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Employability Skill Acquisition of Career and Technical Education Students

Michele Marie Orner

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EMPLOYABILITY SKILL ACQUISITION OF
CAREER AND TECHNICAL EDUCATION STUDENTS

A Dissertation

Submitted to

School of Education

Duquesne University

In partial fulfillment of the requirements for
the degree of Doctor of Education

By

Michele M. Orner

May 2009

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Michele M. Orner

2009

**DUQUESNE UNIVERSITY
SCHOOL OF EDUCATION
INTERDISCIPLINARY DOCTORAL PROGRAM FOR
EDUCATIONAL LEADERS**

Dissertation

Submitted in Partial Fulfillment of the Requirements
For the Degree of Doctor of Education (Ed.D.)

Presented by:

Michele Marie Orner
B.A., California University of Pennsylvania, 1986
M.Ed., Shippensburg University of Pennsylvania, 1992

November 21, 2008

EMPLOYABILITY SKILL ACQUISITION OF CAREER AND TECHNICAL EDUCATION
STUDENTS

_____, Chair

David Topper, Ed.D.
Associate Vice President for Administration and Finance
Shippensburg University

_____, Member

Tom Austin, Ph.D
Professor, Department of Criminal Justice
Shippensburg University

_____, Member

Jacqueline Lesney, Ed.D.
Superintendent, Shippensburg Area School District

Program Director

James E. Henderson, Ed.D.
Professor of Educational Leadership and
Director, Interdisciplinary Doctoral Program for Educational Leaders
Duquesne University School of Education

ABSTRACT

THE ACQUISITION OF EMPLOYABILITY SKILLS OF CAREER AND TECHNICAL EDUCATION STUDENTS

By:

Michele M. Orner

May 2009

Dissertation Supervised by Dr. David A. Topper

The purpose of this study was to describe and compare the acquisition of employability skills of Cooperative Education students participating in an employability skills training program with those students who chose not to participate in Cooperative Education Program at the Franklin County Career and Technology Center in Chambersburg, Pennsylvania. Additionally, the study described the factors that affected employability skill acquisition, specifically gender, career major, grade point average, and post graduation plans. Employer and student perceptions of the acquisition of employability skills were also described. While a considerable amount of information has been written about workplace skills that warrant employability success, little has been written concerning the acquisition of employability skills of high school students in career and technical preparation programs. Using a static-group pretest-posttest design, a

self administered data collection instrument was distributed to 33 cooperative education students, their 36 employers and 31 students not enrolled in cooperative education.

Results of this study showed that students were more positive than employers about their employability skill acquisition. Pre-test scores were higher than post test scores among students. Only post graduation plans, as it affected the technical literacy domain, appeared to significantly impact a student's acquisition of the employability skills needed for work place success.

DEDICATION

“It’s never too late to be who you might have been.”
George Eliot: 19th century English novelist

This dissertation is dedicated those people who inspired and encouraged me to be a life long learner.

- Malcolm and Candy Callery: for empowering me to do my best
- O. Richard Forsythe: for reminding me that “learning is a two way street”
- Ronald D. Straley: for modeling consistency, fairness and compassion
- Dr. Carol Saylor: for taking a genuine interest in my ideas
- Dr. Mark Leidy: for soaring with his strengths
- Mr. Bill Johnson: for showing me how to “think outside the box”
- Mr. Jim Duffey: for “doing the right thing, always”
- Mrs. Cheryl Cook: for teaching me to trust and delegate
- Todd Orner: for encouraging me to pursue my education

Their wisdom, encouragement and passion continue to inspire me to view the world as a text book full of lessons worth learning.

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Chapter 1

Introduction

“Hired for Attitude-Trained for Skill”

Amy Fager: Regional Marketing Director for the Madison Settlement Group and Basic Employability
Skills Trainer for the Franklin County Career and Technology Center

Challenges of the American Worker

For most of the twentieth century, employees who demonstrated a commendable work ethic could expect lifelong employment until retirement. For the first two-thirds of the century, workers expected their employers to provide them with job training, internal promotions, and financial rewards for loyalty. Unfortunately, this ideal faded with the restructuring recessions of the late 1970s, mid 1980s, and early 1990s, and the shift of the national economy from domestic manufacturing and industry to an economy focused in providing services and managing information (Herr & Cramer, 1996). These changes in the economy resulted in the closing of mills, factories and manufacturing plants, jobs being shipped overseas (Resnick & Wirt, 1996) and job losses for many of the skilled workers and middle managers who had previously counted on a lifetime job security (Baker & Satcher, 2000).

Today, the American workforce faces job insecurity because few organizations reward or even guarantee employment security. Most can expect to work in many different organizations during their life time, with an increasing number working for various organizations at the same time (Lee & Johnston, 2001). Along with the decrease

of importance placed on employment security comes the reality that few corporations are taking responsibility for the professional development of their employees (Lee & Johnston, 2001). Many businesses have shifted their human resource practices from traditional employment arrangements to contingency employment contracts involving the outsourcing of work to individuals serving in the capacity of independent contractors (Thottam, 2004).

Current and future employees can expect to be held personally responsible for their acquisition of technical and employability skills with the burden of training shifting from business and industry to the K-12 classroom (Baker & Satchel, 2000; Cassel, 1998; Cassel & Kolstad, 1998). However, such changes in the workplace have occurred during a period of increasing concern that public schools are not keeping up with international educational standards. The unfortunate consequence has been a widening skill gap between the changing labor market demands and the employability skills of American workers, resulting in the import of an increasing number of highly educated foreign workers to offset domestic shortages (Heet, 2003).

The Need to Teach Employability Skills

Preparing students for the workplace is viewed to be one way the United States can remain competitive in a global economy. The nature of today's workplace is different from that of the past. Global competition, cultural diversity, new technologies and management skills that require workers to have critical thinking, problem solving and communication skills as well as advanced levels of job skills characterize today's workplace (Carnevale, 1991; Johnston and Packer, 1987; Reich, 1991). According to Friedman (2006), in his book "The World is Flat: A Brief History of the Twenty-First

Century,” the world has become smaller, so small it’s flat. Friedman’s metaphor describes a universal leveling that is occurring, driven by new technology and software. According to Jones (2005), this leveling allows individuals from Canton, China to Canton, Ohio to collaborate and compete on a whole new scale, the single most important trend in the world today. Friedman (2006), identifies ten flatteners that are reshaping lives, business and politics: creativity, connectivity, work flow software, uploading, outsourcing, off-shoring, supply-chaining, in-sourcing, in-forming, and steroids or certain new technologies that amplify or turbo-charge all other flatteners. Because of these flatteners, workers will need to be good at managing and interacting with other people. Although having good people skills has always been an asset in the working world, it seems it will be even more so in a flat world. According to Friedman (2006), “I’m not sure how to teach that as part of a classroom curriculum, but someone had better figure it out” (p. 306) Alan Blinder (2005), a noted Princeton economist, reinforces this concept, “Perhaps, contrary to what we have come to believe in recent years, people skills will become more valuable than computer skills. The geeks may not inherit the earth after all” (Blinder, 2005, p. 23).

According to a 2007 article in *Education Week*, embedding the mastery of interpersonal skills into the secondary curriculum is one response to a national concern among policy and business leaders that teenagers are emerging from high school without the set of skills they need to thrive in college and the workplace. Research refers to those competencies as soft, applied or 21st century skills. According to Gewertz (2007) in an increasingly global and technological economy, it is not enough to be academically strong. Young people must be able to work comfortably with people from other cultures,

solve problems creatively, write and speak well, think in a multidisciplinary way and evaluate information critically. Furthermore, they need to be punctual, dependable and industrious. According to Ken Kay, president of the Partnership for 21st Century Skills, this skill set is the ticket to economic upward mobility in the new economy.

Research indicates the need to build a wide range of soft skills necessary for success in work and college has been discussed in policy circles for years. A 1991 report by the U.S. Secretary of Labor's Commission on Achieving Necessary Skills, called the SCANS report, called for many of the competencies that educators and business leaders have been recommending in the last 15 years. According to Gewertz (2007), scholars who have watched the rise and fall of the "soft skills" agenda say it lost visibility and momentum in the massive national push for better academic performance, driven by the standards movement and the federal No Child Left Behind Act. They attribute its resurgence to a renewed cycle of concern about competitive pressures on the United States in an increasingly global economy. The literature indicates that academic performance and soft skill competencies should never have been separated in the first place.

For many years, career and technical education has focused on job-skill training, training individuals in the hands-on tasks to ensure their employability and job market success. This singular attention to job specific skills continues to characterize many career and technical programs. There is, however, controversy among educators as to whether or not students are actually acquiring the appropriate job specific skills and whether those skills are sufficiently preparing students with the necessary employability skills for workplace success (Lankard, 1996). Some educational leaders believe the needs

of the new workplace eliminate the viability of career and technical education programs that concentrate solely on the acquisition of technical skill. Herr (1995) contends that career and technical education should expand its focus by initiating programs that prepare students with basic academic skills and the commitment to lifelong learning that permits them to rapidly change in ways required by the new workplace.

A 2006 survey of 431 human resource officials by the Conference Board, Corporate Voices for Working Families, the Partnership for 21st Century Skills, and the Society for Human Resource Management concludes “the future work force is here and it is ill prepared” (e-School News, 2006). Business leaders polled reported that while reading, writing and arithmetic are still fundamental to every employee’s ability to do the job, applied skills such as teamwork, critical thinking and communication are also essential for success. Strongly emphasized was the idea that at all educational levels, these applied skills trump basic knowledge skills in importance in the view of employers. The survey found, however, that too many new entrants to the workforce are not adequately prepared in these important skills.

In the United States, global competitiveness depends on the knowledge and employability skill level of the American workforce. According to Susan R. Meisinger, president and CEO of the Society for Human Resource Management, in a knowledge-based economy, a talented workforce with communication and critical-thinking skills is necessary for organizations and the United States to be successful (eSchool News, 2006). Meisinger’s sentiments were expressed sixteen years earlier in a report from the Commission on Skills of the American Workforce (1990), entitled *America’s Choice: High Skills or Low Wages!* The Commission’s report concluded that if the United States

is to avoid competing with low-wage labor in developing countries, it is essential to invest more in education and training America's workforce to better compete with high-skill economies, including Australia, Japan, China, India and Western Europe (Boesel and McFarland, 1994; National Center on Education and the Economy, 1990).

The international community appears to be further ahead in training today's students for tomorrow's workforce. For example, key organizations in Australia, including the National Center for Vocational Education Research, the Australia National Training Authority and Commonwealth Department of Education, Science and Training have addressed the highly problematic issue of employability skills and place the issue firmly on the vocational education and training agenda (Taylor, 2005). Their report, "Employability Skills for the Future" (2002) identified the type of generic skills and personal characteristics or attributes needed in the workplace to ensure success as an employee or self-employed worker. From this information Australia's Commonwealth Department of Education, Science and Training developed a competency-based employability skills framework. Interesting to note, this framework makes the distinction between employability skills (communication, team work, self-management, etc.) and personal attributes (loyalty, commitment, enthusiasm, etc.) that it regards as essential to the concept of an employability skills framework. According to Taylor (2005) educators have been advised to review and redevelop their curriculum to support the teaching of these skills and attributes and examine ways to measure and record attainment.

In China, learning and development opportunities are the top reasons employees are attracted to a company (Gebauer, 2006). In a rapidly growing, rapidly changing business environment, Chinese workers see continuous training and skill development as

a way to enhance their future employability and expand their career options. This desire is instilled in China's workforce while they are students in the secondary schools. The quality of career and technical education has always been a reform priority. According to Hwang (2000), The Republic of China has established a coherent career and technical education system focusing on a job-oriented curriculum. Based on task analysis and competencies, teachers decide on curricular objectives, content, learning activities, and teaching and evaluation methods. Collaboration between schools and enterprises produces students who have the technical knowledge, employability skills and professional certifications to compete in a global economy (Wu, 2002).

In India students diligently study science, math and technology to earn a coveted spot in one of the country's most prestigious and competitive engineering and medical colleges. The country is in the midst of a higher education revolution, and its colleges are graduating thousands of professionals each year. India, where 35 percent of the population still cannot read or write, has positioned itself as one of the world's foremost producers of math, science and technology graduates, forcing the United States to take a closer look at the country's educational system (Honawar, 2005). In India, it is not unusual for high school age students to spend hours each day, seven days a week, attending coaching classes where they are repeatedly tested in math and science, the two subjects students must master to pass the difficult college entrance exam. Furthermore, parents from all economic classes make large financial sacrifices to ensure their children's success. According to Friedman (2006) America's children will increasingly be competing head-to-head with India's students where schools have instilled a character building approach into the curriculum.

Beginning with the launch of Sputnik in 1958 through today, the societal concern that American high school graduates are less prepared for the workplace than their foreign counterparts has resulted in a number of significant and historical legislative initiatives and white paper reports from educational foundations and others. The National Defense Education Act (1959), the “National Commission of Excellence in Education” (1981) and “A Nation at Risk: The Imperative for Educational Reform” (1983) emphasize the lack of preparation of students for transitions into the workplace and/or post secondary education (Myrick, 1997; Wraga, 1998). Other reports, including Hudson Institute’s “Workforce 2000” (1988) and the subsequent “Workforce 2010” (1996) and “Workforce” 2020 (1997), stress that the gaps in skills among American workers need to be addressed in high school curriculum (Lewis, Stone, Shipley & Madzar, 1998).

The need to teach employability skills, along with basic skills, continued to gain nationwide credibility and recognition. Luft and Schoen (1986) studied non-technical competency (employability skills) areas to determine the extent to which business educators addressed each area in the curriculum. Non-technical areas were defined as problem solving, stress management, professional characteristics, communication skills, and human relations principles. One conclusion drawn was that non-technical employment competencies were not receiving enough attention in the classroom.

In June 1991, the Secretary’s Commission on Achieving Necessary Skills (SCANS) presented findings for the United States Department of Labor titled, “A SCANS Report for America 2000, What Work Requires of Schools” (Stodden, 1998). The report, a result of discussions and meetings with business owners, public employers, union representatives, and workers and supervisors in shops, plants, and stores, coined

the term “workplace know-how.” This know-how was defined as having two elements: foundation skills and workplace competency skills. The foundation skills include reading, writing, mathematics and problem solving skills; the workplace competencies include managing resources, understanding systems, working with others, using technology and acquiring and using information (SCANS, 1991).

According to the SCANS report, the “expert worker of tomorrow” would not simply “pick-up” these competencies (Poole & Zahn, 1993). Their acquisition must begin in schools and be refined through real work experiences and further training. “Teaching and learning the competencies must become the tasks of our schools and students” (SCANS, 11). Overall, an important aspect of the SCANS report was the recognition of interpersonal skills or “soft skills,” as referred to by business and industry, as being paramount to the workplace (Rusch & Millar, 1998).

According to Withrow, Long and Marx (1999) there is evidence that academic skills and SCANS skills are increasingly important. “Schools and school systems in the United States have done a noteworthy job of preparing students for the industrial age; fewer have systematically decided how they will prepare students for the 21st century. Therefore, if we continue on our present path, we’ll be preparing students for a world that will no longer exist” (p.6).

The Clinton Administration responded to the SCANS report by supporting and signing the School-to-Work Opportunities Act of 1994. This legislation addressed the issues highlighted in the SCANS report and encouraged the creation of School-to-Work Opportunities (SWO) Programs to prepare high school students for the evolving needs of the workplace (Stodden, 1998). SWO programs were identified as those providing

school-based and work-based educational learning experiences and connective activities designed to assist high school students with more successful post-school outcomes.

In 1997, the “Workforce 2020” report by the Hudson Institute further emphasized important aspects of the SCANS report for employee success in what it calls the “Innovation Age.” However, many of the employability skills highlighted in the SCANS report fail to be addressed in most high school curricula (NAVE, 2004).

Hudson’s “Beyond Workforce 2020” published in 2004 emphasized the long-term implications of the still growing skill gap due to the domestic labor market being satisfied by international competitors. This presents an ever-growing crisis of Americans being at a disadvantage for their own best domestic jobs. Additionally, a 2005 study commissioned by the Pennsylvania Department of Education, “Career and Technical Education in Pennsylvania: Opportunities for Commonwealth Policy,” stressed the need for industry relevance and academic rigor in high school curricula to ensure that Pennsylvania’s workforce is prepared to meet the demands of the new economy. Research indicates the need to build a wide range of soft skills necessary for success in work and college.

According to Lynch (2000), no longer can career and technical education be separate from academic in organizational structure; program, curriculum, and instructional delivery; and in accountability and assessment measures related to students’ educational achievement. The generic and specific skills and knowledge needed in workplaces must be integrated into the ongoing assessment practices of schools. By assessing the students understanding of what skills they have mastered and where they

need to improve, educators can help students become productive citizens of a global economy (Grummon, 1997).

In an effort to document the learning gains for students in secondary career and technical education programs, states are developing skills standards for given occupations upon which their career and technical curricula are based. These standards form the basis for assessing students' occupational skills and employability skills that are generic to all occupations. Some states, like Ohio, have redesigned their career and technical education curricula to address state skill standards for given occupational areas, providing students with strong experiences in all aspects of the industry in which they are preparing to enter. Other states, like Pennsylvania, are encouraging career and technical schools to implement employability skills curriculum similar to the Skills USA Professional Development Program. This is natural course of action since many career and technical schools already compete in the activities offered by Skills USA at the local, state and national level.

Aside from the emphasis that employers and educators place on employability skills, there is another reason why schools should teach such skills. Major shifts in the U.S. economy and changes in the routines and realities of family life have profoundly affected American families. It is increasingly difficult for many American families to provide for their children; they have fewer financial resources and less time to devote to the supervision, education and nurturing of their children than they did two decades ago (Annie E. Casey Foundation, 1992). There are many children who live in families where there is no working adult role model. How do children whose parents do not have jobs learn about employability skills and work ethic?

Rosabeth Moss Kanter (1989) wrote about the concept of employability, “In the post-entrepreneurial world, the best source of security for people is a guarantee not of a specific job or specific employers, but of their employability” (p. 85). According to Lynch (2000), the employability skills needed by employers for the 21st century global economy include knowing how to learn, interpersonal skills, teamwork, flexibility, adaptability and listening and oral communication skills as well as the ability to solve problems. More recently, the Pennsylvania Department of Education (PDE), in their revision of the academic standards for Career Education and Work, have renamed employability skills as illustrative soft skills, grouping the competencies into the following domains: work ethic, courtesy, teamwork, lifelong learning, self discipline-self confidence, conforming to prevailing norms, problem solving, language proficiency, and technical literacy. According to PDE (2006) these illustrative soft skills are equally as important as technical skills in today’s marketplace. Mastery of these competencies will assure success in the workplace.

