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An analysis of the essential components of school-to-work transition projects in selected business and education partnerships

Jocelyn Lee Booth
Loyola University Chicago

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**AN ANALYSIS OF THE ESSENTIAL COMPONENTS OF
SCHOOL-TO-WORK TRANSITION PROJECTS
IN SELECTED BUSINESS AND EDUCATION PARTNERSHIPS**

by
Jocelyn Lee Booth

A Dissertation Submitted to the Department of Educational
Leadership and Policy Studies of Loyola University of Chicago
in Partial Fulfillment of the Requirements for the
Degree of Doctor of Education

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U.S. Department of Labor's Office of Work-Based Learning

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National Alliance of Business, Regional Office, Chicago, Illinois

The Project Directors and the Key Personnel of the School-to-Work Transition Demonstration Projects awarded by the U.S. DOL, 1990

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THIS DISSERTATION IS DEDICATED TO MY FAMILY

To my mother and father
for instilling the pursuit of excellence

To my daughters, Sarah and Jennifer,
to whom I impart this quest for excellence

To my husband, David,
for his love and encouragement

VITA

The author, Jocelyn Lee Gruben Booth, is the daughter of Robert Peter and Jacquelyn Jean (Waldman) Gruben. She was born September 4, 1948 in Joliet, Illinois.

Her elementary education was obtained from the Cathedral of St. Raymond School, Joliet, Illinois. Her secondary education was completed in 1966 at Staint Francis Academy, in Joliet Illinois. Jocelyn completed a Bachelors of Arts degree in May of 1972 from the School of Speech, Marquette University, Milwaukee, Wisconsin. In February of 1977, she completed a Master of Education degree from the Graduate School of Education, Loyola University, Chicago, Illinois.

Jocelyn has been in the field of education for twenty-one years. For thirteen years, she taught reading in elementary and middle schools, and reading, English, and speech in high school. Jocelyn is completing her ninth year as an administrator. She has served as middle school dean of students, high school assistant principal, K-12 district staff-development and curriculum coordinator, and K-12 district gifted coordinator. Currently she is the principal of the Davea Career Center, Addison, Illinois.

She has made professional presentations in reading and in business/education partnerships. Since 1991, she has made the following presentations:

- 1991 National Alliance of Business National Conference - Washington, D.C.: "Transitioning Students from School-to-Work"
- 1992 Tech Prep Consortium Summer Institute - E. C. Missouri College: "Business and Education Partnerships: How to Make Them Work"
- 1992 National Tech Prep Conference - Chicago, Illinois: "Tech Prep - Helping Students Make a Quality Connection"
- 1993 Midwest Leadership Conference - University of Wisconsin - Madison: "Connecting Education and Work: The Challenge of Systemic Change"

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CHAPTER I

INTRODUCTION TO THE STUDY

NEED FOR THE STUDY

The challenges of global competition have focused America's attention on how we educate the American worker. In 1983, the National Commission on Excellence in Education called the U.S. a "nation at risk."¹ A 1987 report from The Hudson Institute's Workforce 2000 indicated that demographic changes, the decline in the youth population, and the technological changes in the work place have widened the gap between employer needs and workforce skills. The U.S. Department of Labor launched Apprenticeship 2000 in 1987 to ascertain the role the apprenticeship concept might play in raising the skill levels of the workforce; this initiative showed work-based learning to be a key component of effective school-to-work transition and apprenticeship to be an effective method for connecting students with the workforce. In 1988, the William T. Grant Foundation Commission concluded that the American educational system prepares students for college entrance and that the educational needs of students whom they termed "the forgotten half" are neglected.²

The 1989 President's Education Summit with Governors made a commitment to restructure the American educational system. President Bush challenged the Secretaries of Labor and Education to strengthen the connection between education and work. The Secretary of Labor responded by appointing the Secretary's Commission on Achieving

-
- 1 National Commission on Excellence in Education, *A Nation at Risk: The Imperative for Educational Reform* (Washington, D.C.: U.S. Government Printing Office, 1983).
 - 2 Youth and America's Future: The William T. Grant Foundation on Work, Family and Citizenship, *The Forgotten Half, Pathways to Success for America's Youth and Young Families* (Washington, D.C.: , 1988).

Necessary Skills (SCANS) to define the skills needed for employment³ and by offering grants to develop school-to-work transition projects. In 1990, the Commission on the Skills of the American Workforce concluded that America would become a second-rate economic power unless business increased our productivity growth.⁴ This commission felt that schools must do a better job of preparing students for work if our national productivity was to increase.

Also in 1990, the Department Of Labor awarded school-to-work transition grants intending to reform educational practices preparing America's future workforce; the six grantees developed business-driven initiatives that form partnerships with education.

In 1992, the Council of Chief State School Officers disseminated DOL funds to six states, including California, Iowa, Maine, Michigan, Oregon, and Wisconsin.⁵ Also in 1992, five of the original six organizations were awarded continuation grants, although two did not have all of their project sites renewed. DOL awarded Youth Apprenticeship Grants to ten new organizations in addition to the five DOL Continuation Grants.⁶ It is important to study these reform initiatives to identify the essential components of successful school-to-work projects. In this way, models may emerge that can be replicated and widely disseminated to institutionalize educational reform.

3 The Secretary's Commission on Achieving Necessary Skills, *What Work Requires of Schools* (Washington, D.C.: U.S. Department of Labor, 1991).

4 Commission on the Skills of the American Workforce, *America's Choice: High Skills or Low Wages* (Rochester, N.Y.: National Center on Education and the Economy, 1990).

5 "Department of Labor Awards Grants to Six States," Student Apprenticeship News, 4 (1992), p. 6.

6 *National Youth Apprenticeship 1992 Demonstration Sites*, (Washington, D.C.; U.S. Department of Labor, 1992).

PURPOSE OF THE STUDY

The purpose of this study is to analyze the essential components of the six Department Of Labor School-to-Work projects funded at nine sites. The study focused on an analysis of the five major points that follow:

- how the projects enable students to enter industry-based career paths;
- how work-based and school-based learning integrate;
- how the findings of SCANS can be integrated into an industry-based curriculum that is jointly developed and delivered in conjunction with education;
- what perceptual differences exist between business and education that can impact school-to-work transition projects; and
- what systemic changes must occur within business and education so reform in current educational practices will better prepare our future workforce.

DESCRIPTION OF THE DOL PROJECTS

Six grants were awarded by the U.S. Department of Labor in 1990. These grants funded nine sites nationwide administered by six Project Directors. The grants were awarded to the:

- Boston Private Industry Council - Boston, Massachusetts
- Electronic Industries Foundation - Washington, D.C.
- Los Angeles Unified School District - Los Angeles, California
- Maryland Department of Economic and Employment Development - Baltimore, Maryland
- National Alliance of Business - Washington, D.C.
- Pennsylvania Department of Commerce - Harrisburg, Pennsylvania

ProTech, the Boston Private Industry Council's project, was awarded \$972,526 to transition students into the health-care industry. The project's goal is to restructure traditional high school program offerings. Program participants include the Boston Public Schools, Bunker Hill Community College, Jobs for the Future, the New England Medical Center, Massachusetts General Hospital, and Boston City Hospital. Students participate in school-based and work-based learning, and they were paid employees of one of three participating hospitals. Successful participants receive an Associate's degree from Bunker Hill Community College and obtain a professional credential indicating certification in a health-care field.

Electronic Industry, the Electronic Industries Foundation's project in Wayne, New Jersey, was awarded \$203,787 to transition students into the electronic industry. The project goal is to educate the electronics industry's future workforce by supplementing public school instruction in science, math, and technology. Program participants include the Electronic Industries Foundation and Passaic County Technical and Vocational High School. Students participate in school-based learning during high school. Successful participants receive a high school diploma and entry into the electronics industry.

Workforce LA Youth Academy, the Los Angeles Unified School District's project, was awarded \$709,766 to transition students into the workforce in the telecommunications, banking, and public service industries. The project's goal is to restructure the educational system to assure student success in school and in the workforce. Project participants include the LA Unified School District, Pacific Bell, Security Pacific Corporation, the City of Los Angeles, and the Los Angeles Community College District. Students participate in school-based and work-based learning, and they were paid employees. Successful participants receive a high school diploma and were linked with post-secondary educational opportunities and employment.

Project Mech Tech, Tech Prep Plus, and Maryland's Tomorrow, the three Maryland Department of Economic and Employment Development projects, were awarded a total of \$379,514 to fund three sites.

Project Mech Tech, centered in metropolitan Baltimore, was created to prepare secondary students for careers in manufacturing technology. Students rotate among participating employers for work-based learning while pursuing technical education at a community college.

Tech Prep Plus, located in suburban and rural southern Maryland, was created to test replacing high school general education courses with courses that offer a technical-skills career path. School-based and work-based learning were interfaced with the community college, and so students have the option of obtaining employment after graduation or choosing post-secondary education.

Maryland's Tomorrow, located in rural Carroll County, was created to prevent at-risk-students from dropping out of high school. The program was designed to help students narrow the focus of career choices and develop employability traits. School-based learning occurs through career awareness, whereas work-based learning occurs through job shadowing, visits to employer facilities, and short term work assignments.

The Quality Connection, the National Alliance of Business's project, was awarded \$437,978 to fund sites in San Francisco and in Chicago.

Together In Education was developed to explore aligning school curricula with the needs of the banking industry as well to provide work-based learning within the San Francisco banking industry. Program participants include the Bank of America and Mission High School. Students were paid entry-level salaries and work with mentors during work-based learning. Successful participants graduate from high school and obtain entry-level employment.

The DuPage County School-to-Work Transition Project was developed to provide Chicago suburban students with full-time structured employment in appliance repair between their junior and senior year of high school and part-time employment during the school year. Program participants include Sears, Roebuck and Company and the DuPage Area Occupational Education System. On-the-job training under the supervision of an experienced technician adds to school-based learning. Successful participants graduate from high school and obtain entry-level employment in appliance repair.

Pennsylvania Youth Apprenticeship Program, the Pennsylvania Department of Commerce project, was awarded \$496,250 to develop a state-wide network linking the education system to employers in the metalworking industry in Pittsburgh, Philadelphia, Erie, and York-Lancaster. The four-year curricula integrates school-based and work-based learning beginning in grade 11. Students were paid training wages during work-based learning. Successful participants earn a high school diploma, post secondary articulated credit, and certification of competencies in entry-level metalworking skills.

MEANS OF DATA COLLECTION AND ANALYSIS

A qualitative approach after M. Q. Patton was used in this study to collect and analyze data because it allowed “important dimensions to emerge from analysis of the cases under study without presupposing in advance what those important dimensions will be.”⁷ Patton defines qualitative data as “detailed descriptions of situations, events, people, interactions, and observed behavior; direct quotations from people about their experiences, attitudes, beliefs, and thoughts; and excerpts or entire passages from documents, correspondence, records and case histories.”⁸

The primary data collection techniques used for this multi-site study were analysis of written project reports and interviews with project personnel. Glaser’s constant comparative method⁹ was used to code and analyze data to generate developmental theory. According to Glaser, this process consists of the following steps:¹⁰

- comparing incidents applicable to each category;
- integrating categories and their properties;
- delimiting the theory; and
- writing the theory.

7 M.Q. Patton, Qualitative Evaluation Methods (Beverly Hills: Sage Publications, 1980), p. 41.

8 Ibid., p. 22.

9 B. Glaser and A. Strauss, The Discovery of Grounded Theory: strategies for qualitative research (New York: Aldine Publishing Company, 1967), p. 114.

10 Ibid., p.105.

The information obtained from project bimonthly and annual reports and the interviews of project Key Personnel was coded into categories. As the coding occurred, incidents were simultaneously compared with previous incidents in the same category. The categories and properties were analyzed and summarized in terms of similarities and differences. Comparisons were made that generated theoretical properties of the categories, and theory developed from the integration of different categories and properties. These comparisons were made within sites, across-sites, and between educators, business representatives, and third-party representatives.

Twenty coding categories were developed to analyze the data; these were correlated with the five broad study areas. The data were mechanically sorted by the "cut-up-and-put-in-folders approach" suggested by Bogdan and Biklen for a qualitative study.¹¹ The contents of each folder were studied to discover patterns and themes, they were analyzed and summarized in terms of similarities and differences, and they were synthesized into a written statement.

Mertz has indicated that researchers must engage in "... self-analysis in order to discover the ways in which their culture and individual biases might shape the behavior of those with whom they interact, their understanding of that behavior, or their account of it."¹² According to Mertz, ethnographers have a responsibility to give a reasonable account of the research process to readers, allowing the readers to draw their own conclusions about the sources of bias. It is therefore important for the readers to know that the author of this study is an educator and has played an active role in one of the school-to-work projects analyzed by this study: the Chicago site of the National Alliance of Business grant. The author is Assistant Director at the Davea Career Center, which housed the project, and she has the responsibility of supervising the Repair Technician Program developed in collaboration with Sears Roebuck and Co. and the DuPage Area Occupational Educational System. To help

11 R. Bogdan and S. Biklen, Qualitative Research for Education An Introduction to Theory and Methods (Boston: Allyn and Bacon, Inc., 1982), p. 166-169.

12 M. H. Mertz, "What can be Learned from Educational Ethnography?," Urban Education, 17 (1983), p. 394.

eliminate bias, the author of this study interviewed another Davea administrator who assumed the role of Key Personnel representing education for this NAB project.

A second method of controlling bias was the use of triangulation, defined as a process which may be used to “guard against the accusation that a study’s findings are simply an artifact of a single method, a single data source, or a single investigator’s bias.”¹³ Triangulation occurred within this study by comparing and cross-checking the consistency of information gathered from several different data sources. The DOL’s Office of Work-Based Learning provided project descriptions, bi-monthly reports, and annual reports for analysis, and this information was cross-checked. It also was cross-checked with the information synthesized from interviews of project personnel, including Project Directors, key business personnel, and key education personnel.

PROCEDURES FOR THE INTERVIEWS

The Project Directors administering the six grants were contacted and asked to identify two individuals per project that were the leaders of a collaborative between business and education. One of these individuals was to represent the interests of business and the other the interests of education; a Project Director might act as one of these individuals if necessary. Together with the Project Directors, these individuals became the Key Personnel interviewed for this study.

An interview was conducted with each of the Key Personnel for all nine projects. The 20 questions used in each interview emerged from reviewing the literature and analyzing the DOL reports. These are provided in Appendix A of Chapter 5.

¹³ M.Q. Patton, Qualitative Evaluation Methods (Beverly Hills: Sage Publications, 1980), p. 332.

STATEMENT OF THE PROBLEM

This study identified and analyzed successful programs, as reported by the respondents relating to the transition of students from school into the world of work.

The Secretary of Labor was commissioned by President Bush to restructure the American educational system. The U.S. Department of Labor responded by appointing the Secretary's Commission on Achieving Necessary Skills (SCANS), which outlined the skills students need to learn to be successful in the workforce. In addition, the DOL created School-To-Work Transition Grants: business-driven initiatives that formed partnerships with education to prepare America's future workforce. These research and development grants, which were awarded to develop and/or test school-to-work models that could be replicated and disseminated to institutionalize educational change, formed the basis of this study.

DEFINITION OF TERMS

At-Risk Student Population - young people in danger of dropping out of high school prior to graduation.

Basic Academic Skills - knowledge obtained from the study of English, math, reading, science and social studies.

Career Path - cluster of job opportunities within a given field of employment.

Career Ladder - systematic progression of job opportunities within a specific field of employment.

Competencies - essential skills that must be mastered to be proficient within a specific occupation. They are outlined by industry and are integrated into work-based and school-based learning activities.

DOL - the U.S. Department of Labor.

Forgotten-Half - the student population not preparing to enter college.

Employability Traits - affective skills that enable a student to be an ideal employee. Referred to by the SCANS report as Personal Qualities, they include responsibility, self-esteem, sociability, self-management, integrity, and honesty.

Industry-Based Curriculum - educational materials developed to meet a particular industry's employment needs.

Key Personnel- the Project Directors and the leaders of a collaborative, one representing business and the other representing education.

Mentor - work-site employee who works one on one with the student during their structured work-based learning experience.

OJT - on-the-job training that occurs while the student is employed. It is designed to enhance school-based learning under the direct supervision of an experienced worker.

Project Directors - designated administrators from organizations that have obtained a DOL School-to-Work Transition Grant.

SCANS Skills - competencies needed for students to become productive members of the workforce. Identified by the Secretary's Commission on Achieving Necessary Skills, they include basic skills, thinking skills, and personal qualities. The basic skills consist of reading, writing, arithmetic, mathematics, listening and speaking. The thinking skills include creative thinking, decision making, problem solving, seeing things in the mind's eye, knowing how to learn, and reasoning. The personal qualities include responsibility, self-esteem, sociability, self-management, and integrity/honesty.

School-Based Learning - education that occurs in school and combines applied academics with conceptual knowledge of industry-based skills.

School-to-Work Transition - process of changing from the state of being a student into that of being a productive member of the workforce.

Systemic Change - major modification to standard operating procedure.

Thinking Skills - knowledge that enables student to diagnosis problems and develop solutions. As defined by SCANS, thinking skills include creative thinking, decision making, problem solving, seeing things in the mind's eye, knowing how to learn, and reasoning.

Transitioning - verb form of transition that does not formally exist. In this study, transitioning means the act of moving from school to the workforce.

