement of career technology students in the public school system (Reese, 2003).

### **Statement of the Problem**

A recent study by Dr. Shepherd Seigel (Reese, 2003) reports that the drive to pass standardized assessments that is more relevant to college admission than to life experiences has pre-empted the promotion of career and technology education as an integral part of career pathway exploration in high schools. Today's educational policy platform must recognize the value of career preparation courses in student achievement and must be examined (Crosby, 2002). The drive to pass standardized assessments that are more relevant to college admission than to life experiences has pre-empted the promotion of career and technology education as an integral part of career pathway exploration in high schools (Reese, 2003). The fact that school leaders promote the myth that all students are college bound is wrong (Green, 1990). Statistics show that only 25% of high school students complete a four-year degree, and the majority of those completers do so only after several years in the workplace (Reese, 2003). Any viable educational policy platform must recognize the value of career preparation courses in student achievement (Green, 1990).

### **Purpose of the Study**

The purpose of this study was to examine the influence of career preparation courses on student achievement as reported by school records at MacArthur High School in the North East Independent School District (NEISD) during the 2004-2005 school year. The primary purpose of the study was to determine the relationship between career preparation enrollment and grade point average. MacArthur is the only high school in the district to use the 6.5 scaled registrar's grade point average (RPA) system, as opposed to the standard 4.0 scaled grade point average. Final computations were converted to the standard 4.0 scale for uniformity. In addition, the relationship between career preparation enrollment, school attendance, and dropout rate was examined. Finally, a comparison was made between students enrolled in career preparation courses and non-enrolled student's grade point average, attendance, and dropout rates.

### **Research Questions**

Answers to the following questions were sought in this study:

1. Is there a difference of mean scores disaggregated by career preparation courses in grade point average (RPA) as reported by student records at MacArthur High School in North East Independent School District?
2. Is there a difference of mean scores disaggregated by career preparation courses in attendance rates as reported by student records at MacArthur High School in North East Independent School District?

3. Is there a relationship between career preparation courses and non-career preparation courses to high school dropout rates at MacArthur High School as reported by student records in North East Independent School District?
4. Is there a difference between career preparation students and non-career prep students in grade point average (RPA) at MacArthur High School as reported by student records in North East Independent School District?

### **Operational Definitions**

The following definitions were applied to this research:

*Attendance Rate:* Total number of enrolled students who appear in class on any given day and are recorded as present by the supervising teacher in the official grade/attendance record maintained by the teacher.

*Career Preparation Courses:* A state-approved cooperative education program that enables 16 and 17 year olds to earn credit in both school-based and work-based learning opportunities.

*Dropout Rate:* Number of enrolled students who are removed from school rolls without benefit of recommended or standard graduation plan goals being met, using the formula of number of completers divided by the number of students in the original cohort.

*Grade Point Average (GPA):* The accumulation of the numerical value in courses completed in high school divided by the total number of courses. The numerical value is based on a four-point system: A=4 points, B=3 points, C=2 points, D=1 point, F=0 points.

*High School Student Records:* Student permanent record card (transcript); career preparation teacher records, indicating employment placement and assessments, participation in student leadership organizations; and attendance.

*Influence:* The power and authority to sway and control an outcome or result by affecting change or providing opportunities.

*MacArthur High School:* One of six 5-A learning institutions within the boundaries of North East Independent School District, consisting of grades 9-12.

*North East Independent School District:* With a student population of 57,679, the North East Independent School District spans approximately 140 square miles in the north central and northeast sectors of Bexar County, Texas. The majority of the district lies within the boundaries of the City of San Antonio, but several smaller communities are also encompassed within the North East ISD, including the cities of Castle Hills, Hill Country Village, Hollywood Park, and Windcrest. It is the eighth largest school district in the State of Texas.

*San Antonio, Texas:* Will Rogers once called San Antonio one of the four unique cities in the United States. San Antonio, with a population of just over one million, is one of the most attractive and livable cities in America. Despite its size, San Antonio maintains the atmosphere of a smaller town. Perhaps the most famous site in San Antonio is the Alamo, the Catholic mission that was the site of the courageous stand for Texas independence in 1836.

*School Performance:* A student's actions, accomplishments, and activities during enrollment in school. Variables identified for this study include: attendance, overall GPA, and dropout rate.

*Student Achievement:* Accomplishment of goals as prescribed by federal regulations, the Texas Education Agency, and the Board of Trustees of NEISD, typified by class rank, grade point average and authorized assessment products.

### **Assumptions**

The following assumptions were applied to this research:

1. The interpretation of the data collected accurately reflects that for which it is intended.
2. The methodology proposed and described here offers the most logical and appropriate design for this particular project (Gall, Borg, & Gall, 1996).

### **Limitations**

The research was limited to the following factors.

1. Findings of the study may not be generalized to any group other than students enrolled at MacArthur High School.
2. The information acquired from the literature review and school records was the basis for this study.

### **Methodology**

#### *Population*

The population for this study was the 11<sup>th</sup> and 12<sup>th</sup> grade students from MacArthur High School within the North East Independent School District in which

career preparation courses are offered as a course of study in the course selection catalogue. That population for 2004-2005 was 2,775. The number of students enrolled in career preparation courses at MacArthur High School was 1175. The sample size for this population was 280. Miller and Salkind (2002) support the use of stratified random samples as they ensure representation of all groups in each strata and “yield less variability than simple random or multistage random sampling” (p. 54).

### *Instrumentation*

This exploratory correlation study investigated the relationship between enrollment in career preparation courses and student achievement compared to students who were not enrolled in career preparation courses using MacArthur High School student records. This study also examined attendance and dropout rates among enrollees in career preparation courses. Gall et al. (1996) state that “educational research develops new knowledge about teaching, learning and educational administration” (p. 3) and that such research allows for the description of the impact of one phenomenon on another.

### *Procedures*

Data concerning the relationship between career preparation course enrollment in 2004-2005 and student success were acquired using student records, career preparation instructor’s records, and attendance records of the high school. The study followed the eight basic steps described by Gall et al. (1996). This research study was conducted using student records from school year 2004-2005. The researcher gathered the demographic data directly from school officials and instructors, without contact with students. Data were collected by personal examination of the student records by the

researcher at the campus, after having obtained permission from Dr. Mark Scheffler, Assistant Superintendent.

### *Data Analysis*

The study permitted a comparison of the level of student success among two populations, one control and one experimental, of approximately the same size. Career preparation enrollees and non-enrollees at MacArthur High School in the North East Independent School District were compared with a significance level of 0.05 for the findings. As this descriptive study was exploratory in nature, Gall et al. (1996) supported the use of this level of significance when they state:

When interpreting research results, remember that a higher level of significance corresponds to a lower p value. For example,  $p < .05$  is a lower p value than  $p < .10$ , but a difference that is significant at the .05p level is a more highly significant difference than difference that is significant at the .10 p level. (p. 137)

All information collected for this study was analyzed using SPSS for Windows- Version 12.0 database for statistical analysis. Analysis was made using numerical and graphic techniques. The researcher used mean scores, standard deviations, frequencies, correlations, and analysis of variance (ANOVA) as part of the descriptive and inferential statistical analysis. Scheffes were used if differences existed. The researcher also used other appropriate charts and tables.

### **Significance Statement**

One of the critical goals of the No Child left Behind (NCLB) federal legislation is to raise student achievement. But before that can happen, we must ensure that students are actually in school (Stone, 2004). Career and technology education, because

of its ability to engage students hands-on, has long been thought to have a role in reducing dropout rates among high school students (Alfeld, 2004). Student motivation and engagement thrives when students are meeting their own goals and formal structures are in place to support their efforts. In these ways, Career and technology education serves to engage students and keep them in school where learning can continue and be improved (Stone, 2004).

The findings of this study provide a basis for educators, parents, and policymakers to become more aware of the influence of career preparation courses during their high school years. This information may also be helpful to those interested in helping young people make informed decisions concerning the value of career preparation courses in making decisions for their future.

### **Organization of the Record of Study**

The record of study is divided into five major units or chapters. Chapter I contains the introduction, a statement of the problem, a purpose for the study, research questions, operational definitions, assumptions, limitations, methodology, and significance statement. Chapter II contains a review of the literature. Chapter III contains the methodology and procedures of the record of study. Chapter IV contains the analysis and comparisons of the data collected during the study. Chapter V contains the researcher's implications, conclusions, and recommendations for further study.

## **CHAPTER II**

### **REVIEW OF LITERATURE**

For much of the 20<sup>th</sup> century, career and technology education programs, especially career preparation courses, have had one clear objective: preparing students for entry-level jobs in occupations that did not require additional education or training beyond high school. This is no longer true (U.S. Department of Education, 1998). According to the U.S. Office of Educational Research and Improvement, there are 11 million career and technology students involved in career and technology education (Alfeld, 2004). Vocational education is a collective term in high schools to identify curriculum programs designed to prepare students to acquire both an education and job skills, enabling them to enter employment immediately upon high school graduation. As mirrored in the larger, complicated society and its public education system, vocational education in the United States is diverse, large, and complex.

There are various operational and accountability-related definitions for vocational education throughout the country. However, the descriptions from most stakeholders and for program enrollment reporting purposes have evolved from federal legislation and guidelines. Thus, according to federal reports, vocational education courses or programs are offered in 93% of the nation's 15,200 comprehensive, Grade 9-12 high schools (Ries, 1997). Nearly all of these high schools offer introductory courses taught for purposes of general labor market preparation to provide students with practical or life skills, such as word processing (typing), introduction to computers, technology education, or family and consumer sciences. About 75% of all

comprehensive high schools offer several courses in one or more specialized labor market preparation programs, historically identified as agriculture, business and office, marketing, health, family and consumer sciences (occupational or wage earning), trade and industrial, and technology and communications (Boesel, Hudson, Deich, & Masten, 1994). More recently the federal government added public and protective services, childcare and education, food service, hospitality, technology and communications, and personal and other services to its classification of vocational education program areas (Levesque et al., 2000). Subjects from business to technology information are offered at the comprehensive high schools, two-year community and technical colleges, and other postsecondary schools, according to the Bureau of Labor Statistics (2004). The increase in youth worker employment has caused many educators, researchers, policymakers, and parents, to question the value of student cooperative employment during high school (MacArthur, 1999). The literature reviewed in Chapter II was selected on the basis of its relevance to this study.

The literature review is organized into four sections. The first is a review of the historical background of career and technology education (CTE) with regard to career preparation courses. The second reviews the nature and trend of career preparation courses and includes an overview of studies and programs related to student employment and the effect on academic achievement. The third section includes a review of literature focusing on students and attendance. The final section provides a short summary of the literature reviewed.

## **Historical Background of the Adolescent Workforce**

### *A Need for Non-Agrarian Skills*

During the agricultural era of this country and the industrial revolution, many of our nation's youth worked long, hard hours on the farm, in the family business, and in the factories. Labor was scarce, child labor and compulsory school attendance were not yet a part of America's workforce rubrics, and many tasks which needed to be accomplished in a non-technical society could be performed at a lower cost by children (Murname & Levy, 1996). Parents frequently looked upon children as a needed source of labor. Education was secondary. Success of the family farm or business was paramount. The largest high school programs were agriculture, business (primarily clerical), and trade and industry, which included, among other fields, automotive, construction trades, food services, and cosmetology. These programs were designed mainly to serve students who did not plan to go to college. Academic expectations for "vocational" students were generally low, and the math, science, and English courses to which they were assigned were typically less rigorous than those provided for their college bound peers. This strategy prevailed for a good part of the last century. Americans with lower-level academic skills and a set of narrow, job-specific technical skills could fare relatively well in the economy if they possessed a solid work ethic. Jobs requiring low- and medium-level skills were plentiful and provided sufficient wages to support a family. This is no longer true.

The emphasis on education began to change with new technology. In the early 20<sup>th</sup> century, school-aged children were only expected to attain the basic skills of

reading, writing, and practical mathematics. Much of this early education was completed by the time the young person was old enough to help on the farm, work in a factory or in an apprenticeship (Decker, 1996). Since more complex machines required increased skills and knowledge for operation, the need for additional training became evident. The public demanded that the schools teach higher-level skills and to encourage the students to attend school to an older age.

During this same time, a chasm developed between the working class educational experience and that of the middle class. Parents, who were wealthy enough and did not need the labor of their children, provided additional educational experiences for their children to qualify them for better, higher paying jobs. Low-income parents needed the labor of their children for support and could not afford the same opportunity of education (Decker, 1996).

#### *Youth Labor Market*

With the arrival of mandatory school attendance, explosion of labor unions in America, and the affluence provided by the post-war economy, adolescent employment was deemed unnecessary (Green, 1990). The childhood years of America's youth lengthened, and school was viewed as the child's job (Decker, 1996). The role of the family also changed during this time. Women, who worked in the businesses and factories during the war, now enjoyed enhanced employment opportunities. Mothers in the labor force became commonplace and children more independent. The invention of many labor-saving devices made the household easier to manage. Children began to come home to empty houses, and the latchkey generation was born (Green, 1990). Many

parents and educators began to adopt the thinking that with so much free time, adolescents could benefit from working while attending school. Others argued that working would assist in the transition to adulthood and that socialization would provide a positive work attitude through interaction with positive role models (Boesel et al., 1994). Most of these jobs required few skills, paid low wages, provided no fringe benefits, and offered no hope of advancement to the managerial level. Despite these conditions, the number of youth employed while attending school continued to grow (Catri, 1998).