All students, college bound or not, need exposure to employability skills to be successful in school and on the job. Success in learning basic skills is often directly related to personal characteristics such as employability skills, a good work ethic, dependability, a positive attitude and determination. These same personal characteristics are essential components of employability skills. Thus, the teaching of employability skills can serve the dual purpose of ensuring that students are successful in and out of school.

Statement of Problem

Research indicates that schools need to do a better job in preparing students for the world of work. The SCANS (1991) report found that more than half of American young people leave school without the knowledge or foundational skills required for entry-level positions. The National Alliance of Business (2001) reported that employers in the United States realize there is a gap between the level of employability skills of students leaving high school and the level needed to obtain and maintain employment in most organizations. The globalization of commerce and industry and the explosive growth of technology on the job have had a profound effect on young people's ability to enter the world of work.

While a considerable amount of information has been written about workplace skills that warrant employability success, there has been little written concerning the acquisition of employability skills of high school students in career and technical preparation programs. Furthermore, describing how business-industry personnel perceive the acquisition of employability skills may provide leaders in education, especially in career and technical education, with the information needed to determine whether high school students are gaining and/or can learn the soft skills needed to succeed in the workplace.

Purpose of the Study

The purpose of this study was to describe and compare the acquisition of employability skills of Cooperative Education students participating in an Employability Skills Training program with those students who chose not to participate in the Cooperative Education Program at the Franklin County Career and Technology Center in

Chambersburg, Pennsylvania. Additionally, this study described the factors that affected the acquisition of employability skills among these students, specifically gender, career major, grade point average, and post graduation plans. Furthermore, this research described what employability skills students and employers perceive Cooperative Education students possess.

Research Questions

The study addressed the following research questions: (1) Do employers and students believe an Employability Skills Training program prepares Cooperative Education students for workplace success? (2) What factors affect a Cooperative Education student's acquisition of the employability skills needed for workplace success? (3) What employability skills do employers and students perceive Cooperative Education students from the Franklin Career and Technology Center possess?

Significance of the Problem

The nation's school-to-work transition strategy is positively acknowledged by educational leaders and major stakeholders. The concept of school-to-work training programs has received support from policy makers, educators, industry and the business community. Educational leaders and policy makers are specifically interested in effective ways to promote the transition from school to skilled employment for all young Americans (O'Neil, 1992).

There has been limited research on the acquisition of employability skills by high school students participating in career and technical programs. This research study will use quantitative data to describe the acquisition of employability skills and the

perceptions of employers and students concerning the success of acquiring employability skills.

To better prepare students for the workplace, teachers must be knowledgeable of how students link school with work, and how students link work with school. Therefore, educational leaders and employers may look to this research to identify how Cooperative Education programs and Employability Skill Training Programs can be more closely aligned with workplace employability skills to provide focus for curriculum development. The findings from this research may also be used to guide professional development for teachers, administrators, and other staff members. Furthermore, this study may provide useful information to educational leaders in making decisions about developing future career and technical education programs. Examining technical programs may provide accountability for educational leaders to determine whether career and technical preparation programs are adequately preparing students with the employability skills needed for workplace success.

This research may also help educational leaders in the process of restructuring career and technical education by identifying programs and program components that are necessary in developing curricula to enhance the employability of high school students. Finally, educational leaders involved with school-to-work, career academies, and comprehensive high schools that offer technical preparation programs, may find the results of this research helpful in implementing Cooperative Education programs that incorporate employability skill training.

Operational Definitions

The following terms were operational for this study:

Employability Skills: According to the Pennsylvania Department of Education (2006) employability skills are the illustrative soft skills needed in today's marketplace. These skills, reflected in the state's current standards for Career and Technical Education revised in 2006, include: work ethic, courtesy, teamwork, lifelong learning, self discipline and self confidence, conformity to prevailing norms, problem solving, language proficiency and technical literacy.

Basic Employability Skills Training (B.E.S.T): an employability skills training curriculum sponsored by the Chambersburg Area Chamber of Commerce. This curriculum is taught by business and industry volunteers to Cooperative Education students in high schools in Franklin County, Pennsylvania.

Capstone Cooperative Education Program: a program that allows students to "cap off" their career and technical education by furthering their education at business and industry training sites in the local community.

Workplace Success: First described in the SCANS report in 1991 as the performance specifications that identify the knowledge, training, certifications, and employability skills needed for individuals to be competent in the workplace.

Career and Technical Education: prepares both high school students and adults for a wide range of careers. These careers may require varying levels of education, from high school and postsecondary certificates to two and four year college degrees. Career and technical education is offered in middle school, high schools, two-year community and technical colleges and other post secondary schools. Subject areas most commonly

associated with career and technical education include: Agriculture, Business, Family and Consumer Science, Health Occupations, Marketing, Technology and Trade and Industrial (Association for Career and Technical Education, 2006).

Assumptions

It is assumed that:

- (1) All students provided truthful answers to the survey questions.
- (2) All employers provided truthful answers to the survey questions.
- (3) All subjects had an equal opportunity to participate in the completion of data collection instrument.

Limitations of the Study

- (1) This study was limited to part-time twelfth grade students enrolled in a Capstone Cooperative Education program at the Franklin County Career and Technology Center and part-time twelfth grade students who were not enrolled in the program.
- (2) This study was limited to employers who participated in a Capstone Cooperative Education program at the Franklin County Career and Technology Center.
- (3) It is possible that the employers participating in this study collaborated before providing answers to data the collection instrument.

Chapter II

Literature Reviewed

Introduction

This literature review provides an overview of the history and structure of career and technical education, including its roots as vocational education and the reformation to meet the needs of business and industry. It also reviews the role of employability skills training in career and technical education and examines how current pressures on educational institutions are changing the purpose of career and technical education. The definition of employability is clearly defined and the theoretical framework for the study of employability skills is examined at length. In addition, research on how the international community views employability skills training, including programming and methodology is examined. Curriculum trends for teaching employability skills in career and technology centers in the United States is also discussed as well as such factors as gender, career major, grade point average, and post secondary plans that may affect a student's acquisition of these skills.

The History of Vocational Education

Vocational preparation has been a part of the mission of public schools in the United States since they were first created. The 1642 Massachusetts law establishing compulsory education in the Colonies required all children be taught reading, the catechism, and "...some honest, lawful calling, labor, or employment" (National School Boards Association (NSBA), 1994, p. 3). American colonists, especially in New

England, transferred to the new settlements the centuries-old apprenticeship system of Western Europe. Prior to the Industrial Revolution, the apprenticeship system and the home were the principle sources of vocational education (Roberts, 1957).

Beginning in 1862, Congress passed the Morrill Acts providing aid to higher education for land-grant colleges. The Hatch Act of 1887 and the Adams Act of 1906 provided aid to agriculture experiment stations, and the Smith-Lever Act of 1914 provided support for agricultural and home economics extension. These acts began the practice of federal subsidies to education (Roberts, 1957). Major federal influences for vocational education began in 1914, when democratic Senator Hoke Smith from Georgia helped prepare legislation that created the Commission of National Aid to Vocational Education (Lozada, 1999). President Woodrow Wilson appointed Representative Dudley Mays Hughes from Georgia to serve on the commission and in 1917 the Smith-Hughes Vocational Education Act passed through Congress. This passage brought vocational education, particularly agriculture education, to the nation's attention by establishing it as a federal program. The Smith-Hughes Vocational Education Act became law in 1917 and provided \$1.7 million for vocational education initiatives (Lozada, 1999). The first three programs to receive federal funding were home economics, agriculture and trade and industrial education (Blassingame, 1999).

The Smith-Hughes Act provided for a Federal Board of Vocational Education. Each state created separate boards, which were required by law to submit a plan to the Federal Board for funding. State plans were required to agree that federally aided programs for vocational education would be under public supervision and control. The states had to agree that the controlling purpose would be to train students for useful

employment and that vocational education programs would be designed for less than college grade level. Programs needed to be designed to meet the needs of persons over 14 years of age who were preparing to enter the occupation for which they were receiving training. States or local communities would need to provide the necessary facilities and equipment. Essentially, the Smith-Hughes Act of 1917 was enacted to prepare youth for jobs that resulted from the industrial revolution and to provide them with an alternative to general core curriculum offered for middle and wealthy classes of students. The Act provided for alternative high school education and emphasized a curriculum to meet the needs of children of the working class (Gray, 1991).

Historically, the practitioners and federal government have provided the direction for vocational education almost exclusively. Vocational teachers emphasized job-specific skills since the curriculum was to be different from the core high school curriculum. The Federal Board mandated the 50-25-25 rule: 50 percent of the students' time in shop work, 25 percent in closely related subject areas, and 25 percent in academic course (Hayward & Benson, 1993).

Hayward and Benson (1993) indicate that the Smith-Hughes Act established vocational education with separate teacher certification and training programs, separate state administrators, separate local supervisors, separate youth organizations, and separate lobbyists for federal and state funds. Lynch (2000) suggests that during the establishment of the Smith-Hughes Act the intent of the Federal Board was to "...separate vocational education students from those in the classical curriculum and prepare them well for the factories, farms and homes of the era" (p.8).

Congress continued to support vocational education by passing legislation funding vocational education in 1918 for veterans following World War I. In the 1920s the focus of federal legislation shifted to ask states to offer training to support national defense efforts. During the 1930s the states were asked to provide programs to reduce unemployment problems and in the 1940s to assist the war efforts (Lynch, 2000). In 1946 an amendment to the George-Barden Act addressed vocational education to practical nursing, which raised an awareness of health occupations. At this time several vocational student organizations were established, including Future Homemakers of America, the Distributive Education Clubs of America, the Health Occupations Students of American, the Vocational Industrial Clubs of America (now known as Skills USA) and the National Postsecondary Agricultural Student Organization (Lozada, 1999). During the 1950s and 1960s the federal funding shifted to peacetime economics and included funds for community colleges and training for jobs. According to Lynch (2000), the objective for the federal policy and funding was to train young people for jobs in the economy. Interesting to note is the fact that even with the vocational opportunities provided to students, only about two-thirds of all 18 year olds graduated from high school in 1960. Many of those who left high school were able to get high paying and unskilled manufacturing jobs. This system worked as long as the jobs were available (NSBA, 1994).

According to Lynch (2000), a significant change in federal policy and direction occurred in the early 1960s with the passage of the Vocational Education Act of 1963. This policy change required that state plans serve poor and disabled persons and youth with other disadvantages in economically depressed communities that prevented them

from completing regular education programs. The amendments to the Vocational Education Act in 1968 and 1972 continued to expand requirements to serve students with disabilities, disadvantaged students, bilingual students, post secondary students, and students preparing for non-traditional occupations for their gender.

During the 1970s, the perceived cause of youth unemployment was excess supply stemming from the large number of baby boomers entering the work force. Concern about a surplus of young workers created worry about a shortage of young people qualified to fill jobs in the new economy. This anxiety was prompted by the perceived inadequacy of their knowledge, skills and attitudes (Law, Knuth, and Bergman, 1992). During this time, the highly paid industrial jobs disappeared as factories moved many production jobs to developing countries. The United States workers found they were not prepared for jobs that required higher levels of knowledge and skills that an information economy required (Goldberger, Krazis, and O'Flanagan, 1994).

While the earnings of American workers in general fell between 1973 and 1990, those with least education experienced the greatest losses. For example, among white males, the median earnings of workers aged 25-34 with less than a high school diploma decreased 42 percent; earnings of high school graduates declined 31 percent; earnings of those with some college declined 21 percent; and earnings of college graduates decreased 14 percent, according to the Census bureau statistic (NSBA, 1994).

For the past 80 years vocational programs have matched specific industrial categories that were called for in the Smith-Hughes Act. These categories included business education, distributive education, health occupations, occupational home economics, trade and industrial arts (Lynch, 2000). The Smith-Hughes Act was enacted

to prepare students with the type of education that would be needed to run farms and factories in the 20th century. Lozada (1999) concluded the “strongest influence on the establishment of instructionally segregated vocational system was the federal government itself. (p.14).

Vocational Education Reform and Federal Legislation

In the 1980s the education reform movement was primarily focused toward improving academic skills of college bound students giving limited direction toward strengthening academic skills of non college bound students. Koppich (1990) wrote, “During the first wave of reform, many states increased high school graduation requirements and added more academic core courses” (p.146). Since more time would be focused on academic courses there appeared to be a reduction in available practical vocational courses (Bailey, 1992). According to Lynch (2000) vocational education cannot be reformed independently of other significant reforms in high schools. He states, “No longer can vocational be separate from academic in organizational structure; program, curriculum, and instruction delivery; and in accountability and assessment measures related to students’ educational achievement” (p. 52).

On April 26, 1983, the major education reform movement began when President Reagan released the report by the National Commission on Excellence in Education (1983), *A Nation at Risk: The Imperative for Educational Reform*. The major threat to our country’s future was “a rising tide of mediocrity” in the schools, which was causing a decline in competitiveness with the Japanese, the South Koreans and the Germans. *A Nation at Risk*, had a profound effect on how Americans viewed education. Goens and Clover (1991) wrote, “As people watched the competitiveness of the U.S. economy

decline, they began to question the effectiveness of education, debating its very purpose and politicizing its operation” (p. 4). This reform movement was the beginning of the renewed emphasis on basic subjects. The report recommended “New Basics:” English, math, science, social studies, and half a year of computer science (Gaddy, Hall, and Marzano, 1996). Where did vocational education fit within this new emphasis?

In response to the *A Nation at Risk*, The Carl D. Perkins Vocational and Technical Education Act was authorized by the federal government in 1984. Named for Carl D. Perkins, a democratic member of the House of Representatives, this significant legislation aimed to increase the quality of technical education within the United States in order to help the economy. The act was authorized to fulfill two main objectives: (1) the improvement of vocational programs (2) better services and increased access to vocational programming for students with special needs (Lynch, 2000). This original Act set aside 57 percent of the federal grants to states for disadvantaged groups and 43 percent for program improvement. Authorization of the original Perkins Act in 1984 brought about a shift in the vocational education population, as federal funding provided for special populations in vocational education programs and general education students enrolled in more of the academic courses (Congressional Record, 1990).

The Carl D. Perkins law was reauthorized in 1990 as the Carl D. Perkins II (Congressional Record, 1990). This reauthorization required states to address the federal focus to require the development of an integrated academic and vocational curriculum teaching technical skills to students through high standards and linking secondary and postsecondary programs to use federal funds (ACTE, 2007). Perkins II explicitly stated that federal funds were to be used to “make the United States more competitive in the

world economy by developing more fully the academic and vocational skills all segments of the populations (Lynch, 2000, p. 80). This idea is further supported by The American Vocational Association (1990) which noted that education reform would be achieved through concentrating resources on improving educational programs leading to academic and occupational skills competencies needed to work in a technologically advanced society.

In 1990, Congress authorized the Technical Preparatory (Tech Prep) education program to be included in the 1990 Carl Perkins Act II to link secondary and post-secondary programs. Dale Parnell in his 1984 book, *Neglected Majority*, brought national attention to the significance of connecting secondary and post-secondary curricula as an alternative to the college-prep program offered in most high schools (Smith and Rojewski, 1993). Parnell called for a significant reform of vocational education based on his observation and data that “voc ed” had become a track for the educational have nots (Hull and Grevell, 1998). Tech Prep is defined as a secondary and post-secondary course of study that connects rigorous high school academic and vocational courses with appropriate technology curricula. The Tech Prep program is academically equal to a college preparatory course of study; it is designed to assist students in making the transition from school-to-work through a coordinated secondary and post-secondary experience.

Congress again funded Tech Prep in Perkins III, reauthorized in 1998, to coordinate ‘2 + 2’ programs that provide two years of secondary education plus two years of post-secondary education (CORD, 1999). The fundamental purpose of Tech Prep is for high school graduates to be prepared with the foundations of both technical and academic

preparation to enter post-secondary education and enter high-skill/high-wage occupations. Tech Prep requires articulation agreements between high schools and post-secondary institutions to provide programs in a non-duplicative, sequenced study that integrate academics with career and technical education. The program is designed to lead high school students to an associate degree or certificate in specific career fields (Lynch, 2000).

The 1998 reauthorization of the Carl Perkins Act set out a new vision of vocational and technical education for the 21st century, with the goals of improving student achievement and preparing students for postsecondary education, further learning and careers (Beck and Rothstein, 1999). This federal legislation authorized additional funds to Technical Preparation (Tech Prep) through a separate title. It became clear that Congress preferred the Tech Prep model and its focus on career and technical education improvement, closely aligned secondary and postsecondary programs, and an integrated academic-vocational curriculum (Lynch, 2000). The Perkins III Act also encouraged and supported a wide variety of programs and initiatives in all states to improve programs to increase students' career and academic preparation. Congress' intentions were to ensure that education programs provided the economic and employment realities faced in the economy and by students (American Vocational Association, 1998).

The state plans were to provide services to special populations to help them succeed in high-quality vocational education programs, but the 1998 Perkins III Act did not dictate what those services were to be (Lynch, 2000). The American Vocational Association (1998) reported that Carl Perkins III required each state to provide data on four core indicators of performance including the attainment of academic and technical

proficiencies and the completion of training that corresponds to employment and retention in employment. For the first time, the federal vocational education legislation placed emphasis on academics and directed funds to all segments of the population. The federal focus continues to require the development of an integrated academic and vocational curriculum teaching technical skills to students through high standards and linking secondary and postsecondary programs (Lynch, 2000).

The most recent reauthorization of the Perkins legislation, Carl D. Perkins Career and Technical Education Improvement Act of 2006, refers to vocational education as career and technical education, provides additional funding for Tech Prep initiatives and maintains state administrative funding at five percent of a state's allocations. The new law also includes new requirements for programs of study that link academic and technical content across secondary and postsecondary education, and strengthens local accountability provisions that will ensure continuous program improvement. According to ACTE (2007), the Perkins Act provides almost \$41.3 billion in federal support for career and technical education programs in all 50 states. The current reauthorization will extend through 2012 and stresses the importance of providing students with the academic and technical skills needed to succeed in a knowledge and skills based economy.

Goals 2000, the School-to-Work Opportunities Act of 1994 and the Improving America's Schools Act of 1994 are additional examples of federal legislation that have promoted the urgency in preparing students for the workplace.

The National Education Goals and Goals 2000, passed by Congress in 1994, called for higher academic standards for all students, with Goals 2000 legislation requiring implementation of academic standards and workplace standards

simultaneously. Goals 2000 provides a national framework for education reform to improve learning and teaching. It promotes the research, consensus building and systematic changes needed to ensure equitable educational opportunities and high levels of educational achievement for all students. Goals 2000 promotes a voluntary system of skill standards and certifications (Lynch, 2000).