Vocational/Academic Learning - education that integrates the application of basic skill knowledge with real life experiences.

Work-Based Learning - education that occurs on the job. It gives students the opportunity to apply conceptual education and basic academic skill obtained in school to "real life" situations in the workforce.

Workforce - the collective group that is employed in various occupations.

OVERVIEW OF THE STUDY

This study reviewed the related literature and research on school-to-work transition. It related the research to the DOL School-To-Work Transition Grant projects. Bi-monthly and annual reports from each project to the DOL were analyzed along with data obtained from interviewing the Project Directors and other Key Personnel. The essential components of school-to-work transition data were summarized, conclusions were drawn, and recommendations and suggestions for further study were made.

LIMITATIONS OF THE STUDY

The study is limited to the six projects awarded School-To-work Transition Grants from the U.S. Department Of Labor. Sites for these projects, which represent different industry-based career paths, were in urban, suburban and rural settings on both East and West coasts and in the Midwest. Some students served by these projects would transition into the workforce upon high school graduation and complete additional education within the company for which they work. Other students would go on to post-secondary education and then into the workforce. The most challenging aspect of the study was the diversified nature of the transition projects.

CHAPTER II

REVIEW OF THE LITERATURE

A comprehensive exploration of the literature, through both computer searches and manual methods, produced a number of articles, dissertations, and studies relevant to school-to-work transition. This survey revealed that the Educational Reform movement of the 1980s was the catalyst for the U.S. Department Of Labor's School-to-Work Transition Grants. In order to understand how America became a "nation at risk," it was necessary to understand how America's productivity rate and mass-production economy influenced our business and educational systems, and how business-led educational reform initiatives offer possible solutions to America's current reform dilemma.

Chapter II is divided into three sections: An Overview of the Educational Reform Movement, Findings of Business-led Educational Reform Initiatives, and An Outline of Conceptual School-to-Work Transition Models.

AN OVERVIEW OF THE EDUCATIONAL REFORM MOVEMENT

The decline in America's productivity became a national concern in the 1970s. Business and government reacted by questioning the way educate our future workforce. Special commissions were appointed to determine how our educational system should prepare our future workforce so that America would continue to set the world standard in productivity.

The findings of several commissions influenced the educational reform movement.

Productivity is the competitive standard of the mass production economy. The Dutch were the world's first productivity leaders, setting the pace beginning in 1700. The British surpassed the Dutch

in 1785, and the U.S. took the productivity lead from the British in the 1890s.¹⁴

The goal of a mass production economy was to simplify and increase productivity to provide large quantities at low cost. The autonomous artisan of the pre-industrial craft economy became a dependent employee who worked for an organization. Jobs were organized into segmented hierarchies controlled by bureaucrats. The job rather than the skill or output of an individual dictated economic gain. The mass production model was integrated in agriculture, manufacturing and mining. The craft and service work were difficult to mass produce but continued during the mass production era primarily in the apprenticeable trades.¹⁵

American productivity peaked after World War II. Production during the war built an excellent manufacturing infrastructure. The following facts demonstrated American postwar success:

- In 1947, the United States produced half the world's manufactured goods, 57% of its steel, 43% of its electricity, and 63% of its oil.
- Also in 1947, U.S. citizens owned three-fourths of the world's cars, and U.S. companies manufactured 80% of the cars built.
- By the 1950's, most of the world's gold supply was safely stored in Fort Knox.¹⁶

America and the rest of the industrialized nations have experienced a serious decline in their productivity rate since the mid 1970s. The mass production economic era has past and is evolving into a new economic era.

The New Economy... retains the volume and productivity standards of mass production and marries them to the craft standards of quality, variety, customization, connivance and timeliness. A notable difference is that autonomous artisans and anonymous mass production workers are replaced by interdependent work teams.¹⁷

The new economy challenges business and education to incorporate the craft standards of quality, variety, customization, connivance and timeliness into their standard operating procedure. Business and

14 C. Grayson and C. O'Dell, American Business: A Two-Minute Warning (N.Y.: The Free Press, A Division of Macmillan, Inc., 1988), p. 61.

15 Ibid.

16 A. Carnevale, Jobs for the Nation: Challenges for a Society Based on Work (Alexandria, Va.: American Society for Training and Development, 1985), p. 44.

17 A.P. Carnevale America and the New Economy (Washington, D.C.: The Department of Labor, 1991), p. 4.

education must work together to answer the challenge of the productivity slowdown.

The productivity slowdown manifested itself in the U.S. during the 1970s, in the form of “teenage and youth unemployment.”¹⁸ Teenage unemployment initiated a national challenge to discover the cause of our productivity decline and to create the method and means to address the cause of this decline. The following gives an overview of the evolution of thought that occurred over a period of two decades 1970 -1990, as government, business, education and labor began to work together to discover a solution to our American dilemma.

The alarm over teenage and youth unemployment, which preoccupied public policy in the 1970s, was replaced in the 1980s by worry about the insufficient supply of qualified young workers. This new concern was prompted not only by the diminishing size of the youth cohort but also their knowledge, skills, and attitudes. By the end of the 1980s, corporate spokesmen, academics, public officials, and the media had research consensus that restoring American competitiveness required major improvements in the preparation of young workers. As the 1990s unfold, there are signs of a new kind of policy emerging, one that addresses supply and demand together in a coordinated fashion. The essential idea is that improvement must occur in employees’ skills and in the organization of work. Employers concerned about the shortage of workers for the new workplace are increasing their investment in partnerships with local schools. Some of these are opening up more jobs for students, with supportive supervision, so that students can understand and learn to meet expectations for high performance. Some business-school partnerships are also reaching into the school itself and producing major changes in curriculum. Local collaboration of this kind, producing changes on both sides of the school/work boundary, is a hallmark of the evolving new policy.¹⁹

The possibility of America losing the world standard productivity rate has led to myriad of national studies to determine the cause of our productivity decline. In 1983 the National Commission on Excellence in Education called the U.S. a “nation at-risk” which gave rise to the Educational Reform Movement.

During the 1980s several commissions studied and identified rationale

18 Office of Vocational and Adult Education, Combining School and Work: Options in High Schools and Two-Year Colleges (Washington, D.C.: U.S. Department of Education, 1991), p. 1.

19 Ibid., pp. 1-2.

for the decline of our productivity rate and proposed solutions. The government enacted federal and state funding to address the identified needs. The following includes a chronological presentation of what occurred during the 1980s that led to the Department of Labor's funding the research and development projects that were designed to establish a more efficient way American youth can make the transition from school to the workforce. The DOL projects, that were funded in 1990, are the focus of Chapter III in this dissertation.

In 1982 the federal government enacted the Job Training Partnership Act (JTPA) which was designed to provide job training for economically disadvantaged youth and unskilled adults. The goal of the program was to guarantee permanent employment. One drawback of the JTPA program was that it was limited in scope and funded only 5% of those eligible for training.²⁰

In 1983, the National Commission on Excellence in Education led by Terrel H. Bell, U.S. Secretary of Education under President Reagan, and Ernest Boyer, U.S. Commissioner of Education under President Carter, stated in the opening paragraph of their report:

Our Nation is at risk. Our once unchallenged preeminence in commerce, industry, science, and technology innovation is being taken over by competitors throughout the world. What was unimaginable a generation ago has begun to occur - others are matching and surpassing our educational attainments.²¹

This report earmarked the beginning of the Educational Reform. In 1988, Bell was not satisfied with the progress of the reform movement; he stated in an article that: "We cannot truly reform U.S. education until its failures become a national obsession because of the threatening consequences."²²

The first reform wave occurred between 1983-1986. The goal of the first wave was to insure quality in education by increasing expectations and assessment measures. During that time teachers were challenged to do more with less, due to the 3.1% drop in federal funding. The states were challenged to produce model curricula, implement testing programs,

20 C. Carlson, "Beyond High School: The Transition to Work," *Focus*, 25 (1990), p. 9.

21 National Commission on Excellence in Education, *A Nation at Risk: The Imperative for Educational Reform*, (1983), p. 5.

22 T. Bell "On the Need for National Leadership to Make American Education Work," *Phi Delta Kappan*, 70 (1988), p. 10.

mandate academic and graduation requirements, and change teacher certification requirements.²³

In 1987, Workforce 2000 indicated that the demographic changes, the decline in youth population and technological changes in the workplace have widened the gap between employer needs and workforce skills. Five demographic changes were outlined in the report:

- The population and the workforce will grow more slowly than at any time since the 1930s.
- The average age of the population and the workforce will rise, and the pool of young workers entering the labor market will shrink.
- More women will enter the workforce.
- Minorities will be a large share of the new entrants into the labor force.
- Immigrants will represent the largest share of the increase in the population and the workforce since the first World War.²⁴

The report stressed the importance of improving workers education and skills as we move into the post-industrial era.

As the society becomes more complex, the amount of education and knowledge needed to make a productive contribution to the economy becomes greater...Between now and the year 2000, for the first time in history, a majority of all new jobs will require post-secondary education.²⁵

In 1988, the W.T. Grant Foundation released the findings of the Commission on Work, Family and Citizenship. The Commission named 20 million non-college-bound young people "the forgotten half." as they concluded that the American educational system prepares students for college entrance.²⁶ The Commission suggested the four major strategies enumerated below to successfully guide these 20 million young people into the adult world.

23 D. Bragg and C. Kirby, "A New Age of Accountability," Update on research and leadership, 5 (1992), p. 1.

24 W. B. Johnson and A. E. Packer, *Workforce 2000: Work and Workers for the 21st Century*, (1987), pp. 7-8.

25 *Ibid.*, p.15.

- Enhance the Quality of Youth-Adult Relationships

We recommend consideration of greater public support to ease the financial burden of raising children and adolescents and enhanced private sector understanding of the demands of family life. In particular, we suggest business and schools practice that is more responsive to working parents, and greater community support to strengthen relationships between young people, their parents, and other adults.

- Expand Community Supports and Opportunities for Service to all Young People

We recommend that our schools and communities create and revitalize community-based activities that concentrate on the developmental needs of youth, respond to young people's opinions and ideas, and involve youth in the planning and implementation of programs that serve them.

We recommend that schools and communities establish attractive service opportunities and make them available to all young people.

We recommend that public and private leaders cooperate to tap the great potential of the many national and community-based youth organizations for improving the lives of youth and young families.

We recommend that communities, through public and private cooperation, develop comprehensive and coordinated systems to ensure that all young people and their families have access the full array of developmental, and remedial services.

- Extend and Improve Employment and Training Opportunities

We recommend that state and national leaders act to encourage local government, business associations, and employers to expand education, training, and employment opportunities.

- Fair Chance: Better Youth Education and Training Policies

We propose specific legislation, entitled Fair Chance: Youth Opportunities Demonstration Act, to stimulate the development of an integrated approach to the education, training, and service needs for all youth. This recommendation is for the state-administered national demonstration, designed to increase access to post-high school education and training through financial aid, counseling, and academic support.²⁶

“ The challenge before us all is seeing the members of the Forgotten Half in a new light, one that recognizes their strengths, respects their diversity, and challenges their talents.”²⁷

26 Ibid., pp. 6-10.

27 Ibid., p. 10.

In 1989, Terrel Bell and Ernest Boyer co-authors of A Nation at Risk, addressed president-elect George Bush during the advisory session American Agenda: Report to the Forty-First President of the United States. Bell and Boyer made the following recommendations to Bush:

- Set practical goals for the nation. For example, return SAT scores to their 1963 levels and double enrollment of minority students.
- Strengthen early education. Slowly increase funding for Head Start to include all eligible children by the year 2000.
- Demand that the secretary of education evaluate programs for disadvantaged and immigrant students to see what works.
- Call for year-round schooling.
- Emphasize the need to attract and hold quality teachers. Offer new opportunities and incentives.
- Encourage technology literacy in teachers as well as students. Ask the secretary of education to create programs demonstrating the power of software and technology.²⁸

In 1989, the 34-member Commission on the Skills of the American Workforce, chaired by former Labor Secretaries William E. Brock and Ray Marshall, issued America's Choice: High Skills or Low Wages.²⁹ According to D. Bragg and C. Kirby of Update on Research and Leadership, "The commission found that the key to productivity improvement lies in the third industrial revolution, which has been brought on by the advent of the computer, high speed communication, and universal education."³⁰ The mass production era was driven by the bureaucracy of the "Taylor" method where managers did the thinking for and controlled a large group of workers. The mass production organization educated the managers but did not think it was necessary to educate the workforce. "Sadly, the commission found that 95% of United States' companies still employ old methods of organization, where the crucial skill needed by an

²⁸ "American Agenda: state of the nation's education," Brain/Mind Bulletin, (January 1989), p. 6.

²⁹ Commission on the Skills of the American Workforce, *America's Choice: High Skills or Low Wages* (Rochester, N.Y.: National Center on Education and the Economy, 1990).

³⁰ D. Bragg and C. Kirby, "The New Age of Accountability", (Winter 1992), p. 3.

employee is the ability to follow orders.”³¹

The commission stated the importance of abandoning the Taylor philosophy and for America’s focus to be the high performance work organization. These organizations empower their front-line workers to be responsible for quality control. The new era described by the commission is focused on productivity, quality, variety, and speed of new product introductions. The American educational system must change from the “Taylor” model along with business. Our educational system is designed to link students with post-secondary education rather than to transition them into the workforce.³²

The commission recommended fundamental changes for work and education if our country is to have a prosperous future. Their recommendations serve as a model to link a high quality American educational system to high performance work organizations.

- A new educational performance standard should be set for all students, to be met by age 16. This standard should be established nationally and benchmarked to the highest in the world.
- The states should take responsibility for assuring that virtually all students achieve the Certificate of Initial Mastery. Through the new Employment and Training Boards, states, with federal assistance, should create and fund alternative learning environments for those who cannot attain the Certificate of Initial Mastery in regular schools.
- A comprehensive system of Technical and Professional Certificates and associate’s degrees should be created for the majority of our students and adult workers who do not pursue a baccalaureate degree.
- All employers should be given incentives and assistance to invest in the further education and training of their workers and to pursue high productivity forms of work organizations.
- A system of Employment and Training Boards should be established by Federal and state governments, together with local leadership, to

³¹ Ibid.

³² Commission on the Skills of the American Workforce, *America’s Choice: High Skills or Low Wages*, (1990), p. 1-3 of the Executive Summary.

organize and oversee the new school-to-work training systems we propose.³³

Thirty-four business, government, and educational representatives met as the Commission on the Skills of the American Workforce. In addition to Secretaries Brock and Marshall, the Commission included former Governors James B. Hunt, Jr., of North Carolina and Thomas Kean of New Jersey, Apple Computer CEO John Sculley, Eastman Kodak CEO Kay R. Whitmore and labor leaders Owen Beiber and Edward J. Carlough.³⁴ The SCANS Commission concluded that America will become a second-rate economic power unless businesses dramatically boost productivity growth. Its report says this will not happen until schools do a better job of preparing young people for work.³⁵

In 1990, President Bush in partnership with our nation's governors announced the National Educational Goals, which were designed to close the gap between skills and knowledge. The President directed the U.S. Department of Education to design a strategy to meet the six National Education Goals by the year 2000. The National Education Goals are:

- All children in America will start school ready to learn.
- The high school graduation rate will increase to at least 90%.
- American students will leave grades four, eight, and twelve having demonstrated competency in challenging subject matter including English, mathematics, science, history, and geography; and every school in America will ensure that all students learn to use their minds well, so they may be prepared for responsible citizenship, further learning, and productive employment in our modern economy.
- U.S. students will be first in the world in science and mathematics achievement.
- Every adult American will be literate and will possess the knowledge and skills necessary to compete in a global economy and exercise the rights and responsibilities of citizenship.

33 Ibid., pp. 5-8.

34 J. Wilcox, "Tough," Vocational Education Journal, (1991), p. 16.

35 Ibid., p.17.

- Every school in America will be free of drugs and violence and will offer a disciplined environment conducive to learning.³⁶

In 1990, the U.S. Department of Education in partnership with the nation's governors developed a strategy to meet the six National Education Goals by the year 2000. The plan, which is called American 2000: An Educational Strategy, has four tracks, including:

- Establish world class standards for the five core subjects and implement voluntary nationwide examinations at specific grade levels.
- With the help of business and communities, establish 535 'New American Schools' by 1996. Teams designing these new schools are encouraged to 'set aside traditional assumptions about schooling and all the constraints under which conventional schools work.' The mission is to create not the physical structure, but the methods and an environment that facilitates meeting world class standards and National Education Goals.
- Because 85% of the workforce for the year 2000 is already out of school, expand and customize education and training in the workplace. Business and labor will be asked to establish standards and develop skill certificates to accompany them. Expansion of adult literacy assessment and education is a major part of this component.
- Become an America 2000 Community. Do so by:
 - adopting the 6 National Education Goals;
 - developing a community-wide strategy to achieve them;
 - designing a report card to measure results; and
 - planning for and supporting a New American School.³⁷

In 1990, the Carl D. Perkins Vocational and Applied Technology Education Act tied federal support for local vocational education programs to rekindling the United States' economic competitiveness in the world economy. The act requires that each state develop a statewide system of core standards and measures of performance for vocational programs. A State Committee of Practitioners should develop the standards and apply them to all programs receiving funds beginning with

³⁶ D. Bragg and C. Kirby, "The New Age of Accountability," (Winter 1992), p. 5.