There are jobs available for young people who decide to enter the job market immediately after high school, as well. However, without strong academic skills, they may have difficulty accessing on-the-job or other training opportunities they will need to advance in their careers. Moreover, in such a dynamic economy as ours, a young person just starting out can expect to change jobs as many as 15 times over the next half-century they will participate in the workforce (Hayward & Benson, 1993). Men and women who have a solid academic foundation will be the most able to adapt nimbly to changes in the economy, family circumstances, and personal interests that may require them to learn new skills (Hoachlander, 1998).

The youth labor market of today fulfills the goals of many blue-ribbons panels of the past 50 years. Additionally, school curricula have been expanded to include career education and work-study programs. Career and technology schools have been built, as well as a new tier of technically oriented two-year colleges. Pro-active manpower training programs, including Texas Worksource, Job Corps, and others were

established. The Bureau of Labor Statistics (2004) even advocates career education introduction in the elementary grades. To succeed in our economy, all high school students, regardless of their post-graduation plans, must acquire a high level of academic knowledge and skills during high school. Employers are demanding stronger reading, writing, and math skills of all of their workers—and reporting that too many recent high school graduates are not making the grade. Seventy-three percent of employers rate the writing skills of recent high school graduates as fair or poor, while 63% express dissatisfaction with graduates' math skills.

According to Slavin (1987), there are two major theoretical perspectives related to cooperative learning—motivational and cognitive. The motivational theories of cooperative learning emphasize the students' incentives to do academic work, while the cognitive theories emphasize the effects of working together as an organization. This sounds great until educators noticed that standardized scores were declining. The concerns of the type and scope of curricula offered in schools surfaced. In 1983, a report, *A Nation at Risk*, issued by the National Commission on Excellence, encouraged by the Secretary of Education, revealed many inadequacies in the educational system and called for tougher graduation requirements and higher standardized test scores.

### *Nature and Trends of Career Preparation Education*

#### **Historical Perspective**

Vocational education has a long and rich history in American public secondary schools, largely due to federal legislation and funding. The beginning of the major federal influences in molding and shaping secondary vocational education began with

the Smith-Hughes Act of 1917. This legislation was in response to a complex set of social, economic, and political forces but especially was enacted to prepare youth for jobs resulting from the industrial revolution and to provide them with an alternative from the general curriculum of schools that were “too exclusively literary in spirit, scope, and methods” (Swanson, 1951, p. 16).

The Smith-Hughes Act emphasized separatism from the classical curriculum and called for a new one that would better meet the needs of the children of the working class who, for the first time, were attending high school but were not headed for the professions (Gray, 1991). Thus, the earliest vocational programs were grounded primarily in the need to prepare more blue-collar-type students with practical skills for the nation’s farms, factories, and homes. Foci in the federal legislation shifted over the years, but the general thrust of federal policy and funding at the high school level—throughout the past 80+ years—remained largely to train boys and girls for jobs in the economy.

Enrollments in high school vocational education increased unabated until the early 1980s. In 1982, the “average” American high school student took about 22% (4.7 Carnegie credits) of his or her 21.6 high school credit course load. By 1994, this had dropped to 4.0 credits (16%), while the total high school credit load had increased to 24.2 credits. The number of students who followed a coherent sequence of courses (i.e., three or more courses in a single occupational program area) decreased from nearly 34% of the 1982 graduates to 25.5% in 1994 (Levesque et al., 2000). Further, those 1992 and 1994 graduates who concentrated (3 or more credits) or specialized (4 or more credits,

with 2 credits beyond the introductory level) in vocational education were disproportionately represented of special populations: single parents, disabled, limited English proficient, lowest 25% on social-economic status, below a C grade point average, in need of two or more remedial credits, and in the bottom 25% on standardized test scores (Boesel et al., 1994; Levesque et al., 2000).

There are many reasons for the steep decline in vocational education during the 10 to 12 year span from 1982-1994. Among those reasons: (a) programs were not seen as meeting the needs of students, employers and the community; (b) vocational education competed against other curriculum programs-especially college preparatory-for a shrinking student population; (c) vocational education suffered from an image of a dumbed-down curriculum; (d) programs were often targeted primarily to educationally disadvantaged students; (e) confusion with school-to-work programs that became unpopular with many critics of education; (f) an elitist view that says any formal context of education for work is not appropriate for students aspiring to a four-year college or university; and (f) a general perception that vocational education inhibits rather than enhances youth's future career and educational choices (Catri, 1998; Innerst, 1999; Ries, 1997).

Whether in response to declining enrollments, a poor image, or increased pressure from such relevant stakeholders as business and policy groups, around 1990 and on into the last decade of the 20<sup>th</sup> century, some vocational education programs in American high schools seem to have changed, albeit not all and not in all places. Much anecdotal reporting in the literature and at conferences, information gleaned from

various federal databases, and reports of new directions for public education—including vocational education—indicated slow, but important changes were taking place in the philosophy or rationale underpinning vocational education: The nature and types of programs being offered in American high schools and the student and employer audiences to whom programs were being targeted (National Commission on Excellence in Education, 1983).

Among others, the more relevant changes, where change occurred, seemed to be to prepare students concentrating in a vocational education curriculum concomitantly for employment and higher education. This reformed vocational education is characterized with a curriculum based on the need for students to demonstrate mastery of (a) rigorous industry standards, (b) high academic standards and related general education knowledge, (c) technology, and (d) general employment competencies. In addition, the curriculum seems to be teaching students all aspects of an industry (i.e., in contrast to just a specific job skill or skills) (Lynch & Harnish, 1998).

Where changes have been made, names other than vocational education and new descriptors are being used in states and localities to depict this revised area of the school or state's curriculum: Applied studies, technical education, applied technology education, workforce education and development, and career and professional (or technical) education, among others. In December of 1998, the members of the American Vocational Association (AVA) voted to change the name of their professional association to the Association for Career and Technology Education (ACTE). They chose this new name as the one to best describe their work and profession and to

identify their association, and then encouraged other organizations and government agencies to remove “vocational education” from titles, policy documents, and legislation and replace it with career and technology education (Stone, 2004).

### **Present Day Conditions**

Today, vocational education at the high school level, hereafter referred to as career and technology education (CTE), seems to be at a crossroads. There appears to be consensus that much, if not most of it, needs to change but how so and in what direction has not been well documented. Supporters of work experience programs point to the acquisition of employability skills, assumption of responsibilities, and integration into the world of work as positive effects of cooperative employment (Green, 1990). At the same time, however, critics of cooperative career preparation education are voicing concerns regarding negative effects of working on student educational performance, values, school attendance, and in-school behaviors. Prior to 1970, very little literature was collected relating to high school student labor participation, especially in career preparation courses (Steinberg & Dornbusch, 1991). Proponents of career preparation courses cite the student’s earning contributions to the family income or personal enjoyment with the opportunity to learn career and technology skills, proper attitudes, adult roles, and social skills (Crosby, 2002).

Opponents of career preparation education maintain that the content and environment of employment available to youthful workers do not provide the opportunity for skill acquisition, adult roles, or social maturity (Stone, 2004). Research on employment and academic achievement produces confusing results. For example,

evidence shows that the number of hours worked has a greater effect than whether the student works during the school week (Barton, 1989). Some governmental efforts have resulted in changes in the student employment arena, as well (Workman, 1990).

Career and technology education provides a level of skill that can create a foundation for not only gainful employment during high school and college, but can also make the connection between employment and future occupational goals (Stone, 2004). There are also follow-up studies that show a significant difference in earnings of career preparation students versus non-career preparation students from the same high school environment (Reese, 2004). In her book entitled *Teaching Workplace Skills*, Koffel (1994) argues that much time is spent on the theoretical process, while career preparation courses, using contextual education, deliver the results that employers have been asking for, that of the ability to do something with the acquired knowledge.

A career preparation course, because of its ability to engage students in hands-on learning, has long been thought to have a role in reducing dropout rates among high school students (Alfeld, 2004). Career preparation courses fill the gap between what the students know and what they need to know to compete in a world economy and successfully fulfill basic adult life roles (Bond, 2004). Career preparation education, through the use of contextual learning, integrates academic subject matter such as science, math, and English, with applications in the workforce (Lynch, 1997).

Career preparation education can provide significant benefits to students with various disabilities, as well (Wonacott, 2001). Limited English Proficient students—especially immigrants—often come not only from a different language

background but also from a very different cultural background; so English-language instruction must often provide cultural acquisition, life skills, and workplace skills that define how people relate to others (Wonacott, 2001). The National Longitudinal Transition Study-2 (NLTS2) of over 8,000 students with disabilities, ages 13 to 21, found that students who took concentrated coursework in career and technical education were less likely to drop out of school and had an average annual earnings of approximately \$6,200 more than non-vocational students. This is an important finding because students with disabilities typically have the highest dropout rate, the highest unemployment rate, and the highest under-employment rate when compared to same age non-disabled peers.

According to Walsh (2000), CTE programs are designed for all students. Because graduates are expected to be ready for employment or for post-secondary education in their fields of study, identified content standards and objectives (CSOs) are based on national industry recognized accreditation and credentialing standards. Students with disabilities should be identified for CTE programs when their transition needs are determined through a team planning and individual education plan (IEP) process that supports the expectation that each student can master the CSOs required for program completion and success. The IEP must specify the support services, aids and modifications that will be provided to enable the student to be involved and progress in the general curriculum.

Career and technology education provides programming for occupations that require extended training rather than short-term on-the-job training. Students with

disabilities whose transition needs include possible CTE training should explore options through a variety of activities such as vocational evaluation, CTE program visits, interviews, and team planning sessions (Walsh, 2000). The U.S. Department of Labor classifies occupations by the level of training required to perform the job duties in the occupation. Students with disabilities should be represented in any CTE program in similar proportion to the total school population. For example, if students with disabilities comprise 23% of the total student population in a school system, then students with disabilities should comprise approximately 23% of the students enrolled in any system CTE program. U.S. Department of Education standards for compliance with the Office for Civil Rights Guidelines, including Title VI, Title IX, and Section 504, require local education agencies (LEAs) to take steps to ensure that any disproportion does not result from unlawful discrimination.

A variety of factors influence career-related activities that are a part of the educational program for students with disabilities beginning no later than age 14. Career exploration is significant in the early stages to assist in determining educational level requirements for various programs. Awareness is the key to making informed decisions. Students considering application for a CTE program are required to meet the same criteria for eligibility that applies to all students. As part of the transition planning process, data from a vocational evaluation of aptitude and interest can provide valuable assistance in developing an IEP that incorporates a student's vocational needs, interests, and aptitudes. Vocational evaluation includes formal or informal measures and may

utilize a situational assessment, work samples, or simulated job stations (Wonacott, 2001).

Recent educational approaches that have career and technology education (CTE) components, such as Tech Prep, High Schools That Work, and Career Preparation Courses, have striven to integrate work experience with traditional academics, combining school-to-work activities, such as work-based learning (WBL), school-to-work (STW), and bridging activities (Wirth, 1992). But perhaps the most important result of the establishment of career technical programs is the marked increase in the academic achievement of career technical students in the public school system (Reese, 2004).

As economists are widely pointing out, it is no longer a post-agricultural or post-industrial world. Rather, it is a new world of fast communications and information, rapid decision-making, and intelligent social skills that are needed to deal with economic, technical, ecological, and ethical issues identified with complex problems facing every economic, social, or political system (Nijhof, 1998). This new economic world is vastly different from the agricultural/factory environment that ushered in public school vocational education at the turn of the 20<sup>th</sup> century. It is characterized today by international activity, cyberspace, ever-changing market demands and standards, rapid product life cycle, ever-increasingly sophisticated computers, and need for a more thorough knowledge of the holistic (the gestalt) of the business environment rather than just specific skills or narrow job tasks (Carnevale, 1991; O-Hara-Devereaux & Johansen, 1994; Wirth, 1992). Today's workplaces are often in multiple locations

characterized by cultural diversity—almost mosaic or fragmented organizations and infrastructures, periodic economic restructuring, and constantly changing worker roles and duties (Wonacott, 2001).

### **Student Success and the Workplace:**

#### **The Need for Hard Skills**

Increasingly, economists and scholars talk about the (a) ascendancy of knowledge as a primary product and competitive edge for many businesses; (b) increased reliance on team problem solving—often from remote locations; (c) incredible (and sometimes difficult) need to manage information and technology; (d) ability to analyze, synthesize, and evaluate information and use that information to solve problems; (e) new versions and forms of prerequisite technical skills; (f) flexible jobs; and (g) new iterations of related education and skill requirements. That is, there is a constant need to continue to learn and upgrade (Brown, 1999; Wirth, 1992).

The specific skills to enter and succeed in these workplaces have also changed significantly in the past two decades. Technical and technological skills remain important, but they must be modified and grounded in employees' ability to think of them in the context of the big picture (i.e., technical skills' role in knowledge and understanding of all aspects of the industry). Employers increasingly discuss the importance of new skills crucial to employees' ability to work effectively, such as knowing how to learn, interpersonal skills, competence in applying general education (reading, writing, calculating, computing) to workplaces, ability to work in teams or groups, effective listening and oral communications skills, adaptability and flexibility,

personal management skills with good self esteem, and personal and workplace ethics, leadership or initiative, and-seemingly, above all-the ability to think and to solve problems in workplaces. Many of these skills were once reserved for those in management; today, they are considered necessary for individuals of all levels of employment (Secretary's Commission on Achieving Necessary Skills [SCANS], 1991).