In order for all students to receive the necessary knowledge, skills and abilities required for middle and higher skilled jobs, President Clinton signed the *School-to-Work Opportunities Act of 1994* (STWOA). The purpose of STWOA was to improve the transition of young Americans from school into the workplace (National School-to-Work Learning Center, 1997). The STWOA provided a national framework that enabled youth to identify career paths and choose productive and rewarding roles in the workplace. STWOA featured three main components: work based learning, school based learning and connecting activities. The legislative act was intended to reform the nation's education and training system so that students were better prepared to enter today's workforce and compete for high-skilled jobs. Federal dollars were provided as seed money to states and local partnerships of business, labor, government, education, and community organizations to develop school-to-work systems. This system was to prepare youth for the high-wage, high-skills in a global economy (Beck and Rothstein, 1999). Goldberger and Krazis (1996) reported that the School-to-Work Act success depends on employers as well as schools taking on new roles, changing the relationship between schools and employers, and restructuring vocational and academic learning.

The Improve America's Schools Act was the reauthorization of the Elementary and Secondary Education Act of 1994. The focus of this Act was on high standards for all

students, teachers better trained for teaching to high standards, flexibility to stimulate local reform, accountability for results, and close partnerships among families, communities and schools (Beck and Rothstein, 1999).

Included in these proposals and others, since the 1990s, is the integration of academic and vocational education and interest in “contextual” and applied learning (Bailey, 1999). Hamilton and Hamilton (1997) found that cognitive scientists believe that apprenticeships can increase competency in the workplace. In apprenticeship, a learner observes and assists a mentor at work, gradually gaining competency by taking responsibility for progressing in to more challenging aspects of the task. Youth apprenticeship programs are based on European training systems that integrate and coordinate work-based and school-based learning. Bailey and Hughes (1999) identified three trends that accounted for the growing emphasis on work-based learning during the 1980s and early 1990s. These trends include the popularity of constructivist pedagogy, the development in cognitive psychology which emphasized the effectiveness of learning context and evidence from the international community which demonstrated that education systems that valued work-based learning were effective at preparing the workforce.

John Dewey’s pragmatic view of education helps to determine if the concepts included in the school-to-work initiatives and other vocational programming are relevant today. More than any other educational reformer, Dewey criticized the separation of the “head and the hand” and advocated the type of academic and vocational education that has defined conventional education (Packer, 1992). Present day vocational programming initiatives, including work-based learning and connecting activities that involve practical

application, confirm that such emphasis in education is of national importance and is of immediate interest to the community.

Dewey's philosophy concerning schools as a primary social institution and education as a social process is compatible with modern vocational education reform. Internships and apprenticeships support his theory that educational experiences exemplify continuity and growth. Dewey's occupational education involves much of what has been written in the SCANS report concerning the "soft skills" such as creativity, decision making, reasoning and problem solving (Packer, 1992). For Dewey, education incorporated good social practices. He considered education to be a paramount social function because it helped the student adapt all the other social operations (Johnson, 1999). This idea drives the career and technical education movement to assist students in opportunities to experience the world of work and help them adjust to other social functions that are a part of the workplace.

The New Vocationalism: Career and Technical Education

According to Kerka (2000), vocational education in this country is vastly different from what it was decades ago. The term vocational education has been replaced with such names as career and technical education, school-to-career, applied technology and workforce development. The new vocational education has been established for the purposes of high school reform. According to Lynch (2000), reform groups', parents' and the general public's' expectations for schools is to prepare students to attend college; they want to be sure that schools are providing students with career education. This includes preparing all students with the knowledge and skills to be successful in the workplace (Lynch, 2000).

The term vocational has been one reason for an image problem and a negative perception of vocational education among teachers, parents and students. This negative image has continued to be a serious issue over the past ten years. According to Catri (1998) and Lynch (2000), there are many major issues that plague vocational education. These include programs that do not meet the needs of students and employers, a curriculum designed primarily to keep the educationally disadvantaged in school, and the perception that college bound students cannot benefit from career and technical training.

The 1994 National Assessment of Vocational Education documented that vocational educators in many schools were teaching relatively low entry-level job skills to students who were educationally disadvantaged in one or more ways (Boesel et. al., 1994). Other groups such as business and industry expect more from career and technical education, high school graduates with solid literacy, numeracy, communication, technology and general employability skills (Lynch, 2000). According to Herr (1995) vocational education should concentrate more broadly on aspects of the students' career development. It should expand its focus to prepare students with the basic academic skills, flexibility, and the commitment to lifelong learning that permits employees to keep up with changes in the workplace.

Vocational programs that have failed are those that have not updated curricula and equipment and rely on larger percentages of their total enrollment from disadvantaged populations. They may not be well staffed or equipped to serve special populations well (Lynch, 2000). The Perkins legislation and education reform reports suggest that students, particularly educationally disadvantaged students, are not going to improve much without a solid education. Furthermore, these program improvements in vocational

education will have to include academics and more time to participate in programs. Program improvement will also need involvement from business and industry, better teaching strategies, increased support services and greater attention to employability skills (Lynch, 2000; Smith and Rojewski, 1993).

According to Lynch (2000) there are two fundamental conditions that need met if career and technical education is to make the adjustments to respond to career preparation and contribute to students' academic achievement and enhance success in post secondary education and the workplace. These fundamental conditions are, first, that high school career and technical education becomes an integral part of mainstream school reform. Second, and most importantly, career and technical education must contribute to increased student achievement. This must be done in such a way so that existing programs become more effective and acceptable to the general public while meeting the demands of the workplace.

Current Trends

The United States education system has been blamed by businesses and economists for failing to help students acquire critical skills needed to make the transition from school to work. Critics argue that America's emphasis on college preparation has isolated academics from vocational education and weakened the system in the ability to prepare high school graduates for the demands of employment (Corson and Silverberg, 1994). This argument continues today as the Center for American Progress (2006) reports that despite several decades of intensive efforts to improve educational outcomes, the United States graduation rate is not keeping pace with the needs of business and industry.

A 2006 report from the New Commission on The Skills of the American Workforce, “Tough Choices or Tough Times” concluded that the United States can no longer take pride in having the best educated workforce in the world. Currently, the United States is competing with countries that can offer large numbers of highly educated workers willing to work for low wages. Over the past thirty years, one country after another, including China and India, has surpassed the United States in the proportion of people entering the workforce with the equivalent of a high school diploma, and many more are on the verge of doing so. Furthermore, thirty years ago the United States could lay claim to having 30 percent of the world’s population of college students. Today that proportion has fallen to 14 percent and is continuing to fall (National Center on Education and the Economy, 2006).

The New Commission’s report notes in order for the United States to remain competitive its work force must possess strong skills in English, mathematics, technology, and science, as well as literature, history, and the arts. Beyond this, candidates will have to be comfortable with ideas and abstractions, good at both analysis and synthesis, creative and innovative, self-disciplined and well organized, able to learn very quickly and work well as a member of a team and have the flexibility to adapt quickly to frequent changes in the labor market as the shifts in the economy become even faster and more dramatic. Failure to retool America’s education system to meet these competencies could result in a steady decline in the nation’s standard of living to the point where the world’s investors will conclude they can get a greater return on their funds elsewhere, and it will be almost impossible to reverse the course (National Center on Education and the Economy, 2006).

In 1990, the U.S. General Accounting Office reported several facts about the changing needs of today's youth. Twenty-five percent of American youth did not complete high school and only about 22 percent completed a four year college degree in 1990. The report further explained that a college preparatory track addressing the educational needs of students who aspired to earn a college degree was available for most students in the public school system. However, as the statistics revealed, career and technical education provided an alternative education for 75% of public school students who were not likely to earn a college degree. This trend continues. According to Thornburgh (2006), public education is misleading today's youth by rallying around the idea that every child should follow a college prep curriculum to prepare for higher education. Research indicates that forcing all students to follow a uniform curriculum, a general education model with little to no option other than to prepare for college, is adding to the national drop out rate. Chaddock (2006) reports nearly 1 in 3 high school students in the Class of 2006 did not graduate. Thus the economic and social consequences of not completing high school impacts the global competitiveness of the United States and the economic self sufficiency of the American worker (Center for American Progress, 2006).

According to Haycock and Huang (2001), high school completion rates have remained relatively the same for 30 years. Students are reading no better when they leave high school than did their peers a decade ago. And, while students are taking and completing more college preparatory courses, the effect on student learning has not been great, raising serious questions about the rigor of those courses. According to a 2004 report by the American Diploma Project, nearly 40 percent of high school graduates feel

inadequately prepared for citizenship, work and postsecondary education. A 2005 survey of the National Association of Manufacturers revealed 84% of employers believe K-12 schools are not doing a good job of preparing students for the workplace. The same survey further revealed that 55% of employers said schools are deficient in preparing students with basic employability skills, while 51% cited math and science deficiencies and 38% cited reading and comprehension deficiencies. According to the Partnership for 21st Century Skills, these are clear indications that high school graduates may struggle to thrive in an increasingly independent and competitive global economy. This pattern of under achievement has had significant costs both to the students themselves and the college and employers that receive them. According to Haycock and Huang (2001) this pattern, unaddressed, poses a serious threat to the economic and social health of America.

According to the National Alliance of Business (2001), the Bureau of Labor Statistics in 1994 reported that 20% of the workforce consisted of professional employees in 1950, 20% were skilled employees, and 60% were unskilled employees. It was predicted that by the year 2000, 20% of the workforce would still be professional employees, but 15% of the workforce would be unskilled employees and 65% would be skilled workers. The changing workplace demands make it imperative that vocational educators seek to guide adolescents toward a successful future. Across the nation, schools similar to the Blue River Vocational School in Indianapolis, Indiana continue to keep pace with the changing workplace by offering a variety of trades from nursing to marketing to auto body to high school juniors and seniors (Thornburgh, 2006).

According to a 1995 report from the Committee for Economic Development, vocational education has done an adequate job of meeting the demands of the labor

market. Whether measured in terms of earnings, job placements, or employment success, secondary education does not meet the needs of students or employers. Vocational courses are often characterized by outdated skill training and minimal academic content; some vocational schools have become a dumping ground for low ability students and teachers with the lowest status (Corson and Silverberg, 1994). One study found fewer than three out of every ten graduates of educational programs find jobs that require skills they are learning in school (Lerman and Pounce, 1990).

The United States General Accounting Office (1990) concluded in the report, “Transition from School-to-Work: Linking Education and Worksite Training” that the U.S. provided non-college youth with relative little assistance for entry to the workforce. The report further concluded that U.S. schools direct the majority of their resources toward preparing students for college, while only 23% of U.S. youth complete a four year degree. Youth, looking for employment immediately after high school, typically do not recognize the relevance of what was learned in the classroom and how that connects to work. While they are likely to recognize the importance of a diploma for future employment, they do not see school grades as relevant for labor market success (U.S. General Accounting Office, 1990). This perceived disconnectedness particularly hurts those students who enter the labor market directly out of high school (O’Neil, 1992). Haycock and Huang (2001) suggest that schools answer the question “What should a high school diploma enable a student to do?” to overcome this disconnectedness. In answering the question, according to Pett (2007), America’s education leaders must pay close attention to Alan Blinder’s comments in [American Prospect and Foreign Affairs](#). The former vice-chair of the Federal Reserve and professor of economics at Princeton

University contends “the greatest problem for American workers may not be education but, rather, off-shoring.” Blinder’s recent analysis of jobs most likely to remain in the United States predicts neither a strict service economy for the future nor one in which higher education is the deciding factor. A new wave of jobs going overseas includes many from service occupations. The distinction in the future, according to Pett (2007), will be between personal and impersonal work, not between levels of skill and education. “It is easy to send impersonal work overseas-whether that means working in a call center or writing computer codes. It would be almost impossible, however, to off-shore janitorial services, fast-food restaurant services, college teaching, or open-heart surgery” (p. 164). According to Pett (2007) “stay in school longer” was good advice for success in the labor markets of the past. Over the next 25 years, however, a more subtle message may be prepare for a high-end personal service occupation that is not off-shorable. If Pett’s analysis is correct, schools have a clearer direction on how to counsel students for workplace success.

According to Corson and Silverberg (1994) the problems non-college bound youths face as they enter the workplace are rooted in changes in the U.S. and global economies, technology, and demographic trends. There has been a decline in the availability of stable, high-wage employment for high school graduates in manufacturing, communications, transportation, utilities, and forestry. The traditional sources of high-wage employment for youths with only a high school diploma have dwindled as part of a broader technological transformation of the U.S. and world economies. The transformation has been described by some as the information revolution based on the increasing use of automation, telecommunications and computers. Because of this

transformation, skill requirements have increased for new jobs, and workers with a range of competencies and skills and the ability to reason, make decisions and quickly learn are in large demand.

For students to be successful in the workplace, continuity between school and work is needed for today's ever-changing society. Lynch (2000) suggested that vocational high schools or area vocational centers consider transforming their current programs into new career academies. According to Hoachlander (1999) it is no longer sufficient to rely on a system of vocational education that concentrates on entry-level preparation in specific occupations. Furthermore, the traditional narrow focus of vocational education that is usually limited to the non-college bound student, does not lend itself well to building students' understanding of high level academics or broad industry and career knowledge. Berryman and Bailey (1992) and Marshall and Tucker (1992) explained that workforce preparation that is limited to narrow, entry-level training is less and less defensible economically.

More than 90 percent of today's high school students aspire to post-secondary education. The percentage of high school graduates enrolling in post-secondary education has grown dramatically during the twentieth century (National Center on Education and the Economy, 1990). According to Hoachlander (1999) less than half of high school graduates achieve the goal of completing a four-year post-secondary education. The Pennsylvania Department of Education has addressed this issue through an initiative called Project 720. Named for the number of days a student spends in high school from the beginning of ninth grade until the end of twelfth grade, Project 720, piloted during the 2004-2005 school year, aims to improve the learning environment in the state's high

schools by making the curriculum more challenging. The state's underlying goal is to have all students graduate from high school prepared to enter college and the high-skills workforce by implementing such initiatives as dual enrollment programs, upgrading "vo-tech" for the 21st century and creating seamless transitions from high school to higher education. Pennsylvania Governor Rendell created a Commission on College and Career Success to focus on preparing high school students for postgraduate opportunities in higher education and the workforce (Pennsylvania Department of Education, 2007).

According to the Manpower Demonstration Research Corporation (MDRC), (1996) numerous reports from researchers, blue-ribbon panels and the SCANS report continue to call on policymakers, educators and the business community for innovative responses to prepare young people leaving high school with the skills needed to enter the workforce. These efforts are often referred to as school-to-work-transition reforms to help high school students achieve academically, while providing them with marketable skills, work-based learning experiences and clearer pathways to post-secondary education and productive employment.

The Career Academy is one of the best established and most promising school-to-work approaches (MDRC, 2000). Authorized under the School-to-Work Opportunities Act of 1994, Career Academies promote the themes used by career and technical education. The Career Academy approach began in Philadelphia in 1969 as a dropout prevention program. The initial Career Academies in 1970s and 1980s were primarily vocational education programs targeted at students who were high risk for dropping out of school. The goals of the early programs were to keep students in school and provide them with work related experiences both in the classroom and on the job (MDRC, 1996).

Since the late 1980s the primary goal of Career Academies has been to remain distinctly different from traditional vocational education by seeking to prepare students for both work and college (MDRC, 2000).

Increasingly, the Career Academy concept is seen as a potentially powerful way to improve students' success in both school and work. Career Academies focus on a career theme such as health, business and finance, or electronics, which is usually determined by local employment opportunities and demand for expertise in the workplace. Traditional academic classes such as math, English, social studies, and science are combined with occupation related classes to complete the career education concept. Career Academies also establish partnerships with local employers in an effort to build connections between school and work; this provides students with a range of career development and work-based learning opportunities, including employability skills training (MDRC, 2000). A growing numbers of states and school districts are investing in new Career Academies and are looking for evidence of their effectiveness. All of the Academies use classroom-based activities to teach employability skills such as resume writing, interviewing and working effectively under supervision (MDRC, 1996).

Newer forms of vocational education such as career magnets and career academies have demonstrated that school-to-work programs prepare students for college as well as preparing them for the workforce. All students, including the college-bound are likely to master academic concepts better if they have opportunities to apply them in a practical context. According to Lynch (2000) a school wide age-appropriate career development program, a rigorous program of studies surrounding career majors, a frame work for technical preparation and employability training, and implementation of the

characteristics identified with the currently successful career academies must underpin the development of the new 21st century career and technical education.

A Framework for Employability Skills

There is a lack of common language or framework for defining and measuring employability skills. Fallows and Steven (2000) acknowledge that there are many definitions of the term including, “skills necessary for employment and life as a responsible citizen, transferable skills, common skills and core skills” (p.8). Evers et al. (1998) define employability skills as “essential skill competencies, with bases of competence: managing self, communicating, managing people and tasks and mobilizing innovation change”(p. 5). Zinser (2003) includes managing resources, communication and interpersonal skills; teamwork and problem solving; and acquiring and retaining a job as the key elements of employability skills. Overtoom (2000) defines employability skills as transferable core skill groups that represent essential functional and enabling knowledge, skills and attitudes required by the 21st century workplace. According to a recent bulletin from the Pennsylvania Department of Education, soft skills are equally as important as technical skills and include such competencies as work ethic, courtesy, teamwork, self-discipline, self-confidence, conformity to prevailing norms and language proficiencies (Pennsylvania Department of Education, 2006). Regardless of the varying definitions, the key concept of employability skills encompasses those attributes, behaviors and skills that are necessary for individuals to effectively manage their careers and sustain successful employment in the world of work.

While there is no definitive definition that can be applied across all situations, there is a central theme to the definitions presented, which focuses on those skills,

qualities and attributes that support a person's ability to enter and succeed in the workplace. Additionally, these definitions provide the multi-faceted characteristics of the term employability skills, but it should be noted that there are other factors that may impede the graduate finding work and being successful in their career. Just being able to demonstrate employability skills does not secure long lasting employment. Other factors noted by Yorke (2004) include the health of the local, national or regional economy as well as the supply and demand for certain skills. Yorke (2004) also explains that occupational choices for graduates may be limited. Graduates may have to accept that their first choice of job may not be realistic and some time in the workforce is required before securing a desired position. Regardless of the labor market impact on career fulfillment, the literature suggests those with developed employability skills will be more successful than those without the desirable skills employers require.

At the forefront of the new career and technical education is the emphasis on the specific skills needed to enter and succeed in the world of work. According to Lynch (2000), technical and technological skills remain important, but they must be modified and grounded in employees' ability to think of them in the context of how they impact job performance. 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, math) to workplaces, ability to work in teams or groups, effective listening and oral communication skills, adaptability and flexibility, personal management skills with good self esteem, personal and work place ethics, leadership or initiative, and, above all, the ability to think and solve problems in the workplace. Many of these skills were once reserved for those in

management; today, they are considered necessary for individuals of all levels of employment (Alpern, 1997; Clagett, 1997; Evers, Rush, & Bedrow, 1998; Secretary's Commission on Achieving Necessary Skills, 1991; Stasz, Ramsey & Eden, 1995).