³⁷ Ibid.

the 1992-1993 school year. Performance standards and measures must be used to evaluate the state vocational programs, including the following four components:

- Measures of learning and competency gains must be established including student progress in the achievement of basic and more advanced academic skills. Many are interpreting these in terms of gain scores achieved from test to post-test in academic subjects (e.g., reading, math, science).
- One or more measures of performance from the areas of :
 - competency attainment;
 - job or work skill attainment or enhancement, including occupational skills in fields in which students are being prepared for employment;
 - retention in school or completion of secondary school or its equivalent; and
 - placement in employment, further education or training, or the military.
- Incentives to encourage services to special populations and in methods consistent with the students' IEPs.
- Procedures for using existing resources and methods developed in other program receiving federal funds.³⁸

The goal of this Act is to improve the quality of vocational education in the areas of academic skill attainment and occupational preparation. The intended outcome of this vocational education improvement grant is to prepare Americans to be successful in the workplace in order to ensure our ability to compete in a world economy.

In 1990, the Secretary's Commission on Achieving Necessary Skills (SCANS), outlined the skills students need to develop to be successful in the workplace. The U.S. Department of Labor's Secretary challenged the commission to identify What Work Requires of Schools. The Commission, headed by the former Secretary of Labor William Brock, spent 12 months "talking to business owners, to public employers, to the people who manage employees daily, to union officials, and to workers on the line and

38 Ibid., p. 7.

at their desks.”³⁹ The following three major conclusions arose from their work:

- All American high school students must develop a new set of competencies and foundation skills if they are to enjoy a productive, full, and satisfying life.
- The qualities of high performance that today characterize our most competitive companies must become the standard for the vast majority of our companies, large and small, local and global.
- The nation’s schools must be transformed into high-performance organizations in their own right.⁴⁰

According to Brock, “ Businessmen keep telling educators that they need good workers, ... but they haven’t done a very good job of defining what skills a good worker needs.”⁴¹ The Commission’s report outlines five competencies and a three-part foundation of skills and personal qualities important to job performance. Together, these define for educators components that must be integrated into the academic curriculum to help students become world-class workers in a high-performance work-organization. Mastery of the five SCANS competencies, detailed in Appendix B of Chapter 5, and the three-part foundation, detailed in Appendix C of Chapter 5, will provide students with “workplace know-how” that is a key element in school-to-work transition. These include:

- Competencies- effective workers can productively use:
 - Resources - allocating time, money, materials, space, and staff;
 - Interpersonal Skills - working on teams, teaching others, serving customers, leading, negotiating, and working well with people from culturally diverse backgrounds;
 - Information - acquiring and evaluating data, organizing and maintaining files, interpreting and communicating, and using computers to process information;
 - Systems - understanding social, organizational, and technological systems, monitoring and correcting performance, and designing

39 The Secretary’s Commission on Achieving Necessary Skills, *What Work Requires of Schools: A SCANS Report for America 2000*, (1990), p. v.

40 Ibid., p. vi.

41 “SCANS Report Defines New Work-Readiness Skills,” Vocational Education Weekly, IV (1991), p. 1.

or improving systems; and

Technology - selecting equipment and tools, applying technology to specific tasks, and maintaining and troubleshooting technologies.

- The Foundation - competence requires:

Basic Skills - reading, writing, arithmetic and mathematics, speaking, and listening;

Thinking Skills - thinking creatively, making decisions, solving problems, seeing things in the mind's eye, knowing how to learn, and reasoning; and

Personal Qualities - individual responsibility, self-esteem, sociability, self-management and integrity.⁴²

Five of the twenty interview questions used as a data source for Chapter III of this study are based on the SCANS five competencies and the three-part foundation.

Brock also contends that, "no school district in the United State - not one - is even world class, much less the best in the world. Radical reform - fundamental, systemic reform - is urgent."⁴³ Our current American education system was patterned after the needs of the "Tayloristic" needs of the workplace around the turn of the century.

Konosuke Matsushita, a contemporary Japanese industrialist, predicts that America will lose the race for international markets because our manufacturing and educational systems are founded upon the teaching of Frederick Winslow Taylor (1856-1915), the father of scientific management. Taylorism, with its roots in social Darwinism, is the belief that a natural order exists in which the fittest should manage and all others should work. The managers do the thinking and the workers follow directions. Interactions between the two groups are discouraged in that it threatens the authority of management.⁴⁴

⁴² The Secretary's Commission on Achieving Necessary Skills, *What Work Requires of Schools: A SCANS Report for America 2000*, (1990), p. vii.

⁴³ W. E. Brock, "SCANS Chairman Sees Need for High-Performance Schools," *Vocational Education Journal*, (1992), p. 22.

⁴⁴ K. Gray, "Why We Will Lose: Taylorism in America's High Schools," *Phi Delta Kappan*, 74 (1993), p. 371.

The instructional methodology of a teacher lecturing to students who are passively listening served the needs of a workplace that required repetitious jobs that did not require employees to take an active role in quality control, think critically, or solve problems. The high performance workplace requires different skills and our school system has been challenged to respond. The SCANS report contains the following charts that represent a view of the traditional and high performance characteristics of the workplace and school. The accompanying charts illustrate the systemic reform that William Brock feels is urgently needed.

Characteristics of Today's and Tomorrow's Workplace ⁴⁵

	Traditional Model	High Performance Model
Strategy	<ul style="list-style-type: none"> • Mass production • Long production runs • Centralized control 	<ul style="list-style-type: none"> • Flexible Production • Customized Production • Decentralized control
Production	<ul style="list-style-type: none"> • Fixed automation • End-of-line quality control • Fragmentation of tasks • Authority invested in supervisor 	<ul style="list-style-type: none"> • Flexible automation • On-line quality control • Work teams, multi-skilled workers • Authority delegated to worker
Hiring and Human Resources	<ul style="list-style-type: none"> • Labor-management confrontation • Minimal qualifications accepted • Workers as a cost 	<ul style="list-style-type: none"> • Labor-management cooperation • Screening for basic skills abilities • Workforce as an investment
Job Ladders	<ul style="list-style-type: none"> • Internal labor market • Advancement by seniority 	<ul style="list-style-type: none"> • Limited internal labor market • Advancement by certified skills
Training	<ul style="list-style-type: none"> • Minimal for production workers • Specialized for craft workers 	<ul style="list-style-type: none"> • Training sessions for everyone • Broader skills sought

⁴⁵ The Secretary's Commission on Achieving Necessary Skills, *What Work Requires of Schools: A SCANS Report for America 2000*, (1990), p. 3.

Characteristics of Today's and Tomorrow's Schools ⁴⁶

	Schools of Today	Schools of Tomorrow
Strategy	<ul style="list-style-type: none"> • Focus on developing basic skills • Testing separate from teaching 	<ul style="list-style-type: none"> • Focus on developing thinking skills
Learning Environment	<ul style="list-style-type: none"> • Recitation and recall from short-term memory • Students work as individuals • Hierarchically sequenced - basics before higher order 	<ul style="list-style-type: none"> • Students actively construct knowledge for themselves • Cooperative problem solving • Skills learned in context of real problems
Management	<ul style="list-style-type: none"> • Supervision by administration 	<ul style="list-style-type: none"> • Learner centered, teacher directed
Outcome	<ul style="list-style-type: none"> • Some students learn to think 	<ul style="list-style-type: none"> • All students learn to think

SCANS developed a five level proficiency scale moving from a Preparatory Level (unskilled work), to a Work-ready Level (readiness to enter a career ladder), to an Intermediate, Advanced and Specialist Level. The first two levels are designed to be completed in high school, the remaining three levels were designed to happen as part of America 2000's life long learning process.⁴⁷

The Commission's plan is to have all students acquire a Certificate of Initial Mastery at age 16. The certificate would be issued after a student successfully passed a series of performance-based exams tied to world-class standards of achievement. At age 16 the student would be given the option to go to work, enter a college prep program or continue to study for a technical or professional certificate. In keeping with the goals of *America 2000*, "Youth Centers" would be available for student to attend if they were not able to attain the Certificate of Initial Mastery in their high school.⁴⁸

⁴⁶ Ibid.

⁴⁷ Ibid., p. 25.

⁴⁸ J. O'Neil, "Preparing for the Changing Workplace," Educational Leadership, p. 49 (1992), p. 9.

In 1990, the U.S. Department of Labor created School-to-Work Transition Grants, business-driven initiatives forming partnerships with education. These partnerships were to raise educational standards by developing curriculum that integrated school-based and structured work-based learning. They had as their goal to conduct research and demonstration projects that would establish models by which American students could more easily and efficiently make the transition from school into the workforce.

From the 75 proposals submitted, grants were awarded to six organizations. The Rating Criteria that follows was employed to evaluate each proposal, and the awards were based on what was most advantageous to the government in terms of technical quality and cost.⁴⁹

- Project Design (50 points): Degree to which the proposal reflects sound program design and methods, including the following areas:
 - the offeror's understanding of the basic aims and objectives of the project;
 - the existence of a sound partnership at the local level, bringing together key participants from business, education, government, labor, and other groups, with all of the partners sharing in the cost of implementing the project;
 - the appropriateness of the approaches and methods used for information gathering and evaluation, problem identification and their technical solutions, management and performance;
 - innovative yet practical proposed demonstrations that reflect determined needs and that involve a collaborative effort by local, educator, the business community, labor, government, and other pertinent groups;
 - the incorporation of the concept of work-based learning, combining the learning of academic skills with applied learning in the work place.

⁴⁹ Solicitation for Grant Application (SGA) Package, "School-to-Work Transition Demonstration Projects," (Washington, D.C.: U.S. Department of Labor, 1990), p. 6.

- Administrative Capability (20 points): Proposals will be evaluated in terms of:
 - the offeror's capability for managing such a technical and multi-faceted project; and
 - an indication of the offeror's ability to perform within the time lines provided.
- Staff Capability (10 points): Proposals will be evaluated in terms of the degree to which:
 - the duties outlined for key executive, managerial, and technical positions appear appropriate to the work that will be conducted under the award; and
 - the demonstrated qualifications of the persons participating in the program design and implementation appear to match the requirements of these positions.
- Previous Experience (10 points): The proposals will be evaluated on the degree to which the offeror demonstrated that it has successfully carried out programs or work of a similar nature in the past.
- Offeror's Proposed Costs (10 points): Special consideration for the grant will be given to programs involving cost-sharing by all partners, especially local groups.⁵⁰

The six grantees were charged with the responsibility of developing and implementing all aspects of the work-based learning program design. The design of the methodology was to clearly identify the problems that work-bound youth encounter as they enter the labor market. The grantees were responsible for developing an innovative and unique program for solving the problems that youth encounter, focusing on the following four principles based on the outcome of the Job Performance Learning demonstrations funded by DOL's Office of Work-Based Learning in 1989:

- School-to-Work transition programs must enable youth to attain the same achievement levels required of all who may graduate from high school.
- School-to-Work transition programs must motivate youth to stay in school, meet high standards, and become productive citizens.

50 Ibid., pp. 4-6.

- School-to-Work transition programs must embody direct relationships between education at work and in the classroom. The curriculum and work experience must complement each other and include direct linkages between the classroom instructor and the workplace mentor.
- School-to-Work transition programs should lead to initial employment and a significant chance for continued employment and education growth.⁵¹

Furthermore, the six project grantees were to incorporate the following Principles Of Job Performance, developed and tested by the National Alliance of Business in the prototypes for a new, national, work-based learning system of employer-sponsored training.

- Learning is treated as an integrated whole.
- Instruction supports the organization's strategic goals and is part of the management process.
- Instruction is used to address skills or knowledge deficiencies.
- A Job Performance Profile is developed for each job.
- Performance objectives drive instructional design
- Performance is the test of learning.
- A single learning plan is designed for each individual.
- Learning is a continuous, lifelong process.⁵²

Each project's effectiveness was judged by an independent contractor, who participated in a competition process to obtain project evaluator status. The program evaluation criteria included the following: the number of employers and trainees participating, costs, an assessment of the competency-based training and curriculum, the relevancy of skills attained in relationship to industry needs, program completion/dropout rates, placement rates in target jobs, average wages attained by trainees when placed in employment, average term of employment with training employer; number of employees leaving training employer before three months, community acceptance, and long-term prospects for replicating

51 Ibid., p. 10.

52 N. Komatsu, *Expert Performance: Designing On-the-Job Learning* Washington, D.C.: National Alliance of Business, 1990), p. 2.

the program nationally.⁵³

Grants were awarded to the Boston Private Industry Council; the Electronic Industries Foundation (Washington, D.C.); the Los Angeles Unified School District; the Maryland Department of Economic and Employment Development (Baltimore); the National Alliance of Business (Washington, D.C.); and the Pennsylvania Department of Commerce (Harrisburg). Mathematicia Policy Research, Inc., located in Princeton, New Jersey, was named to do the evaluations.

It was the original intent of the DOL that the grant period be for three years, paid in successive one-year increments based on the availability of funds, DOL needs, and effective program operation. All six organizations were funded for a two-year period ending in October, 1992. Third-year funding proposals focused on incorporating youth apprenticeship into the projects.

In 1977 and 1978 the Department of Labor successfully demonstrated the feasibility of starting apprenticeship in high school. According to CSR, Inc., in their 1981 Report on Impacts: Study of New Youth Initiatives in Apprenticeship evaluating eight youth apprenticeship programs, "Students in the programs were more likely to continue in job related to their training than were other high school students who had participated in vocational education."⁵⁴

Based on this DOL success and on renewed interest in developing the apprenticeship system in the United States, the National Youth Apprenticeship Act of 1992 paved the way for new grants that would incorporate apprenticeship activities to strengthen the transition of America's youth from school-to-work. The criteria for the grants included the following points:

- Academic Instruction which consists of:
 - a program of study which meets State education standards;
 - instruction to attain academic proficiency in at least the five core subjects of English, mathematics, history, science, and geography

⁵³ Solicitation for Grant Application (SGA) Package, "School-to-Work Transition Demonstration Projects," (Washington, D.C.: U.S. Department of Labor, 1990), p. 11.

⁵⁴ Transition From School To Work Linking Education and Worksite Training, (GAO/HRD-91-105, August 1991), p. 36.

consistent with voluntary national standards; and where appropriate, modification to curriculum components to increase the relevance of instruction in the workplace.

- Work-Based Learning which consists of:
 - instruction in occupational specific knowledge, skills, abilities, based on appropriate nationally accepted industry standards;
 - a planned program of structured job training including tasks to be mastered;
 - development of sound work habits and behaviors; and
 - instruction in general workplace competencies, including, where appropriate, the ability to manage resources, work productively with others, acquire and use information, understand and master system and work with technologies.
- Work-Site Learning and Experience which consists of:
 - helping the youth apprentice achieve academic requirements;
 - helping the youth apprentice achieve the work-based learning requirements;
 - paid work experiences; and
 - otherwise fulfilling the employer commitments in the youth apprenticeship agreement.
- A Youth Apprenticeship Agreement which consists of:
 - a commitment by youth apprentices and parents to meet and support the requirements of the youth apprenticeship programs;
 - a commitment by employers to support and arrange for all the above youth apprenticeship components, including a mentor;
 - a commitment by the school to support the youth apprenticeship components including ensuring close coordination between academic instruction, work-based learning, and work-site experience; and
 - a provision setting forth the educational and occupational credentials to be obtained, the wage rate, and other provisions of the youth apprenticeship.

- Information and Guidance consisting of a formal method advising the youth apprentice of:
 - occupational and career opportunities, work experience requirements, and any decision necessary for exercising options for post-secondary educational and career-specialization, including formal registered apprenticeship programs under the National Apprenticeship Act;
 - the methods and frequencies of assessing achievement of job related competencies and performances in the workplace; and
 - the job description.⁵⁵

The same general procedure used in evaluating the 1990 DOL grants was used for proposal scoring, advisory review, and recommendation of the 1992 grants. The Rating Criteria are as follows:

- Basic Soundness of Proposal (40 points):
 - The degree to which the proposal shows understanding of and incorporates each of the:
 - youth apprenticeship criteria and components
 - five basic principles and five issues
 - The program's value in relation to the Department of Labor's goals and objectives in launching youth apprenticeship programs.
 - The degree of involvement by organizations (e.g., local and state government agencies, school boards, Chambers of Commerce) with the capacity to effect significant change.
- Potential for Broad-Scale Replication (20 points): If the project has a plan for replication, consideration will be given to factors covered under the plan which indicate that the project has potential for establishing a foundation for a comprehensive system for assisting non-college bound students to make the school-to-work transition through Youth Apprenticeship, including:
 - the involvement of national industry groups, national organizations, and/or state government agencies with greater potential for replication;
 - the integration of program operation into existing schools, with

⁵⁵ "National Youth Apprenticeship Grant Solicitation," Federal Register 57 Washington, D.C.: U. S. Department of Labor, 1992), p. 28988.

other State, and local operations; and
 the degree to which the plan provides potential for replicability
 beyond the test site(s) and in a variety of industries - including
 evidence of continuing labor market needs in the industries
 designated or a comprehensive plan for in-depth labor market
 analysis to determine need.