In the U.S. today, less than 20% of the workforce is in jobs classified as unskilled. This is almost an exact reversal of the nature of the American workforce just 40 years ago. In 1959, 60% of the workforce was unskilled, with 20% classified as professional and 20% as skilled. Today 60% of the workforce is in skilled occupations and 20% in professions. The assembly line, single-skill jobs of the factory or construction site and the office clerk typist or bookkeeper are largely defunct. Rather, there is a tremendous demand for educated people with general employability and specialized technical skills in areas related to computer science and computer science technology, high-tech manufacturing, software development, biotechnology, biomedical applications, sales and services, database management, and health care. Nearly all of the rapidly growing jobs and occupations require postsecondary or extensive continuing education (10 Hot Jobs, 1999; Murnane & Levy, 1996). Thus, it is important to recognize in any redirection of high school career and technology education, the role the new economy is playing in determining the need for all students today to have increasingly higher levels of academics and, simply stated, to know more and to be able to learn even more. It is simply in the best interests for all high school students to plan for and prepare to acquire postsecondary training whether they want to or not. This is

crucial information and needs increasingly to be included in career development and guidance sessions for all students in all schools (U.S. Department of Commerce, 1999).

In addition to higher salaries and wages, various government databases also show that increased levels of educational attainment and academic achievement enhance students' future abilities to earn a good living and sustain a career in others ways. They correlate strongly with improved worker productivity, less unemployment, greater benefits, ability to learn new skills and workplace operations more rapidly, exposure to and engagement with computers, and generally, better ability to negotiate the rigors of the labor market. Even dislocated workers with an associate's degree or higher find new jobs at higher average pay than the jobs they lost (U.S. Department of Commerce, 1999). Conversely, the Bureau of Labor Statistics (1998) reported that for out-of-school youth (16-24 years of age), the unemployment rate for those who have not graduated from high school is 19.8%, compared with 11.1% for those with a high school diploma (no college) and 2.1% for those with a baccalaureate degree. The conclusion is indeed obvious. Drawing on economic analysis of wage and salary and other employment-related data and information, an individuals' investment in education and further training pays big dividends; the more education, coupled with experiential learning, the better (U.S. Department of Commerce, 1999).

Public survey data lead to two conclusions about expectations related to career and technical education: (a) the public does indeed want career education and work skills included as critical components of the public school (K-12) curriculum, and (b) parents expect their children to attend college. Marzano, Kendall, and Cicchinelli (1999)

concluded that five subject areas have majority acceptance by the American adult public as definitely necessary in school curriculum: health, work skills, language arts, technology, and mathematics. All standards identified with the work skills subject category were rated as definitely necessary; the specific skills were drawn heavily from general employability skills and included, for example, standards about working with others, working with tools and technology, work ethics, and managing money. This government-funded and Gallup-conducted study also concluded that a main goal of education should be to provide knowledge that helps individual students obtain meaningful employment (U.S. Department of Commerce, 1999).

Nearly 100% of parents say they want their children to attend college, and the vast majority of students say they plan to do so. Nearly all graduates of the class of 1992 said they planned to attend postsecondary education either immediately after high school (77%) or at some later point (an additional 20%); 71% of them said they planned to earn a bachelor's degree. These figures generally held regardless of parents' formal education, income level, race, or ethnicity (Choy, 1998). A very recent study by the Association of Career and Technical Educators (ACTE) (2004) found 77% of current 10<sup>th</sup> graders indicated they planned to attend a four-year institution after graduation. Of the 634,700 students surveyed by ACTE, only 6% planned to attend a community or technical college, and another 3% indicated they would attend a vocational or proprietary school, job training through the military, or career apprenticeship in their future (Walsh, 2000).

In reality, however, actual college attendance compared with planned college attendance is far from a perfect correlation. About 67% of 2002 high school completers were enrolled in college in October of that year; nearly 2/3 of them at a four-year college and another 1/3 at a two-year institution (Bureau of Labor Statistics, 2004). Levesque and colleagues (2000) found that 73% of 2002 graduates were enrolled in a postsecondary institution within two years of graduation. These figures are a marked increase in college enrollment rates from a decade earlier.

Despite the positive enrollment of high school graduates into higher education, studies indicate that the U.S. has a dismal record for college program completion or graduation. According to a most recent study by ACTE, nearly 26% of all 2002 freshmen in four-year colleges and 44.9% of freshmen at two-year colleges did not return for a second year. Further, ACTE claims that only about 51% of all students who attend college will eventually complete a baccalaureate degree (Walsh, 2000). Studies and statistics vary on the exact percentages of students who complete degree programs, usually depending on what programs (e.g., certification or license only, associate degree, baccalaureate) are considered. However, it is generally concluded that only about 50% of students who start in a U.S. college or university—and certainly those who attend state-supported systems—eventually will receive a baccalaureate degree (Kirst, 1998).

In reviewing public survey data and some government databases and analyzing comments from position papers and interviews, a few conclusions seem obvious:

1. The public expects its high school youth to attend college and indeed more high school graduates continue to do so each year.

2. The public expects public high schools to prepare youth for employment.
3. Huge numbers of high school graduates are not prepared to be successful at four-year colleges, and large percentages (50% on a nation-wide average) will drop out before completing a liberal arts baccalaureate degree or a professional program within six years.
4. Virtually all American youth should complete a solid, high quality education that includes some Career and Technical Education through the equivalent of two years of postsecondary education (Bureau of Labor Statistics, 2004).

### **Student Learning, Motivation, and Achievement in Schools**

#### *A Change of Perspective*

As commented by Gardner (1995), renowned Professor of Education at Harvard University, “We’ve probably learned more about the mind and how it works in the last, say, 25 years than has been learned in all previous systematic study” (p. 4). We simply know so much more today about how youth learn, think, remember, perceive, form associations, transfer knowledge, construct knowledge and meaning from new information, and apply knowledge to solve problems including those that are poorly structured and unfamiliar. We also know more today about how to structure curriculum and learning experiences for young people who build on our new knowledge of cognition.

Further, we know more about how to motivate more students to continue to learn more. Our challenge, of course, is to figure out how to use this new knowledge to advance student achievement in schools and other learning environments (e.g.,

workplaces). Business leaders and educational researchers continue to say that we must teach all students to new levels of higher-order thinking. This, then, is much of the impetus that supports the initiatives to integrate vocational and academic education. It is important to teach youth how to think, not just what to think. Any definition of higher-order critical thinking skills include the ability to think creatively, make decisions, solve problems, visualize a solution, reason, analyze, interpret, and how to continue to learn. Critical thinkers draw on a variety of resources and disciplines to solve problems, use standards of performance as a benchmark, and are intermittently independent and group reliant for assistance (Walsh, 2000).

We are also beginning to learn more about adolescent and adult learning, retention, and application processes in non-school environments. There are lessons to be learned about how learning occurs and knowledge is acquired in organizations such as businesses, nonprofits, and government that offer apprenticeship and other forms of work-based learning programs. A major finding, for example, from the learning organizational literature is that the essence of real learning—that which leads to individual and organizational changes—is social, that is, undertaken with peers and tackles real problems (Spence, 1998).

Much of the recent theories and research on cognition and learning clearly support some of the pedagogical approaches historically used by career and technology educators—“learning by doing,” “heads and hands,” “theory and practice,” and cooperative education. The theories and published works on multiple intelligence and

how the brain processes information (Gardner, 1983); learning styles (Flannery, 1993; Gardner, 1995; Griggs, 1991); contextual teaching and learning (Borko & Putnam, 1998; Howey, 1998); out of school learning (Resnick, 1987); situated cognition and constructivism (Lynch, 1997) are prominent examples.

Conversely, career and technology education needs to set aside its historical reliance on an essentialist philosophy and embrace psychology (Prosser & Quigley, 1950) that helped to shape pedagogy and practice throughout its history. The premise behind Prosser's essentialism is that education should train for specific jobs rather than train for culture and that the "right habits of doing and thinking are repeated to the point that the habits developed are those of the finished skills necessary for gainful employment" (Prosser & Quigley, 1950, p. 222).

In contrast to Prosser's essentialism of the 20<sup>th</sup> century, the economy of the 21<sup>st</sup> century clearly calls for thinking and culture into career and technology education. The learner needs to be able to make sense of the workplace and its context within that person's life. It isn't just "training" for specific jobs that is needed, but to make decisions, solve problems, find answers, and draw on a variety of disciplines and cultural contexts to make sense out of changes, challenges, and day-to-day operations at the workplace. Thus, the learner (i.e., the worker) needs the broad framework of that which underlies the mission and all aspects of that industry, as well as the company's and his or her role, responsibilities, and duties within the larger society. This leads to the integration of technological and academic education, or contextual learning, which may

be among the most important recommendations emanating from federal legislation and funding in the past decade (Walsh, 2000).

### *Contextual Teaching and Learning*

Much of the current theory and research on teaching and learning is quite supportive of the practices or pedagogy identified historically with career and technology education, especially that related to the contextualization of learning. Our academic colleagues can learn much from our history of practical applications in real world or simulated contexts.

We need to be adamant in our advocacy that abstract academic education unconnected to career or real-world contexts can only be satisfying to those students who are absolutely certain they will complete at least a four-year college degree and that this degree and/or immediate graduate study will meet their career preparation needs. Most students need context to understand, learn, and remember. Conversely, others are asking us, as Career and Technology educators, to step up our theory base in classrooms to reinforce better the academics that must provide the foundation for applications in workplaces and other contexts. And, thus, we see the continuing thrust from policymakers and various constituents to integrate academic and applied instruction (Walsh, 2000).

There are major implications from cognitive science research for teaching and learning in career and technology education, as well as for some important changes that need to be made in this profession relative to its teaching force of the 21<sup>st</sup> century. There is also an extensive body of knowledge from the wisdom of practitioners—those

teachers who have demonstrated their effectiveness in classrooms and have chosen to speak about it at teachers' conferences or write about it on the World Wide Web and in textbooks, trade journals, magazines, and newsletters (Wonacott, 2001). The Vocational Education Standards Committee of the National Board for Professional Teaching Standards (1997) has published standards for highly effective career and technical teachers and provides some description of what it is those teachers should know and do to advance the achievement of their students to high levels. The contemporary work from the scholarly and applied community (i.e., teachers themselves) seems to reinforce the critical importance of a solid education and preparation program for teachers. The historical view of Prosser and the resulting practice, even today, that college degrees and preparation in the liberal arts and sciences are not necessary for career and technical education teachers seems to make no sense and can no longer be supported through any logical, let alone, research basis (Walsh, 2000).

In 1996 and 1997, several groups converged in their thinking about preparing the teachers for 21<sup>st</sup> century career and technology education programs. The National Association of State Directors of Vocational Technology Education Consortium and the University Council on Vocational Education (now known as the University Council for Workforce and Human Resource Education) convened task forces and prepared publications delineating the issues and proposing new themes and frameworks for revising teacher preparation. Some of their work was built on broader reform proposals or reform initiatives emanating from the wider arenas of reform in teacher education, such as the National Commission on Teaching and America's Future, Holmes Group,

the National Council for Accreditation of Teacher Education, and the Carnegie Forum on Education and the Economy. A national conference was held to discuss the challenges and issues with career and technical teacher education (Walsh, 2000).

### *Work-Based Learning*

A third essential component in improving and developing reformed programs of high school career and technology education is to design and include quality, work-based learning experiences as an integral part of the curriculum for all students with career and technology majors. Most educators and businesspersons also consider it important to include work-based learning experiences for all students in workplaces related to other high school majors as well (Wonacott, 2001).

Contemporary work-based learning is grounded in teaching and learning research emanating from the cognitive sciences, psychology, and pedagogy. Consistent with research from these various disciplines, work-based learning blends into an integrated curriculum the mental and tactile, theoretical and applied, and academic and vocational. This blending appears—for most students most of the time—to result in increased retention of knowledge, deeper understanding of subject matter, and the ability to apply (i.e., transfer) knowledge and skills in ill-structured environments. The effectiveness of blended classroom- and work-based activities also draws strength from the psychological and pedagogical principles underlying constructivism, contextual learning, the teaching of concepts and subjects through a variety of methods based on students' preferred learning styles, and authentic assessment. Much of what we know about effective work-based learning has been gleaned through research on learning and

training in workplaces, according to the Vocational Education Standards Committee of the National Board for Professional Teaching Standards (1997).

In 1995, the U.S. Office of Technology Assessment (OTA) described work-based learning as “learning that results from work experience that is planned to contribute to the intellectual and career development of students” (p. 3). It is critical to emphasize the intellectual development of students in that all school-sponsored activities must have solid education objectives and that the work experiences are planned. Based on OTA’s study, some research studies emanating from the federal school-to-work office and the wisdom of practitioners, an operational definition of work-based learning has surfaced.

Work-based learning is an educational approach that uses workplaces to structure learning experiences that contribute to the intellectual, social, academic, and career development of students and supplements these with school activities that apply, reinforce, refine, or extend the learning that occurs at a work site. By so doing, students develop attitudes, knowledge, skills, insights, habits, and associations from both work and school experiences and are able to connect learning with real-life work activities (Lynch & Harnish, 1998, p. 131). Results from recent studies examining use of structured work-based learning approaches in education provide positive indication of its impact on student achievement, motivation, and educational continuation (Bailey & Merritt, 1997; OTA, 1995; Phelps, 1998; Steinberg, 1998). In much of the research and evaluation studies, there appears to be a correlation between the positive student outcomes and the structure that the school and employers put into the work experiences.

When the goals, school curriculum and work-site experiences, and staff support are well planned, implemented, and evaluated relative to the education and career goals and the integrity of the school program—and to some extent, vice versa with the place of employment—the outcomes for all are very positive (Kazis & Liebowitz, 2003; Lynch & Harnish, 1998; Steinberg, 1998).

### **Career Academies and Other Career Preparation Programs**

Some recent studies support revitalizing vocational high schools or area vocational centers into career academies and changing names and descriptors accordingly. A high school career academy is typically a separate or distinct building near or distant from the comprehensive high school(s) OR a “school within a school” with a separate wing, floor, or section identified with the career academy within the comprehensive high school (Allen, 1999).