The employability skills or soft skills that Lynch (2000) refers to in many of his studies are not new. In 1988 the state of Michigan published a set of curriculum Standards and Benchmarks for career and technical education. This was a formalization of a process that had been developing for many years beginning in 1988 when the governor established an employability skills task force. Through a state-wide survey of businesses, the group adopted a document describing three broad areas of skills that employers require: academic, personal management, and teamwork skills. In the years following, the Board of Education approved a model curriculum which included career and technical education and later the use of student portfolios to showcase students' application of the standards. The vision of the Career and Technical Content Standards and Benchmarks for the state of Michigan was to provide for a more comprehensive delivery of instruction and were intended to be integrated into all curricular areas. The standards represent the knowledge, skills and behaviors that will help students move successfully into the world of work and/or continuing education in order to pursue their career goals. The ten career and employability skills content standards include applied academic skills, career planning, developing and presenting information, problem solving, personal management, organizational skills, teamwork, negotiation skills, understanding systems, and using employability skills. Many states have adopted similar content standards.

Through the Parker Project in Wisconsin, business representatives were asked what they wanted, expected and found lacking in entry level employees (Oinonen, 1981-85). The following characteristics were identified in the project as most needed for job success: getting along with others, giving a full day's work for a full day's pay, job seeking and getting skills, dependability, and showing pride in work. The personal skills and kinds of knowledge identified in this study as important included understanding how to apply and interview for a job, presenting a neat appearance, possessing good work habits and attitudes, getting along with others, adapting to change and solving problems.

Further definition of employability skills' competencies were provided by Bush and Barrick (1987). Employability skills were categorized by the following competency areas: personal values, problem solving and decision making skills, relations with other people, communication skills, task-related skills, maturity, health and safety habits, and commitment to job. Similar types of skills were identified in a report from the Panel on Secondary School Education for the Changing Workplace, National Academy of Sciences (1984). In this report, ten core competencies were listed. Of the ten, several directly related to employability skills: interpersonal relationships, personal work habits and attitudes, oral communication, and reasoning and problem solving.

Studies that have been conducted with the purpose of defining employability skills needed for job success typically identify similar types of characteristics but often use different words and systems of organization to define them. While there is no one "correct" system to use, research emphasizes some organizational system be used to facilitate the integration of employability skills into the secondary curriculum. For example, Thiessen and Looker (1999) examined high school students' assessments of

their employability skills before and after participating in a school-to-work transition program. Students' self assessments were contrasted with job supervisors' rating of the same skills. Generally, supervisors emphasized communication skills and the ability to work with others, viewing basic literacy as less important. Supervisors rated students in the program high on workplace behavior (punctuality, attendance, safety), but lower on employment skills such as communication, problem solving, planning and organization.

Conversely, the results of a recent survey of Fortune 500 companies by the Education Consumers Clearing House indicate that the most coveted critical job skills have to do with being able to work with people as opposed to reading, writing and arithmetic (Cassel & Kolstad, 1998). The top five most coveted critical-job skills in the Fortune 500 companies were reported as: (1) teamwork; (2) problem solving; (3) interpersonal communication skills; (4) oral communication; and (5) listening. Traditional basic skills such as writing, computation and reading were ranked 10th, 12th, and 13th respectively. A review of the same survey 30 years earlier reveals that interpersonal communication skills have risen from the 13th spot to the current 3rd spot; this supports the idea that the changing workplace has demanded more interpersonal communication skills from employees (Cassel, 1998).

In another survey, interpersonal communication skills are presented as essential for successful execution of job duties in the current market. In fact, it is estimated that human relation skills have a stronger influence (up to 80%) on job promotions than job proficiency (Cassel & Kolstad, 1998). However, many graduating high school are lacking in these essential employability competencies (Lewis et. Al, 1998). Thus, in order to produce American school graduates who are competitive within the workforce, schools

need to increase their emphasis on human and social development (Cassel & Kolstad, 1998).

Richens and McClain (2000) surveyed 400 employers on their perceptions of skills and competencies required for employees. Employers reported that they preferred employees to possess employability skills over technology skills. Basic skills, thinking skills, personal quality skills, and interpersonal competencies were all rated as important to employers by 93%, while technology and system competencies were rated the lowest by 55% and 53 %, respectively. Taylor (2005) also reported that employers are looking for attitudinal traits rather than skill proficiency in young employees.

Krahn, et. al. (2002) examined Canadian high school students' self reports of the employability skills they had acquired in high school courses, formal work experience programs, paid part-time employment, and volunteer work. They found that certain types of employability skills are considerably more likely to be acquired in some settings than in others. Most students do not see the labor market relevance of analytic skills or of a basic high school education. In addition, the skills that employers typically indicate they are seeking are not the same as the skills the students believe employers want. According to the researchers, their findings may suggest that the different stake holders may not be communicating effectively with each other. In particular, educators and employers must demonstrate more clearly the link between core secondary curriculum and employment outcomes.

As recent as October 25, 2006 the Pennsylvania Department of Education published new Academic Standards for Career Education and Work. These new standards provide students, as early as first grade, the opportunity to begin exploring career options

and offer graduating high school students a comprehensive set of tools to explore opportunities for post-secondary education and jobs. Under the new standards, students, by 8th grade, should begin their individualized career plan and portfolios, which will be developed throughout high school, and learn effective skills used in a job interview. By 11th grade students should analyze the relationship between career choices and career preparation opportunities such as secondary-education degrees, industry or military training, as well as apply interviewing skills to real life situations. Students are also expected to evaluate strategies for career retention and advancement in response to the changing global workplace and the impact of life long learning on careers.

As a response to the labor gap and the passage of the School-to-Work Opportunities Act, which requires school-based instruction in employability skills, state legislatures and departments of education have recently passed policies geared to address these human relation skill deficits. Various states have delegated the duties of preparing students to be workers in a new century to counseling programs that, in turn, have created comprehensive career development programs (Lewis, Stone, Shipley, & Madzar, 1998; Myrick, 1997; Sink & MacDonald, 1998). These programs have integrated social and personal development outcomes into the school curriculum. However, beyond outcome expectations, there is a lack of published program evaluations describing the best practices of facilitating high school students' acquisition of the interpersonal communication skills necessary for success in the workplace (Foster, Watson, Meeks & Young, 2003).

According to Wakelyn (2007), although states periodically review high school academic standards to gauge whether they reflect sufficient rigor, too often the standards

are misaligned with college and workplace demands. The literature reveals state education agencies are encouraged to consult with industry and post secondary leaders so academic standards better reflect workplace expectations. Often termed “soft” or “21st century,” these skills include problem solving, critical thinking, and communications; these abilities are important for academic achievement as well as traits demanded by employers (Wakelyn, 2007). According to Wakelyn (2007), governors and other state leaders should consider broadening state standards and accountability systems to focus on both hard industry-specific skills and soft 21st century skills. All students are measured against whether they meet state standards. At first glance, this suggests that state leaders should simply continue measuring career and technical education student achievement using current states assessments. Indeed, this is an essential first step. However, career and technical education proponents maintain that current state standards and assessments fail to reflect both the 21st century skills and industry specific skills taught in career and technical education courses. According to Charles Knapp, Chairman-Commission on the Skills of the American Workforce (2007), “A lot of the stuff we teach in K-12-and I know from having been a college professor, a lot of the stuff we teach in colleges-has a shelf life now of about a year and a half. And you aren’t going to probably remember it, and it’s probably out of date anyway.”

A World View: Employability Skills Training in Secondary Education

A dominant world issue has to do with national views on the role schooling plays in preparation of workers. Basic to these views is the reality that skills learned in school and on the job are complementary and have become an essential resource in establishing a nation’s competitive edge (Carnevale and Gainer, 1989). Within the education reform

movements and national development plans of many nations, there are attempts to make schooling more relevant to the world of work. This has involved the blending of academic subject matter with career development programming to give learning greater connection to the adult workplace. Many schools have created decision-making courses and included experiences such as creating individual career development plans. They have introduced required courses on the principles of technology to help students envision the effects of advanced technology in workplaces and have established career resource centers and computerized occupational and information systems. Other initiatives include expanding contacts between schools and larger community, instituting work study and shadowing programs, enlarging apprenticeship opportunities and providing placement offices and youth information centers directly in schools (Herr and Cramer, 1996).

Observers examining the educational systems of Europe have contrasted them with those of the United States. In Europe, work is considered an integral part of life and is central to the education students receive. Career guidance is begun at an early age and structured pathways to education and employment are central to the curriculum (Council of Chief State Officers, 1991). One major difference between American approaches to preparing young people for work and those of most European nations is the comprehensive and systematic attention of European nations to the collective responsibility of the population, and of the combined private and public sectors, to prepare youth for employment. The collective responsibility is both in the national interest and a service to youth, as they prepare to assume their economic and social responsibilities.

Airing (1993) has compared the German vocational educational system with that of the United States. As she indicates, all education is considered inherently vocational in Germany, and many of the stereotypes inherent in American education are not present in Germany. Since 70 percent of German youth, aged 16 to 19, enter the dual apprenticeship system, it is a formidable aspect of preparation for technical productivity. It is clearly one element of a career ladder for employment-bound individuals who often progress to further technical education after completing the dual apprenticeship system. By one estimate, one third of German university-trained engineers came through Germany's apprenticeship system and then attended a university, a path that would be virtually impossible for most U.S. engineers since the apprenticeship system is considered an archaic and ineffective education model by American standards (Marshall & Tucker, 1992). Airing (1993) notes Germany's approach to career training is highly successful because students learn in two interconnected settings: the workplace and the school, by means of an interrelated curriculum. The emphasis is on socialization and on broad industry training so graduates have the maximum job opportunities and mobility within the companies that make up the industries. Most importantly, education and training paths are structured so that virtually all students can pursue further education, enter an occupation with a solid future, or change industries and retrain.

Although it is possible to identify national differences in how schools have been instrumental in the preparation of workers, common issues are emerging. Germany and many other European nations have relied heavily on apprenticeships and improved technical training as a way of connecting school-based learning and the requirements of the work place. Apprenticeships have provided an immediate opportunity for students to

apply what they are learning in school to what they are learning in the work place. Such an approach has allowed Germany to excel in manufacturing and other technical occupations and to prepare a work force with superior skills in these areas. However, there are emerging signs of discomfort with the degree to which apprenticeships are the most appropriate form of training in economies dominated by the information and service occupations (The Economist, 1993). There are also concerns about personal traits related to work roles, especially for the large number of unemployed persons. In one view, “the real problem lies not in the lack of job-specific skills but in a surplus of social pathologies—too many people with too little self-discipline, self-respect, and basic education fit easily into any workplace” (The Economist, 1993, 20).

There are growing attempts in some nations to recreate career preparation by implementing a stronger emphasis on basic academic skills by integrating vocational and academic competencies, providing more opportunities for work based experiences and placing a greater emphasis on acquiring the attitudes and behaviors essential to work place success. In some cases, the addition of these initiatives has altered the traditional views of the content of vocational education. In the United States, and some other nations, vocational education traditionally focused on occupation specific performance skills. Increasingly, this approach has become too narrow and almost borders on, according to Herr (1996), an early obsolescence. As a result, more comprehensive models have emerged intended to broaden the interrelationships and pathways within vocational education, and between it and other educational experiences. For example, Lumby and Ping (1998) reported that a major debate in the Peoples’ Republic of China and in the United Kingdom centers on the proper preparation for work, particularly as it relates to

the skills needed to become an independent learner and learning how to learn. This broadening of the vocational education curriculum from specific technical skills to a larger range of employability skills is consistent with the decision of the World Bank to withdraw funding in developing countries from vocationally specific education and invest it on education and training that is less likely to become quickly obsolete and more likely to prepare employees with a broader range of skills related to a life time of work place success (King, 1993).

A further illustration of national differences in the preparation of workers is found in transition services. According to the Educational Testing Service (1990), most developed countries have highly structured institutional arrangements to help students make the transition from school to work. It is not a process left to chance or luck. Germany accomplishes the transition process through the apprenticeship system by combining classroom work with job instruction. In Japan, schools themselves select students for referrals to employers, under agreement with employers. In other countries, there is either a strong employment counseling or job placement process within the school or this function is carried out for the student by labor and industry working directly with the school system.

A final example of national differences in the preparation of workers is the role played by employers. The question arises as to whether employers actually continue the preparation of workers from where schools leave off. One aspect of this pertains to the degree to which employers are involved in job training. For example, in a report to Congress (Hilton, 1999), the U.S. Office of Technology Assessment concluded that only a few U.S. firms use training as part of a successful competitive strategy, in contrast to

firms in Germany and Japan. Indeed, it has been shown that many U.S. firms fail to pick up where schools leave off. Younger workers ages 16 to 24 receive a disproportionately smaller share of employer training. Estimates suggest, for example, that German firms invest more than twice as much each year in worker training than their U.S. counterparts and nearly 17 times as much in training per apprentice. Part of the difference in training investment between Germany and the United States has to do with the degree to which German businesses pool the costs and the benefits of worker training. In Germany, such pooling is commonplace, as a matter of federal policy and as a matter of negotiation between German industry and labor unions. This is true in both large and small firms. Typically, business-industry and labor unions are not involved in such training in the United States.

In Germany, industry associations are also involved in delivering the training. As technology advances, apprenticeship has evolved away from “learning by doing” to more theoretical training. Large firms have training centers where apprentices spend much of their time with instructors, especially during the first two years. Smaller firms, which rely more heavily on apprentices for daily production, send their trainees for a few weeks at a time to area training centers, administered and partially financed by their local Chamber of Commerce and Industry, or Chamber of Artisans. The German federal government encourages such centers by contributing about half of their costs. Training advisers oversee apprenticeships and advise firms on strategies for further training (Marshall & Tucker, 1992).

According to the European Commission (1998), a variety of nations are pursuing training systems to help ensure international competitiveness and raise living standards.

For example, skill intensive Singapore obliges big companies to set up training systems, and then measures their success. The French, in response to Germany's ability to produce skilled workers, have made a sustained attempt to improve their vocational education. According to Economist (1993), the British unveiled a plan for reintroducing apprenticeships. Other spokespersons on the economy are advocating creation of a university for industry which would link workers and trainers electronically in a virtual permanent technology seminar.

According to Herr (1998) several policy issues should be studied as they relate to the preparation of any country's workforce. For example, to what degree should the preparation for work be centralized in national policy that governs pre-employment training and on-the-job training decentralized to local government units or individual providers of education and training? Furthermore how should a nation's policy reflect three major questions related to work force competencies including who delivers the education, what is taught and who funds the training? Next, how should a nation's policies reflect the differences in preparation for work as it pertains to school students, university students, young adults in work and part-time education, mid-career changers, unemployed and underemployed persons, and those at the point of pre-retirement and pensioners? This includes incorporating career guidance, employability training and related career services as an integral preparation for work.

Secondary Curriculum Considerations

There seems to be general consensus that career and employability skills should be taught in high schools. According to Smith and Katz (2005), employability skills are included in secondary teaching programs with the expectation that students will be better

prepared to obtain and maintain employment after high school. As noted before, the SCANS Reports (1991) provided a common language for business and education by outlining the basic workplace skills needed by all students. A study by Lynch (2000) revealed that 81 percent of the chief state school officers identified “student preparation for the workforce” as the most critical factor facing public education for the next 20 years. In addition, many of the school reform efforts of the last decade, such as career academies, incorporate the teaching of employability skills.

The research on the effectiveness of different approaches to teaching employability skills generally does not compare entire program structures to one another (Cotton, 2007). That is researchers do not typically compare the relative effectiveness of cooperative work experience programs and school-based businesses in terms of their power to instill employability skills in their participants. According to Cotton (2007) employability skills research is no longer even concerned with comparing the effectiveness of school based instruction and learning with that of workplace-based learning, since previous research has shown that both can be effective or ineffective, depending on how they are structured and managed (Bhaermann and Spill, 1988; Stasz, et. al 1993). Nor have researchers studied the comparison of the relative effectiveness of vocational programs and regular academic programs in terms of their ability to build students’ employability skills. As noted in the RAND policy brief, “Teaching Generic Skills for the Workplace:” “If policy makers focus on the use of an effective instructional model, regardless of setting, they can leave more options for improving instruction for all students in many different types of programs” (1993, p. 1).

According to Cotton (2007), what researchers have focused on is identifying the practices operating in successful programs, regardless of program type or setting. Some of the research is observational. For example, researchers may identify teachers whose students exhibit high levels of employability skills and teachers whose students are less equipped with these skills. Then they conduct observations of those teacher's classes, noting differences in instructional content, teaching approach, classroom design, etc. Other studies, according to Cotton (2007), are experimental. For example, a control group receives no employability skill instruction, an experimental group hears a series of lectures on employability skills, and another experimental group is exposed to employability skills via an interactive, experiential approach. The acquisition of employability skills by students in the three groups is then compared using a rating instrument, teacher observations, or other means. Whatever the approach, research promotes the following ideals as it applies to the acquisition of employability skills among secondary students.

First, employability skills are best learned when they are included among instructional goals and explicitly taught (Stasz et al.,1993). Students will not simply “pick up” these skills and abilities unless they are addressed in the curriculum. Furthermore, some research disputes the idea certain employability skills, particularly critical and creative thinking and affective traits such as a positive attitude and a cooperative manner, are not teachable. According to Herr and Johnson (1989) and Stasz, et al. (1993) employability skills and traits are very amenable to being taught.

Second, in school settings, employability skills are best learned when classrooms replicate key features of real work settings and student tasks approximate those

performed by workers in those settings (SCANS, 1991). This finding validates what is already well known about teaching vocation-specific technical skills; active, hands-on learning in actual or simulated work environments is far more effective than isolated, de-contextualized learning. According to Berryman (1991), one of the prevailing mistakes educators make is to teach knowledge and skills outside of the setting in which the knowledge and skills will be used. Instructors must attempt to teach work values and attitudes in a context similar to what students would experience in the world of work (Junge, Daniels, and Karmos, 1984).

Next, research emphasizes that a key feature of classes that successfully teach employability skills is that instructors hold and communicate high expectations for the learning and behavior of their students, whether or not the overall culture of the school holds high expectations for them (Stasz, et al. 1993). The general education research shows that holding and communicating high expectations for students' learning and deportment are critical features of effective schooling (Cotton, 2007). Unfortunately, in some school settings career and technical education classes are treated as low ability tracks and/or courses for misbehaving students. Since research also shows that low expectations are frequently communicated to students in lower tracks (Oakes, 1986), students in career and technical education programs are often given negative messages about their ability to learn and behave properly. Those teachers in career and technical schools, who do hold and communicate high expectations for their students, generally find their students to be quite responsive (Cotton, 2007). In creating a workplace-like learning environment, teachers communicate employer-like expectations for basic skill application, punctuality, dependability, thoroughness, decision-making capability and

cooperation; students have opportunities to practice and perfect these skills and traits. This, in turn, enhances the desirable employability qualities of skill-related self-confidence and general self-esteem (Stasz, et al., 1993).