- Program Resources (20 points): The level of commitment of State, local, and other non-Federal resources, including consideration of the following:

the proportion of total documented program resources, including funds and other resources with preferences being given to grantees who offer a greater share of non-grant moneys to the project;

the level of involvement, measured by financial, staff time and in-kind resources, and offer of commitment by both schools and employers in the activities outlines in the basic eligibility requirements and under the youth apprenticeship agreement; and

evidence of the reallocation of existing resources commitment to allow for continuation of the project after federal funding has ended.

Administrative Capability (20 points) in terms of:

the applicant's capability for managing a technical and multi-faceted project;

the qualifications of the Project Director and each of the Key Personnel to be used in the project, as demonstrated by previous experience and training in fields related to the project objectives; and

the duties outlined for key executives, managerial and technical positions as they relate to the work that will be conducted under the program.⁵⁶

⁵⁶ Ibid., p. 22991.

The Council of Chief State School Officers disseminated DOL funds to six states, including California, Iowa, Maine, Michigan, Oregon, and Wisconsin.⁵⁷ Five of the original six organizations were awarded continuation grants, although two did not have all of their project sites renewed. DOL awarded Youth Apprenticeship Grants to ten new organizations in addition to the five DOL Continuation Grants. The extension grants were awarded to the Boston Private Industry Council; the Los Angeles Unified School District; the Maryland Department of Economic and Employment Development (Baltimore; 1 of 3 sites was renewed); the National Alliance of Business (Washington, D.C.; 1 of 2 sites was renewed); and the Pennsylvania Department of Commerce (Harrisburg). The new grant recipients included the Boston Private Industry Council; Craftsmanship 2000, Inc.; the Flint Board of Education; the Gwinnett County Public Schools; the Illinois State Board of Education; the Middle Georgia Technical Institute; the Oakland Unified School District; the Scripps Ranch High School; the Seminole School District and Siemens Stromberg-Carlson; and the Toledo Area Private Industry Council.⁵⁸

⁵⁷ "Department of Labor Awards Grants to Six States," Student Apprenticeship News, 4 (1992), p. 6.

⁵⁸ *National Youth Apprenticeship 1992 Demonstration Sites*, (Washington, D.C.: U.S. Department of Labor, 1992).

FINDINGS OF BUSINESS-LED EDUCATIONAL REFORM INITIATIVES

In 1982, The Boston Compact, one of the first and best known business/education partnerships was created. It consisted of agreements signed by the Boston school district, the business community, the local colleges and universities and the building and trade unions. Three agreements were signed between 1982 and 1984. The Boston school district set the goal of increasing the daily attendance, decreasing the high school dropout rate and increasing college placement of students, all by 5%, and by assuring minimum competencies for high school graduates. Priority hiring of high school graduates was promised by the business community. Local colleges and universities agreed to admit more high school graduates, and the building and trade unions agreed to recruit graduates to apprenticeship programs. The student attendance rate increased but, the dropout rate continued and some students failed to reach the minimum competency in reading prior to graduation. The Boston experience resulted in the understanding that educational changes required a long-term commitment and that there were many complex issues that contribute to the problems in education.⁵⁹ According to William Kolberg, CEO of the National Alliance of Business there are 10 lessons that can be gleaned from the Boston Compact. They are:

- Business still doesn't adequately understand the magnitude and the seriousness of the problems of our public schools.
- Many business leaders in a community must be brought together to coalesce around education-restructuring issues.
- An institutional structure is needed at the local level to orchestrate the ongoing business commitment and to build the likelihood of continuity of business involvement.
- Reform requires a high level of interest from at least three groups: educators, business leaders, and government officials.
- It takes patience.
- Business needs to become involved in the governing structures of the school.

⁵⁹ L. C. Kenny, America's Leaders Speak Out On Business-Education Partnership (Washington, D.C.: National Alliance of Business, 1989), pp. 10-11.

- Partnerships take time to evolve, because trust between the parties takes a long time to grow.
- It is imperative to develop agreed upon and measurable goals that clarify the intent, focus the commitment, and permit periodic assessment.
- Large infusions of money aren't necessary to maintain partnerships, but information and assistance that can encourage the endeavor are essential.
- Business people have only limited knowledge of educational reform issues. Involvement at the local level builds that knowledge, but information and technical assistance are needed to hasten the learning process.⁶⁰

The National Alliance of Business (NAB), located in Washington D.C. assumed a role in providing informational and technical assistance to business to hasten the educational reform that needs to occur in our country. NAB assumes the role of third party intermediary with business to intensify business/education partnerships to institutionalize systemic change. The Alliance is helping business more effectively:

- Articulate its strategic and immediate workforce needs and workplace requirements;
- Understand the needs and current status of the local school system;
- Comprehends the governance, financing and operations of the education system;
- Understand the leverage points, roles, responsibilities and relationships among the various parties in the education system; and
- Direct corporate resources and expertise to improve schools.⁶¹

In 1986, NAB launched the Compact Project with employers and educators in seven cities around the United States. The Boston Compact served as the prototype for this project. The first year, seven cities participated in the project and five additional cities were added the second year. The first year participants were Albuquerque, Cincinnati, Indianapolis, Louisville, Memphis, San Diego, and Seattle. The second year

⁶⁰ Ibid., pp. 12-17.

⁶¹ J.R. Reingold, Corporate Action Agenda The Business of Improving Public Education (Washington, D.C.: National Alliance of Business, 1990), p. 4.

Detroit, Miami/Dade County, Pittsburgh, Providence, and Rochester joined the projects. There were several "lessons learned" as a result of the Compact project.⁶²

NAB's long-term goals in the educational reform focus on improving the quality of business/education partnerships and to stimulating the creation of effective educational reform efforts. NAB accomplishes their goals by disseminating information and applying knowledge about what works. NAB is a leader in developing a national strategy for school improvement.⁶³

NAB feels that it is important for the business and education partners to outline their common characteristics, understand how their organizations differ, and identify how educational reform effort can be enhanced when business offers their expertise to education.

The accompanying tables outline requirements for successful businesses and effective schools. The common characteristics provide a strong foundation for business-education partnerships, and when both partners identify how their organizations differ, they can begin to understand the potential constraints they may face in restructuring education.

⁶² The Compact Project: Final Report (Washington, D.C.: National Alliance of Business, 1991), p. iii.

⁶³ *Ibid.*, p. 7.

Common Characteristics ⁶⁴

Successful Businesses Require:	Effective Schools Require:
• Strong leadership and vision	• Strong leadership and vision
• Clear goals and objectives	• Clear goals and objectives
• Strong quality requirements for products	• Strong academic and behavioral requirements for students
• Workplace conducive to getting the work done	• School setting conducive to learning
• Worker involvement in decision making	• Principal, teacher, and parent involvement in decision making
• High expectation for the performance of employees	• High expectation for the performance of teachers and administrators
• Autonomy for management at the work site	• Autonomy for management at the school site
• Staff with up-to-date skills	• Administrators and teachers with up-to-date skills
• Up-to-date equipment	• Up-to-date equipment

⁶⁴ A Blueprint for Business on Restructuring Education (Washington , D.C.: National Alliance of Business, 1989), p. 7.

Differences Between the Business and Education Sectors ⁶⁵

Business Sector	Education Sector
<ul style="list-style-type: none"> • Powerful and autonomous chief executive and board of directors 	<ul style="list-style-type: none"> • Chief executive operating under constraints imposed by independent state and local boards and state officials
<ul style="list-style-type: none"> • Can operate in relative privacy 	<ul style="list-style-type: none"> • A public institution, unable to limit media or citizen access
<ul style="list-style-type: none"> • Can totally restructure by closing plants, changing products, changing markets, etc. 	<ul style="list-style-type: none"> • Must continue to provide education services to all clientele
<ul style="list-style-type: none"> • Use of incentives and sanctions are accepted aspects of performance evaluation 	<ul style="list-style-type: none"> • No existing structure for rewards (or sanctions) structure for good (or poor) performance
<ul style="list-style-type: none"> • Can determine its organizational structure 	<ul style="list-style-type: none"> • Has limited organizational flexibility
<ul style="list-style-type: none"> • Can shape its public image through media relations 	<ul style="list-style-type: none"> • Has little or no promotional resources
<ul style="list-style-type: none"> • Can access state-of-the-art technology 	<ul style="list-style-type: none"> • Has few resources to keep technology current
<ul style="list-style-type: none"> • Can implement and enforce quality control standards for its goods and services 	<ul style="list-style-type: none"> • Difficult and complex to assess and measure a "quality" education
<ul style="list-style-type: none"> • Can target its products and select its consumers 	<ul style="list-style-type: none"> • Must serve all students assigned to it

⁶⁵ Business Strategies That Work A Planning Guide for Education Restructuring (Washington, D.C.: National Alliance of Business, 1990), p. 6.

Whereas education and business are different, the restructuring efforts in the business community provide valuable learning experiences that business can share with education. In particular, business' knowledge and expertise can assist educators in five functional areas:

- Management Analysis and Improvement: in initiating restructuring, in developing goals and objectives, and in conducting analysis and planning;
- Advocacy: in building coalitions and partnerships and in leveraging support;
- Staff Development: in improving teacher and administrator capabilities;
- Research and Development: in fostering creativity and new approaches; and
- Applications and New Technology; in applying new technology.⁶⁶

In 1989, NAB published "Who Will Do the Work? A Business Guide for Preparing Tomorrow's Workforce." This work was the outcome of research NAB conducted involving three successful business partnerships that helped students to transition into the workplace. The three successful projects were: The Boston Compact, The Louisville Education & Employment Partnership, and The Portland Investment. NAB's research and experience identified the following elements of successful school-to-work transition programs and the roles each partner played:

- Sustained and visible commitment and leadership
- A mutually agreed upon goal
- Quantifiable commitments and measurement of success
 - number of jobs to be pledged;
 - number of students to be referred or placed;
 - long-term results - improved attendance and achievement;
 - permanent job or post-secondary education.
- An intermediary organization to perform the following duties:
 - develop program framework and management system;
 - develop and maintain a system of communication between schools and businesses;

⁶⁶ A Blueprint for Business on Restructuring Education (Washington , D.C.: National Alliance of Business, 1989),p. ix.

follow up on business job pledges to identify specific jobs for students;

provide job readiness training in conjunction with schools and businesses (The job readiness curriculum should provide students with information about job market opportunities and expectations; such skills as completing applications, preparing resumes or personal profiles, interviewing; and developing positive work attitudes, ethics, and habits);

match students with appropriate jobs and refer them for interviews (An appropriate job skill match student skills, interests, and aptitudes with the performance and work behavior requirements for the position);

provide follow-up services to students and employers to address workplace concerns and monitor student progress;

provide job counseling and personal counseling for students;

refer students for other support services, such as health and transportation assistance;

establish a system to track job pledges, interviews, placements, and student progress; and

establish interim measures with business and education to review progress toward program goals and take corrective action as needed.

- Commitments from all partners

- Private Sector Commitments:

- pledge appropriate job opportunities;

- hire qualified students;

- orient and train supervisors, and provide job-related support services to students while on the job and in the classroom (e.g., mentoring, career orientation); and

- establish a communication system with the school through the intermediary organization.

- School System Commitments

- identify schools to participate in the program;

- identify students for participation;

- provide academic, remediation, and support services, directly or

by referral as needed (in conjunction with the intermediary);
 develop, in conjunction with business and the intermediary,
 curriculum to prepare students for jobs, and develop standards
 for skill development; and
 establish and maintain a data base for tracking student progress
 and measuring program progress against goals.

- Student Commitment

participate in all aspects of the program;
 perform satisfactorily on the job;
 maintain or improve grades; and
 maintain or improve attendance.⁶⁷

In 1989, The Business Roundtable, located in New York City, representing over 200 corporations, agreed to support the national education goals developed by President Bush and our nation's Governors to help produce systemic change in America's schools. The Business Roundtable identified nine essential components that are needed to provoke the degree of systemic change that will achieve the national goals through successful schools:

- The new system is committed to four operating assumptions:
 all students can learn at significantly higher levels;
 we know how to teach all students successfully;
 curriculum content must reflect high expectations for all
 students, but instructional time and strategies may vary to
 assure success; and
 every child must have an advocate.
- The new system is performance or outcome based.
- Assessment strategies must be as strong and rich as the outcomes.
- Schools should receive rewards for success, assistance to improve and penalties for failure.
- School-based staff have a major role in making instructional decisions.
- Major emphasis is placed on staff development.

⁶⁷ Who Will Do The Work? A Business Guide for Preparing Tomorrow's Workforce
 (Washington D.C.: National Alliance of Business, 1989), p. 4.

- A high-quality pre-kindergarten program is established, at least for all disadvantaged students.
- Health and other social services are sufficient to reduce significant barriers to learning
- Technology is used to raise student and teacher productivity and to expand access to learning.⁶⁸

⁶⁸ Essential Components of a Successful Education System - the Business Roundtable Education Public Policy Agenda (New York: N.Y.; The Business Roundtable, 1989), p. 2.

AN OUTLINE OF SCHOOL-TO-WORK TRANSITION MODELS

A review of the literature revealed that eight work-related education models can serve as the basic foundation of a business-education partnership. The demonstration projects funded by DOL used these existing work-related education models as the cornerstone of their school-to-work transition projects.

The Academy Model operates within a regular high school. The program provides a focused education - a "school within a school"-emphasizing simulation of the work environment and applied academic instruction in broad occupational areas. It integrates secondary vocational and academic curriculum with a paid work experience that allowed the students to apply what they learn in high school.⁶⁹ Employers play a major role in curriculum development and often provide summer jobs for students.⁷⁰

Students move through a progressively sequenced schedule centered around hands-on, competency based learning which involves work assignments in a school-based enterprise (such as a nursery, construction project, restaurant, etc.) in community service programs, or in a cooperating industry.⁷¹ Students enrolled in youth academies have the choice of continuing their education or going into the workforce.

Evaluations of academy programs suggest that participating students have lower dropout rates, higher graduation rates, high subsequent earnings, and a higher likelihood of going on to further education than non-academy students with similar school records.⁷²

The Cooperative Education Model "is a long standing approach to learning used in high schools, community colleges, and four year

⁶⁹ James E. Rosenbaum, et al., *Youth Apprenticeship in America : Guidelines for Building an Effective System*. unpublished work, Washington, D.C. : William T. Grant Foundation Commission on Youth and America's Future, 1992, pp. 12-13.

⁷⁰ G. Moore, "Youth Apprenticeship Building on Existing Foundations," Work America, 9 (1992), pp. 4-5.

⁷¹ School-to-Work Connections: Formulas for Success (Washington, D.C.: U.S. Department of Labor, 1992), pp. 10-11,

⁷² D. Stern, *Combining School and Work*, unpublished paper prepared for the Office of Vocational and Adult Education, U.S. Department of Education, March 1991, pp. 29-31.

institutions in which periods of study alternate with periods of work experience. High school students receive school credit for the work experience."⁷³ Federal support for co-op education originated with the Smith-Hughes Act in 1917. The co-op structure evolved over several decades to include the following elements:

- A written *training agreement* between the school and each employer sets forth the expectations for each party. The employer will provide a job with opportunities to learn. The school will monitor students' performance.
- A written *training plan* for each student is at the heart of the co-op program. It specifies what the student is expected to learn on the job. Learning objectives may be linked to vocational or academic courses. The plan also specifies who will judge whether the student has achieved the stated objectives. It is usually signed by the student, the job supervisor, the co-op coordinator, and sometimes by a parent.
- The co-op *coordinator* may be the teacher in a related class (e.g., business or marketing) with responsibility for supervising students only in that field. Alternatively, in a diversified co-op program the coordinator supervises students from several fields. The coordinator may also have special training and certification as a co-op specialist.
- The coordinator's responsibilities include finding suitable job placements; identifying suitable students for each placement; negotiating training plans for all students; monitoring students on the job; and offering related instruction.⁷⁴

Evaluations of co-op programs indicate that secondary co-op students are more satisfied with school, but their jobs and earning prospects do not seem to be better than non-co-op students.⁷⁵ "Even more important, co-op programs have little effect on classroom curricula and therefore simply reinforce the gap between the worlds of work and school."⁷⁶

73 G. Moore, "Youth Apprenticeship, Building on Existing Foundations," (1992), p. 4.

74 James E. Rosenbaum, et al, *Youth Apprenticeship in America : Guidelines for Building an Effective System*, (1992), pp. 11-12.

75 D. Stern, *Combining School and Work*, (1991), p. 15.

76 William E. Nothdurft and Jobs for the Future, *Youth Apprenticeship, American Style: A Strategy for Expanding School and Career Opportunities* (Washington, D.C. Commission on Youth Apprenticeship, 1990), p. 17.

The Integrated Model incorporates aspects of the Tech Prep Plus Model, the Academy Model, the Work-Site Model and the Youth Apprenticeship: American Style Model in order to provide the entire school population with competency-based instruction that links academic studies with structured work-site learning. Basic academic course work is completed in the freshman and sophomore years of high school to help students prepare for the "Initial Mastery" test given at the end of the junior year in high school. During junior and senior years, on-the-job training occurs at a work-site in addition to academic classes that are taken at the high school. Career guidance is available to all students to help them explore occupational interests.

This program gives all students a greater understanding of the nature of work and of career selection and further education. It works toward the elimination of tracking in schools by instructing youth together based on occupational area (vertical instruction) rather than on the level of the career ladder they are expected to reach (horizontal instruction). It also blurs the boundaries between academic and vocational "tracks" and between college and non-college bound students.⁷⁷

High School graduates obtain a diploma and occupational certification that gives them option to go on to post-secondary education or directly into the workforce.