In reviewing recent evaluative studies, it appears as though successful career academies (and, incidentally, academies identified with the classical curriculum, as well) throughout the country have at least as many as five characteristics in common: (a) clusters of students who share many of the same classes each day and have some of the same teachers from year to year; (b) sufficient depth and breadth of academic courses that meet high school graduation and college entrance requirements; (c) career and technical courses sufficient to comprise a career major; (d) work-based learning experiences built into the curriculum; and (e) a group of business persons who advise the school district on important components of the program such as curriculum, work-

based learning, financial aspects, specific courses to offer, and equipment needs (Walsh, 2000).

In current career academies, the teachers from both academic and career and technical fields usually teach the same group of students for two to three years, engage in group curriculum and program planning, collectively advise the students relative to career and education goals, and focus the curriculum around a particular industry. Typically, in today's academies, about 50 students are enrolled in a particular major at each grade level. The academies are designed to ensure that their graduates are academically and technically proficient, have marketable job skills, and are academically prepared to enroll in postsecondary education (Raby, 1995).

Business groups or professional associations, such as The Academy of Finance in New York City, which was developed in partnership with American Express, and subsequently joined other companies to create the National Academy Foundation, directly sponsor some of these academies. Other types of academies include, for example, New York City's Academy of Travel and Tourism, Academy of Public Service, and the Academy of Manufacturing Services. Philadelphia has over 40,000 students enrolled in academies in 28 high schools. The National Academy Foundation serves over 60,000 students in more than 100 high schools throughout the country. California's 200 academies serve over 100,000 high school students in 25 career fields such as electronics, health, business technology, computers, agribusiness, media, environmental science, retailing, graphic arts, and law and government (Raby, 1995; Stern, Dayton, & Raby, 1998).

There is not a lot of large scale, quantifiable, longitudinal, or national data that prove career academies (or similarly focused themed high schools) are causing significant increases in student achievement as measured by standardized tests. In general, however, the collective findings on other measures, especially from interviews with and survey data from students and teachers about their perceived satisfaction with the academies, have been fairly impressive. Student attendance is higher; discipline problems are rarer; there seems to be tremendous esprit de corps in the schools (among teachers and students) and a connection with the essence of the school; there is a diminishment of racial, ethnic, and gender stereotyping; there is a feeling of safety and security among all who studied and worked there; there is cooperative (i.e., team) work projects that are rigorous and draw on both academics and work-based activities; and there is a frequent description of the school environment as a feeling of “family”—this coming from students, teachers, administrators, and the business partners (Raby, 1995).

Researchers at Teacher’s College, Columbia University, studied post-graduation activities and found that graduates of career magnets earned at least a third more college credits than graduates from comprehensive high schools, chose a college major one or two years after graduation, cut class less often, studied more, and held good employment records. Interesting findings were that graduates engaged in less high-risk behaviors (e.g., smoking and drinking less, becoming pregnant, or causing pregnancy) and the programs seem to have a positive effect on families (Crain et al., 1999). Based on these findings (and others), Allen (1999) proposed that career programs be reframed

within the context of adolescent identity development, in contrast to relying primarily on work-related skills development.

In analyzing published or about to be published data from several studies of career academies, Stern et al. (1998) concluded:

The evidence to date...indicates that students in career academies have been more academically successful while in high school. The evidence on enrollment in postsecondary education is more limited, but on balance suggests that the academy graduates are more likely than non-academy graduates to attend college. There is little evidence that career academies give their graduates any immediate advantage in the labor market. In other words, entry-level job training is not what career academies seem to be delivering. Instead, they appear to be helping students strengthen their academic performance, which may improve their career options some years later. (p. 18)

Career academies and career magnet schools do seem to hold great promise for many high school students, their teachers, and indeed the reform of high schools themselves. It simply makes sense that focused study with like-minded students and teachers, in student-selected interesting and applied subjects, in a small and safe school environment, grounded in adolescent identity development, devoid of social class and race distinctions, and surrounded by supportive teachers and community partners would truly enhance learning. Most of the academies described in the literature are well respected in their communities, well regarded (and sometimes partially financed) by business or industry, and are considered rigorous and of high quality. The greatest changes in students who attend and graduate from career academies seem to be in their development of much more positive attitudes with increased interest in learning, planning for the future, awareness of career opportunities and related education

expectations, self-confidence, and regard for the academy and its supportive environment (Bottoms & Presson, 1999).

Today's vocational high schools or area/regional vocational schools ought to consider transforming their current programs into career academies early in the 21<sup>st</sup> century. But, this will need to be substantive transformation—no mere name change or curricular tinkering on the margins. To be successful, these academies are going to have to be credible to their constituents (students, parents, community, businesses, higher education) and serve students successfully (i.e., prepare them both for college and for careers). There needs to be a school-wide, age-appropriate career development program, with a rigorous program of studies surrounding career majors and a framework for tech prep, and implementing the characteristics identified with the currently successful career (Walsh, 2000).

Technology and global economic competition are combining in unprecedented ways to change work and redefine the American workplace. Unlike jobs a half-century ago, most of today's jobs that pay family supporting wages and offer opportunities for advancement demand strong academic and technical skills, technological proficiency, and further education and training beyond high school. Policymakers, school and college administrators, educators, and employers across the nation are rising to these challenges and charting a new course for career and technology education (CTE). They are forging new pathways to success for young people interested in technical careers by setting and helping CTE students to meet higher academic and technical skill expectations, easing the transition of CTE students to postsecondary education and

advanced training; and raising the rigor of CTE instruction (Institute for Research and Reform in Education, 2003).

*Who Participates in CTE?*

In the Interim Report to Congress, the U.S. Department of Education (2005) reported that 96% of 1998 public high school graduates earned one or more credits in any form of career and technical education, and 44% of 1998 public high school graduates earned three or more credits in occupational courses. Twenty-five percent of 1998 public high school graduates earned three or more credits in a single occupational program area (health care, agriculture, business, technology, marketing, food service and hospitality, protective services, child care and education, personal and other services, and trade and industry precision) and 19% of 1998 high school graduates earned three or more credits in more than one occupational program area.

Thoughtful education leaders and practitioners are working on several fronts to ensure that all students, including those choosing a technical program of study, leave high school with the solid academic foundation they will need for a lifetime of employment and education.

High Schools That Work (HSTW) is a comprehensive school reform strategy initiated by the Southern Regional Education Board in 1987 to improve the academic achievement of CTE students. It has now expanded its mission to encompass the entire high school curriculum. HSTW expects students to combine their technical studies with college preparatory academics consisting of at least four credits of English; three credits of mathematics including Algebra I, Algebra II, and Trigonometry; three credits of

science, including two in college preparatory biology, chemistry, or physics; three credits of social studies; and one-half credit in basic computing technology (Bottoms & Presson, 1999).

This reform model also strongly encourages participating high schools to offer a “major” in a technical or non-technical area, more intensive career guidance and academic counseling, and tutorial assistance for students who need extra help. HSTW has become one of the most widely recognized high school reform strategies in the United States, with a network of 1,100 participating high schools in 27 states. Student performance on math and reading assessments has significantly improved at many of the participating high schools (Talent Development High Schools, 2003).

### **Talent Development High School**

The educational needs of young people attending high poverty, urban high schools are particularly acute. By some estimates, the typical 9<sup>th</sup> grade student in a high poverty, urban community enters high school with 5<sup>th</sup> to 6<sup>th</sup> grade reading and math skills. Talent Development High School With Career Academies is a research-based reform model created by the Center for Research on the Education of Students Placed At Risk based in Philadelphia, Pennsylvania and is designed to help troubled urban high schools increase student achievement and provide quality career and technical education. Ninth grade students attend small, self-contained “success academies” taught by interdisciplinary teams of teachers. All students complete a study skills course and instructional time is doubled in math and English for those students with below grade level skills. Grades 10 through 12 are structured as career academies that offer a

common core of academic courses with a blend of career and technical education courses. Tutoring and extra help are easily accessible. Teachers are provided time during the school day to plan and consult with their colleagues. “Coaches” also provide teachers with sustained, intensive professional development to support their work with students (Nijhof, 1998).

Some high schools implementing the model are seeing promising results. At two Philadelphia high schools that began implementing talent development three years ago, the number of 9<sup>th</sup> grade students who have remained in school through 11<sup>th</sup> grade has doubled. Student performance on standardized academic assessments is also rising. At one school, the percentage of 11<sup>th</sup> graders scoring “below basic” on the Pennsylvania math assessment dropped from 91% to 56% in a single year (Spiridakis, 2002).

### **First Things First**

Developed by the Institute for Research and Reform in Education, *First Things First* is another promising comprehensive school reform model that uses smaller learning communities, such as career academies, as one of its central improvement strategies. Kansas City, Kansas, began implementing *First Things First* in all of its schools in 1997 and is now reporting some impressive results. The graduation rate has increased significantly and student achievement has improved in reading and math at all grade levels (Kazis & Liebowitz, 2003).

## **Easing the Transition of CTE Students to Advanced Training and Apprenticeships**

Entering most high-demand, technical occupations that pay family-supporting wages now requires completion of some training or education beyond high school. Making the pathway from high school to further education seamless and easily navigable is essential to preparing young people for the future.

### **Tech Prep**

Tech Prep was designed to prepare students for technical careers through a four-year program of related academic and vocational coursework. The Tech Prep program was conceived to span the last two years of high school and first two years of community college. Now, more than a decade old, the federal initiative has spawned more than 1,000 local consortia of community colleges, local educational agencies, and businesses that promote the pursuit of higher education by CTE students. Many outstanding programs have emerged from this movement, but they are too few in number. Only an estimated 10% of Tech Prep consortia offer the comprehensive “2 + 2” model envisioned by the proponents of the program, serving about 5% of Tech Prep students. Only 15% of Tech Prep high school students earn and use college credits for “articulated” technical courses offered through Tech Prep programs (Krile & Parmer, 2002).

The engineering technology program established by the *Miami Valley Tech Prep Consortium* in Dayton, Ohio, demonstrates how effective the Tech Prep model can be when it is implemented comprehensively. The program begins in high school with a mix

of rigorous academics and technical coursework and culminates with one of the 15 associate degree-engineering programs at Sinclair Community College. While in high school, students may earn up to 15 articulated credits toward their degrees. To assess their academic preparation for college, students take the COMPASS math and reading placement test during their junior year, giving them more than a year to address skill deficits that might cause them to be placed in remedial classes in college. Students who complete the high school portion of the program and continue in their studies at Sinclair, receive a \$3,000 scholarship that is paid from non-federal funds. A 2002 quasi-experimental evaluation found that participants in the program were less likely to need remediation when they entered college and were more likely to return to continue their studies the following year (Bragg, 1995).

### **Articulation Agreements**

A growing number of community and technical colleges are creating high schools on their campuses that support and accelerate the transition to college through a blend of secondary and postsecondary coursework. Many of these “middle colleges” focus on helping average to low-achieving students make successful transitions to postsecondary education. Washtenaw Technical Middle College (WTMC) is a charter high school that serves approximately 300 at-risk students on the campus of Washtenaw Community College in Ann Arbor, Michigan. Many of its students have low literacy skills or diagnosed learning or other disabilities (Gardner, 1983). To help entering students transition successfully to college credit courses, WTMC offers academic “core transition” courses, career development seminars and study skills courses. Students then

proceed to dual credit academic and technical courses offered by the college, as they continue to receive academic support, counseling, and other services from WTMC. Paid workplace internships are part of the curriculum (Hershey, Silverberg, Owens, & Hulse, 1998). Students must earn a postsecondary certificate or an associate degree in one of 37 career areas in order to graduate. During the 2000-2001 school year, 73% of WTMC graduates earned at least a postsecondary certificate in addition to their high school diploma. More than half earned an associate degree (Bottoms & Presson, 1999).

### **Apprenticeships**

Apprenticeships that combine classroom instruction with paid work-based learning provide another important avenue to careers that offer family-supporting wages. Employers, employer groups, and employee associations currently sponsor apprenticeships in more than 500 occupations. They are particularly common in construction and manufacturing occupations. Apprentices must complete a minimum of 2,000 hours of closely supervised on-the-job training for which they are paid wages that are often about half of what is paid a fully trained worker (Hull & Grevelle, 1998). They must also complete related academic and technical coursework that is often provided by a community college or other educational institution.

Apprenticeships in many higher-paying occupations are very competitive, and applicants with strong communication and math skills, as well as some foundation technical skills related to the occupation, have a clear advantage. To help more young people access apprenticeship opportunities, a number of high schools, community colleges, and apprenticeship sponsors have created “pre-apprenticeship” programs that

offer high school students academic and technical instruction and part-time, on-the-job training that lead seamlessly into a full-time apprenticeship after they graduate from high school (Walsh, 2000).

### **Raising the Rigor of CTE Instruction**

Many of the fastest-growing and better-paying occupations also now require a higher level of technical skills than ever before. Automotive industry experts, for example, note that the cars and trucks sold today “feature more sophisticated components than were in the NASA Apollo 11 spacecraft,” (Automotive Youth Education Services [AYES], 2003, p. 43) demanding more advanced technical know-how from service technicians than in previous decades. To help students meet these higher expectations, CTE leaders are working closely with industry partners to create a new generation of more technically rigorous CTE programs (Ford Academy of Manufacturing Sciences [FAMS], 2003).