Finally, employability skill acquisition research reveals to effectively teach employability skills, instructors must assume the role of facilitators and coaches rather than lecturers and order givers (Gregson, 1992). This means teachers must require students to take much of the responsibility for their own learning. Closely related to the design of realistic learning setting and tasks is the practice effective teachers pursue of relating to their students the ways that supervisors in high-performance workplace relate to those they supervise. With the instructor functioning as a guide and “expert practitioner” the student engages in group problem solving and decision making with others in his or her team while working on a group project, generating hypotheses, testing ideas, and finding solutions (Gregson, 1992).

To further ensure implementation of employability standards, attention must be given to including them in the curriculum (Smith and Katz, 2005). The notion of including essential content in the curriculum is grounded in curriculum design. Over time, several curriculum designs have been proposed to reinforce employability skills including separate subject, multidiscipline and interdisciplinary. A popular approach is the integrated curriculum as used by Smith and Katz (2005) and identified by Bean (1993). According to Bean (1993), the integrated curriculum design promotes personal and social integration through the organization of curriculum around significant problems and issues that have been identified without regard for subject area lines. Shoemaker (1989) defines an integrated curriculum as one that cuts across subject-matter lines,

bringing together various aspects of the curriculum into meaningful association to focus on broad areas of study. Additionally, an integrative curriculum can start with an organizing theme followed by questions, projects, and activities that involved integration and application of knowledge in the context of the theme. Downer (1994) maintains that as themes are studied in and outside of school, students will become generally educated about real-life problems, and teachers will be able to use their specializations in this general education context. Since employability standards are broad and cover several different kinds of essential skills that are applicable to all career and technical education program areas, an integrated curriculum is a justified approach for teaching these skills.

A popular integrated employability skills curriculum is the Your Employability Skills Program or Y.E.S. Program. The program, started 10 years ago to teach workers basic employability skills, was part of the curriculum in more than 20 Pennsylvania high schools during the 2006-2007 school year (Knight Ridder Tribune Business News, May 24, 2006). Slightly more than a year ago, the Your Employability Skills program was taught in four York County High Schools including, Dallastown, Eastern York, Red Lion and York County School of Technology. More than 150 seniors were enrolled in the class at the four schools. Since then, the program has garnered interest since nearly two dozen high schools used the Y.E.S. curriculum in Erie, Lancaster, Schuylkill and York Counties during the 2006-2007 school year.

The goal of Y.E.S. is to teach students the skills many employers say are lacking in today's work force: communication, personal development, safety and health, teamwork, and basic math, among others. The curriculum is an elective course for

seniors. When they complete the class and meet all of the requirements, including perfect attendance, students receive a certificate that employers look upon favorably when hiring.

The Manufacturers' Association of South Central Pennsylvania and the York County Alliance for Learning supervise the program; according to Knight Ridder, 2006, they hope to expand the program to 40 plus schools across several counties. The Pennsylvania Department of Labor & Industry currently supports the program with a modest level of funding.

The Basic Employability Skills Training Program (B.E.S.T.) is another example of an integrated employability skills training program. In 2003 representatives from the Franklin County Area Development Corporation, local colleges and universities, and business and industry personnel met to discuss how the Y.E.S. curriculum could be adapted to meet the needs of Franklin County's workforce. A Chambersburg Consortium was formed; with assistance from the founders of Y.E.S., a pre-employment training program focusing on the soft skills essential to meeting the ever increasing demands of the future, and workforce fundamentals training program for incumbent workers was created (B.E.S.T. Curriculum, 2004).

The consortium developed the B.E.S.T. curriculum to produce reliable, committed and motivated candidates for employment, support high performance work organization objectives and save consortium members the cost of training new employees (B.E.S.T. Curriculum, 2004). Through a series of meetings and workshops a standardized curriculum was established and a train the trainer program was initiated, a strength of the B.E.S.T. program. The initial curriculum focused on communication, quality, teamwork, math, safety & health principles and technology and has since been expanded to include

the illustrative soft skill standards developed by the Pennsylvania Department of Education.

Although developed primarily to support the needs of incumbent workers, trainers find their most receptive audiences to be high school aged students preparing to enter the workforce (Yohn, 2007). Currently, two schools in Franklin County require B.E.S.T. training for their cooperative education and diversified occupation students: Chambersburg Area Senior High School and the Franklin County Career and Technology Center.

Although workforce preparation certainly applies to all students, teachers of career and technical education appear to be in the best position to address employability skills (Zinger, 2003). It is natural for classes such as business, cosmetology, allied health and transportation to have discussions on careers. Since the career and technical teacher is often the “career expert” in their profession, they assume the extended role to help students with career exploration and planning. However, research indicates that the teaching of these skills has not been part of career and technical teacher training; therefore, educators may not have either the experience or comfort level to be effective. Gray and Walter (2001) recommend that career and technical teacher preparation programs provide general knowledge in workforce education and career development. Since high schools have been initiating efforts to integrate academics with technical courses, to include more work-related activities, and to create pathways for employment and/or continued education, the role of the career and technical teacher has changed.

Irving (1999) argued that teacher training should include curriculums that promote a culture of lifelong learning because this is so central to coping with an ever

changing world. Professional associations have also provided a forum to discuss and formulate change. The National Association of Industrial and Technical Teacher Education quality standards for teacher preparation of 1996 states as one of their four goals, that teachers should be prepared to teach problem-solving, decision-making, and team work to better prepare vocational students for high performance places of work (Walker et al., 1996). Frantz (1997) further identified trends for workplace preparation and their relation to the preparation of career and technical educators. One conclusion was that to prepare well qualified workers, teachers need the ability to link learning with workplaces.

Richard Lynch has published extensively on the topic of career and technical teacher preparation, lending further support to the need for career and technical educators to teach employability skills. Lynch (1997) spelled out a curriculum framework which includes: a workforce education common core; specialized workforce education; and work preparation processes. Lynch defines workforce education as the “general knowledge about contemporary workplaces and employability skills that are to be learned by all students in career and technical teacher education programs” (Lynch, 1997, p. 70). In another study on contextual learning for education students, Lynch (2000) argued that career and technical teachers need to be prepared to show connections between their content area and the workplace, and to teach students to apply classroom knowledge at work.

In today’s workplace, what was once known as employment security has been replaced by ‘employability security’ (NAVE, 2004). Employability security can best be described as the knowledge that one has of the competencies demanded in a global

economy and the ability to expand and adjust those competencies as requirements change. The challenge of preparing young people for this new workplace has generated legislative efforts to stimulate educational reform directed at creating “world class” education and a comprehensive system for helping students make a smooth transition from high school to a productive, skilled employment and further learning. The renewed interest in career development presents educators with two dilemmas: efficient delivery and accountability. CTE legislation has placed the responsibility on school systems to provide programs that help students make informed career decisions and to provide opportunities for students to take responsibility for their career development. However, this raises two compelling questions: (1) What is the best way to offer the necessary career guidance and counseling to support student learning? (2) How can educators assure that those facilitating the career development process possess the knowledge and skills needed for students to achieve the desired career development standards?

In answering the question concerning how to ensure that those facilitating the career development process possess the knowledge and skills needed, an innovative curriculum developed through the collaborative efforts of the National Career Development Association (NCDA), National Occupational Information Coordinating Committee (NOICC), the Career Development and Training Institute (CDIT) at Oakland University, and the National Board for Certified Counselors (NBCC) has led to an innovative approach toward expanding the “one career course masters” typical of traditional counselor education programs. Generally, professional counselors with specialties in school counseling, marriage and family therapy, community or agency counseling, and college student development, among others, have only one course to

prepare them for delivery of career-related services (Casey, 1999). Concurrently, this need for more and better career development services has dramatically increased over the past decade (Splete & Hoppin, 2000). This need has been consistently expressed by workers undergoing career and job transitions, by underemployed and unemployed persons, and by students preparing for the world of work. In response to this need a new credential has emerged: Career Development Facilitator (CDF). According to Splete and Hoppin (2000), CDFs hold various titles such as career advisor, case manager, job search trainer, placement specialist, intake interviewer, school-to-work coordinator, and career resource center manager.

According to Casey (1999), the CDF Program consists of an expansive curriculum that can be adopted for undergraduate career courses, infused into existing graduate curricula, offered through distance learning, used as the basis for a continuing education certificate program or offered as in-service for field based practitioners. The CDF curriculum consists of a 120-hour curriculum divided into four modules each with 30 clock hours. The modules are designed to prepare career service providers with competency in the following areas: Career Development Overview, Helping and Assessment Skills, Career Information, Resources and Program Design and Reality Checks, Goal Setting and Action Plans. Several states have begun implementing this credential including New York, Oklahoma and North Carolina.

Factors Affecting Employability Skills Acquisition

Research reveals that several factors may affect a student's acquisition of the knowledge and skills needed to be successful in the workplace. These factors include

gender, grade point average or academic achievement, career major and post secondary plans.

According to Cummings (1994) gender differences in academic achievement are often revealed in test scores. Results on the statewide Maine Educational Assessment have shown wide gaps in the performance of eleventh grade males and females. Cummings' study revealed males outscore females in math while females outscore males in reading and writing and attributes this discrepancy to several responses clustered around several broad headings from her qualitative research: the way things are, work, society, school and logic. Students indicated that ability in either reading or math is dependent on one being male or female; as many as 29% of the girls and 37% of the boys felt that superiority in either reading/literature is determined by one's sex. Also, students generated answers that focused specifically on work or careers. An equal number of boys and girls, 14% of the students, saw male superiority in math as related to work that males would naturally pursue: carpentry, mechanics, medicine, law. Cummings (1994) noted that when girls mentioned professions, they tended to view higher paid professions as possibilities for males and lower paid professions, those demanding the communication skills, for themselves.

Next, 17% of the students viewed differences as having been imposed from the outside, from society as a whole or from the smaller society of the family. Boys, whose writing was rated as low, tended to see a woman's position as being in the home, therefore communication skills would be more practical in reading recipes and patterns, talking with others or reading for pleasure. Several boys pointed out that historically men were the ones who hunted and tilled the land; therefore, math skills were essential.

Another area of influence was school. Fourteen percent of the students saw gender issues evolving from instructional practices. Students mentioned teachers giving more attention to one sex or the other, degrading remarks about girls in math and science classes, a lack of male models in primary and elementary school, and a lack of female role models in math and science at the high school. Pointing out that boys were often more aggressive in math classes, sometimes shouting out responses which could intimidate the girls, were 4% of the students, a mix of both boys and girls.

A final reason cited by Cummings (1994) for the achievement differences between the sexes was a male need for logic. Unlike literature, a response in math is specific; the answer is either right or wrong. Both boys and girls, 11% of the students, saw this as an attribute appealing to males. Interestingly enough, the logic of math, the specificity of the response, was not mentioned as a trait that was appealing to high school girls.

A study conducted by Warrington and Younger (2000) revealed that British girls consistently outperform boys in achievement tests. This achievement, however, has taken place in a context where many of the concerns voiced by researchers in the 1970s and 1980s have not been resolved. In the study, it is argued that there is another side to the gender gap. Drawing on data from 20 schools in eastern England, it is suggested that girls still feel alienated from traditionally male subjects, that career aspirations are still highly gendered, that boys still dominate the classroom environment, and that boys' misbehavior can have a negative effect on girls' learning. Furthermore, some teachers have lower expectations of girls and find boys more stimulating to teach. Warrington and Younger (2000) conclude that the gender debate appears to have been captured by those concerned

predominantly with male underachievement and equal opportunities for girls have seemingly again become less important in many of Britain's schools.

The influence of achievement motivation and gender on Nigerian secondary school students' performance in English was examined in a study by Jegede (1994). Findings suggest that, if adequately motivated, boys and girls at the secondary level are capable of mastering English. The data revealed there were no significant gender differences in English language performance and academic achievement motivation, but the students' English language performance could be reliably inferred from their level of achievement motivation. According to the study, that achievement motivation and English language performance are not affected by gender is borne out by a changing trend in Nigeria, women are moving from domestic to professional jobs and are competing favorably with men.

Using data from 811 respondents in two central Toronto schools with "mixed" social class composition but strong reputations for academic achievement, Maxwell (1996) examined how ideal occupation and career indecision are linked to gender. His study contradicted some traditional expectations. For example, perceptions of careers as gendered appear to be diminishing, as evidenced by the number of females in the study planning to move into occupations traditionally considered male. However, his findings confirmed that males continue to stay away from careers considered to be female. Furthermore, the amount of career indecision by girls was lower than boys. Girls appeared to be deciding earlier and aiming higher. Maxwell's (1996) findings also indicated that the vast majority of both sexes chose very high status occupations as both their ideal and what they expected; however, girls had higher aspirations than boys. The

study noted that the lack of girls choosing traditional female occupations (teaching, nursing, and secretarial work) and the strong preference for and expectation of high status “male” occupations led the researchers to conclude that these girls no longer appeared to be disadvantaged by the traditional gender stereotypes.

In 2006, Nelson and Leganza investigated gender along with other academic variables, including SAT scores, high school GPA and high school class percentile, as predictors of success in entry-level freshman courses from liberal arts mathematics through calculus. Nelson and Leganza found that as the sophistication level of the course increased, gender became less important as a predictor for success. For example, gender was a significant predictor of success in the liberal arts mathematics course; however, it was less significant as a predictor for the applied calculus course. In theoretical calculus, the most mathematically sophisticated of the courses examined, the coefficient for gender was eliminated from the final logistic regression equation. However, contrary to what the researchers predicted, the female students in the study performed better in all the beginning mathematics classes. Even in the theoretical calculus class, where gender was not a significant predictor, the females still were more successful in completing the course. Particularly noteworthy was that females outperformed the males in terms of successful completion when females in each of the courses considered had lower average SAT mathematics scores. For each of these classes, the average high school GPA was higher for the female students than for the male students.

Nelson and Leganza (2006) argued that research from their study supports the conclusion from Dorner and Hutton (2002) that the SAT mathematics test has a gender bias. This would suggest that the SAT mathematics scores, if used as part of placing a

student in the appropriate mathematics class, be treated differently for different genders. Also of note, was that non-cognitive variables may affect academic achievement in mathematics courses as much or even more than academic factors. For example, one finding in the study suggests that students at private liberal arts institutions were more successful in the courses than students in the larger public university, even though the average SAT mathematics scores and the high school GPA were higher for the students at the larger public institution. Nelson and Leganza (2006) theorized the drive to succeed among private school students and the environment of a private liberal arts college may impact success.

A study by Fang, et. al. (2004) examined the relationship between Management Information System (MIS) full-time job offers and other variables, such as internship, gender, declaration time as a MIS major, double major and grade point average. Their study, the first to empirically investigate the impact of multiple factors on full time MIS job offers, revealed that student GPA, nature of the internship and double majors may influence a student's success in obtaining an offer of employment in the management information systems field.

In a study by Trust, et. al. (2000), national data was used to examine the effects of gender, socioeconomic status and four types of eighth grade academic performance on post secondary educational choices at late adolescence. Gender had the strongest independent influences on educational choice; it also interacted with socioeconomic status and academic performance. Relationships between socioeconomic status and educational choice were stronger for women than for men. For women, eighth grade reading scores were the strongest predictor of educational choice, whereas for men,

mathematics scores were the strongest predictor. According to the study, these findings have implications for career counseling practices. Most notably is that career counselors should explore the effects of gender role socialization on achievement-related perceptions and beliefs by designing appropriate interventions and programming.

A study by Simpson (2002) described the acquisition of employability skills of eleventh grade students participating in technical preparation programs at a Career and Technical Center during the 2000-2001 school year. In addition, the study described the perceptions of the teachers and administrators concerning the acquisition of employability skills. The study utilized a case study format using qualitative data and archival quantitative data. The pretest and posttest scores from the American College Testing (ACT) Work Keys assessment for Applied Mathematics, Reading for Information and Locating Information were used as the dependent variables while the grade point average and number of absences served as the independent variables for the study. The results showed that twenty-seven percent of the students received higher posttest scores in applied mathematics; thirty-seven percent showed higher scores in reading for information; seventeen percent received higher scores in locating information. The results indicate that the technical preparation programs were marginally successful in preparing students with employability skills. There was not a significant relationship between students with higher grade point average and those with lower grade point. Nor was there a significant relationship between students with fewer absences and those with eleven or more absences.

Trybus (1998) reported the results of three years of implementation of a Partnership Academy, a restructuring model for at-risk students at J. Sterling Morton East

High School in Cicero, Illinois. Modeled after a school in California, the partnership academy was distinguished by four features: a multi-year school, school-within-a-school structure from 10th grade to graduation, integration of academic and vocational curriculum centered around a health and business career academy, block scheduling, and job shadowing including emphasis on employability skills and active employer involvement through mentoring. Program evaluation focused on measuring students' performance as indicated by attendance, credits earned, grade point averages and achievement-test results. A follow-up survey documented students' postsecondary activities in college and the workplace. Results showed favorable program effects for all indicators. Students had higher attendance rates, increased credits earned, improved grades and significant achievement test gains. Students graduated on time from high school, with a high percentage continuing their education in college. Some students secured meaningful employment related to the career academy they studied.

Winters (2002) compared factors other than vocational competencies which influenced successful job related employment upon completion of a two-year vocational-technical training program. Seventy-eight high school graduates from area vocational-technical centers in central Oklahoma participated in the study which addressed the following research questions: (1) Do math and science courses influence students' post-graduation employment? (2) Is post-graduation employment influenced by the number of times a student takes advantage of career guidance while a secondary vocational-technical education student? (3) Does student academic performance in high school influence post-graduation employment? (4) Do employability skills influence post-graduation employment? Results from the study revealed that a student's grade point

average, exposure to employability skills training and overall academic achievement had the greatest influence on related job placement for vocational-technical completers.

Lin, Sweet and Anisef (2003) examined how college course selection relates to successful transition to the job market. The study revealed the Canadian labor market favors vocational over liberal arts graduates with regard to employment status, income, job security and job satisfaction. Additionally, there was a surprising lack of differences between liberal and vocational graduates in their employability skills. However, data revealed employers were more likely to utilize employability skills from vocational than liberal graduates.

According to a study conducted by Shafer (2005) the high-performance/high-involvement model is one workplace re-design innovation being considered by American manufacturers in response to increasingly intense global competition. Front-line workers in such environments assume tasks and responsibilities far different from those performed in a traditional factory. In order for companies to successfully pursue this high-performance option, they must have a workforce qualified in the necessary skills. Shafer's (2005) study examined the occurrence and distribution of fifteen skills associated with the high-performance/high-involvement within an existing manufacturing workforce. A worker-centered survey was used to collect the data. The objective was to determine the frequency of the skills within the sample and the distribution of the skills across ten selected variables. Further, the study examined the feasibility of predicting, through the use of linear regression, which cohorts of workers were most likely to possess the skills. The skills identified in the study represented an additional skill set beyond the basic employability and job-specific skills required in traditional work

environments. This additional layer of skills is termed Level 3 (with basic employability skills being Level 1 and job-specific skills Level 2). Level 3 includes knowledge of such competencies as decision making, problem solving, systems thinking, team skills and self directed learning. Shaffer's (2005) findings indicated a high degree of confidence among the 237 participants in using the Level 3 skills. This degree of confidence was evidenced without regard to the variables of gender, age, educational level, tenure with the current employer, or total years of experience in the workforce.