Evaluation of the program indicates that it allowed students to experience increased interest, motivation, and retention of academic knowledge as a result of context-based instruction.

The Jobs for America's Graduates (JAG) Model provides school-to-work assistance to some 21,000 at risk and disadvantages high school students in 350 high schools in 19 states. Using a specially trained staff of job specialists, JAG focuses on counseling, motivational work, and job placement as a supplement to regular high school education.

Almost all JAG students graduate from high school or receive their General Education Degree (GED). Eighty percent get a job, enroll in the military or continue their education in college upon graduation.⁷⁸

Brenda A. Sheinmel completed An Analysis of the Practitioner in a

77 School-to-Work Connections: Formulas for Success, (1992), p. 12.

78 G. Moore, "Youth Apprenticeship Building on Existing Foundations, (1992), p. 5.

School-Business Collaborative, for a 1989 Ed.D. from Harvard University. She analyzed the work of the “job specialists” in the implementation stage of Jobs for Bay State Graduates (JBSG), which was based on the JAG Model. Her findings indicated the importance of using a prescriptive model which is narrowly focused and outline the goals of the program, the task the practitioners need to perform, structured training and supervision and an accountability system.⁷⁹

The School-Based Enterprise (SBE) Model has been defined as “... an activity, sponsored or conducted by a school, that engages a group of students in providing services or producing goods for sale or use to people other than the participating students themselves.”⁸⁰ The common school-based enterprises include a child-care center, a hair salon, a restaurant, a retail store, or similar activities. Structured work-based learning is integrated into the curriculum so that students have the opportunity to apply what they have learned. According to Professor David Stern of the University of California, Berkeley, there are four purposes of the SBE Model. They include: “... to teach entrepreneurship, provide opportunities for applying knowledge taught in class, enhance students’ personal development and/or stimulate community economic development.”⁸¹ Stern believes that the model could be enhanced by combining it with career academy models that integrate vocational and academic education.

The Tech Prep Model is a relatively new approach to school-to-work transition. In 1990, the Carl Perkins Vocational and Applied Technology Education Act was revised to include the Tech Prep Education Act. “The goal of this Act, and of the tech prep programs, is to foster technical preparatory curricula based on current conceptual models that demonstrate the effectiveness of articulating high school and community college programs.”⁸² The 2+2 Model links the final two years in high school with two years of community college, and the 2+2+2 Model links high school, the community college and the final two years of a four year college program.

79 Brenda A. Sheinmel, “An Analysis of the Practitioner in a School-Business Collaborative” (Ed.D. dissertation., Harvard University, 1989), p. 146.

80 D. Stern, *Combining School and Work*, (1991), p. 17.

81 Ibid.

82 C. Dornsife, “NCRVE - Tech Prep Activities,” *Center Voice*, 3 (1992), p. 1.

Designed to make technology-based vocational education as attractive as traditional college-prep courses and to make secondary education more meaningful to students who might otherwise become disaffected, tech-prep programs are the most thorough approach to restructuring public school curricula currently underway in the United States.⁸³

Like the Swedish upper secondary school system, the Tech Prep system provides instruction in math, science, communications and technologies. Unlike the Swedish model, Tech Prep has not worked with the business community to formulate curriculum or consistently to offer work-based, paid educational experiences.⁸⁴

The Tech Prep Plus Model includes "...a structured work-site experience which increases progressively from 50 percent of a student's time to nearly full-time in the community college phase."⁸⁵ Curriculum is jointly developed by the teachers and work-site mentors. Students are usually paid for the work-site experience. Students obtain a high school diploma after the first two years in the program and an Associates degree and certification in a particular occupational field when they complete two years of college.

The Work-Site Model delivers education at the work-site and removes the student from the traditional setting of a high school; classes are held on the shop floor or in a separate classroom. The model provides an alternative for students who are not motivated to succeed in the traditional educational setting. Students are paid for work-site learning.

Teachers and mentors work together to develop competency-based curriculum that is integrated with structured work-based learning. The curriculum covers theoretical aspects of the occupation and is highly individualized, allowing for "open-entry/open-exit" based on completion of required academic and work-place competencies. This design includes counseling, on-site day care, health care and other support services that can be used by students and all employees.⁸⁶

83 William E. Nothdruff, Youth Apprenticeship, American Style: A Strategy for Expanding School and Career Opportunities, (1990), p. 18.

84 School-to-Work Connections: Formulas for Success, (1992), p. 10.

85 Ibid.

86 Ibid., p. 11.

The Youth Apprenticeship, American Style, Model expands the limits of the traditional American Apprenticeship, which trains a small number of adults for a few opening in the skilled trades. It draws upon the success of the 1977 and 1978 DOL demonstration grants that proved that successful apprenticeship programs can begin in high school.

Several lessons can be learned from the European Apprenticeship Models which focus on developing the education of the working class. The study of international apprenticeship models led to the discovery of practices that can be transferred across international boundaries to strengthen the American apprenticeship system.

Great Britain and Australia share many of the same traditions and problems as the United States. During the 1970s, many teenagers in both countries left school at age 15-16 to get a job. In the late 1970s, however, technological and structural changes in the economy led to a collapse of the youth labor market. In the 1980s, these countries struggled with educational reform issues, and the governments of both countries devised plans to keep 16-18 year old students in an education setting. The approaches they adopted are a resource for America to develop strategies to reform education.

The British Model increased youth participation in school through the development of the employer-controlled Youth Training Scheme. The scheme developed two strategies in order to transition student into the workforce. One was to provide occupationally relevant skills and to provide certification that would be respected by potential employers. The other strategy was to give (some) trainees privileged access to firm's internal labor markets, by subsidizing their employment for a year or two and allowing employers to select among them.⁸⁷

The Australian Model increased the number of students remaining in schools by reducing the gap between academic and vocational education. The State Examination Boards moved beyond their mission of only assessing academic courses required for university entrance to include the assessment of developing performance measures of a wide range of courses. The range of high school competition certificate courses meet the

87 M. Vickers, *Building a National System for School-to-Work Transition: Lessons from Britain and Australia*. (Jobs for the Future, 1991), p. 50.

educational needs of the majority of students.⁸⁸

Both of the models rely on a system of certification to strengthen their school-to-work transition programs.

France has its Certificate of Aptitude (CAP). Germanic countries require a final exam and may peg responsibility on the employer if an apprentice fails. For craft training, England uses the City and Guilds of London Institute and other entities as examination boards. In New Zealand, the National Trades Certification Board sets examination standards, administers exams, and awards certificates to those who pass. The United States has nothing approaching the national system of standards and examinations found in other nations, but programs for examination and certification, operated by industry, exist in welding and automobile mechanics.⁸⁹

The Youth Apprenticeship, American Style, Model has been defined as “a systematic mix of academic instruction in secondary and post-secondary schools with employment-based training for students - at a level of quality sufficient to certify the ability of individuals to perform entry-level tasks in skilled occupations capably and professionally.”⁹⁰ Stephen Hamilton of Cornell University stated, “An American-style youth apprenticeship system must be more flexible than traditional European systems. Most of all, it must be tied directly to the completion of high school and entrance into higher education.”⁹¹ This model provides the most current vision of how to transition students from school-to-work. The renewed interest of youth apprenticeship is manifested in the 1992 Youth Apprenticeship Act. The unique cultural, social and economic structure of the United States demands that the Youth Apprenticeship, American Style Model must be based on the following premises:

- It must recognize and accommodate the diversity inherent in the American populace.
- It must be part of a broad effort to improve the linkages between the world of work and the world of high school, and not just for those who are not college-bound.

88 Ibid., p. 5.

89 Robert Glover, Apprenticeship Lessons from Abroad (The National Center for Research in Vocational Education, Ohio State University, 1986), p. x.

90 William E. Nothdurft, Youth Apprenticeship, American Style: A Strategy for Expanding School and Career Opportunities, (1990), p. 19.

91 Stephen Hamilton, “School-Work Nexus: If Any Road Can Take You There, You Don’t Know Where You’re Going,” Education Week, (1992), p. 36.

- It must provide early exposure to work experiences and genuine opportunities for workplace learning, with training wages paid by employers.
- It must result in formal, universally-recognized credentials that meet nationwide standards that are the product of the collaboration of government, education and labor agencies, union representatives, and business associations.
- It must assure apprentice's the opportunity to go on to further education, should they seek it, after receiving their apprenticeship credentials.
- It must encourage lifelong skill-building.⁹²

Robert I. Lerman, an economist from American University, studied the European apprenticeship system and has developed a vision for youth apprenticeship that addresses our American culture and societal needs. He suggests that enacting a youth-apprenticeship system in American is possible, but that changes are necessary prior to the implementation of the program. First, employers must see the long term benefits of the system and would therefore, be willing to finance the stipends and training. Second, the schools would need to revamp the school week and curriculum in order to accommodate placing students in appropriate apprenticeships and develop course work that integrates school-based and work-based learning and incorporates the application of academic learning that is related to their occupational field. His vision for how the course work would be delivered includes developing a vocational counseling system that exposes students, grades eight to ten, to multiple occupations through visits to work sites, job sampling and business representatives making presentations to students that describe career ladders. Job placement assistance would be available to students and employers.⁹³

Lerman's vision would restructure the educational delivery system to include career exploration between grade seven and nine. Students would interview for apprenticeships in a variety of occupations in tenth grade.

⁹² Ibid.

⁹³ Robert Lerman and Hillard Pouncy, "The Compelling Case For Youth Apprenticeships," The Public Interest, No. 101 (Fall, 1990), pp. 73-75.

By the end of tenth grade students would choose an apprenticeship and sign a written agreement. Work-site learning would be integrated with school-based learning occurring in the eleventh and twelfth grades. Work-site learning would increase from 30 to 75% of the student's time based on their chosen occupation. Interim examinations would occur at the end of twelfth grade. In thirteenth grade students would spend 75 to 80% of their time at the work site. Students have the option of continuing their education by attending college and obtaining a degree.⁹⁴

The Education Writer's Association believes that in order for America to adopt an apprenticeship system a change in the status quo is needed. Change would need to occur in business, education, labor and government. Business would have to view training young people as an investment crucial to their own long-term survival. Schools would have to acknowledge the importance of work-relevant education and training and respect the aspirations of young people who want to enter the workforce directly from high school. Teachers and school administrators would have to relinquish some control over curriculum content and teaching methods to employers and union specialists. Unions would have to accept, as their European colleagues have, a training wage for student apprentices that reflects their learner status. Government officials would have to commit to investments in technical assistance, monitoring, and testing. Parents and the community as a whole would have to recognize that national technical credentials are as valid as a college degree as proof of an individual's ability and value to society. And students would have to learn that school is a place to prepare for the responsibilities of adulthood, not a place to avoid them.⁹⁵

A review of the apprenticeship literature revealed that there are nine common concerns that must be addressed before an American system can be established. Advocates of youth apprenticeship have attempted to answer these nine questions. It is however, the author's belief that the outcomes of the 1990 DOL School-to-Work Transition Demonstrations projects as well as the ten youth Apprenticeship projects funded by DOL

94 Ibid.

95 Education Writer's Association, *Training for Work : What the U.S. Can Learn from Europe* (Washington, D.C. : Education Writer's Association, 1990), p. 11.

in 1992 could perhaps offer some answers to these questions and raise additional questions as well. The nine most common concerns are reflected in the following questions.

- Does it make sense to produce better-qualified workers when most employers have no use for them?
- If most companies see no skill shortage how can we expect them to finance the cost of apprenticeship training?
- Won't apprenticeship narrow student's educational experience, leaving them with skills that will rapidly become obsolete?
- Doesn't any youth apprenticeship program represent a form of "tracking" for those students unable or unwilling to go on to college- in effect, providing education for the privileged and training for the underprivileged?
- Is it reasonable to expect 10th graders to make career choices?
- How can youth apprenticeship compete with the paid part-time work young people are already doing?
- How would such a system accommodate the differences in technical sophistication and training ability of small and large firms?
- A vocational education has low social status in the U.S.; how could youth apprenticeship change that?
- Skill development makes sense in a period of labor shortages, but what happens when the business cycle turns downward? How do you keep employers investing in training and assure graduates jobs when they complete training?⁹⁶

The review of the literature provided a comprehensive presentation of information relevant to school-to-work transition. An overview of the educational reform movement of the 1980s revealed how the work of the national commissions served as a catalyst for the 1990 DOL School-to-Work Transition Demonstration projects. The findings of business-led initiatives for educational reform provided a list of lessons learned from business/education partnerships as reference for the DOL projects. Eight models were outlined that form the cornerstone of the DOL transition projects.

⁹⁶ William E. Nothdurft, Youth Apprenticeship American Style: A Strategy for Expanding School and Career Opportunities, (1990), p. 21-23.

CHAPTER III

PRESENTATION OF THE MULTIPLE DATA SOURCES

DATA SOURCES

A representative from the U.S. Department of Labor's Office of Work - Based Learning (OWBL) introduced the concept of this research project at the second Quarterly Meeting held in Washington D.C. on March 26, 1991. Project Directors also agreed to be interviewed and to cooperate in identifying Key Personnel in each project to be interviewed, one representing business and the other education. Interviews were scheduled to begin in the spring of 1992, one year following the research project announcement.

The DOL School-to-Work Transition projects began in October of 1990. Each of the six grantees submitted bi-monthly and annual reports. Because two of the projects had multiple sites, there are nine project sites included in this study. Permission to use the U.S. Department of Labor's bi-monthly and annual reports was secured from the OWBL and from each Project Director.

Seventy-two bi-monthly reports and twelve annual reports were reviewed for the period from October 1990 to September 1992. Each report was studied to identify information that would address the six research questions purposed to aid in the analysis of the essential components of the School-to-Work Transition projects.

The data gathering procedure for obtaining information from interviewing Project Directors and Key Personnel from each of the nine project sites consisted of the following:

- personal contact with each of the Project Directors at the second Quarterly Meeting held in Washington, D.C. on March 26, 1991;
- a letter, contained in Chapter 5, outlining the interview procedure;

- a personal phone call arranging the interview;
- in the case of a telephone interviews, a FAX transmission that included the interview questions;
- twenty-one interviews conducted between spring and fall 1992, eight by phone and thirteen in person; the interview period extended into the fall of 1992 because it took a few projects that long to develop the work-site component of their project; and
- a site visit and personal interviews conducted for the projects located in Boston (quarterly meeting held in July, 1992), Chicago, and Los Angeles (quarterly meeting held in January, 1992).

The Project Director and Key Personnel from education and business were interviewed for the projects located in Boston, San Francisco, Chicago, and Pennsylvania. The Project Director in two projects also served as Key Personnel: in the Electronic Industries project, the Project Director served as the business representative, and in the Los Angeles project the Project Director served as the educational representative.

In the Maryland projects, with three project sites, the Project Director, three Key Personnel from education and one from business were interviewed. The business representative of the Mech Tech site was interviewed, but business sites for the other two Maryland projects were not developed during the interview period.

DATA FROM DOL BI-MONTHLY AND ANNUAL REPORTS

The purpose of this study is to analyze and synthesize the essential components of the DOL School-to-Work Transition projects so that education leaders can study the conclusions drawn from the DOL projects. Educational leaders can study the recommendations outlined in this dissertation as they begin to develop a strategic plan to reform the current educational practices that prepare our future workforce. The DOL bi-monthly and annual reports were studied in terms of the five research questions developed to help analyze the essential components. The analysis focused on:

- how the projects enable students to enter industry-based career paths,
- how work-based and school-based learning integrate,
- how the findings of SCANS, can be integrated into an industry-based curriculum that is jointly developed and delivered in conjunction with education,
- what perceptual differences exist between business and education and how they impact the nine projects,
- what systemic change needs to occur within business and education in order to reform current educational practices that prepare our future workforce.

DATA PERTINENT TO RESEARCH QUESTION ONE:

How do the projects enable the students to enter industry-based career paths?

Within-Site Comparison

The Boston Private Industry Council project enabled students to enter the medical career path through part-time work experience at the New England Medical Center, Massachusetts General Hospital, Boston City Hospital, New England Deaconess Hospital, New England Baptist Hospital, or Brigham Women's Hospital. This occurred during summer employment and a one-day-per-week clinical rotation through eight hospital careers. The Boston Public School system had developed a Tech Prep agreement in conjunction with Bunker Hill Community College that allowed students to earn articulated credit in high school towards an Associates Degree. In addition to an AA degree, the students were able to obtain to complete the clinical experience required for state certification in any of eight medical careers.

Students in the National Alliance of Business DuPage County School-to-Work Transition Project entered the appliance repair career path through part-time employment with Sears Produce Service Centers throughout the Chicago area. This project had an industry-based curriculum that students studied in high school, an articulated credit agreement with the College of DuPage, and an extended campus experience that enabled students to rotate through three job areas under the direction of a workplace mentor. Upon high school graduation, Sears offered employment opportunities, including an opportunity to continue technical education through the Sears National Training Center. Additional training led to advanced career opportunities within the industry-based career path.

Students in the Maryland Department of Economic and Employment Development Mech Tech project entered the manufacturing career path through an articulated credit agreement with Catonsville Community College. Students were able to earn credits towards an Associates degree in technical education. Tech Prep Plus project students entered the electronics career path through an articulated credit agreement with Charles County Community College. Maryland's Tomorrow project did

not transition students into a career path, but it allowed career exploration through job shadowing.