### **State Standards and Assessments**

A number of states are implementing content standards for CTE courses and assessments that measure the technical skills of CTE students. Through its Vocational Competency Achievement Tracking System (VoCATS), North Carolina has developed industry-validated blueprints for 129 CTE courses that include curricula, instructional strategies, and item banks for use by teachers to construct classroom tests and by the state to develop assessments for accountability purposes. CTE students must complete a criterion-referenced, end-of-course assessment, the results of which count as part of their final grade. The state also uses the assessment for program evaluation (Kriple &

Parmer, 2002). Pennsylvania assesses the technical skills of all students who complete a CTE program using an array of tests developed by the National Occupational Competency Testing Institute and industry associations, such as the Air Conditioning and Refrigeration Institute and the Computer Technology Industry Association. The state uses student performance data to evaluate local CTE programs. Each student who scores at or above the national norm on the assessment is awarded a state skills certificate (Kazis & Leibowitz, 2003). The Utah Skill Certificate Program awards incentive funding to participating school districts on the basis of the performance of their CTE students on industry certification tests, state licensing exams, and skill assessments developed by the state in partnership with industry. Students who perform well on the assessments are awarded skills certificates (Crosby, 2002).

### **Industry-Developed Curricula**

In many career areas, industry is expanding beyond its more traditional role as a curriculum advisor to take the lead in developing and supporting the implementation of a specific curriculum. Launched in 1990 by the Ford Motor Company, the Ford Academy of Manufacturing Sciences (FAMS) includes a paid internship and courses in manufacturing systems and processes, technology, science, and math that promote teamwork and the use and application of math and science knowledge to solve workplace problems. More than 70 high schools are now using the FAMS curriculum (FAMS, 2003). Founded by the Associated Builders and Contractors and other national construction associations, the National Center for Construction Education and Research (NCCER) offers modular training curricula in carpentry, plumbing, and other skilled

crafts for students who aspire to careers in construction and related fields, as well as current professionals who want to update their skills. Supported by major automobile manufacturers and dealer associations, Automotive Youth Education Services (AYES) provides young people with the foundation technical and applied academic skills they need to secure entry-level employment as service technicians and to pursue college-level studies in automotive technology or advanced technical training offered by automobile manufacturers. Local automobile dealers are actively involved in the implementation of the program, offering each student a paid internship and mentoring by an experienced mechanic. More than 330 schools in 44 states currently offer an AYES program (AYES, 2003).

### **A Challenge for a New Century**

Innovation and creative reform in CTE abounded at the close of the 20<sup>th</sup> century. Forward-looking men and women in many communities across the United States recognized the dramatic changes unfolding in our economy and began the difficult work of re-tooling, and sometimes rethinking, how we prepare young people for occupations in many technical fields. Our challenge as we continue into a new century is bringing their innovations to scale—helping all schools in all communities rise to the new standards of excellence that are being set by these pioneers (Resnick, 1987).

According to Krile and Parmer (2002), successful career and technology programs should offer:

- A coherent sequence of high-level academic and technical skill coursework in high school that includes dual credit technical education courses;

- Rigorous academic instruction that is based on state standards;
- Sustained and intensive professional development for teachers and college instructors;
- Academic and career-related counseling and other student services;
- Creative delivery strategies, such as distance learning and computer-assisted applications; and, finally
- Articulation between associate and bachelor degree programs.

### **Student Attendance and Dropouts**

One of the most significant problems facing schools today is that of student attendance and potentially, dropouts. In many school districts, it means the loss of revenue of thousands of dollars. The State of Texas recognizes schools that reach the goal of 95% and penalizes those schools that fail to attain the goal. This is only one of the many indicators by which successful schools are measured annually. The school also receives funds from the state based on its average daily attendance (ADA). This means that a higher daily attendance average translates to more money for the school district. One percentage point can result in the loss of tens of thousands of dollars (American Association of School Administrators, 1999). Oakland Unified School District's loss of \$19 per student per day resulted in over \$4 million in lost revenue due to high absenteeism. Similar losses are reported across the country. Where significant sanctions were employed, or where there was a large concentration of career and technology programs, reimbursements to the ADA are being reported (Mayer & Mitchell, 1993).

Several implications both to students and the community have been identified as problematic when student absenteeism increases. Naturally, students suffer academically and socially. According to Baker and Jansen (2000), studies indicate that students who are absent have lower achievement and may be penalized through lower test scores. Sustained absences may lead to retention and later to truancy (Baker & Jansen, 2000). In addition, schools that experience high rates of absenteeism suffer loss of learning and instructional time (Mayer & Mitchell, 1993). Essentially, when students are absent, not only do those students miss simply miss learning opportunities, but the teachers try to provide remediation when the students return, which accounts for additional loss of instructional time taken from other students.

The implications of absenteeism are felt outside the classroom, as well. Continued loss of instructional time and low academic performance among students with high absenteeism are essential characteristics of students who later drop out of school (Mayer & Mitchell, 1993). Those who drop out of school frequently move on to lives of delinquency and crime, which has a tremendous impact on society. Lotz and Lee (1999) indicate that acts of delinquency are more frequent among students who exhibit low grades, have spotty attendance, and later drop out of school. Further, Walsh (2000) suggests that truancy leads to delinquency and later to adult crime, citing statistics reporting 82% of inmates in one study are high school dropouts.

An important aspect of students' access to education is the amount of time actually spent in the classroom. Findings indicate that in 1991, the student absentee rate increased with each grade in school and was generally greater in urban public schools.

An average of 8% of the students in public high school were absent on a typical day; the average was 12% for urban high schools. Forty-four percent of urban public high school teachers reported that absenteeism was a serious problem in their schools. Public high schools with more than 40% of their students eligible for free and reduced lunch had higher absenteeism rates (10%) than those with lower percentages of eligible students, which has 7% or 8% absenteeism. Fifty-five percent of the teachers in urban high schools reported that absenteeism was a problem in their schools, as well (Green, 1990).

It is becoming increasingly difficult for school personnel to encourage students to attend school. Unfortunately, there are many valid reasons for the pressing attendance problems, several of which will continue to be problems in the future, according to Attendance Supervisor, S. Flammia (personal communication, November 22, 2005).

Life in the 1990's and 2000's is a bit more complex than it was just a few years ago. Not only do single parents have their work cut out for them trying to make financial ends meet, many two-parent households require a dual income to pay the bills (Alfeld, 2004). With both parents working, most high school-aged children must have transportation. In this day and age, teenagers are frequently expected to transport themselves back and forth to school events, social functions, etc. Ultimately, most teenagers need access to a vehicle. With the skyrocketing cost of fuel and automobiles, many students take jobs to help pay for their cars and trucks (Howey, 1998). Many parents have made it a financial priority help pay for their transportation, even at the expense of school attendance, according to B. Turnbo (personal communication, November 22, 2005). It is common for students to choose less challenging courses or

opt for career preparation courses in order to leave school prior to the regular end of classes and have more time to devote to their job or training station, all to help finance their “wheels.” For many students, the focus becomes the job as opposed to high school classes, or their academic future. In these situations, attendance rates often drop (Innerst, 1999).

There are also a significant percentage of students who are expected to work to help supplement the family income. The fastest growing demographic group in public schools today is the low socioeconomic class. These families live at or below the poverty level. When food and shelter are a legitimate concern for students and their families, attending school becomes secondary to keeping a job and earning a steady wage (B. Turnbo, personal communication, November 22, 2005).

A study by Green (1990) assessed the costs and benefits of learning and of developing part-time employment of in-school youth. During the study, data were collected from a sample of 531 10<sup>th</sup> and 11<sup>th</sup> grade students drawn from an initial pool of 3100 youngsters attending high schools in Orange County, California. Researchers found that students who take part-time jobs while in schools experience a number of benefits such as the development of personal responsibility and acquisition of knowledge. However, some of the benefits of working while in school were determined by researchers to have been overstated (Hull & Grevelle, 1998). Youngsters who work show no significant changes in their long-term educational or occupational plans. In addition, working entails costs. It can diminish involvement in extracurricular experiences, is associated with absenteeism, and in some cases, leads to a decline in

school performance. Recommendations from the study resulted in calling for a limit of 15-20 hours per week on the job, for encouraging youth to take jobs that provide opportunities for learning closer contact with adults, and for closer collaboration among educators and employers (Green, 1990).

Another group that is famous for poor attendance are those who habitually fail classes in school. These students are often identified as at-risk and have had problems being successful in school, year after year. By the time they arrive at high school, failure is routine. Their motivation to succeed dwindles, their chances of passing fades, and they adopt a “why come to school” attitude (B. Turnbo, personal communication, November 22, 2005). Many of these students report that they suffer from low self-esteem or poor self-image. It was reported to be caused by the tracking and labeling of students by the school administration.

The final group that adds to absenteeism are the habitual skippers. These are generally students who do not like school. These teenagers see no purpose to coming to school and enduring classes that are boring and lack relevance, and they frequently have no connection with the school through extracurricular activities, according to B. Turnbo (personal communication, November 22, 2005). They simply report to school and attend class for a short period of time, become bored, and then are usually found roaming the halls, or leaving the school grounds completely without proper documentation. Because this problem is so prolific, most districts have enlisted the aid of either local or district law enforcement, along with the court system to impose large fines on both students and parent for excessive truancy problems (B. Turnbo, personal communication, November

22, 2005). However, Lotz and Lee (1999) cite that keeping older, unmotivated students in school, only adds to the absenteeism problem, with younger students “following the leader” in truancy and absenteeism.

In light of the theory that student absenteeism and lack of motivation are intertwined, educators have begun to investigate the theories of motivation in order in order to apply them to creative attendance policies in an attempt to reduce the problem of student absenteeism (SCANS, 1991).

Students enrolled in career preparation courses are held to a state-mandated rule of attendance. If the student misses school, they are precluded from working at their training station that day, as well. Students know that when they cannot come to school, regardless of the reason, they will not make money that day. This keeps the student mindful of the benefits of regular attendance, and often sets the tone for regular attendance on the job as they mature (Stone, 2004).

Career preparation courses also provide opportunities for educators to provide a cooperative action, which will allow students to satisfy their need to be both independent and empowered. Schools should be designed to use career preparation courses or competitive events through a student leadership organization (SLO) to attain established attendance goals. Just as in a free market system, this will result in a high level of production (Reese, 2003).

### **Literature Review Summary**

For much of the 20<sup>th</sup> century, career and technology education programs, especially career preparation courses, have had one clear objective: preparing students

for entry-level jobs in occupations that did not require additional education or training beyond high school. This is no longer true (U.S. Department of Education, 1998). According to the U.S. Office of Educational Research and Improvement, there are 11 million career and technical students involved in career and technology education (Stone, 2004).

Subjects from business to technology information are offered at the comprehensive high schools, two-year community and technical colleges, and other postsecondary schools, according to the Bureau of Labor Statistics (2004). The increase in youth worker employment has caused many educators, researchers, policymakers, as well as parents, to question the value of student cooperative employment during high school (MacArthur, 1999).

According to Slavin (1987), there are two major theoretical perspectives related to cooperative learning—motivational and cognitive. The motivational theories of cooperative learning emphasize the students' incentives to do academic work, while the cognitive theories emphasize the effects of working together as an organization. In her book entitled *Teaching Workplace Skills*, Koffel (1994) argues that much time is spent on the theoretical process, while career preparation courses, using contextual education, deliver the results that employers have been asking for, that of the ability to do something with the acquired knowledge.

A career preparation course, because of its ability to engage students hands-on, has long been thought to have a role in reducing dropout rates among high school students (Bottoms & Presson, 1999). Career preparation courses fill the gap between

what students know and what they need to know to compete in a world economy and successfully fulfill basic adult life roles (Bond, 2004). Career preparation education, through the use of contextual learning integrates academic subject matter such as science, math, and English, with applications in the workforce (Business-Higher Education Forum, 2003). Supporters of work experience programs point to the acquisition of employability skills, assumption of responsibilities, and integration into the world of work as positive effects of cooperative employment (Green, 1990). At the same time, however, critics of cooperative career preparation education are voicing concerns regarding negative effects of working on student educational performance, values, school attendance, and in-school behaviors Koffel (1994). Prior to 1970, very little literature was collected relating to high school student labor participation, especially in career preparation courses (Steinberg & Dornbusch, 1991). Proponents of career preparation courses cite the student's earning contributions to the family income or personal enjoyment with the opportunity to learn career and technology skills, proper attitudes, adult roles, and social skills (Crosby, 2002).

Opponents of career preparation education contend the content and environment of employment available to youthful workers does not provide the opportunity for skill acquisition, adult roles, or social maturity (U.S. Department of Commerce, 1999). Research on employment and academic achievement produces confusing results. For example, evidence shows that the number of hours worked have a greater effect than whether the student works during the school week (Barton, 1989). Some governmental

efforts have resulted in changes in the student employment arena, as well (Workman, 1990).

Career and technology education provides a level of skill that can create a foundation for not only gainful employment during high school and college, but can also make the connection between employment and future occupational goals (Stone, 2004). There are also follow-up studies that show a significant difference in earnings of career preparation students versus non-career preparation students from the same high school environment (American Institute of Research, 1999).

Career preparation education can provide significant benefits to students with disabilities, as well. LEP persons—especially immigrants—often come not only from a different language background but also from a very different cultural background; so English-language instruction must often provide cultural, life skills, and workplace skills that define how people relate to others (Wonacott, 2001).

Recent educational approaches that have career and technology education (CTE) components, such as Tech Prep, High Schools That Work, and Career Preparation Courses, have striven to integrate work experience with traditional academics, combining school-to-work activities, such as work-based learning (WBL), school-to-work (STW), and bridging activities (Phillipe & Patton, 2000). Career and technology education provides a level of skill that can create a foundation for not only gainful employment during high school and college, but can also make the connection between employment and future occupational goals (Stone, 2004).