Clarke (2007) explored attitudes toward employability among a small group of individuals who were in career transition as a result taking a voluntary lay off. Research in career development suggests that much of the responsibility for career and employability has been transferred from the organization to the individual (King, 2004). The study indicated that, in general, mid-career individuals were yet to recognize this transfer and take ownership of their employability. When moving from a stable career to an uncertain job market they were unsure what they had to offer an employer, how to approach a job search or how to market their skills and experience. The majority of participants did make a successful career transition but more in the absence of, rather than because of, individual career management strategies, also referred to as employability skills.

Conclusion

In conclusion, throughout history the direction and funding for career and technical education has come from the federal government. Recent federal legislation and education reform initiatives are supporting school efforts to prepare youth for making the transition from school to work and to enhance the productivity of the American

workforce. Since several studies suggest a correlation between employability skill acquisition and workplace success, Departments of Education continue to develop curriculum initiatives to help students acquire the knowledge, abilities and skills to think critically, solve problems, work in teams, use technology and learn other soft skills to be successful in today's high performance workplace. Because the global playing field has been leveled, there will be plenty of good jobs in a flat world for people with the right knowledge, skills, ideas and self-motivation to seize them (Friedman, 2006).

Chapter III

Design of the Study

Introduction

The purpose of this study was to describe and compare the acquisition of employability skills of Cooperative Education students participating in an employability skills training program with those students who chose not to participate in the Cooperative Education Program at the Franklin County Career and Technology Center in Chambersburg, Pennsylvania. Additionally, this study described the factors that affect the acquisition of employability skills among these students: gender, career major, grade point average, and post graduation plans. Furthermore, this research described what employability skills students and employers perceive Cooperative Education students actually possess.

The study addressed the following research questions:

1. Do employers and students believe an employability skills training program prepares Cooperative Education students for workplace success?
2. What factors affect a Cooperative Education student's acquisition of the employability skills needed for workplace success?
3. What employability skills do employers and students perceive Cooperative Education students from the Franklin County Career and Technology Center possess?

Participants in the Study

The participants in this study included (1) Cooperative Education students enrolled in the Basic Employability Skills Training Program at the Franklin County Career and Technology Center in Chambersburg, Pennsylvania, (2) business and industry personnel who employed these students and (3) students who were not enrolled in the Cooperative Education program. The Cooperative Education students participated in the Basic Employability Skills Training Program for 14 weeks.

The Franklin County Career and Technology Center (FCCTC) is a part time career and technical school serving the school districts of Chambersburg, Waynesboro, Shippensburg, Tuscarora, Greencastle and Fannett-Metal in Franklin County, Pennsylvania. The school offers twenty one career and technical programs to approximately 720 students in grades ten through twelve. Students study such diverse occupations, including but not limited to, carpentry, culinary arts, electrical, masonry, landscaping and horticulture, marketing and electronics related technology. Many of the program areas offer college credits through Harrisburg Area Community College, California University of Pennsylvania, University of Pittsburgh and Mountain State University in West Virginia. Recently, the Chambersburg Area School District renovated classrooms at FCCTC to offer an academic curriculum to their sophomores and juniors. This addition has created a comprehensive atmosphere, blending academics with vocational subjects.

FCCTC offers a Capstone Cooperative Education Program to all interested senior students. This cooperative effort allows students and business and industry to bridge the gap between school and the world of work. At a certain point in the career and technical

program, application of the learning process can be more effective through experiential learning at an approved training site. Thus, the Capstone Cooperative Education Program allows the students to cap off their career and technical education by using the community and business training sites as classrooms. To support the Cooperative Education Program, the Chambersburg's Chamber of Commerce implemented the Basic Employability Skills Training (B.E.S.T.) program in 2004. Seniors involved in the Capstone Cooperative Education Program benefit from B.E.S.T., an employability skills training program taught by business and industry personnel from the Franklin County area. This training program introduces students to the following industry standard soft skills: active listening, conflict management, work ethic, problem solving, interviewing, life long learning and team building.

The Setting

Franklin County, Pennsylvania consists of six school districts: Chambersburg, Greencastle-Antrim, Waynesboro, Tuscarora, Fannett-Metal and Shippensburg. According to enrollment data compiled by a Mr. Edward Bard, Student Services Director, Chambersburg sent the largest number of students to FCCTC in the 2006-2007 school year with 326, followed by Waynesboro and Tuscarora tied at 131, Shippensburg with 125, Greencastle-Antrim with 72, and Fannett-Metal with 20 students. As noted by the Pennsylvania Department of Education, 1,171 students graduated from these schools in 2005. Of the 1,171 graduates, 654 were college bound while 517 pursued some other type of activity including the military, homemaking, farming, white collar employment, blue collar employment service worker or unemployment (Pennsylvania Department of Education, 2006). According to the 2000 Decennial Census in Franklin County, the

largest educational attainment category for men is the high school diploma category with 44.6 percent receiving this level of education. The women in Franklin County achieved a lower level of higher education (Bachelors or Higher) than men: 15.6 percent (men) versus 14 percent (women). A high proportion of the female population in the area reached the High School Diploma category, with 45.2 percent of women in the area reaching this education level.

Between 2000 and 2005, the percent of the male population designated as highly educated increased by 2.2 percent. In 2005, 18.2 percent of the area's male population (+25) achieved a Bachelors degree or higher. The percentage of women (+25) that earned a Bachelors degree or higher increased by a total of 1.8 percent during this same period. By 2005, a total of 15.8 percent of the women in the population received Bachelors degree or higher. According to the Decennial Census, Franklin County can be described as having a moderately-educated 2000 population, with 14.8 percent of the population (+25) having received a Bachelors degree or higher. This is a lower percentage of highly educated individuals than Pennsylvania's 22.3 percent and the United States' 24.4 percent.

Since 2000, Franklin County has increased the percent of the total population (+25) with a Bachelors degree or higher. The portion of this population has grown by 2.2 percent to a total of 17 percent in 2005, according to the American Community Survey. The 2005 proportion of the highly educated population is less than Pennsylvania's percent of 25.6 and less than the United States' average of 27.2 percent.

Composition Sample-Method of Sampling: Students

The sample of students selected represented the total population of participants and non-participants in the Basic Employability Skills Training Program, 60 students total. These senior level students attend one of the six rural school districts which jointly own the Franklin County Career and Technology Center including: Chambersburg: 40% of total enrollment, Waynesboro: 16% of total enrollment, Tuscarora: 16% total enrollment, Shippensburg: 15% total enrollment, Greencastle-Antrim: 9% total enrollment, Fannett-Metal: 2% total enrollment.

Using a Static-Group pretest-posttest design, the method of sampling included distributing a data collection instrument, designed by the researcher, to measure attitudes toward employability skill acquisition. This instrument was used as the study's pretest and posttest.

Employability Skill Acquisition

Seniors Participating in Cooperative Education:	$\frac{O}{O}$	X	$\frac{O}{O}$
Seniors Not Participating in Cooperative Education:	$\frac{O}{O}$		$\frac{O}{O}$

The pre-test was administered in February 2008 to all seniors, 30 students, enrolled in the Capstone Cooperative Education program. This same data collection instrument was also administered in February 2008 to all seniors, 30 students, who were not enrolled in the program. At the conclusion of the Basic Employability Skills Training Program, fourteen weeks of instruction, the data collection instrument was distributed to both groups as a post-test measure to compare and contrast their acquisition of employability skills.

Composition Sample-Method of Sampling: Business and Industry Personnel

An additional method of sampling involved mailing, in April 2008, a data collection instrument designed by the researcher to business and industry personnel who employed the Cooperative Education students. This sample size included 30 people who served as the Cooperative Education students' immediate supervisors. Using a Static-Group Comparison, employers (specifically the immediate supervisor) were matched with their students in order to compare and contrast the perceptions of employability skills between the two groups.

Employability Skill Acquisition

Cooperative Education Students:	$\frac{X}{O}$
Employers of Cooperative Education Students:	$\frac{O}{O}$

Data Collection

The method of data collecting was a self administered data collection instrument. To reduce errors in measurement and insure reliability and standardization, the surveys were administered in a uniform and consistent manner. All students completed the instrument within the same months: February, 2008-pret-test and April-May 2008-post-test. Business and industry personnel who employed the Cooperative Education students completed the instrument in April, 2008. Although students and business-industry personnel were given the opportunity to participate in the study, participation was strictly voluntary. The researcher kept track of those individuals who did not complete the instrument to ensure the sample was representative of the population of those who agreed to participate.

Student Data Collection

Consent and assent forms for students participating in the Cooperative Education program were given to the Coordinator; consent and assent forms for students not participating in the Cooperative Education program were given to the guidance counselor. The Cooperative Education Coordinator and guidance counselor distributed the forms. Students returned the forms (signed by a parent or guardian) to the Cooperative Education Coordinator or guidance counselor within one week.

Approximately, one week later, the researcher sent additional consent and assent forms to the Cooperative Education Coordinator and guidance counselor to distribute to the students who had not responded. After another one week period, the remaining assent and consent forms were be collected and reviewed. The researcher compiled a list of all students who assented to participate in the study. A date was established for the students to complete the self administered data collection instrument. When the data collection instrument was to be completed, all students who agreed to participate in the study were gathered in a large group setting. At that time, standardized instructions were read, the data collection instrument was handed out, and the researcher collected the instrument upon completion. The results were treated with strict confidentiality and student names did not appear anywhere on the instruments.

Business-Industry Personnel Data Collection

Consent forms for business-industry personnel were mailed to respective places of employment. Prospective participants were able to mail the consent forms directly to the researcher, via a self addressed stamped envelope. Approximately one week later, the researcher sent a follow up reminder to the respective places of employment. The

researcher then compiled a list of all business-industry personnel who assented to participate in the study. The self administered data collection instrument was mailed to the participants directly to complete on their own. Standardized instructions were included with the data collection instrument. A date was established for participants to return the data collection instrument via the self addressed stamped envelope. The results were treated with strict confidentiality and participant names did not appear anywhere on the instrument.

Data Collection Instrument

The principle data gathering instrument for Cooperative Education students, their employers and students not participating in the Cooperative Education program was a self administered questionnaire. The Cooperative Education students' data collection instrument consisted of three parts. Part A of the questionnaire included one question asking for a response on how well an Employability Skills Training Program prepares students for workplace success. Part B of the questionnaire included 31 statements clustered into nine skill areas referenced by the Pennsylvania Department of Education (2006) as illustrative soft skills or employability skills. A Likert-type scale (1-5) was used for the purpose of computing means, standard deviations, and other descriptive statistics.

Part C of the student questionnaire requested demographic information including: gender, career major, grade point average and post graduation plans. The correlation between these demographic variables and the acquisition of employability skills is supported in the researcher's literature review.

The questionnaire for seniors not enrolled in the Cooperative Education program consisted of two parts. Part A of the questionnaire included 31 statements clustered into

nine skill areas referenced by the Pennsylvania Department of Education (2006) as illustrative soft skills or employability skills. A Likert-type scale (1-5) was used for the purpose of computing means, standard deviations, and other descriptive statistics.

Part B on the student questionnaire requested demographic information including: gender, career major, grade point average and post graduation plans. The correlation between these demographic variables and the acquisition of employability skills is supported in the researcher's literature review.

The employer's questionnaire consisted of three parts. Part A of the questionnaire included one question asking for a response on how well the Basic Employability Skills Training Program prepares students for workplace success. Part B of the questionnaire included 31 statements. These 31 statements were clustered into nine skill areas referenced by the Pennsylvania Department of Education (2006) as illustrative soft skills or employability skills. A Likert-type scale (1-5) will be used for the purpose of computing means, standard deviations, and other descriptive statistics.

Demographic information was not requested from the employers of Cooperative Education Students.

Field Test

A field test of the data collection instrument was conducted in November of 2007. A sample consisting of five Cooperative Education students, their employers and five students not enrolled in the Cooperative Education program was used to determine the reliability and validity of the instrument. The instrument's validity was established. Reliability coefficients fell within .111 to 1.000, with an overall alpha score of .959. Student participants noted that the question asking them to mark the sentence that best

describes their post graduation plans was confusing since six of the ten participants indicated they had more than one plan after graduation. To remedy this confusion, the question was revised to reflect a ranking scenario, using a scale of one to five, to best describe student post graduation plans. Employers did not indicate problems with their data collection instrument. The average completion time of the questionnaire by students was 10 minutes; the average completion time of the questionnaire by employers was 8 minutes.

Tabulation of Data

The thirty-one statements on the data collection instrument were clustered into nine skill domains as recommended by Pennsylvania Department of Education in 2006 from their work in creating standards for Career and Technical Education. Section 13.3 of the academic standards for Career and Technical Education reference the need to teach, challenge, and support every student to realize his or her maximum potential in acquiring the knowledge and skills needed to evaluate personal attitudes and work habits that support career retention and advancement (Pennsylvania Department of Education, 2006). The nine skill domains are:

1. Work Ethic Domain: a motivating belief that employees owe their employer a full day of diligent work. This includes reporting to work on time and on a regular basis and following their supervisor's instructions. (Statements 1, 2, 3 on the survey instruments.)
2. Courtesy Domain: the habitual use of "please," "thank you," "excuse me," and "may I help you?" in dealing with customers, supervisors and colleagues. (Statements 4, 5, 6 on the survey instruments.)

3. Teamwork Domain: the ability to work with others and in teams. The ability to share responsibilities, confer with others, honor commitments, help others do their jobs, and seek help when needed. (Statements 7, 8, 9 on the survey instruments.)
4. Lifelong Learning Domain: desire and capability to continually absorb new knowledge. (Statements 10, 11, 12, 13 on the survey instruments).
5. Self Discipline and Self Confidence Domain: the ability to arrange one's own tasks for best performance, to learn from experience, to ask questions and correct mistakes, and to absorb criticism and direction without feeling defeated, resentful or insulted. (Statements 14-15-16-17 on the survey instruments.)
6. Conformity to Prevailing Norms Domain: the ability to govern one's dress, grooming, body language, tone of voice and vocabulary according to a particular culture of a given workplace. (Statements 18, 19, 20 on the survey instruments.)
7. Problem Solving Domain: recognizing that a problem exists, identifying the problem, devising a plan of action to solve the problem, and implementing that plan of action to solve the problem. (Statements 21, 22, 23, 24 on the survey instruments.)
8. Language Proficiency Domain: the ability to speak, read and write standard English in a business like way. (Statements 25, 26, 27, 28 on the survey instruments.)

9. Technical Literacy Domain: the ability to use computers and other technologies. (Statements 29, 30, 31 on the survey instruments.)

The following directional hypotheses were developed for each of the skill domains:

1. Students who participate in the Basic Employability Skills Training program will demonstrate a more committed work ethic than students who do not participate and there will be no statistically significant difference between the work ethic perceptions of students who participated and their employers.
2. Students who participate in the Basic Employability Skills Training program will demonstrate more courteous behaviors than students who do not participate and there will be no statistically significant difference between the courtesy perceptions of students who participated and their employers.
3. Students who participate in the Basic Employability Skills Training program will demonstrate more ability to work with others in teams than those who do not participate and there will be no statistically significant difference between the teamwork perceptions of students who participated and their employers.
4. Students who participate in the Basic Employability Skills Training program will demonstrate a more committed desire and capability to absorb new knowledge than those students who do not participate and there will be no statistically significant difference between the lifelong learning perceptions of students who participated and their employers.
5. Students who participate in the Basic Employability Skills Training program will demonstrate more self discipline and self confidence characteristics than

those students who do not participate and there will be no statistically significant difference between the self discipline and self confidence perceptions of those students who participated and their employers.

6. Students who participate in the Basic Employability Skills Training program will demonstrate a greater desire to conform to prevailing norms than those who do not participate and there will be no statistically significant difference between the conformity perceptions of students who participated and their employers.

7. Students who participate in the Basic Employability Skills Training program will demonstrate more problem solving abilities than those students who do not participate and there will be no statistically significant difference between the problem solving perceptions of students who participated and their employers.

8. Students who participate in the Basic Employability Skills Training program will demonstrate more ability to read, write and speak standard English in a business like way than those students who do not participate and there will be no statistically significant difference between the language proficiency perceptions of students who participated and their employers.

9. Students who participate in the Basic Employability Skills Training program will demonstrate more ability to use computers and other technologies than those students who do not participate and there will be no statistically significant difference between the technical literacy perceptions of students who participated and their employers.

Using these hypotheses, the researcher determined if the Cooperative Education students, their employers and students who did not participate in the Cooperative

Education program had the same perceptions regarding the acquisition of skills in the Cooperative Education students. A rationale for using directional hypotheses to study employability skill acquisition is supported in the literature. For example, Richens and McClain (2000) surveyed 400 employers on their perceptions of skills and competencies required for employees. Employers reported that they preferred employees to possess employability skills over technical skills. Taylor (2005) also reported that employers are looking for attitudinal traits rather than skill proficiency in young employees. In response to these and other concerns, respective Departments of Education have created curriculums to reinforce the attitudinal traits employers believe are important for workplace success.

As recent as October 25, 2006 the Pennsylvania Department of Education published new Academic Standards for Career Education and Work. These new standards provide students, as early as first grade, the opportunity to begin exploring career options and offer graduating high school students a comprehensive set of tools to explore opportunities for post-secondary education and jobs. Under the new standards, students, by 8th grade, should begin their individualized career plan and portfolios, which will be developed throughout high school, and learn effective skills used in a job interview. By 11th grade students should analyze the relationship between career choices and career preparation opportunities such as secondary-education degrees, industry or military training, as well as apply interviewing skills to real life situations. Students are also expected to evaluate strategies for career retention and advancement in response to the changing global workplace and the impact of life long learning on careers. Research

studies in employability skill acquisition using directional hypotheses can help determine if employability skills training programs are meeting expected standards.

The researcher created nine indices based on the nine skill domains. For each index, the researcher computed descriptive statistics, including mean and standard deviation, and test for significant differences between means using a t-test at the .05 level of significance on each of the nine skill domains. This was followed by a multivariate analysis using linear regression to control for demographic variations between the two groups.

Chapter IV

Presentation and Interpretation of Data

Introduction

This chapter contains an analysis of the data relevant to this study. The purpose in doing so was to describe and compare the acquisition of employability skills of Cooperative Education students participating in an employability skills training program with those students who chose not to participate in the Cooperative Education Program at the Franklin County Career and Technology Center in Chambersburg, Pennsylvania. It describes the employability skills students and employers perceive Cooperative Education students actually possess and examines factors that may affect the acquisition of employability skills among these students including gender, area of study, grade point average and post graduation plans.