The Pennsylvania Department of Commerce's project, the Pennsylvania Youth Apprenticeship Program transitioned students into a metalworking career path through an integrated curriculum, summer and part-time school-year employment opportunities, advance standing in the Pennsylvania adult apprenticeship system, and articulated credit agreement with community colleges throughout the state of Pennsylvania.

The Los Angeles Unified School District project allowed students to enter the telecommunication, banking and public service industry career path through part-time work experience during the school year. Students were employed by Pacific Bell, the Security Pacific Corporation, and the City of Los Angeles. These students were given the opportunity to enter the career path beyond entry-level positions or to work towards an advanced career through a Tech-Prep, articulated-credit agreement with the Los Angeles Community College District.

The Together in Education project enabled students to enter entry-level jobs in the banking industry career path through part-time employment with the Bank of America.

The Electronic Industries Foundation project was designed as a pilot program that transitioned students into the electronic industry career path. Students were exposed to a strong industry-based curriculum in their high school electronics class. The pilot program was designed to give two top seniors an opportunity for summer employment with the Mituska Corporation.

Across-Site Comparison

The School-to-Work Transition projects allowed students to enter industry-based career paths through work experience and articulated credit agreements in partnership with local community colleges. All of the grantees entered the project with the goal of offering employment opportunities to high school students, but economic recession impacted all of these projects. All of the industry partners faced economic realities that included temporary hiring freezes, massive corporate reorganization, and layoff of personnel. The projects that were able to offer work

experience for their students did so in spite of the economic recession.

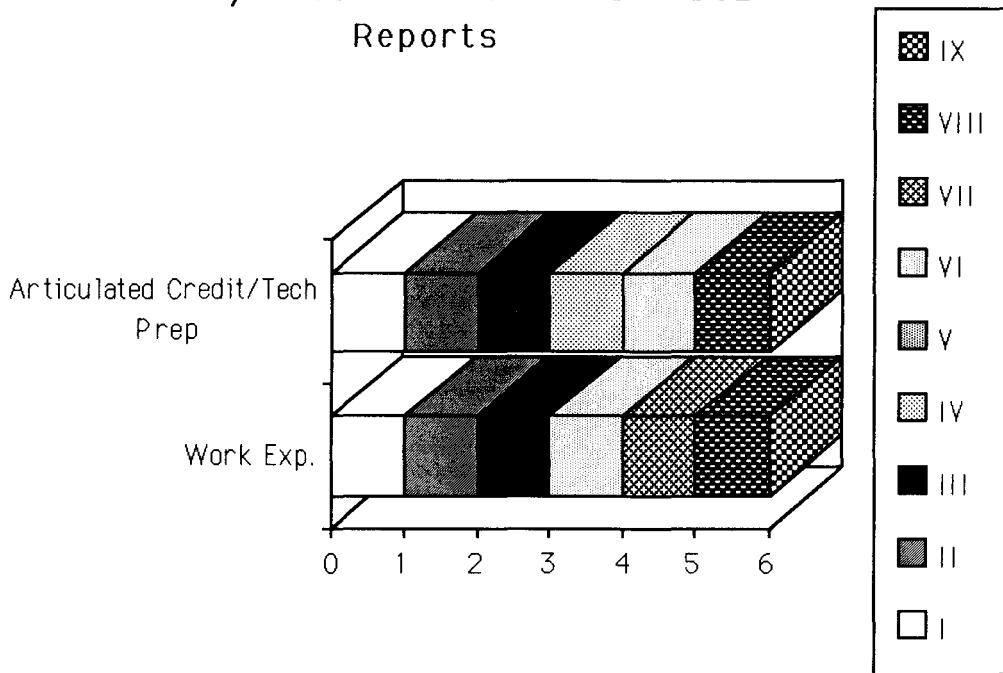
Six of the nine projects had articulated credit agreements. Although all nine projects were designed to offer work experience, only six actualized work experience opportunities for their students. The range of work experience available included part-time school-year employment and part-time and full-time summer employment during high school.

Five additional elements of program design enabled the students to enter industry-based career paths. Three project sites completed the DACUM cognitive task analysis and curriculum development process. Six developed an industry-based curriculum. Two had a job-rotation segment that exposed students to additional positions within the project's career cluster. Job shadowing occurred in one project site. Two project sites had youth apprenticeship programs that were interfaced with the adult apprenticeship program.

The first graph illustrates how each of the project sites allowed its students to enter an industry-based career path. A list of the projects is given to assist in project identification.

GRAPH #1

**Avenues that Enable Students to Enter
Industry-Based Career Paths - DOL
Reports**

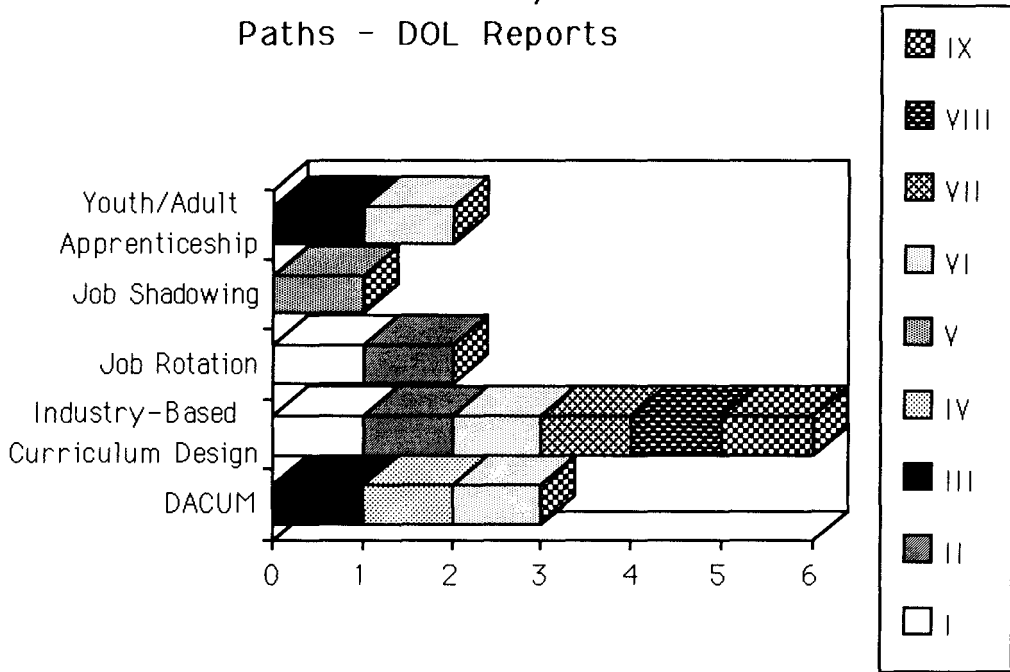


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| I. Boston | VI. PYAP |
| II. DuPage Co. | VII. Los Angeles |
| III. Mech Tech | VIII. TIES |
| IV. Tech Prep Plus | IX. Electronic Industry |
| V. Maryland's Tomorrow | |

The second illustration shows the unique components of program design that enabled students to enter an industry-based career path.

GRAPH #2

Elements of Program Design that Enable
Students to Enter Industry-Based Career
Paths - DOL Reports



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| I. Boston | VI. PYAP |
| II. DuPage Co. | VII. Los Angeles |
| III. Mech Tech | VIII. TIES |
| IV. Tech Prep Plus | IX. Electronic Industry |
| V. Maryland's Tomorrow | |

DATA PERTINENT TO RESEARCH QUESTION TWO:

How are work-based and school-based learning integrated ?

Within-Site Comparison

The Boston Private Industry Council project integrated work-based and school-based learning through a cognitive task analysis that formed the basis of the multi-disciplinary curriculum, as well as through part-time work experience, clinical rotation, and a competency-based portfolio assessment system. The multi-disciplinary curriculum, designed by World Education, was developed with the input of business and education; it was based on a cognitive task analysis of the medical careers addressed in the project. The curriculum combines school-based instruction in math, science, and communication with practical work-based application of academic skills in a hospital. One day per week the students participated in an internship at the hospital, which gave them a classroom orientation to different departments and the opportunity to rotate through the departments. The students were taught by a health-care professional who gave an orientation session for each department, accompanied the students on the department rotation, and conducted a debriefing session at the end of the day to help the students reflect on the practical experience they gained during their internship. School-based classes identified the practical application of academics in medical careers through experiences obtained in after-school and summer jobs. School-based and work-based learning were linked through a senior project, which was a competency-based assignment that became a major portion of the student's portfolio.

The DuPage County School-to-Work Transition project integrated school-based and work-based learning through a cognitive task analysis and also through an industry-based curriculum that integrated and applied academics in extended campus and employment experiences. The competency-based curriculum, jointly developed by business and education, incorporated the findings of the cognitive task analysis, linking learning that occurred in school with learning that occurred in the workplace. It integrated academics with basic mechanical and electrical concepts which were applied to appliance diagnosis and repair. Learning

activities were structured to apply academics and promote the development of problem-solving and decision-making skills. Remedial academic help was available at the school.

Structured work-based learning, guided by OJT checklists, occurred in an extended campus where students worked one-on-one with a professional repair technician mentor as they rotated through three departments. Weekly job logs, completed by the student and work-site mentor, outlined tasks the students completed and the academic skills needed to complete the tasks.

Maryland's Tomorrow and the Tech Prep Plus projects did not have work-based learning experiences at the time of this study. The Mech Tech project integrated work-based and school-based learning through work experience and the DACUM (Developing a Curriculum) process; this process was also completed for the Tech Prep Plus project. Representatives from business and education worked together. The DACUM process, which leads to the development of an academic curriculum or an industrial training program based on the reality of the workplace, consists of completing a task analysis, curriculum planning and curriculum development. Dandalk Community College (Baltimore) served as the DACUM Resource Center for Maryland.

The Pennsylvania Youth Apprenticeship Program sponsored by the Pennsylvania Department of Commerce integrated work-based and school-based learning through curriculum founded on a cognitive task analysis, as well as through employment and competency-based portfolio assessment. The multi-disciplinary curriculum, developed by an interdisciplinary team directed by a University of Pittsburgh professor, was designed to meet manufacturing industry needs by addressing skills derived from the cognitive task analysis. School-based learning clustered students in multi-disciplinary classes that taught academics in the context of the manufacturing industry. Portfolio assessment linked work-based and school-based learning by including samples of projects integrating academic and work assignments

The Los Angeles Unified School District project integrated school-based and work-based learning through work experience and the high school curriculum. Each student participated in academic course work in the

morning; afternoons were spent at a part-time job four days a week and in a classroom session one day a week. Students linked their school-based and work-based learning through a job log that identified the academic skills needed that week. Students had the opportunity during the classroom session to request remedial help.

NAB's other project, Together in Education, integrated work-based and school-based learning through curriculum incorporating a cognitive task analysis, as well as through employment and two high school courses taught by Bank of America. Bank of America sponsored *Choices*, a ninth-grade career-exploration unit that addressed how math skills apply to the banking industry, and *Employability Traits*, a tenth-grade after-school course that focused on how to obtain and keep a job. Work-based learning activities focused on developing the skills outlined in the cognitive task analysis completed by the American Institute of Banking.

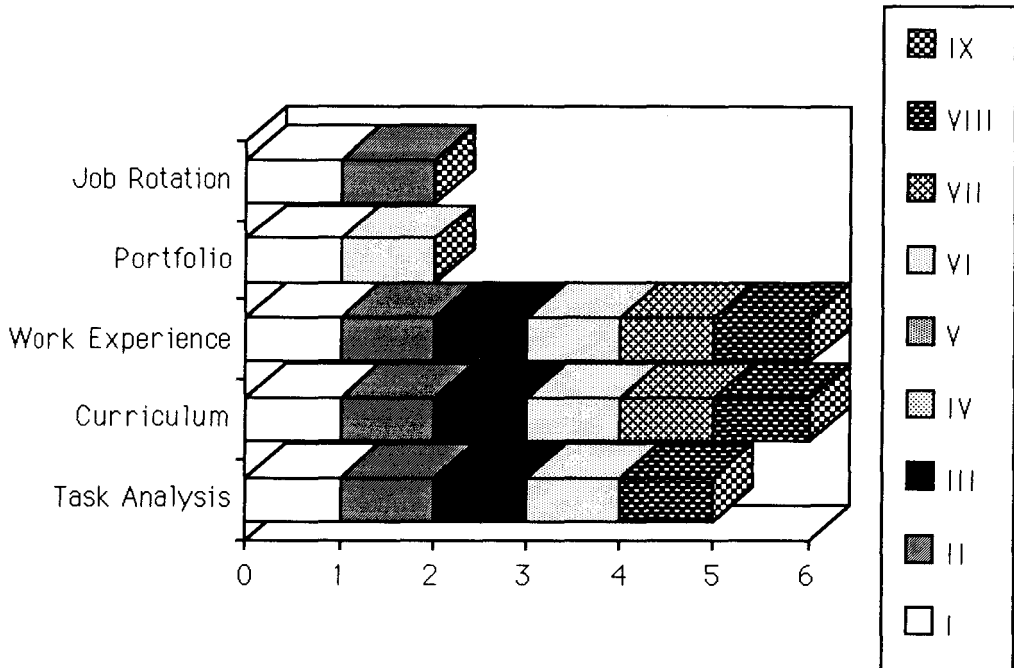
The Electronic Industries Foundation project did not have a work-based learning component. The school-based curriculum developed by the Electronic Industries Association was a competency-based digital/microprocessor course that integrated math instruction with electronic concepts.

Across-Site Comparison

The following illustration summarizes how the DOL projects integrated work-based and school-based learning. Five out of nine project sites completed a cognitive task analysis that served as a basis for curriculum development. One project hired a consultant to complete the task analysis and write the curriculum; two used the DACUM process to complete the task analysis and develop the curriculum; and four did their own task analysis and developed their own industry-based curriculum. Six projects developed curriculum and employment experiences integrating work-based and school-based learning. Three planned to develop work-based learning but had not actualized it at the time of this study. Two projects had competency-based portfolio assessment and two offered structured rotation through several jobs in addition to work experience limited to a single job.

GRAPH #3

Integration of Work-Based and School-Based Learning - DOL Reports



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| I. Boston | VI. PYAP |
| II. DuPage Co. | VII. Los Angeles |
| III. Mech Tech | VIII. TIES |
| IV. Tech Prep Plus | IX. Electronic Industry |
| V. Maryland's Tomorrow | |

DATA PERTINENT TO RESEARCH QUESTION THREE

How can the findings of the SCANS be incorporated into a curriculum that is industry-based and jointly developed and delivered by business and education.?

This research question identifies how the DOL projects integrated the findings of SCANS Foundation Skills and Competencies into an industry-based curriculum jointly developed and delivered in conjunction with education. The Foundation Skills consist of basic skills, thinking skills and personal qualities that are employability traits. The Competencies require the worker to productively use resources, interpersonal skills, information, systems, and technology. These are enumerated and briefly defined in Appendices 2 and 3 of Chapter 5.

Within-Site Comparison

The Boston Private Industry Council curriculum was developed by World Education, a curriculum development firm that worked to meet both student and industry needs. Although the SCANS skills were not formally identified in the curriculum, a cognitive task analysis identified basic math and science skills that were applied to problem-solving tasks in the medical field. The SCANS Foundation Skills were informally addressed in school and at the work-site.

The DuPage County School-to-Work Transition Project formally identified where the SCANS skills were taught. Foundation Skills were taught at the school and applied in the work-site. The Interpersonal Skills and Technology Competencies were addressed in the industry-based curriculum jointly developed and delivered by business and education. The classroom instructor and the work-based mentor evaluated each student's mastery of the SCANS skills.

There was no formal attempt to incorporate the SCANS skills in any of Maryland's project sites. Although two of the Maryland projects, Mech Tech and Tech Prep Plus, took part in the DACUM process, only the Mech Tech project had a fully developed work component. The SCANS Foundation Skills were informally addressed in the Mech Tech curriculum jointly developed by business and education. Although Maryland's Tomorrow had not formally integrated the SCANS skills into

the job shadowing segment of its project, the job shadowing experience linked school and work through the *Personal Qualities* curriculum.

The Pennsylvania Youth Apprenticeship Program had not formally integrated the SCANS skills into the curriculum, but the Foundation Skills and Technology Competency were found in the inter-disciplinary curriculum. This was developed by a team of teachers and the Learning and Resource Development Center at the University of Pittsburgh, funded by the Heinz Foundation in the amount of \$250,000. The cognitive task analysis results were formalized in the Training Matrix, which assured that the needs of the manufacturing industry were being addressed through the curriculum.

The Los Angeles Unified School District project completed a formal evaluation identifying the SCANS skills incorporated in its curriculum. The Foundation Skills were addressed in the academic curriculum, but the Competencies were not. The School District sent the SCANS skills to over 300 employers in Los Angeles, asking them to identify when during a student's academic career individual skills should be addressed and/or mastered. Survey results indicated that employers believed all students should address and master the Foundation Skills during high school. The results also showed that employers felt the Competencies should be addressed in high school, but that they would not likely be mastered until the student has matured or has practical work experience.

Although the Together In Education project did not formally identify the SCANS skills taught, the Foundation Skills were taught by Bank of America in the school setting and on the job. Bank of America have set a future goal to integrate the SCANS skills into their curriculum.