From the review of the literature, it is apparent that high rates of absenteeism and potential for dropping out are also problems that affect many schools throughout the country, not only in the United States but also in other countries that have compulsory attendance laws. Students who habitually miss school, exhibit loss of learning and instruction and have been identified as at-risk for dropping out of school altogether. School systems suffer when absenteeism is high, both financially, due to lost ADA, and through lower assessments on student achievement (Baker & Jansen, 2000).

### **CHAPTER III**

#### **METHODOLOGY**

MacArthur High School was selected for this study for two reasons: (a) its accessibility to the investigator and (b) its desire to determine the effectiveness of its career preparation program. The purpose of this study was to examine the influence of career preparation courses on student achievement as reported by school records at MacArthur High School in the North East Independent School District (NEISD) during the 2004-2005 school year. The primary purpose of the study was to determine the relationship between career preparation enrollment and grade point average. In addition, the relationship between career preparation enrollment, school attendance, and dropout rate was examined. Finally, a comparison was made between students enrolled in career preparation courses and non-enrolled students' grade point average, attendance, and dropout rates. These relationships were represented by four research questions as follows:

1. Is there a difference of mean scores disaggregated by career preparation courses in grade point average (RPA) as reported by student records at MacArthur High School in North East Independent School District?
2. Is there a difference of mean scores disaggregated by career preparation courses in attendance rates as reported by student records at MacArthur High School in North East Independent School District?

3. Is there a relationship between career preparation courses and non-career preparation courses to high school dropout rates at MacArthur High School as reported by student records in North East Independent School District?
4. Is there a difference between career preparation students and non-career prep students in grade point average (RPA) at MacArthur High School as reported by student records in North East Independent School District?

In order to answer the research questions, the researcher obtained information for this study from existing school records. Permission to investigate those records was obtained from Dr. Mark Scheffler, Assistant Superintendent of North East Independent School District.

Chapter III reports the research methods used to accomplish this study. The chapter is divided into the following sections: (a) population, (b) instrumentation, (c) procedures, and (d) data analysis.

### **Population**

With a student population of 57,679, the North East Independent School District spans approximately 140 square miles in the north central and northeast sectors of Bexar County, Texas. The majority of the district lies within the boundaries of the City of San Antonio, but several smaller communities are also encompassed with the North East ISD, including the cities of Castle Hills, Hill Country Village, Hollywood Park, and Windcrest. It is the eighth largest school district in the State of Texas.

MacArthur High School is one of six 5-A learning institutions within the boundaries of North East Independent School District, consisting of grades 9-12.

Built originally in 1953 as North East High School, the name was changed to Douglas MacArthur High School in 1955, as the district expanded. The buildings originally housed both a junior high school and a high school, until sufficient population encouraged the building of feeder junior high schools, now entitled middle schools. Throughout the years, MacArthur High School, accredited by the Texas Education Agency as well as the Southern Association of Secondary Schools, was awarded exemplary status by the Texas Education Agency and Blue Ribbon Acknowledgement for two years. But MacArthur also witnessed student population shifts, socio-economic demographic changes, as well as the ravages of time, bringing about changes to the MacArthur physical structure. In 2000, construction was started on a “new” MacArthur. The once wide, expansive campus became a three-storied monument to modern education, with state-of-the-art infrastructure, lighting, sound, and more students than the previous campus had ever seen.

One of the largest segments of student population at MacArthur High School is represented by those enrolled in career preparation coursework, also called cooperative learning. The population for this study was the 11<sup>th</sup> and 12<sup>th</sup> grade students from MacArthur High School. That population for 2004-2005 was 2,775. The number of students enrolled in career preparation courses at MacArthur High School was 1175. The sample size for this population was, therefore, 280.

### **Instrumentation**

The researcher used Microsoft Excel in spreadsheet format to record the data from school records. These spreadsheets recorded populations, genders, ethnicities,

grade point averages, class rank, age, grade level, course number, socio-economic strata (free and reduced lunch code), hours spent per week at training stations, attendance records, and dropout occurrence. The demographic data were used for data analysis for this study. Information from analogous data was reported in summary form.

### **Procedures**

In January 2005, the researcher met with Dr. John Cadena, a research supervisor at North East Independent School District Central Office, to explain the purpose of the research and obtain, through him, the permission and support of Dr. Mark Scheffler, Assistant Superintendent. Dr. Cadena offered insight concerning data collection procedures and scope of the intended research and requested that a letter for research approval be submitted.

In February 2005, the researcher met with Mr. Wendell Watson, then Principal of MacArthur High School, to seek permission to conduct research and obtain data from the high school records. Final approval was granted in May 2005.

During the months of March and April 2006, data collection procedures were established with the school administrators, attendance recorders, data processor, registrar, and Perry Callaway, Chairman of the Career & Technology Education Department at MacArthur High School.

Data concerning student absenteeism, GPA, class rank, and dropouts were secured from the district's management information system, through a special printout. Since grade point average at MacArthur High School in North East Independent School

District is based on a six-point scale, final computations were converted to a four-point scale for this study and rounded to the nearest 100<sup>th</sup>.

Data were collected on June 6, 2006, under the direction and supervision of the registrar, Ms. Molly Bucklew. The purpose of her supervision was to maintain confidentiality of student information and to ensure that accurate data were obtained by the researcher.

### **Data Analysis**

Results of the data gathered by the researcher for this study were reported using numerical and graphic techniques. From the interpretation of the data, descriptive and inferential data analyses were used. Appropriate statistical measures used in the study included frequency, central tendency chi-square tests, analysis of variance (ANOVA), and multiple regression analysis.

The information obtained was defined, coded, and analyzed using a statistical software package, SPSS, version 12.2. The level of significance was set at .05. Analysis of variance was used to determine if three or more sample means were significantly different from one another. The results were computed in an F-value, which if statistically significant, indicated that the means were likely to have been drawn from different populations. Since ANOVA did not specify which of the four or more sample means differed significantly from one another, a Scheffe post hoc test was used for the purpose of multiple comparisons.

Chi-square tests were used to determine the significance of differences between two independent groups. The chi-square test takes into account “the size of the sample

and the magnitude of the relationship or difference reported in each study” (Gall et al., 1996, p. 155). These tests were considered appropriate for assessing the difference between those students enrolled in career preparation courses and those not enrolled.

Analysis and interpretation of the data adhered to the principles prescribed for data description by Borg and Gall (1983) in *Educational Research: An Introduction*.

## **CHAPTER IV**

### **PRESENTATION OF FINDINGS**

This study investigated the influence of career preparation courses on student achievement at MacArthur High School in North East Independent School District, San Antonio, Texas. It sought to identify the effects of enrollment in career preparation courses upon student achievement based on grade point average. The study also investigated the influence of career preparation courses at MacArthur High School upon attendance. Additionally, it investigated if career and technology course enrollment influenced the rate of student dropout at MacArthur High School. Finally, the study assessed the differences in student success based on grade point average (RPA) between a sample of those enrolled in career preparation courses at MacArthur High School and a sample not enrolled in career preparation courses.

All data were obtained from student records. Student records were identified as student permanent record cards (transcripts), career preparation teacher records (indicating employment placement and assessment activities), and school attendance records. Student achievement was defined as the accomplishment of goals as prescribed by federal regulations, the Texas Education Agency, and the Board of Trustees of NEISD. RPA based on a 6.5 point system and authorized assessment products traditionally typify these goals.

The intent of the research was to answer four questions concerning the influence of career preparation enrollment upon student achievement. The following research questions were posed:

1. Is there a difference of mean scores disaggregated by career preparation courses in grade point average (RPA) as reported by student records at MacArthur High School in North East Independent School District?
2. Is there a difference of mean scores disaggregated by career preparation courses in attendance rates as reported by student records at MacArthur High School in North East Independent School District?
3. Is there a relationship between career preparation courses and non-career preparation courses to high school dropout rates at MacArthur High School as reported by student records in North East Independent School District?
4. Is there a difference between career preparation students and non-career prep students in grade point average (RPA) at MacArthur High School as reported by student records in North East Independent School District?

Based on MacArthur High School demographic information, Table 1 provides a summary of gender distribution which shows that 50.15% of the research population was female, while 49.85% of the population was male and held a combined population of 252 (N). The non-career preparation population consisted of 46.4% females, while the males made up 53.6% of that group and consisted of 280 (N). Although the overall percentage of male-female enrollment in career preparation programs is virtually 50-50, substantial variations can be noted in business and marketing and health occupation education curriculum. Table 1 clearly indicates that while both health occupation education and trade and industry students are fairly equal in gender, almost twice as many female students are enrolled in business and marketing than males. One of the

most important results of career preparation programs is the marked increase in the enrollment of females in all facets of career technical programs in the public school system. The data in Table 1 also support the literature on appealing to both males and females in equal numbers.

Table 1. Frequencies and Percentages of Sample Population's Gender Distribution Disaggregated by Enrollment in Career Preparation Courses, Illustrated With Non-Career Preparation Enrollment for Comparison, According to Student Records at MacArthur High School in North East Independent School District

Career Preparation Program	Gender	Frequency (n)	Percent
Business & Marketing	Female	52	68.4
	Male	24	31.6
	Total	76	100.0
Trade & Industry	Female	49	49.0
	Male	51	51.0
	Total	100	100.0
Health Occupation	Female	28	36.8
	Male	48	63.2
	Total	76	100.0
Non-Career Preparation Students	Female	130	46.4
	Male	150	53.6
	Total	280	100.0

N=252 (CPE).

N=280 (non-CPE).

Table 2 provides a summary of the grade levels of the sample population at MacArthur High School. The data showed that 43.5% of the career preparation students were juniors, while 56.5% were seniors. Of the 280 students not enrolled in career

preparation, 47.9 % were juniors and 52.1 % were seniors. Moreover, data showed that more seniors were enrolled in both business and marketing and trade and industry, while health occupations education experienced a majority of juniors enrolled in that program. The non-career preparation group was more homogeneous as to grade level than the career preparation groups and had almost an equal number from both classifications. This supports the literature review as to the popularity of career preparation course enrollment across grade levels. Career preparation courses are designed for 16 through 19-year-old students and, therefore, are universally inviting to both juniors and seniors.

Table 2. Frequencies and Percentages of Sample Population's Grade Level Disaggregated by Enrollment in Career Preparation Courses, Illustrated With Non-Career Preparation Enrollment for Comparison, According to Student Records at MacArthur High School in North East Independent School District

Career Preparation Program	Grade Level	Frequency (n)	Percent
Business & Marketing	Grade 11	26	34.2
	Grade 12	50	65.8
	Total	76	100.0
Trade & Industry	Grade 11	28	28.0
	Grade 12	72	72.0
	Total	100	100.0
Health Occupation	Grade 11	52	68.4
	Grade 12	24	31.6
	Total	76	100.0
Non-Career Preparation Students	Grade 11	134	47.9
	Grade 12	146	52.1
	Total	280	100.0

N=252 (CPE).

N=280 (non-CPE).

Table 3 provides information on the ethnicity of the population. The population is diverse and mirrors the diversity of MacArthur High School. One hundred twenty-four students were coded as Caucasian/Anglo. This represented 49.3% of that sample. One hundred two were coded as Hispanic/Mexican American. This represented 29.9% of the sample. Twenty-six students were coded as Black/African American. This represented 10.3% of the sample population. Finally, 28 students were identified in a category styled “other.” This group represented Pacific Islanders, Middle Eastern immigrants, and Native Americans; and while this category was not the least represented, no single ethnicity had sufficient numbers to require the use of another ethnic category. This group represented 11.0% of the sample.

The non-career preparation population consisted of 124 students who were coded as Caucasian/Anglo. This represented 44.3% of that sample. Seventy-four were coded as Hispanic/Mexican American. This represented 29.3% of the sample. Twenty-six students were coded as Black/African American. This represented 9.3% of the sample. Finally, 28 students were identified in a category styled “other” and consisted of 10% of the non-career prep students. It was interesting that in this study, no African Americans were enrolled in either trade and industry or in health occupations education, while almost 10% were represented in the non-career preparation group. Additionally, there were twice the number of Anglos represented in the trade and industry and health occupation programs than Hispanics; but in the business marketing program, the population was more homogeneous.

Table 3. Frequencies and Percentages of Sample Population's Ethnicity Disaggregated by Enrollment in Career Preparation Courses, Illustrated With Non-Career Preparation Enrollment for Comparison, According to Student Records at MacArthur High School in North East Independent School District

Career Preparation Program	Ethnicity	Frequency (n)	Percent
Business & Marketing	Anglo	24	31.6
	Hispanic	26	34.2
	African American	26	34.2
	Total	76	100.0
Trade & Industry	Anglo	48	48.0
	Hispanic	24	24.0
	Other	28	28.0
	Total	100	100.0
Health Occupation	Anglo	52	68.4
	Hispanic	24	31.6
	Total	76	100.0
Non-Career Preparation Students	Anglo	124	44.3
	Hispanic	102	36.4
	African-American	26	9.3
	Other	28	10.0
	Total	280	100.0

N=252 (CPE).

N=280 (non-CPE).

### Research Question 1

Research question 1 asked, "Is there a difference of mean scores disaggregated by career preparation courses in grade point average (RPA) as reported by student records at MacArthur High School in North East Independent School District?"

Career preparation courses demonstrate how academic knowledge and skills are applied in the workplace and other settings. Students are able to select and apply

appropriate technological resources and problem-solving strategies to real-life situations using problem-solving strategies in purposeful ways. Students acquire and apply skills/concepts required to balance personal, family, community, and work responsibilities. The skills to manage work, family, and community responsibilities for the well being of themselves and others are critical for personal success. Their high school RPA is a crucial benchmark in skill and knowledge acquisition.