The study addressed the following research questions:

1. Do employers and students believe an employability skills training program prepares Cooperative Education students for workplace success?
2. What employability skills do employers and students perceive that students from the Franklin County Career and Technology Center possess?
3. What factors affect a student's acquisition of the employability skills needed for workplace success?

Demographics

The sample of students selected represented a percentage of the population of participants and non-participants in the Basic Employability Skills Training Program offered at the Franklin County Career and Technology Center. Of the 109 senior-level students asked to participate in the study, 33 of the 65 students enrolled in cooperative education programming and 31 of the 44 students not enrolled in cooperative education programming agreed. These students, including those who participated in the study, attended one of the six rural school districts which jointly own the Franklin County Career and Technology Center. These include Chambersburg: 40% of total enrollment, Waynesboro: 16% of total enrollment, Tuscarora: 16% total enrollment, Shippensburg: 15% total enrollment, Greencastle-Antrim: 9% total enrollment, Fannett-Metal: 2% total enrollment. Additionally, of the 63 employers of cooperative education students asked to participate in the study, 36 agreed.

Table 1 represents the demographics of the participants in the study. More males (69%) than females (31%) participated in the Cooperative Education program whereas more females (57.4%) than males (42.6%) did not participate in Cooperative Education. The majority of students who participated in the study were enrolled in the Chambersburg Area School District, 27.3% as Cooperative Education students and 52% as Non Participating students. The Greencastle Antrim School District had the least number of participants, 14.5% as Cooperative Education students and 3.7% as Non Participating students. The Fannett Metal School District did not have senior level students enrolled at the Franklin County Career and Technology Center the semester the study was conducted.

More Cooperative Education students, 92.8%, indicated they possessed a grade point average of 2.1 or higher compared to 63% of Non Participating students.

To produce a more efficient analysis of data, Area of Study was recoded into two categories, one that reflected programs representing service occupations such as Business and Health-Human Services and one that reflected programs representing trade-industrial occupations, such as Transportation, Production and Construction. Of the Cooperative Education students who participated in the study, 30.8% were enrolled in a service occupation program and 69.2% were enrolled in a trade-industrial program. Non Participating students represented the service occupation programs with 64.5% and the trade-industrial programs with 35.5%.

Post Graduation Plans was similarly dichotomized. The employment variable was not recoded; however, the categories community college, technical school, industry certification, and college/university were recoded as post secondary. Slightly less Cooperative Education students, 51%, indicated they were pursuing employment upon graduation compared with 52% of the Non Participating students. Thus 48% of Non Participating students indicated they were pursuing some type of post secondary education after graduation compared to the Cooperative Education students with 49%.

Table 1: Participant Demographics

	Cooperative Education Students	Non- Participating Students	Employers
Survey Response Rate:	60% (n=55)	57% (n=54)	57.1% (n=63)
Gender:			
<i>Male</i>	69% (n=38)	42.6% (n=23)	N/A
<i>Female</i>	31% (n=17)	57.4% (n=31)	N/A
School District:			
<i>Chambersburg</i>	27.3% (n=15)	52% (n=28)	N/A
<i>Waynesboro</i>	18.2% (n=10)	16.6% (n=9)	N/A
<i>Shippensburg</i>	12.7% (n=7)	20.3% (n=11)	N/A
<i>Tuscarora</i>	27.3% (n=15)	7.4% (n=4)	N/A
<i>Greencastle-Antrim</i>	14.5% (n=8)	3.7% (n=2)	N/A
<i>Fannett-Metal</i>	0	0	N/A
Grade Point Average:			
<i>4.0 – 3.1</i>	45.5% (n=25)	16.7% (n=9)	N/A
<i>3.0 – 2.1</i>	47.3% (n=26)	46.3% (n=25)	N/A
<i>2.0 – 1.0</i>	7.2% (n=4)	37.0% (n=20)	N/A
<i>Below 1.0</i>	0%	0%	N/A
Area of Study:			
<i>Transportation</i>	18.1% (n=10)	12.9% (n=7)	N/A
<i>Production</i>	9.1% (n=5)	7.4% (n=4)	N/A
<i>Health-Human Services</i>	18.1% (n=10)	42.5% (n=23)	N/A
<i>Business</i>	12.7% (n=7)	22% (n=12)	N/A
<i>Construction</i>	42% (n=23)	15.2% (n=8)	N/A
Post Graduation Plans:			
<i>Employment</i>	51 % (n=28)	52% (n=28)	N/A
<i>Community College</i>	9.1% (n=5)	18.5% (n=10)	N/A
<i>Technical School</i>	18.2% (n=10)	3.7% (n=2)	N/A
<i>Industry Certification</i>	9.1% (n=5)	3.7% (n=2)	N/A
<i>College/University – 4-year</i>	12.6% (n=7)	22.1 % (n=12)	N/A

The study addressed if an employability skills training program can prepare students for workplace success. Only Cooperative Education students and their employers were asked to respond yes or no to the question, “Do you believe an employability skills training program prepares Cooperative Education students for workplace success?”

Table 2 compares the yes-no response percentage between Cooperative Education students and their employers using a cross tabulation calculated from pre and post-test data. Overall, the analysis showed an overwhelming majority of Cooperative Education students (97%) on the pre-test believed that an employability skills training program prepares students for workplace success. Despite the decrease in the percentage on the post-test, Cooperative Education students still remained positive with 82% reporting yes. Employers who received only the post-test were less positive than Cooperative Education students; 72% indicated an employability skills training program prepares students for workplace success.

Table 2: Do employers and students believe an employability skills training program prepares Cooperative Education students for workplace success?

	Pre-test				Post-test			
	YES		NO		YES		NO	
	%	n	%	n	%	n	%	n
Students ¹	97	(32)	3	(1)	82	(27)	18	(6)
Employers ²					72	(26)	28	(10)

1 = pre-post student $r=.08$; $p=.65$

2 = post student vs. employers $r=.11$; $p=.35$

The study examined employability skill perceptions of participating and non participating students and employers. Table 3 shows the results of a reliability analysis

conducted on the 36 questions contained in the nine skill domains. Reliability was strong overall on the pre-test for both Cooperative Education Students and Non Participating students in the nine domain areas, .94 and .96 respectively. When examined individually, the domains Teamwork (.63) and Conformity to Norms (.58) showed a less than ideal reliability for the participating students on the pretest. The post-test also showed a strong reliability overall at .97 for Cooperative Education students, .96 for Non-Participating students and .97 for employers.

Table 3: Cronbach Alpha-Reliability Analysis. What employability skills do students and employers perceive the students from the Franklin County Career and Technology Center possess?

Domain	Pre-Test			Post-Test		
	Cooperative Education Students n = 33	Non Participating Students n = 31	Employers N/A	Cooperative Education Students n = 33	Non Participating Students n = 31	Employers n = 36
Work Ethic	.85	.89	N/A	.92	.92	.92
Courtesy	.78	.84	N/A	.97	.95	.79
Teamwork	.63	.84	N/A	.95	.95	.77
Lifelong Learning	.80	.83	N/A	.94	.95	.87
Discipline-Self Confidence	.68	.84	N/A	.88	.91	.87
Conformity to Norms	.58	.83	N/A	.93	.93	.84
Problem Solving	.80	.90	N/A	.95	.99	.91
Language Proficiency	.78	.86	N/A	.90	.97	.88
Technical Literacy	.81	.84	N/A	.98	.92	.96
Overall Domain Index	.94	.96	N/A	.97	.96	.94

In Table 4, descriptive statistics, including mean and standard deviation, were tabulated for the nine employability skill domains. An independent samples t-test on the pre-test's nine employability skill domains revealed that, overall, Cooperative Education students, with a mean of 4.7, were more positive about their perception of the employability skills they possessed in all nine indices when compared with students who did not participate in the employability skills training program. Their overall mean score was 4.5.

On the post-test Cooperative Education students, with a mean of 4.4, were less positive about their perceptions of the employability skills then on the pre-test, although

they still remained more positive than the Non Participating students with an overall mean of 4.3 on the nine indices. With respect to the specific domains, although Cooperative Education students were more positive in six of the nine domains, Non-Participating students had a more positive attitude toward their technical literacy skills (4.3) and English language proficiency (4.2), including their ability to read, write and speak in a business like way. Both student groups had the same perception toward conforming to norms at a mean of 4.3.

Employers were the least positive of the three groups. Their perceptions were lower, moreover, in each of the nine indices with an overall average of 4.0. With respect to the specific domains, employers were the most positive in their perception that Cooperative Education students' possessed a work ethic (4.3) and least positive in their perception that Cooperative Education students possessed technical literacy skills (3.7). Employers' perceptions regarding Cooperative Education students' ability to work in teams, conform to the norms of the workplace and be self disciplined and confident was the same at 4.1

Table 4: *What employability skills do employers and students perceive students from the Franklin County Career and Technology Center possess?*

Domain	Pre-Test			Post-Test		
	Cooperative Education Students	Non Participating Students	Employers	Cooperative Education Students	Non Participating Students	Employers
** Work Ethic	5.0	4.8	N/A	4.6	4.5	4.3
Courtesy	4.8	4.7	N/A	4.6	4.4	4.2
** Teamwork	4.7	4.4	N/A	4.6	4.4	4.1
Lifelong Learning	4.7	4.4	N/A	4.4	4.3	3.9
** Discipline-Self Confidence	4.7	4.3	N/A	4.4	4.3	4.1
** Conformity to Norms *	4.7	4.4	N/A	4.3	4.3	4.1
** Problem Solving	4.8	4.3	N/A	4.5	4.3	3.9
Language Proficiency	4.4	4.3	N/A	4.2	4.3	3.8
* Technical Literacy	4.6	4.4	N/A	4.1	4.2	3.7
Overall Domain Index	4.7	4.5	N/A	4.4	4.3	4.0

*significant at .05 or less

**significant at .01 or less

KEY: (1) * or ** at the left of the domain name signifies a comparison between cooperative education students and non participating students.

(2) * or ** at the right of the domain signifies a comparison between cooperative education students and the employers.

NOTE: Non-participating students were not employed; therefore no comparison was made between them and the employers.

The study examined the factors that affect a student's acquisition of the employability skills needed for workplace success. First described in the SCANS report in 1991 and later referenced in the standards for Career and Technical Education created by the Pennsylvania Department of Education in 2006, workplace success refers to performance specifications that identify the knowledge, training, certifications, and employability skills needed for individuals to be competent in the workplace. Departments of Educations across the United States have created curricula to reinforce the attitudinal traits, similar to the nine skill domains, employers believe are important for workplace success or competency.

A multivariate regression analysis, controlling for the effect of the dichotomized variables grade point average, area of study and post graduation plans, along with gender and the pre-test, was undertaken. The purpose in doing so was to determine if these control variables had an effect on the bivariate relationship between those who did and did not participate in the employability skills training program and the nine skill domains.

Interestingly, participating or not participating in an employability skills training program was not a significant factor in any of the nine domains examined. However, post graduation plans affected students' perception of their technical literacy skills. Those students who indicated they were more likely to enter the workforce directly upon graduation were more positive in their attitude they could use computers and other technologies to perform tasks related to the job compared to those students who indicated they were pursuing a post secondary education ($B = -.42$; $SE = .19$). None of the remaining variables, including gender, area of study and grade point average affected a students' acquisition of the nine skill areas needed for workplace success. As expected,

the pre-test scores on all nine domains were statistically significant. (Note: Identical findings in terms of statistical significant results were achieved when pre-test scores were excluded and the analysis repeated).

Table 5: Regression Analysis. What factors affect a student's acquisition of the employability skills needed for workplace success?

Domain		Pretest	Status	Gender	GPA	Area of Study	Post Graduation Plans	Domain	
1	B	.79	.10	.06	-.01	.29	-.19	B	1
	S.E.	.25	.18	.22	.18	.23	.17	S.E.	
2	B	.81	-.13	.11	.12	.04	.05	B	2
	S.E.	.21	.18	.23	.19	.25	.18	S.E.	
3	B	.44	-.10	.03	.02	-.08	-.17	B	3
	S.E.	.14	.19	.23	.19	.25	.18	S.E.	
4	B	.53	-.03	.09	.16	-.04	-.24	B	4
	S.E.	.19	.19	.23	.19	.24	.18	S.E.	
5	B	.25	.01	.19	.20	.28	.06	B	5
	S.E.	.16	.18	.22	.18	.23	.17	S.E.	
6	B	.74	.27	.30	.06	.40	.01	B	6
	S.E.	.20	.20	.23	.19	.25	.18	S.E.	
7	B	.43	-.15	.09	.34	.22	-.02	B	7
	S.E.	.17	.17	.20	.17	.21	.16	S.E.	
8	B	.35	-.03	.05	.37	-.12	-.26	B	8
	S.E.	.17	.18	.24	.20	.25	.18	S.E.	
9	B	.64	.19	.24	.04	-.00	*-.42	B	9
	S.E.	.16	.19	.24	.20	.26	*.19	S.E.	

KEY: Domain 1: Work Ethic
 Domain 2: Courtesy
 Domain 3: Teamwork

Domain 4: Lifelong Learning
 Domain 5: Discipline-Self Confidence
 Domain 6: Conformity to Norms

Domain 7: Problem Solving
 Domain 8: Language Proficiency
 Domain 9: Technical Literacy

* significant at .05

Chapter V

Discussion

Introduction

In this chapter the results of the study are examined, including conclusions that were drawn from the answers to the research questions and implication for further research. The purpose of this study was twofold: (1) to describe and compare the acquisition of employability skills of Cooperative Education students participating in an employability skills training program at the Franklin County Career and Technology Center in Chambersburg, Pennsylvania with those students who chose not to participate in the program (2) to compare the students' perceptions of employability skills with those of employers.

Statement of the Problem

The nation's school-to-work transition strategy is positively acknowledged by educational leaders and major stakeholders. The concept of school-to-work training programs has received support from policy makers, educators, industry and the business community. Educational leaders and policy makers are specifically interested in effective ways to promote the transition from school to skilled employment for all young Americans. Research indicates that schools need to do a better job in preparing students for the world of work as more than half of American young people leave school without the knowledge or foundational skills required for entry-level positions (Wakelyn, 2007). Employers in the United States realize there is a gap between the level of employability

skills of students leaving high school and the level needed to obtain and maintain employment in most organizations. The globalization of commerce and industry and the explosive growth of technology on the job have had a profound effect on young people's ability to enter the world of work as employers continue to value attitudinal traits as much as skill proficiency in new employees (Taylor, 2005).

While a considerable amount of information has been written about workplace skills that warrant employability success, there has been little written concerning the acquisition of employability skills of high school students in career and technical preparation programs. Furthermore, describing how business-industry personnel perceive the acquisition of employability skills may provide leaders in education, especially in career and technical education, with the information needed to determine whether high school students are gaining and/or can learn the soft skills needed to succeed in the workplace.

Procedures

The study was conducted during a fourteen week period at the Franklin County Career and Technology Center in Chambersburg, Pennsylvania. The sample population included 33 Cooperative Education students who participated in an employability skills training program and 31 non-participants. The design of the study was quasi-experimental in that the experimental and control groups were compared using a static group in both the pre-test and post-test. The data collection instrument used to measure attitudes toward employability skills acquisition of the students, who volunteered to participate in the study, was designed by the researcher.

An additional sample population included 36 employers who directly supervised the Cooperative Education students during a semester long work experience. This sample population received the same data collection instrument, also designed by the researcher, to measure attitudes toward employability skills acquisition.

Findings and Interpretations

Do students and employers believe an employability skills training program prepares Cooperative Education students for workplace success?

An analysis of the data reveals that Cooperative Education students were significantly more positive on the pretest (97%) in responding to this question and remained positive on the post-test (82%) when compared to employers, who received only the post-test, at (72%). Research indicates that although employability skill training programs were developed primarily to support the needs of incumbent workers, trainers find their most receptive audiences to be high school aged students preparing to enter the workforce. Interesting enough, participation in an employability skills training program did not appear to have a positive effect on student attitudes toward employability skill acquisition. One would think that exposure to an employability skills training program would reinforce the students' positive attitude toward developing and retaining the interpersonal skills needed to be successful in the workplace. The results of this study did not support this premise since students were more positive on the pre-test than on the post-test. Employers, who just received the post-test, although generally positive, were less positive than students about their young workers acquisition of employability skills.

What employability skills do employers and students perceive that students from the Franklin County Career and Technology Center possess?

An analysis based on an independent sample t-test performed on the nine skill domains revealed overall Cooperative Education students were more positive than Non-Participating students in both the pre-test and post-test about their perception of the employability skills they possessed. Once again, both student groups were more positive on the pre-test in their attitude of employability skill acquisition when compared to post-test results. In regards to the pre-test, Cooperative Education students were more positive in all nine skills domains than Non-Participating students. In regards to the post-test, Cooperative Education students were more positive about their employability skill acquisition in the work ethic, courtesy, teamwork, lifelong learning, self-discipline and confidence, and problem solving domains. Non-Participating students were more positive about their employability skill acquisition in the language proficiency and technical literacy domains. Both groups were equally positive in their ability to conform to prevailing norms.

Employers were not as positive in their perception of the employability skills students possessed in all nine skill domains. The work ethic domain received the highest score (4.3) and was the most recognized employability skill in the young workers; the technical literacy domain received the lowest score (3.7) and was the least recognized employability skill.

What factors affect a student's acquisition of the employability skills needed for workplace success?

A multivariate regression analysis was undertaken to determine what factors may affect a student's acquisition of the employability skills needed for workplace success. The data revealed that only student's post graduation plans affected his or her perception of their technical literacy skills. Those students who indicated they were more likely to

enter the workforce directly upon graduation were more positive in their attitude they could use computers and other technologies to perform tasks related to the job compared to those students who were pursuing a post secondary education. This might be expected given that students entering the workforce immediately upon graduation have a more urgent need to master the technical literacy needed to successful in the workplace. Students entering a post secondary institution may perceive they have more time to learn the technology. None of the factors, including gender, area of study and grade point average affected a student's acquisition of the nine skill areas needed for workplace success.

Conclusions

The major goal of the study was to determine what effect an employability skills training program may have on the acquisition of the employability skills needed for workplace success. As a result of statistical analyses of the data, it appears the null hypotheses of this research study were retained. First, Cooperative Education students were more positive on the pre-test about their employability acquisition than they were on the post-test, after they completed the employability skills training program. Second, both Cooperative Education students and Non-Participating students were more positive on the pre-test than the post-test in regards to the employability skills they believed they possessed, again after completing the employability skills training program. Furthermore, employers, who were surveyed toward the conclusion of the employability skills training program, were less positive than their student employees about employability skills acquisition. Finally, only post graduation plans, as it affected the technical literacy

domain, appeared to significantly impact a student's acquisition of the employability skills needed for workplace success.