The Electronic Industries Foundation project incorporates some SCANS Foundation Skills and Competencies into a curriculum developed by the Electronics Industries Association in conjunction with a University professor. Basic Skills, Thinking Skills, and Technology were incorporated, but Personal Qualities, Resources, Information, and Systems were not addressed formally. Problem-solving and troubleshooting electronic technology were part of the curriculum. The project hired a math tutor to help students develop basic math skills.

Across-Site Comparison

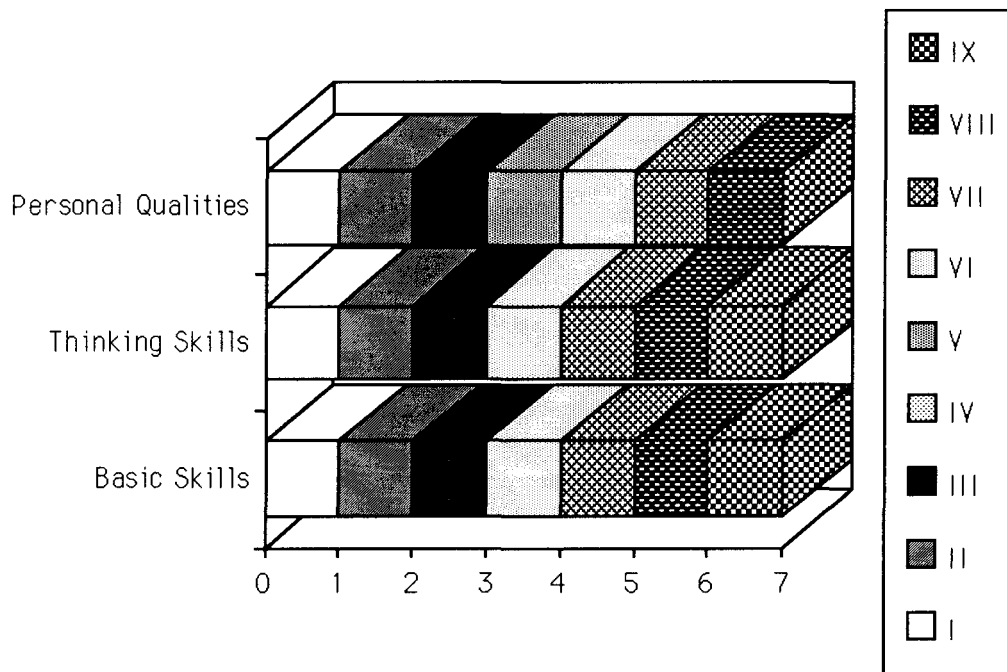
The work of SCANS coincided with the development of the DOL School-to-Work Transition projects. A member of SCANS gave a status report at each the DOL Quarterly Meetings held for the grantees from 1990-1992.

At time of this study, only two project sites had formally incorporated SCANS into the curriculum and student assessment systems. Nonetheless, seven sites had incorporated all the Foundation Skills. One had also incorporated the Interpersonal and Technology Competencies, and one had incorporated only the Technology Competency. The SCANS skills had not been incorporated formally into the curriculum in three project sites. Each grantee valued the SCANS work, however, and had established goals to interface the SCANS Skills and Competencies with their curriculum.

The following illustrations visually present the summary of this information.

GRAPH #4

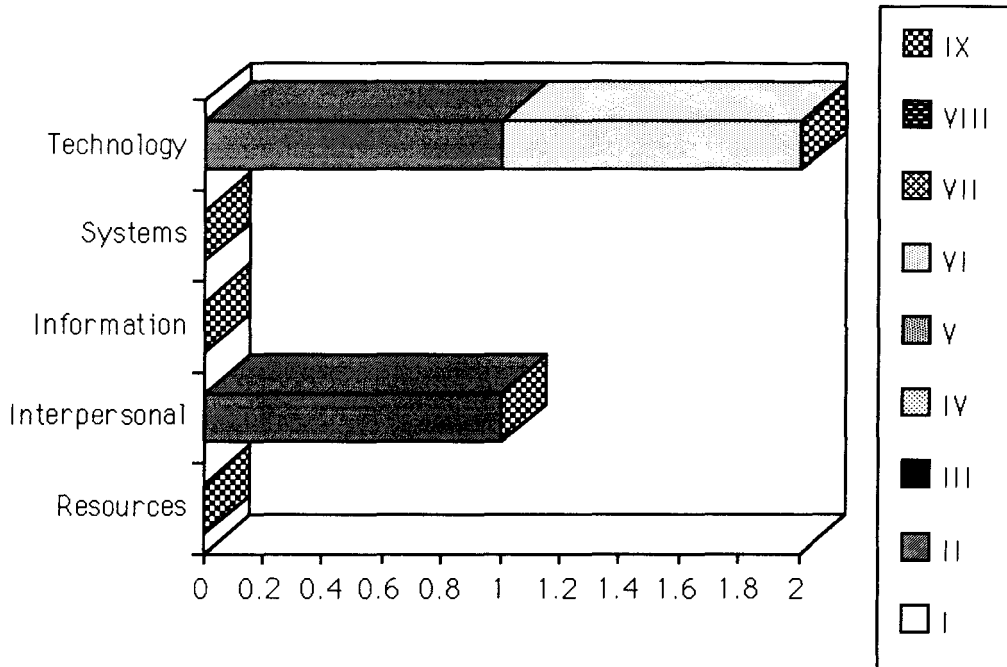
SCANS Foundation Skills - DOL Reports



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| III. Mech Tech | VIII. TIES |
| IV. Tech Prep Plus | IX. Electronic Industry |
| V. Maryland's Tomorrow | |

GRAPH #5

SCANS Competency Skills - DOL Reports



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| I. Boston | VI. PYAP |
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| III. Mech Tech | VIII. TIES |
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| V. Maryland's Tomorrow | |

DATA PERTINENT TO RESEARCH QUESTION FOUR

What perceptual differences exist between business and education and how do they impact the nine projects ?

This research question identifies the perceptual differences that exist between business and education and outlines how they impact the nine project sites. A review of the bi-monthly and annual reports to the DOL revealed that only two projects mentioned perceptual differences between business and education. The reports revealed that perceptual differences emerge from a lack of understanding of the organizational culture of the business or education partner.

Within-Site Comparison

The Pennsylvania Youth Apprenticeship Program was unaware that student population determined if a reduction in force or if staff additions were necessary. Originally the program was to be located in industry and completely removed from the school setting. School officials were reluctant to release students to participate in a program that would be held outside the school setting. The business partners did not realize the impact state budget cuts have on local school systems.

The Electronic Industries Foundation questioned the issue of class size, feeling that classes should have a low student-teacher ratio for learning to be maximized; they did not understand budget constraints. They also expressed concern about the lack of academic achievement, the immaturity of students, the lack of parent involvement, the high drop-out rate, and the lack of student participation in work experience opportunities offered by local industry.

Across-Site Comparison

Only two projects submitted a written report that addressed perceptual differences and how the differences impacted their project. One site was unaware that student population correlates with school staff size, and removing students from the school setting could result in a reduction in force. Both sites reported industry's lack of awareness concerning how budget cuts adversely affect schools. One site reported concern over the students' low academic achievement and their

immaturity, over low parental involvement, and over the lack of student interest in employment opportunities.

DATA PERTINENT TO RESEARCH QUESTION NUMBER FIVE

What systemic change needs to occur within business and education in order to reform current educational practices that prepare our future workforce?

This question identified the major modifications to the standard operating procedures of business and education that are needed to reform current educational practices preparing our future workforce. Each project identified such systemic changes.

Within-Site Comparison

The Boston Private Industry Council project identified five areas of systemic change that would maximize the opportunity for students to make the transition from school to work. These included the following:

- use the business/education partnership between the school system and local hospitals as a model for vocational education reform in Boston;
- restructure educational funding sources and develop tax incentives for business participation;
- reform the teacher certification system to allow hospital professionals to instruct high school students;
- change the university teacher training system to expose teachers to the work world they are preparing their students to enter;
- create a business supervisor/mentor training program that will prepare their supervisors/mentors to work with high school students.

The DuPage County School-to-Work Transition project identified three areas of systemic change that must occur in order to actualize educational reform. These included the following:

- address industry's commitment to educating its future workforce during an economic recession that leads to massive lay off and early retirement of employees;
- institutionalize change within a corporation so that when the corporation undergoes reorganization the business/education

- partnership is not subject to set backs as personnel change; and
- train business supervisors or mentors to guide student learning at the work-site.

The Maryland Department of Economic and Employment Development projects collectively identified the following three areas of systemic change that need to be addressed:

- resolve liability issues of students in the work place;
- identify industry's commitment to educating its future workforce during an economic downturn; and
- develop a new curriculum that is industry-based and integrates school-based and work-based learning.

The Pennsylvania Youth Apprenticeship Program identified the following nine areas required to institutionalize educational reform:

- create an equalized subsidy for basic education for grades 13 and 14 to help address funding issues;
- train teacher effectively;
- effect massive interdisciplinary curricular changes
- alter the public attitude towards vocational education and the metalworking trade;
- convince the adult apprenticeship system to interface with the youth apprenticeship system;
- obtain union support for educating the future workforce;
- create a new guidance and career exploration program;
- enact year round schooling; and
- alter the use of Carnegie units as the sole measure for graduation.

The Los Angeles Unified School District project identified four areas of systemic change that would help reform the educational system. They included:

- change the instructional curriculum to integrate structured work-based learning and the SCANS skills;
- change educational staff development to reflect the curricular changes needed;
- change instructional methodology to accomplish interdisciplinary teaching where academic skills are applied in a work-based context; and

- prevent loss of industry commitment during an economic downturn.

The Together In Education site identified the following four areas of systemic change that would work to reform education:

- create long-term industry commitment to help educate the future workforce;
- institutionalize change within the business and education site so that economic setbacks do not adversely affect the program;
- develop a curriculum that integrates work-based learning and the SCANS skills; and
- enact an attitude change on the part of education that 80% attendance is not acceptable in industry.

The Electronic Industries Foundation project identified two areas of systemic change that would reform educational practices. These included:

- create a credential that would be nationally recognized by the electronic industry; and
- establish a third-party coordinator in a business/education partnership.

Across-Site Comparison

Business identified that two major changes would need to occur within its organization to reform current educational practices that prepare our future workforce. These were:

- change corporate culture so that business looks beyond today's profit to tomorrow's future and begin to train our future workforce; and
- work collaboratively with education to train students on the work-site.

All nine projects agreed on the first change; five agreed on the second.

Education identified three ways in which systemic change would need to occur within their organization in order to reform current educational practices that prepare our future workforce. These were:

- create business/education partnerships;
- revise curriculum content; and
- implement a Tech Prep system.

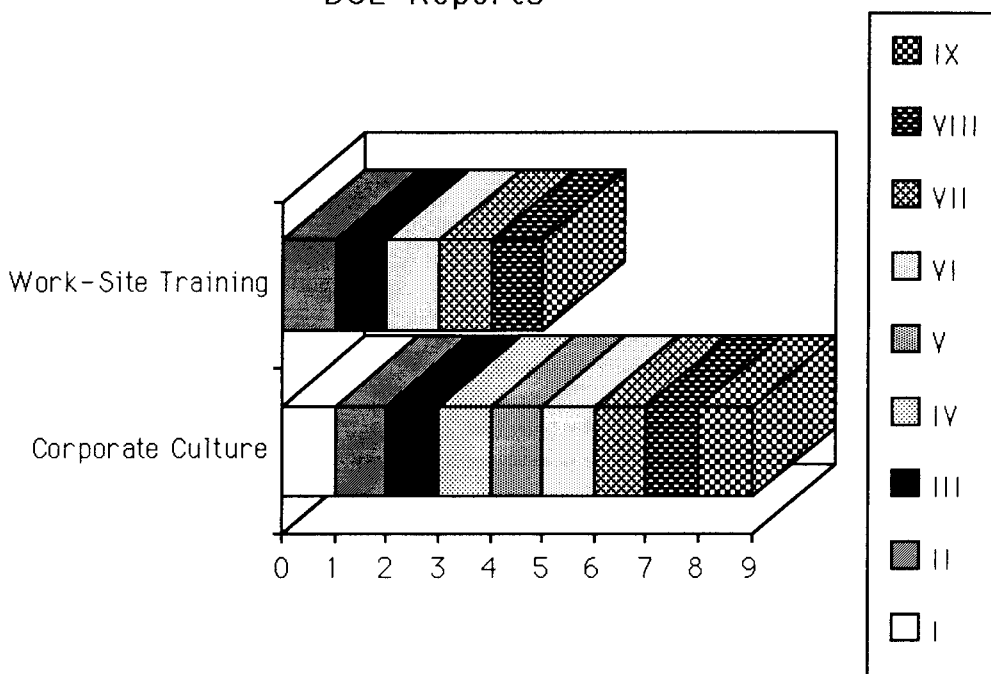
All projects said that business/education partnerships are essential, and

eight of the nine felt that an industry-based curriculum is essential. Seven out of nine insisted that a Tech Prep program must be in place so students could continue their education beyond high school and thus be prepared to enter the workforce.

The accompanying illustrations show this data.

GRAPH #6

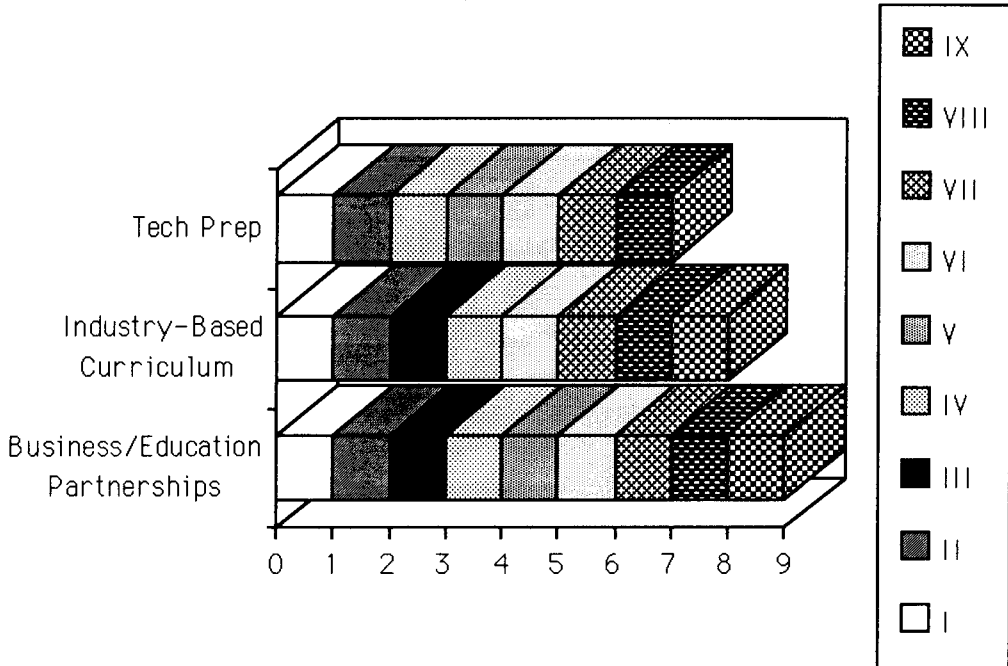
**Systemic Change Needed Within Business
- DOL Reports**



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| I. Boston | VI. PYAP |
| II. DuPage Co. | VII. Los Angeles |
| III. Mech Tech | VIII. TIES |
| IV. Tech Prep Plus | IX. Electronic Industry |
| V. Maryland's Tomorrow | |

GRAPH #7

Systemic Change Needed Within Education
- DOL Reports



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| I. Boston | VI. PYAP |
| II. DuPage Co. | VII. Los Angeles |
| III. Mech Tech | VIII. TIES |
| IV. Tech Prep Plus | IX. Electronic Industry |
| V. Maryland's Tomorrow | |

DATA FROM INTERVIEWS WITH PROJECT DIRECTORS AND KEY PERSONNEL

All together, interviews were conducted with twenty-one people, including seven Project Directors, as well as six Key Personnel representing business and eight Key Personnel representing education. The information obtained from the interview questions was summarized for each project and is presented here in terms of the similarities and differences.

Three members of the Boston Private Industry Council project were interviewed, including the Project Director and Key Personnel representing business and education. Three members of the DuPage County School-to-Work Transition project were interviewed, including the Project Director and Key Personnel representing business and education. Five interviews took place for the Maryland Department of Economic and Employment Development projects; the Project Director and four Key Personnel were interviewed, including one business representative and three educational representatives. Three people were interviewed from the Pennsylvania Youth Apprenticeship Program, including the Project Director and Key Personnel representing business and education. Two people were interviewed in the Los Angeles Unified School District project, including the Project Director and a representative of business.; the Project Director also represented education. Three people were interviewed in the Together in Education project including the Project Director and Key Personnel representing business and education. Two people were interviewed in the in the Electronic Industries Foundation project, including the Project Director and an educational representative; the Project Director also represented business.

DATA PERTINENT TO RESEARCH QUESTION ONE

How do the projects enable students to enter industry-based career paths?

The responses to interview questions 3, 4, and 5 were analyzed in terms of similarities and differences. These questions are:

- Question 3 - Outline the career ladder that illustrates the hierarchy of your industry-based career path.
- Question 4 - Describe how the students in your project transition into entry-level positions on the career ladder.
- Question 5 - What positions are made that allow students to progress beyond entry-level positions?