Table 4 provides information on the population's grade point average (RPA). Conventional wisdom often labels CTE students as non-college bound, less than scholarly, and many times, less intelligent than non-career preparation students. Academics for "vocational" students have often been assigned to less rigorous basic courses than their college-bound peers. Strong academic skills will enable those students not college bound to access needed skills and training needed to advance in their careers.

**Table 4. Summary of Sample Population's Grade Point Average (RPA) Disaggregated by Enrollment in Career Preparation Courses, Illustrated With Non-Career Preparation Enrollment for Comparison, According to Student Records at MacArthur High School in North East Independent School District**

Career Preparation Program	Frequency (n)	Mean	SD
Business & Marketing	76	4.434	.0478
Trade & Industry	100	4.947	.8364
Health Occupation	76	4.753	.9188
Non-Career Preparation Students	280	4.734	.7578

N=252 (CPE).

N=280 (non-CPE).

In order to answer research question 1, the researcher tested the variance between the means of two or more groups through the use of a one-way analysis of variance (ANOVA) procedure. The decision-making process began with comparing the calculated level of significance against the alpha level. The comparison in this instance was seeking a level of significance at or less than 0.05. Table 5 shows the RPA for the sample populations, including the non-career preparation students for comparison.

Table 5. Analysis of Variance (ANOVA) of Sample Population's Grade Point Average (RPA) and the Influence of Career Preparation Course Enrollment According to Student Records at MacArthur High School in North East Independent School District

	Sum of Squares	df	MS	F	Sig.
Between Groups	11.394	2	5.697	10.687	0.001*
Within Groups	132.730	249	.533		
Total	144.123	251			

\*Significant at the 0.05 level.

Table 5 shows the significance level was 0.001, well under 0.05, and therefore, the decision was made to reject the null hypothesis. It was now known that at least one mean was statistically different from at least one other mean. However, the ANOVA was not designed to indicate where the difference(s) occurred. To test this, a post hoc analysis was used to search for homogeneous subsets.

In Table 6, the Scheffe illustrates that in this case, the health occupation students, as well as the trade and industry students possess a higher RPA than do the

business and marketing students. This supports the review of literature, which holds that the need for technical writing skills and understanding of technical terminology in both health occupations education and trade and industry lends valuable academic skills to the student's knowledge base. The daily use of coding, technical terms, and math usage increases academic rigor and presents a more challenging experience for the career preparation student.

Table 6. A Post Hoc Test, the Scheffe, of Sample Population's Grade Point Average (RPA) and the Influence of Career Preparation Course Enrollment According to Student Records at MacArthur High School in North East Independent School District

Career Preparation Program	N	Subset for alpha= .05	
		1	2
Business & Marketing	76	4.434	
Health Occupations	76	4.753	
Trade & Industry	100		4.947
Significance		1.000	.233

*Note.* Means for homogeneous subsets are displayed.

### Research Question 2

Research question 2 asked, "Is there a difference of mean scores disaggregated by career preparation courses in attendance rates as reported by student records at MacArthur High School in North East Independent School District?"

Career preparation can help students develop the ability to handle changes. Several implications both to students and the community have been identified as problematic when student absenteeism increases. Naturally, students suffer academically and socially. According to Baker and Jansen (2000), studies indicate that students who are absent have lower achievement and may be penalized through lower test scores. Essentially, when students are absent, not only do those students simply miss learning opportunities, but when the teachers provide remediation upon a student's return, that accounts for additional loss of instructional time taken from other students.

To partially answer research question 2, the researcher provided descriptive and inferential data regarding the absences within the career preparation programs in Table 7.

Table 7. Descriptive and Inferential Statistics of Absences and the Influence of Career Preparation Course Enrollment, Disaggregated by Enrollment in Career Preparation Courses, According to Student Records at MacArthur High School in North East Independent School District

Career Preparation Program	N	Mean	SD
Business & Marketing	76	2.97	.816
Trade & Industry	100	3.06	.750
Health Occupations Education	76	3.58	1.707
Total	252	3.19	1.165

In order to answer research question 2, the researcher tested the variance between the means of two or more groups through the use of a one-way analysis of variance (ANOVA) procedure. Table 8 indicates the level of significance at 0.05 for the purpose of this study. More importantly, however, is that the statistics in this study show there is very little difference between any of the populations regarding absences.

Table 8. Analysis of Variance (ANOVA) of Sample Populations of Absences Among the Student Populations and the Influence of Career Preparation Course Enrollment, According to Student Records at MacArthur High School in North East Independent School District

	Sum of Squares	df	MS	F	Sig.
Between Groups	16.743	2	8.372	6.432	0.002*
Within Groups	324.114	249	1.302		
Total	340.857	251			

\*Significant at the 0.05 level.

The decision-making process began with comparing the calculated level of significance against the alpha level. The comparison in this instance was seeking a level of significance at or less than 0.05. The means reported in Table 8 clearly show no overwhelming difference in student absences. Absences are only one of the ways that student success can be measured annually. This portion of the study does not support the literature review, which clearly indicates that student absences fall when strong career preparation courses are concentrated.

Table 8 also showed the significance level was 0.002, well under 0.05, and therefore, the decision was made to reject the null hypothesis. It was now known that at least one mean was statistically different from at least one other mean. However, the ANOVA was not designed to indicate where the difference(s) occurred. To test this, a post hoc analysis was used to search for homogeneous subsets.

In Table 9, the Scheffe illustrated that in this case, only the health occupation students possess a higher rate of absenteeism than do the business and marketing students or the trade and industry students. Since the health occupations career preparation course meets every other school day at 7:30 a.m., this sample population may have unduly affected the results of this question.

Table 9. A Post Hoc Test, the Scheffe, of Sample Populations of Absences and the Influence of Career Preparation Course Enrollment, Disaggregated by Enrollment in Career Preparation Courses, According to Student Records at MacArthur High School in North East Independent School District

Career Preparation Program	N	Subset for alpha= .05	
		1	2
Business & Marketing	76	2.97	
Trade & Industry	100	3.06	
Health Occupations	76		3.58
Significance		1.000	1.000

*Note.* Means for homogeneous subsets are displayed.

### Research Question 3

Research question 3 asked, “Is there a relationship between career preparation courses and non-career preparation courses to high school dropout rates at MacArthur High School as reported by student records in North East Independent School District?”

In a review of research, it was noted that findings indicated that vocational students were less likely to drop out. However, students who defined themselves as vocational students in 12<sup>th</sup> rather than 9<sup>th</sup> grade in a follow-up survey or who were defined by having a vocational concentration were often much less likely to drop out than general students or non-vocational students. In order to evaluate this hypothesis, the data were processed by cross-tabulation and by chi-square tests. The cross-tabulation was used to illustrate that non-career prep students drop out at a higher rate than do students enrolled in any career preparation program as reflected in Table 10.

Table 10. Cross-Tabulation of Sample Population’s Dropout Rate by Enrollment in Career Preparation Courses, Illustrated With Non-Career Preparation Enrollment for Comparison, According to Student Records at MacArthur High School in North East Independent School District

		Career Preparation Enrollment			
		Career Prep Enrolled	Not Career Prep Enrolled	Total	
Drop Out?	No	Count	245	267	512
		% of Drop Outs	47.9	52.1	100.0
		% in Career Prep	97.2	95.4	96.2
		% of Total	46.1	50.2	96.2
Yes	Count	7	13	20	
	% of Drop Outs	35.0	65.0	100.0	
	% in Career Prep	2.8	4.6	3.8	

Table 10 (continued)

		Career Preparation Enrollment		
		Career Prep Enrolled	Not Career Prep Enrolled	Total
Total	Count	252	280	532
	% of Drop Outs	47.4	52.6	100.0
	% in Career Prep	100.0	100.0	100.0
	% of Total	47.4	52.6	100.0

A Pearson chi-square was then used to test the association between categorical variables generated by the inferential procedure against the critical level of significance (0.05). A chi-square analysis is an inferential statistics technique that tests the association between categorical variables and can assist the researcher in rejecting or failing to reject a null hypothesis by providing a sampling distribution that gives probabilities about frequencies. The results are displayed in Table 11.

Table 11. Pearson Chi-Square of Sample Population's Dropout Rate by Enrollment in Career Preparation Courses, Illustrated With Non-Career Preparation Enrollment for Comparison, According to Student Records at MacArthur High School in North East Independent School District

	Value	df	Sig.
Pearson Chi-Square	1.275	1	.259
N of Valid Cases	532		

\*Significant at the 0.05 level.

Based on that comparison, the researcher failed to reject the null hypothesis, that is, the null remained. In the population, one variable is not associated with or will impact the other. They have statistical independence. In this case, non-career preparation students do have a higher dropout rate than students enrolled in career preparation courses. This supports the literature review that career preparation courses can help reduce dropout rates. Researchers involved in a study in another large urban school district found that career preparation students dropped out at less than half the rate of non-career preparation students. Career academies affect dropout and graduation rates *indirectly* by increasing knowledge and skills (as reflected in RPA), which in turn increases the likelihood of graduating.

#### **Research Question 4**

Research question 4 asked, “Is there a difference between career preparation students and non-career prep students in grade point average (RPA) at MacArthur High School as reported by student records in North East Independent School District?”

Table 12 provides descriptive statistics that illustrate not only the grade point average (RPA) of CTE students, but for non-CTE students, as well. Innovation and creative reform in CTE abounded in the close of the 20<sup>th</sup> century. The challenge ahead is to ramp up all communities to rise to the new standards, regardless of student placement.

Table 12. Descriptive and Inferential Statistics of Grade Point Average (RPA) and the Influence of Career Preparation Course Enrollment, Disaggregated by Enrollment in Career Preparation Courses, Illustrated With Non-Career Preparation Enrollment for Comparison, According to Student Records at MacArthur High School in North East Independent School District

Career Preparation Program	N	Mean	SD
Business & Marketing	76	4.434	.0478
Trade & Industry	100	4.947	.8364
Health Occupations Education	76	4.753	.9188
Non-Career Preparation Students	280	4.810	.7593
Total	532	4.774	.7588

In order to answer research question 4, the researcher tested the variance between the means of two or more groups through the use of a one-way analysis of variance (ANOVA) procedure.

The decision-making process began with comparing the calculated level of significance against the alpha level. The comparison in this instance was seeking a level of significance at or less than 0.05. Table 13 showed the significance level was 0.001, well under 0.05, and therefore, the decision was made to reject the null hypothesis. It was now known that at least one mean was statistically different from at least one other mean. However, the ANOVA was not designed to indicate where the difference(s) occurred. To test this, a post hoc analysis was used to search for homogeneous subsets.

Table 13. ANOVA of Sample Populations of Grade Point Average (RPA), Which Illustrates Absences Among the Student Populations, and the Influence of Career Preparation Course Enrollment, According to Student Records at MacArthur High School in North East Independent School District

	Sum of Squares	df	MS	F	Sig.
Between Groups	12.172	3	4.057	7.297	0.001*
Within Groups	293.590	528	.556		
Total	305.762	531			

\*Significant at the 0.05 level.

The Scheffe, in Table 14, illustrated that in this case, the health occupation students, as well as the trade and industry students possess a higher RPA than do the business and marketing students. Career and technology education provides a level of skill that can create a foundation for not only gainful employment during high school and college, but can also make the connection between employment and future occupational goals (Stone, 2004). There are also follow-up studies that show a significant difference in earnings of career preparation students versus non-career preparation students from the same high school environment (Reese, 2004).

Table 14 showed that among the career preparation programs, the business and marketing program experienced lower RPA than health occupations or trade and industry. In this case, the non-career preparation group experienced the higher RPA.

Table 14. A Scheffe of Sample Populations Comparing Grade Point Average (RPA) and the Influence of Career Preparation Course Enrollment, Disaggregated by Enrollment in Career Preparation Courses, Illustrated With Non-Career Preparation Enrollment for Comparison, According to School Records at MacArthur High School in North East Independent School District

Career Preparation Program	N	Subset for alpha= .05	
		1	2
Business & Marketing	76	4.434	
Health Occupations	76		4.753
Non-Career Preparation Student	280		4.810
Trade & Industry	100		4.947
Significance		1.000	.334

*Note.* Means for homogeneous subsets are displayed.

## **CHAPTER V**

### **SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS**

Chapter V contains a summary of the purpose, procedures, and major findings of this research study based upon the research questions that were posed. The second section presents the conclusions and implications that were derived from the data as well as the review of literature. The third section includes the recommendations for further study.

#### **Summary**

The primary goal of this study was to examine the influence of career preparation courses on student achievement as reported by student records at MacArthur High School in the North East Independent School District (NEISD) during the 2004-2005 school year. Comparisons were made between those students enrolled in the various career preparation courses at MacArthur High School and those students not enrolled in career preparation courses at MacArthur High School.

The study was conducted during the spring of 2006. The researcher used Microsoft Excel in spreadsheet format to record the data from existing student records. These spreadsheets recorded populations, genders, ethnicities, RPA, age, grade level, course program name and number, attendance records, and dropout occurrence. The sample of the non-career preparation students in the study was 280 (N). The sample of the career preparation students in the study was 280. However, due to errors discovered after collecting the data, the career preparation sample was reduced to 252 (N). This control group number was determined by using the standard statistical parameters of a

95% confidence level and a 5-point confidence interval. The demographic data were used for data analysis in this study. Information from analogous data was reported in summary form.