Implications

Although the empirical results did not yield increases in skill acquisition as a result of exposure to an employability skills training program, there are lessons to be learned from answering, "Why did the students in the experimental group not perform statistically higher on the post-test as a result of the prescribed treatment?"

A contributing factor may be the overwhelming positive response from the experimental group on the pre-test. The data reveals that students scored so high at the beginning of the study, thus creating a situation where there was no room for improvement over the course of the semester. Furthermore, students were asked to evaluate themselves on the data collection instrument. It is human nature to view our abilities more positively than others might view them. Another contributing factor to consider is the time of year in which the study was conducted. Participants had just completed the academic semester at their sending high school, always considered the more challenging semester for the majority of career and technical education students. Participants were motivated to finish their high school education by pursuing employment in a vocational program area in which they excelled and enjoyed. The opportunity to be paid to attend school may have produced an attitude of "I can do anything!"

With this "I will conquer the world" mentality in mind, one still has to ask, "What accounts for the decrease in perception of employability skill acquisition on the post-test?" Even without the room to improve, why didn't students, at the very least, maintain

their positive perception toward employability skill acquisition at the conclusion of the study? One factor to consider is the on the job experience students may have had with their employers. Is it possible that students found the world of work intimidating, demanding and stressful? Is it also possible that the students' employment situation directly impacted their confidence in their employability skill acquisition? Another factor to consider is the time of year in which students took the post-test, late May several weeks before graduation. Could senioritis and the desire to be finished with school have affected the results?

One constant in the study was employers were more negative than students in their perception of the employability skills their student employees possessed. What accounts for this disconnect in perception between employers and students? Research reveals that the most compelling arguments for including employability skill training in secondary curricula comes from employers who are directly impacted by their employees' skill deficits. Is it possible that the employers, because they were evaluating another person and not themselves, had a more realistic view of the skills their student employee actually possessed?

Results from this study have raised many questions pertaining to the effectiveness of teaching employability skills. First, is it possible to teach employability skills, often referred to as interpersonal skills and deemed subjective and difficult to teach? Consideration should be given to the model used to deliver instruction in this study. Several business and industry personnel over the course of 14 weeks delivered the employability skills curriculum. Is it possible that a person's teaching ability impacted a student's acquisition of the specific employability skill being taught? Second, would the

results have been different if the treatment was provided over a longer period of time? Students were exposed to the program for 14 weeks. One has to wonder if this period of time was sufficient enough to impact the acquisition of these skills. Finally, would combining quantitative and qualitative methodology in the design of the study provide a more comprehensive view of the issue? Since students were more positive than employers regarding student acquisition of employability skills, interviews with employers may have provided insight into the discrepancy between the two groups. Those interviews could have also provided insight into what employability skills employers believe should be stressed.

Recommendations for Future Study

Employability skill acquisition research is in an infancy stage. Much is written about the need to teach interpersonal skills; however, little is written about curriculum development. Even less is written about data collection instruments used to measure the effectiveness of such curricula. The current research demonstrates there is a need for a common language to describe the specific skills needed for workplace success. Therefore, this study will add to the growing body of literature regarding the acquisition of employability skills needed for workplace success.

A research opportunity exists to develop a data collection instrument that truly reflects what the content of an employability skills instrument should cover. Because employability skills are often deemed intangible and subjective, more thought should be given to the accuracy of instruments to measure the uniqueness of these skills.

Another research opportunity might be to select several researched based employability skill curricula, including the BRIGANCE Employability Skills Inventory,

ACT-Work Keys, and Keys2Work, and compare and contrast their effectiveness.

Although the employability skills training program used in this study did not yield statistically significant results, it is possible that another program or combination of programs may increase acquisition. A note worthy question: Is there a difference in acquisition when using a research based curriculum versus using a curriculum similar to the one utilized in this study, developed in combining state standards with local business and industry input?

A future research possibility might be a longitudinal study in which students begin explicit instruction in employability skills in their junior year and continue to receive this instruction through the completion of their senior year. It is possible that given more exposure to an employability skills curriculum will yield more statistically significant results. A larger sample size may also alter the results. The design of this study allowed for a relatively small sample size (N=33, N=31, N=36) among the three groups. Conducting further research on a larger population may reveal statistically significant results.

Another longitudinal study could involve tracking the students over a five year period of time. For example, did the students retain the employability skills they acquired in high school? Did their perceptions of the importance of the skills change over time? What problems did these students encounter in the workplace as a result of failing to master these skills?

Another idea for future study is to combine qualitative and quantitative methodology into one study. Employer observations, student perceptions and teacher input regarding a student's employability skill acquisition might prove to be enlightening

regarding the skills employers believe students should have. Documented observations of student performance in the workplace would be of some value in some instances since employability skill acquisition may depend on the types of jobs students pursue.

One final possibility for a study involves the link between character education, especially reinforced in elementary schools, and employability skill training programs. Many of the soft skills deemed necessary for workplace success, including teamwork, courtesy and work ethic, are also taught in character education programs. Are students more likely to acquire employability skills when they are exposed to character education programs in elementary school?

Summary

This research study began as a means to describe and compare the acquisition of employability skills of Career and Technical Education students. An essential question was asked, “What effect does an employability skills training program have on a student’s acquisition of the employability skills needed for workplace success?” The results demonstrated no significant differences between students who did and did not participate in the employability skills training program. However, Cooperative Education students were more positive than Non-Participating students on both the pre-test and post-test. Nonetheless, the researcher has accepted the null hypothesis indicating the same.

Although the results of this study did not support the idea that participating in an employability skills training program would have a positive effect on the acquisition of these skills, researchers may want to further investigate employability skill acquisition, especially curricula, employability skill alignment with occupations, and data collection

instruments. Additionally research is necessary to determine the most effective approach in teaching the nation's work force to succeed in a flat world. All high school students, regardless of their social and/or academic status, career goals, and post secondary plans share a common bond. They will all some day be contributors toward a global economy. America's success in that global economy depends on the ability of its workforce to master and retain employability skills.

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APPENDIX 1

Data Collection Instrument: Cooperative Education Students

Employability Skills Survey Instrument: **FCCTC-Cooperative Education Students**

General Information

The questions in this survey are designed to determine the acquisition of employability skills of Cooperative Education students who attend the Franklin County Career and Technology Center (FCCTC) in Chambersburg, Pennsylvania. An identification number appears on the survey. Only the researcher can match this code number with a name. This allows for follow-up mailings, if necessary. Once all of the information is gathered, the paper listing student names will be shredded.

There is no such thing as a right or wrong answer. It is important to answer every question since partially completed surveys cannot be used in this research study. The survey responses will be evaluated as a group and not individually; the results of this survey will be treated with strict confidentiality. No teacher, school official, perspective or current employer will see any completed surveys. After the researcher's work is finished, the surveys will be shredded.

Directions

1. Part A: answer question "I" by circling the appropriate response.
2. Part B: answer questions 1 through 31 by circling the appropriate response.
3. Part C: place your responses directly on the page in the spaces provided.
4. When finished, please check that you have responded to all questions and return the survey to the proctor.

PART A

Please respond to the following statement by circling YES or NO.

I. Do you believe an Employability Skills Training program prepares Cooperative Education students for workplace success?

YES

NO

PART B

Please respond to statements 1-31 by circling the letter which BEST represents your beliefs regarding the skills necessary to be successful in the workplace.

Code: SA: Strongly Agree
A: Agree
U: Undecided
D: Disagree
SD: Strongly Disagree

I believe I can:

WORK ETHIC DOMAIN

- | | | | | | |
|-----------------------------|----|---|---|---|----|
| 1. Arrive on time for work. | SA | A | U | D | SD |
| 2. Attend work regularly. | SA | A | U | D | SD |
| 3. Be trusted. | SA | A | U | D | SD |

COURTESY DOMAIN

- | | | | | | |
|--|----|---|---|---|----|
| 4. Be honest with others. | SA | A | U | D | SD |
| 5. Be courteous when working with others. | SA | A | U | D | SD |
| 6. Pay attention to people who are speaking. | SA | A | U | D | SD |

TEAMWORK DOMAIN

- | | | | | | |
|--|----|---|---|---|----|
| 7. Work cooperatively with others as part of a team. | SA | A | U | D | SD |
|--|----|---|---|---|----|

8. Work effectively with people from different backgrounds. SA A U D SD

9. Ask for help when needed. SA A U D SD

LIFELONG LEARNING DOMAIN

10. Adapt to change. SA A U D SD

11. Learn new knowledge and skills. SA A U D SD

12. Develop goals. SA A U D SD

13. Develop new ideas. SA A U D SD

SELF DISCIPLINE-SELF CONFIDENCE DOMAIN

14. Maintain a positive view of myself. SA A U D SD

15. Demonstrate self control. SA A U D SD

16. Manage my time effectively. SA A U D SD

17. Learn from mistakes. SA A U D SD

CONFORMITY TO PREVAILING NORMS DOMAIN

18. Work towards agreement with others. SA A U D SD

19. Follow workplace rules SA A U D SD

20. Follow assigned directions. SA A U D SD

PROBLEM SOLVING DOMAIN

21. Recognize problems. SA A U D SD

22. Create a plan of action to solve problems. SA A U D SD

23. Implement a plan of action to solve problems. SA A U D SD

24. Learn from mistakes. SA A U D SD

LANGUAGE PROFICIENCY DOMAIN

25. Communicate information orally. SA A U D SD

26. Communicate information in writing. SA A U D SD

27. Understand written information in books and documents including graphs, manuals and schedules. SA A U D SD

28. Apply written information in books and documents including graphs, manuals and schedules. SA A U D SD

TECHNICAL LITERACY DOMAIN

29. Use technology to communicate with others. SA A U D SD

30. Learn to use emerging technologies. SA A U D SD

31. Adapt to changes in technology. SA A U D SD

APPENDIX II

Data Collection Instrument: Seniors

Employability Skills Survey Instrument: **Seniors Enrolled at FCCTC**

General Information

The questions in this survey are designed to determine the acquisition of employability skills of seniors who attend the Franklin County Career and Technology Center (FCCTC) in Chambersburg, Pennsylvania. An identification number appears on the survey. Only the researcher can match this code number with a name. This allows for follow-up mailings, if necessary. Once all of the information is gathered, the paper listing student names will be shredded.

There is no such thing as a right or wrong answer. It is important to answer every question since partially completed surveys cannot be used in this research study. The survey responses will be evaluated as a group and not individually; the results will be treated with strict confidentiality. No teacher, school official, perspective or current employer will see any completed surveys. After the researcher's work is finished, the surveys will be shredded.

Directions

5. Part A: answer questions 1 through 31 by circling the appropriate response.
6. Part B: place your responses directly on the page in the spaces provided.
7. When finished, please check that you have responded to all questions and return the survey to the proctor.

PART A

Please respond to statements 1 through 31 by circling the letter which BEST represents your beliefs regarding the skills necessary to be successful in the workplace.

Code: SA: Strongly Agree
A: Agree
U: Undecided
D: Disagree
SD: Strongly Disagree

I believe I can:

WORK ETHIC DOMAIN

- | | | | | | |
|-----------------------------|----|---|---|---|----|
| 1. Arrive on time for work. | SA | A | U | D | SD |
| 2. Attend work regularly. | SA | A | U | D | SD |
| 3. Be trusted. | SA | A | U | D | SD |

COURTESY DOMAIN

- | | | | | | |
|--|----|---|---|---|----|
| 4. Be honest with others. | SA | A | U | D | SD |
| 5. Be courteous when working with others. | SA | A | U | D | SD |
| 6. Pay attention to people who are speaking. | SA | A | U | D | SD |

TEAMWORK DOMAIN

- | | | | | | |
|---|----|---|---|---|----|
| 7. Work cooperatively with others as part of a team. | SA | A | U | D | SD |
| 8. Work effectively with people from different backgrounds. | SA | A | U | D | SD |
| 9. Ask for help when needed. | SA | A | U | D | SD |

LIFELONG LEARNING DOMAIN

10. Adapt to change.	SA	A	U	D	SD
11. Learn new knowledge and skills.	SA	A	U	D	SD
12. Develop goals.	SA	A	U	D	SD
13. Develop new ideas.	SA	A	U	D	SD

SELF DISCIPLINE-SELF CONFIDENCE DOMAIN

14. Maintain a positive view of myself.	SA	A	U	D	SD
15. Demonstrate self control.	SA	A	U	D	SD
16. Manage my time effectively.	SA	A	U	D	SD
17. Learn from mistakes.	SA	A	U	D	SD

CONFORMITY TO PREVAILING NORMS DOMAIN

18. Work towards agreement with others.	SA	A	U	D	SD
19. Follow workplace rules.	SA	A	U	D	SD
20. Follow assigned directions.	SA	A	U	D	SD

PROBLEM SOLVING DOMAIN

21. Recognize problems.	SA	A	U	D	SD
22. Create a plan of action to solve problems.	SA	A	U	D	SD
23. Implement a plan of action to solve problems.	SA	A	U	D	SD
24. Learn from mistakes.	SA	A	U	D	SD

LANGUAGE PROFICIENCY DOMAIN

25. Communicate information orally.	SA	A	U	D	SD
26. Communicate information in writing.	SA	A	U	D	SD
27. Understand written information in books and documents including graphs, manuals and schedules.	SA	A	U	D	SD
28. Apply written information in books and documents including graphs, manuals and schedules.	SA	A	U	D	SD

TECHNICAL LITERACY DOMAIN

29. Use technology to communicate with others.	SA	A	U	D	SD
30. Learn to use new technologies.	SA	A	U	D	SD
31. Adapt to changes in technology.	SA	A	U	D	SD

PART B

Directions: Please complete the following by marking your responses in the space provided.

1. Gender: (circle one): Male Female

2. Career Major: (circle one):

- | | |
|----------------------------------|--------------------------------------|
| Agricultural Mechanics | Allied Health |
| Automotive Technologies | Auto Body |
| Carpentry | Computer Technologies |
| Cosmetology | Culinary Arts |
| Diesel Mechanics | Distribution Technology |
| Electronics Related Technologies | Electrical Occupations |
| Graphic Communications | Heating-Ventilation-Air-Conditioning |
| Landscaping and Horticulture | Machining Related Technologies |
| Marketing | Masonry |
| Pre-Engineering | Plumbing |
| Welding | |

3. Grade Point Average: (circle the range that best describes your overall performance in high school to date):

4.0 to 3.0 3.0 to 2.0 2.0 to 1.0 Below 1.0

4. Post Graduation Plans: (using a scale of 1 through 5, with 1 being most likely and 5 being least likely, rank each of the choices below):

- _____ Enter the workforce directly upon graduating from high school
- _____ Attend a Community College or 2 year postsecondary institution
- _____ Attend a Technical School
- _____ Pursue Industry Certification
- _____ Attend a 4 year college or university

5. School District: (circle the one you attended this school year):

Chambersburg	Waynesboro	Shippensburg
Fannett-Metal	Tuscarora	Greencastle-Antrim

APPENDIX III

Data Collection Instrument: Employers

Employability Skills Survey Instrument: Employers

General Information

The questions in this survey are designed to determine the acquisition of employability skills of Cooperative Education students who attend the Franklin County Career and Technology Center (FCCTC) in Chambersburg, Pennsylvania. An identification number appears on the survey. Only the researcher can match this code number with a name. This will allow for follow-up mailings, if necessary. Once all the information is gathered, the paper containing business and industry names will be shredded.

There is no such thing as a right or wrong answer. It is important to answer every question since partially completed surveys cannot be used in this research study. The survey responses will be evaluated as a group and not individually; the results of this survey will be treated with strict confidentiality. After the researcher's work is finished, the surveys will be shredded.

Directions

8. Part A: answer question "I" by circling the appropriate response.
9. Part B: answer questions 1 through 31 by circling the appropriate response.
10. Please check that you have responded to all questions and return the completed survey in the enclosed self-addressed stamped envelope. Your response by _____ will be greatly appreciated.

PART A

Please respond to the following statement by circling YES or NO.

- I. Do you believe an Employability Skills Training program prepares Cooperative Education students for workplace success?
YES NO

PART B

Please respond to statements 1-31 by circling the letter which BEST represents your beliefs regarding the skills necessary to be successful in the workplace.

Code: SA: Strongly Agree
A: Agree
U: Undecided
D: Disagree
SD: Strongly Disagree

The FCCTC Cooperative Education students my organization employed during semester two of the 2007-2008 school year demonstrated the following employability skills:

WORK ETHIC DOMAIN

- | | | | | | |
|--------------------------------------|----|---|---|---|----|
| 1. Arrived on time for work. | SA | A | U | D | SD |
| 2. Attended work on a regular basis. | SA | A | U | D | SD |
| 3. Could be trusted. | SA | A | U | D | SD |

COURTESY DOMAIN

- | | | | | | |
|--|----|---|---|---|----|
| 4. Were honest with others. | SA | A | U | D | SD |
| 5. Were courteous when working with others. | SA | A | U | D | SD |
| 6. Paid attention to people who were speaking. | SA | A | U | D | SD |

TEAMWORK DOMAIN

- | | | | | | |
|--|----|---|---|---|----|
| 7. Worked cooperatively with others as part of a team. | SA | A | U | D | SD |
|--|----|---|---|---|----|

8. Worked effectively with people from different backgrounds. SA A U D SD

9. Asked for help when needed. SA A U D SD

LIFELONG LEARNING DOMAIN

10. Adapted to change. SA A U D SD

11. Acquired new knowledge and skills. SA A U D SD

12. Developed goals. SA A U D SD

13. Generated new ideas. SA A U D SD

SELF DISCIPLINE-SELF CONFIDENCE DOMAIN

14. Maintained a positive view of themselves. SA A U D SD

15. Demonstrated self control. SA A U D SD

16. Managed their time effectively. SA A U D SD

17. Learned from mistakes. SA A U D SD

CONFORMITY TO PREVAILING NORMS DOMAIN

18. Worked towards agreement with others. SA A U D SD

19. Followed workplace rules. SA A U D SD

20. Followed assigned directions. SA A U D SD

PROBLEM SOLVING DOMAIN

21. Recognized problems. SA A U D SD

22. Created a plan of action to solve problems. SA A U D SD

23. Implemented a plan of action to solve problems. SA A U D SD

24. Learned from mistakes. SA A U D SD

LANGUAGE PROFICIENCY DOMAIN

25. Communicated information orally.	SA	A	U	D	SD
26. Communicated information in writing.	SA	A	U	D	SD
27. Understood written information in books and documents including graphs, manuals and schedules.	SA	A	U	D	SD
28. Applied written information in books and documents including graphs, manuals and schedules.	SA	A	U	D	SD

TECHNICAL LITERACY DOMAIN

29. Used technology to communicate with others.	SA	A	U	D	SD
30. Learned to use emerging technologies.	SA	A	U	D	SD
31. Adapted to changes in technology.	SA	A	U	D	SD