Following a review of the literature, this researcher met with the school registrar, Ms. Molly Bucklew, to access the student records required for cumulative data. Data were collected on June 12, 2006, under the direction and supervision of the registrar, Ms. Molly Bucklew. The purpose of her supervision was to maintain confidentiality of student information and to ensure that the researcher obtained data that were as accurate as possible. The data resulting from the student record collection led the researcher to use several types of descriptive and inferential procedures to answer the four research questions.

Data were analyzed in several different ways. In order to answer the first research question, an ANOVA was used to test the means between two or more groups. Scheffes were used as a post hoc test for homogeneous subsets. Pearson chi-squares were used to compare categorical variables.

## **Conclusions**

### *Research Question 1*

Research question 1 asked, “Is there a difference of mean scores disaggregated by career preparation courses in grade point average (RPA) as reported by student records at MacArthur High School in North East Independent School District?”

The results of this study indicated that the health occupation students, as well as the trade and industry students, possessed a higher RPA than the business and marketing

students at MacArthur High School. The comparison shows the significance level was 0.001, well under 0.05, and therefore, the decision was made to reject the null hypothesis (Table 5). It was now known that at least one mean was statistically different from at least one other mean. A Scheffe (Table 6), used as a post hoc test, illustrates that in this case, there was a difference between the groups and that the Health Occupation students, as well as the Trade and Industry students possess a higher RPA than do the Business and Marketing students. This supports the review of literature (Plank, 2001), which holds that the need for technical writing skills and understanding of technical terminology in both Health Occupations Education and Trade and Industry lends valuable academic skills to the student's knowledge base. The daily use of coding, technical terms, and math usage increases academic rigor and presents a more challenging experience for the career preparation student.

### **Implications for Practice**

Career preparation courses fill the gap between what students know and what they need to know to compete in a world economy and successfully fulfill basic adult life roles (Bond, 2004). Career preparation education, through the use of contextual learning, integrates academic subject matter such as science, math, and English with applications to the workforce (Business-Higher Education Forum, 2003). Opponents of career preparation education contend the content and environment of employment available to youthful workers do not provide the opportunity for skill acquisition, encouragement of adult roles, or social maturity (Stone, 2004). Research on employment and academic achievement produces confusing results. For example,

evidence shows that the number of hours worked has a greater effect than whether the student works during the school week (Barton, 1989). Some governmental efforts have resulted in changes in the student employment arena, as well (Workman, 1990).

### *Globally and Culturally*

Career and Technical Education provides a level of skill that can create a foundation for not only gainful employment during high school and college, but can also make the connection between employment and future occupational goals (Stone, 2004). Supporters of work experience programs point to the acquisition of employability skills, assumption of responsibilities, and integration into the world of work as positive effects of cooperative employment (Green, 1990). There is also rich research that shows a significant difference in earnings of career preparation students versus non-career preparation students from the same high school environment (Reese, 2004), thus providing career and growth opportunities far beyond the student's local environment.

### *Timing*

The youth labor market of today fulfills the goals of many blue-ribbon panels of the past 50 years. Additionally, school curricula have been expanded to include career education and work-study programs. Career and Technology schools have been built, as well as a new tier of technically oriented two-year colleges. Pro-active manpower training programs, including Texas Work Source, Job Corps, and others were established. The Bureau of Labor Statistics (2004) even advocates career education introduction in the elementary grades. To succeed in our economy, all high school students, regardless of their post-graduation plans, must acquire a high level of

academic knowledge and skills during high school. Employers are demanding stronger reading, writing, and math skills of all of their workers—and reporting that too many recent high school graduates are not making the grade. Seventy-three percent of employers rate the writing skills of recent high school graduates as fair or poor, while 63% express dissatisfaction with graduates' math skills.

### *Academically*

Clearly, this study is supported by the review of literature, which holds that the need for technical writing skills and understanding of technical terminology in both Health Occupations Education and Trade and Industry lends valuable academic skills to the student's knowledge base. The daily use of coding, technical terms, and math usage increases academic rigor and presents a more challenging experience for the career preparation student.

### *Research Question 2*

Research question 2 asked, "Is there a difference of mean scores disaggregated by career preparation courses in attendance rates as reported in student records at MacArthur High School in North East Independent School District?"

The results of this study strongly support, as evidenced in Table 7, the findings that some opponents of career preparation education are correct when they contend that the content and environment of employment available to youthful workers do not provide the opportunity for skill acquisition, encouragement of adult roles, or social maturity (Stone, 2004). In order to answer the second question regarding absences, the researcher again turned to the analysis of variance (ANOVA), shown in Table 8, to test

the means of the groups, with an Scheffe as a post hoc to test for homogeneous subsets. This analysis determined that the Health Occupation students possess a higher rate of absenteeism than the Business and Marketing students or the Trade and Industry students. The comparison in this instance was seeking a level of significance at or less than 0.05. The mean reported clearly shows no overwhelming difference in student absences. Absences are only one of the ways that student success can be measured annually. This portion of the study does not support the literature review, which clearly indicates in Chapter IV that student absences fall when strong career preparation courses are concentrated. The comparison also showed the significance level was 0.002, well under 0.05, and therefore the decision was made to reject the null hypothesis. However, the ANOVA was not designed to indicate where the difference(s) occurred. The Scheffe, shown in Chart 9, was used to search for homogeneous subsets. The comparison illustrated that in this case, only the Health Occupation students possess a higher rate of absenteeism than do the Business and Marketing students or the Trade and Industry students. Since the Health Occupations career preparation course meets every other school day at 7:30 a.m., this sample population may have unduly affected the results of this question.

### **Implications for Practice**

The results of this study did not support Lynch and Harnish (1998) in the literature review regarding career preparation student absenteeism. In fact, Health Occupations students, in this case, had more absenteeism than either of the other programs studied and more than the non-career preparation students group, as well.

Could this be attributable to contact with patients with contagious diseases, fevers, and other maladies in healthcare agencies and training stations? Could this also be due to the time the course is offered, the instructor, or the rigor of the coursework?

In a world of work where being a “good worker” is no longer an assurance of continued employment, career preparation can serve students in several ways. It helps them acquire the basic skills and attitudes for successful entry to the world of work, it teaches them to be effective career managers and to be knowledgeable about their talents, to acknowledge their strengths, and to address their weaknesses. Career preparation can enable students to recognize that challenges present opportunities and that they must be prepared to acquire new skills and new knowledge to take advantage of those opportunities. This includes employee morale, productivity, and absenteeism.

### *Research Question 3*

Research question 3 asked, “Is there a relationship between career preparation courses and non-career preparation courses to high school dropout rates at MacArthur High School as reported in school records in North East Independent School District?”

The third question, regarding dropout status, was answered through the use of cross tabulation and a chi-square test in Table 10, since the variables were categorical. The cross-tabulation was used to illustrate dropout rates of non-career prep students compared to students enrolled in any career preparation program.

This analysis determined that non-career preparation students possess a higher rate of dropout than career preparation students. A Pearson chi-square was then used to test the association between categorical variables generated by the inferential procedure

against the critical level of significance (0.05). A chi-square analysis (Table 11) provides a sampling distribution that gives probabilities about frequencies. Based on that comparison, the researcher failed to reject the null hypothesis, that is, the null remained. In this population, one variable is not associated with or will impact the other. In this case, 13 non-career preparation students compared to 7 career preparation students dropped out of MacArthur High School during the 2004-2005 school year. Thus in this study, non-career preparation students do have a higher dropout rate than students enrolled in career preparation courses. This supports the literature of Mayer and Mitchell (1993) and Kaufmann, Alt, and Chapman (2001) that supports the premise that career preparation courses can help reduce dropout rates. Researchers involved in a study in another large urban school district found that career preparation students dropped out at less than half the rate of non-career preparation students. For example, the literature of Barton (1989) shows that the number of hours worked has a greater effect than whether the student works during the school week. Some governmental efforts to control the number of hours worked by high school students have resulted in changes in the student employment arena, as well (Workman, 1990).

### **Implications for Practice**

All students can use a career planning process that includes self-assessment, personal development, and a career portfolio as a way to gain initial entry into the workplace. By demonstrating job-seeking skills, they can assess personal, educational, and career skills that are transferable among various jobs and explain the problems and possible benefits of involuntary changes in employment, including information on what

actions the employee can take to make it easier to find a new position or to become self-employed.

#### *Research Question 4*

Research question 4 asked, “Is there a difference between career preparation students to non-career prep students in grade point average at MacArthur High School as reported in school records in North East Independent School District?” This question was answered in Table 13, through the use of an analysis of variance (ANOVA), to test the means of the groups, with an Scheffe (Table 14) as a post hoc to test for homogeneous subsets. This analysis determined that the non-career preparation students, Health Occupation students, as well as the Trade and Industry students possess a higher RPA, than do the Business and Marketing students. Attributable for the most part, to skills sets needed for scientific definitions, higher math skills, and enhanced scientific knowledge. In that comparison those samples were statistically the same. The post hoc test illustrated that in this case, the Health Occupation students, as well as the Trade and Industry students possess a higher RPA than do the Business and Marketing students. In this case, however, the non-career preparation group experienced the higher RPA.

Career preparation education provides a level of skill that can create a foundation for not only gainful employment during high school and college, but can also make the connection between employment and future occupational goals (Stone, 2004). There are also follow-up studies that show a significant difference in earnings of career

preparation students versus non-career preparation students from the same high school environment (Reese, 2004).

### **Implications for Practice**

A successful career in the twenty-first century will differ significantly from the model of career success that has prevailed in this century. New ways of working and new technology already dictate the importance of bringing new skills to the workplace, but other changes are even more fundamental. Lifelong employment for the same employer has virtually vanished. Initial career decisions are no longer seen as lifetime determinations, but rather as first steps in a career that is likely to include work for several employers in a variety of positions. Career preparation can help students develop the ability to handle changes. In a world of work where being a “good worker” is no longer an assurance of continued employment, career preparation can serve students in several ways. It helps them acquire the basic skills and attitudes for successful entry to the world of work, it teaches them to be effective career managers and to be knowledgeable about their talents, to acknowledge their strengths, and to address their weaknesses. Career preparation can enable students to recognize that challenges present opportunities and that they must be prepared to acquire new skills and new knowledge to take advantage of those opportunities.

### **Recommendations Based on This Study**

This study was intended to serve as basic research for MacArthur High School to evaluate their career preparation education program and use the findings for future planning purposes. The study’s primary purpose was to examine the influence of career

preparation courses on student achievement as reported by student records from the 2004-2005 school year. Based upon the review of literature, the findings of this study, and the conclusions drawn from research, the following recommendations are provided:

1. The data clearly indicate that within the career preparation programs, Health Occupations students and Trade and Industry students possess a higher RPA than Business and Marketing students. MacArthur High School should continue to enroll students in career preparation courses, in order to help them acquire the basic skills and attitudes for successful entry to the world of work. It teaches them to be effective career managers and to be knowledgeable about their talents, to acknowledge their strengths, and to address their weaknesses.

2. The data clearly indicate that all groups of career preparation students have fewer absences than non-career preparation students. MacArthur High School should continue to enroll students in career preparation courses, to increase average daily attendance, and place more students in a learning environment that fosters academic success.

3. The data clearly indicate that career preparation students have a lower dropout rate than non-career preparation students. Career preparation courses enable students to recognize that challenges present opportunities and that they must be prepared to acquire new skills and new knowledge to take advantage of those opportunities. As part of career preparation education, students can learn to see education, not as something to be completed in 13 or 17 years, but as a continuing process, available throughout their lives, to assist in coping with a fast-changing world.

MacArthur High School should increase the number of career preparation programs on campus.

4. The data clearly indicate that career preparation students do not have a significantly higher RPA than non-career preparation students. Students can demonstrate how academic knowledge and skills are applied in the workplace and other settings. Students can select and apply appropriate technological resources and problem-solving strategies to real life situations using problem-solving strategies in purposeful ways. Students can acquire and apply skills/concepts required to balance personal, family, community, and work responsibilities. The skills to manage work, family, and community responsibilities for the well being of themselves and others are critical for personal success. MacArthur High School should look beyond the RPA and class rank in order to focus on true student success.

5. Clearly, there is room for improvement among career preparation education student equity. MacArthur High School should make efforts to encourage more ethnic minorities to enroll in career preparation courses.

6. Clearly, the career preparation students are experiencing wonderful success. The curriculum and their teachers are providing strong leadership in acquiring work, academic, and related skill sets. Portfolio assessments would add to the “toolkit” of success each student can take with them into the workplace.

### **Recommendations for Further Study**

The following are recommendations for further research related to this topic:

1. Research is needed since this study was limited in scale and should be replicated in other districts to further explore career preparation student success.

Similarly, each program area should be researched.

2. Research is needed to conduct an additional study and control for as many variables as possible to determine the impact of TAKS performance, discipline referrals, and mobility of training stations.

3. Conduct an additional study to include all NEISD high school campuses. This will assist administration and other appropriate personnel in facilities planning, human resources activities, and program evaluation of career and technology opportunities.

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North East Independent School District, San Antonio, Texas, 1996-Present

Marketing Education Coordinator, MacArthur High School  
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Special Populations Coordinator, Central Office  
Responsible for administration of all Special Programs for Career and Technology Education in the district. Supervised a highly successful assessment team of paraprofessionals. Responsible for establishing new and innovative programs for special populations through Career and Technology Department; responsible for compliance reporting to upper management; authored and administered CATE grants. Served as liaison for Alamo Workforce, Northside Chamber of Commerce, and Alamo Community College District. Responsible for all in-service presentations as they applied to Special Population Students. Privileged to be part of the highly successful “Camp Mickey D,” with Sybel Pici, local McDonald’s operator. Program is now being advanced on a national level.

This dissertation was typed and edited by Marilyn M. Oliva at Action Ink, Inc.