Within-Site Comparison

The members of the Boston Private Industry Council revealed that students entered the industry-based career path during summer employment while in high school. They were able to rotate through eight areas of the hospital to explore medical careers. The project was a Tech Prep program, which allowed students to obtain Associates degree credit while enrolled in high school. Students could choose one of six state-certified Associates degree programs and they could continue working while obtaining their degree. Upon completing their degree they were beyond an entry-level position.

The members of the DuPage County School-to-Work Transition project revealed that students entered the industry-based career path during part-time employment in the summer and during the school year. The students progressed up a career ladder established by Sears, and they were able to explore several departments through an extended campus activity. This Tech Prep project allowed students to obtain credit towards an Associates degree while they were attending high school. Sears offered training at their National Training Center that enabled employees to move up the company career ladder.

Members of the Maryland Department of Economic and Employment Development projects revealed that the Mech Tech program allowed manufacturing students to enter the industry-based career path while they were in high school. Students had the opportunity to view different working environments while they rotated through small manufacturing

shops, transferring every three to four months. This was not only a Tech Prep program that allowed students to obtain credit towards an Associates degree while they were in high school, but it was also a youth apprenticeship program. Interviews revealed that the state of Maryland was working with labor so that youth apprenticeship experience would be recognized by the adult apprenticeship programs.

Tech Prep Plus and Maryland's Tomorrow students did not obtain entry-level positions in an industry-based career path because these projects did not have a work component at the time of this study. The Tech Prep Plus program allowed student to obtain credit towards an Associates degree while they were still in high school. Maryland's Tomorrow's career exploration program gave students the opportunity to job-shadow a professional in a field the student wanted to explore.

The interviewees from the Pennsylvania Youth Apprenticeship Program revealed that the project allowed students to enter the manufacturing industry through a youth apprenticeship agreement connected with the state adult apprenticeship program. This Tech Prep program enabled high school students to earn credits towards an Associates degree. It was designed for students to work three days per week and attend school two days per week.

Endorsed by the mayor's office, the Los Angeles Unified School District project was aimed toward at-risk youth. According to the interviewees, students entered an industry-based career path while attending high school; there were 1200 job classifications but no established career ladder. Jobs were available in the city transportation system, which had a career ladder leading to jobs in construction and engineering. Employment with L.A. Water and Power could lead to building inspector. Students could advance by doing well on the civil service exam and their six-month review.

The interviewees from the Together in Education project revealed that students attended an after-school class offered by the Bank of America that prepared students to interview and apply for a job. Students also were employed in the banking industry, but there was no evidence of a career ladder; they remained in the same job rather than rotating through jobs. The students participated in a quarterly coaching session and an annual

job review as an evaluation measure. Students received raises based on their performance review.

The interviewees from the Electronic Industries Foundation project revealed that the first year of the project was focused on freshmen students, unable to work because of their youth. When these freshman became juniors, they would be eligible for employment and would transition into industry. This Tech Prep program allowed students to work towards a Associates degree while enrolled in high school.

Across-Site Comparison

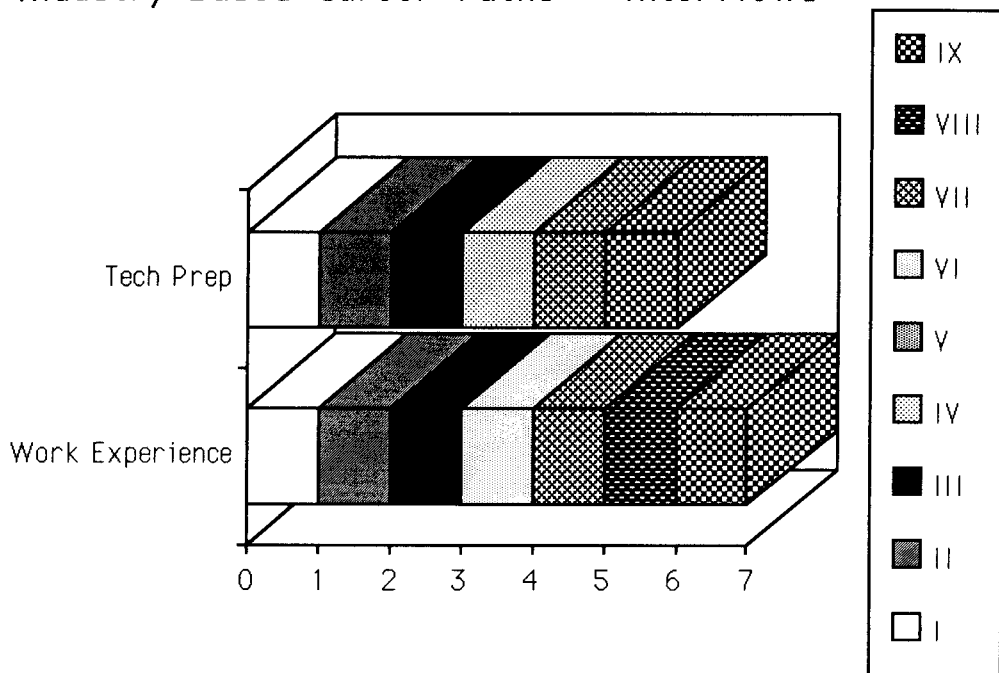
The data indicated that entry into an industry-based career path is enhanced through work experience and a Tech Prep system that leads to an Associate degree. Seven projects of the nine transitioned students to entry-level positions through summer school employment. Six of the nine were Tech Prep projects.

The data also revealed that several projects enabled students to enter a career path beyond entry-level positions. Two projects had a youth apprenticeship system that connected students with the established apprentice system. One project had a state-certified program. One not only outlined a company-based career ladder but also provided in-depth training for movement on the career ladder. One project allowed students to advance beyond an entry-level position by taking the Civil Service Exam. Four allowed students to move beyond entry-level positions through positive performance reviews. Two offered individual jobs to students but did not outline an specific career ladder.

The first illustration shows how the projects help students entered an industry-based career path and the second illustrates how the student was able to move beyond entry-level positions.

GRAPH #8

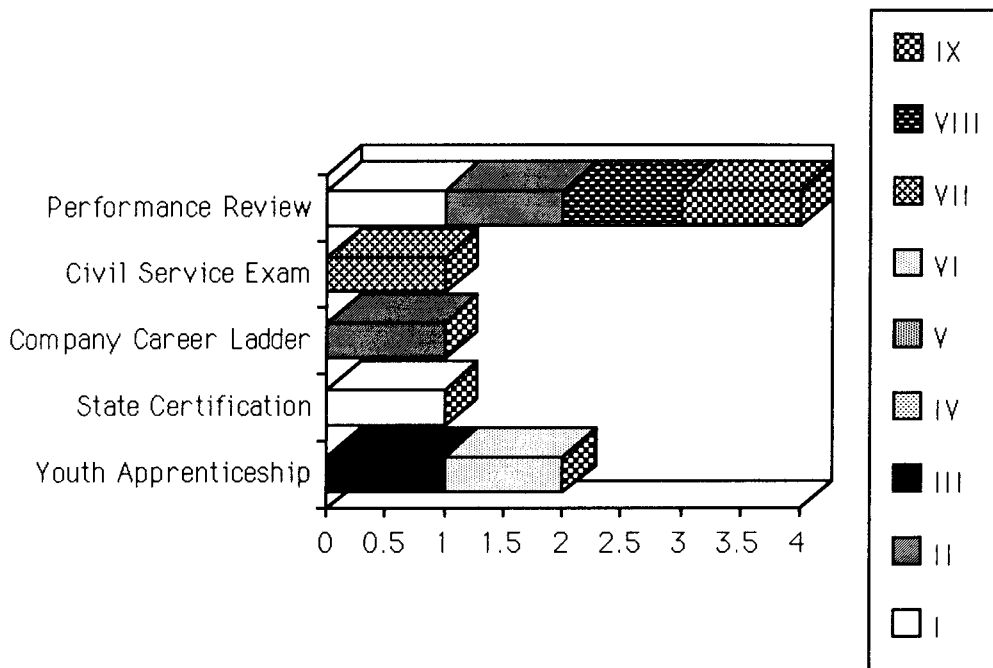
**Avenues that Enable Students to Enter
Industry-Based Career Paths - Interviews**



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| I. Boston | VI. PYAP |
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GRAPH #9

Methods of Career Acceleration - Interviews



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| I. Boston | VI. PYAP |
| II. DuPage Co. | VII. Los Angeles |
| III. Mech Tech | VIII. TIES |
| IV. Tech Prep Plus | IX. Electronic Industry |
| V. Maryland's Tomorrow | |

Cross-Check for Consistency of Information

Data obtained through the analysis of the DOL bi-monthly and annual reports reveals a commonality with the information obtained through interviews. Both data sources identified work experience and Tech Prep systems as the main ways students entered industry-based career paths.

Both data sources revealed additional means by which the projects allow students to enter industry-based career ladders. The DOL bi-monthly and annual reports identified five additional components that individual projects enabled students to enter industry-based career paths. These included the DACUM process, industry-based curriculum design, job rotation, career exploration through job shadowing, and a connection between youth apprenticeship and established adult apprenticeship systems.

The data obtained through interviews identified three similarities: the work experience, articulated credit agreements, and the connection between the youth apprentice experience and the adult apprenticeship system. The interviews identified that one project intended to add a summer employment work experience scheduled to begin during the 1992-93 school year when students in the program would enter 11th grade. The interviews also revealed six additional components that the individual projects created in order to help students make a smooth transition into industry-based career paths. They included state certification, a career ladder, and a company training system, as well as methods for students to move within the career path based on the results of the Civil Service exam and favorable performance reviews.

DATA PERTINENT TO RESEARCH QUESTION NUMBER TWO

How do work-based and school-based learning integrate?

The information obtained from interview questions 6, 7, and 8 was summarized and analyzed in terms of similarities and differences. These questions are:

- Question 6 - Describe the work-based learning component of your project.
- Question 7 - Describe the school-based learning component of your project.
- Question 8 - How does your project link work-based and school-based learning?

Within-Site Comparison

Interviews with members of the Boston Private Industry Council revealed that the work-based learning was obtained through summer employment and part-time employment through the school year, Monday through Thursday. The students were viewed as interns, their supervisors served as their mentors, and their classroom teachers visited the work-site during the school year and were employed by the hospital during the summer. Students were clustered in math and science classes in most of the school sites, but the Project Director indicated that all schools would offer clustered classes in the future based on the performance of the students that attended the clustered classes. The interdisciplinary curriculum was identified as a key component of the school-based learning; math and science were presented in the context of medical careers and the students' English research project interfaced with medical careers. The key components of the Boston project that integrated work-based and school-based learning were: the interdisciplinary curriculum developed by World Education; the high school instructors who visit the work-site during the school year and were employed at the work-site in the summer; the work-site mentors; the Private Industry Council; and the hospital professionals who reinforced the importance of doing well in school, of obtaining a high school diploma, and of connecting the math, science and communication skills learned in school with the application of those skills in the work-site.

Interviews with the DuPage County School-to-Work Transition project members revealed that structured work-based learning occurred through the curriculum, the extended campus rotation, and employment. The work-site curriculum was structured in an on-the-job format that included project-based check lists and a weekly job log. School-based learning occurred through a structured work-based learning approach that directly linked what was being learned in the school-site with what was being learned at the work-site. The design of the school-based curriculum included the integration of math, physics, and problem solving skills. Student were taught the basic concepts of mechanical and electrical operations which were applied to appliance diagnosis and repair. Remedial needs were addressed through school-based learning. Six basic elements linked work-based and school-based learning, including the following: the structured work-based learning curriculum; work experience; the job log; the work-site mentor; teacher visits to the work-sites; and the grading system.

Interviews of the Maryland Department of Economic and Employment Development project members revealed that the Tech Prep Plus and Maryland's Tomorrow projects did not have established work-based learning components at the time of this study, but that the Mech Tech project addressed work-based learning through work experience and its curriculum. Tenth and eleventh graders took part in co-op summer work experience, and twelfth-grade students worked part-time by rotating through small machine shops every 3 to 4 weeks. The curriculum was derived from the DACUM process and based on adult apprentice curricula. The school-based portion of the curriculum stressed math and principles of technology, and the co-op teacher linked the school-site with the work-site.

The interviewees from the Pennsylvania Youth Apprenticeship Program indicated that work experience, a work-site mentor and curriculum in the form of a common training matrix, weekly job logs, and the grading system were the elements that linked work-based and school-based learning. The common training matrix was used as a curriculum guide in the work-site for students working in the summer and part-time through the school year. School-based learning was guided by a project-

based, interdisciplinary curriculum that included the application of academics, and had a portfolio system of assessment.

The members of the Los Angeles Unified School District project indicated that work experience, the curriculum, the work-site mentor, the classroom teacher, and the weekly job log integrate work-based and school-based learning. The work experience consisted of part-time work four days per week in the afternoon during the school year and summer employment. The curriculum was based on industry needs but taught in the school-site only. Basic academic skills and employability traits were addressed one half-day per week in the school setting. The work-site mentor, the classroom teacher and the weekly job log linked work-based and school-based learning

The Together in Education project interviews indicated that the work-based component consisted of work experience directed by a mentor and on-the-job training. The school-based learning consisted of job seeking and keeping skills, which were taught after school by a bank employee. The bank employee served as an essential link in work-based and school-based learning.

The members of the Electronic Industries Foundation project revealed that the project did not have a fully developed work-based experience at the time of this study. Plans were in place to offer a summer job shadowing program. The school-based portion of the projects was based on curriculum, developed by the Electronic Industry, that included a diagnostic problem solving approach. The students tour plants to observe working conditions and guest speakers from industry came into the classroom to talk to students about their careers. Remedial math help was available for the students at the school.

Across-Site Comparison

A comparison of data across the nine project sites indicated that work-based and school-based learning was integrated by curriculum design and work experience. The industry-based curriculum was designed to be delivered and applied in the school setting and in the work-site.

Seven projects had developed a curriculum design that helped to integrate what transpires in the work-site with what transpires in the

school-site. Four projects had completed skill identification through four different methods. The DuPage County School-to-Work Transition Project used industry-based identification process, project Mech Tech used the DACUM process, the Pennsylvania Youth Apprenticeship Program developed a Training Matrix, and Together in Education used a skills identification study. The skill identification process served as the foundation of the curriculum. The interviews revealed that the curricular content should include problem solving skills and employability trait development. Six projects taught problem solving skills in their curriculum. Five projects integrated employability traits into their curriculum.

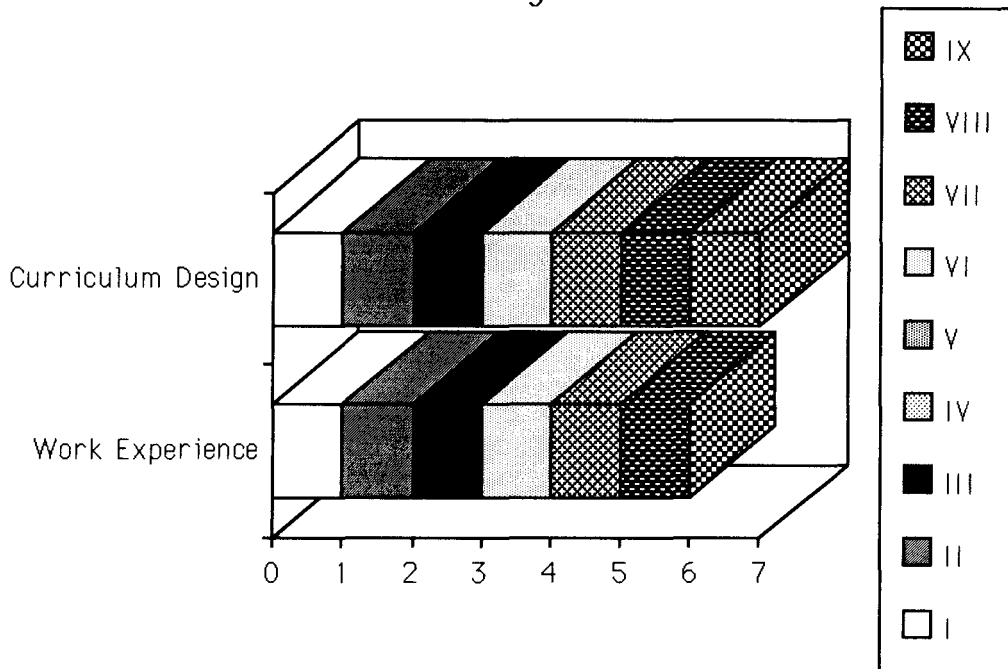
Six projects identified work experience as an important link between what happens in the classroom and how it is translated in a work setting. The same six projects had work-based mentors work with students in the work-site and used work-based learning for their project. Three projects were still working to develop a work component in their project.

Five projects revealed that communication between the work-site mentor and the classroom teacher is an important link between work-based and school-based learning. In three projects the Project Directors said they were the vital link between work-based and school-based learning. Three projects said their grading system held students accountable and linked work-based and school-based learning. Two projects cited the weekly job log as an essential link between work-based and school-based learning.

The following four illustrations show: (1) the major factors that integrated work-based and school-based learning, (2) curriculum, (3) work experience and (4) additional methods to integrate work-based and school-based learning.

GRAPH #10

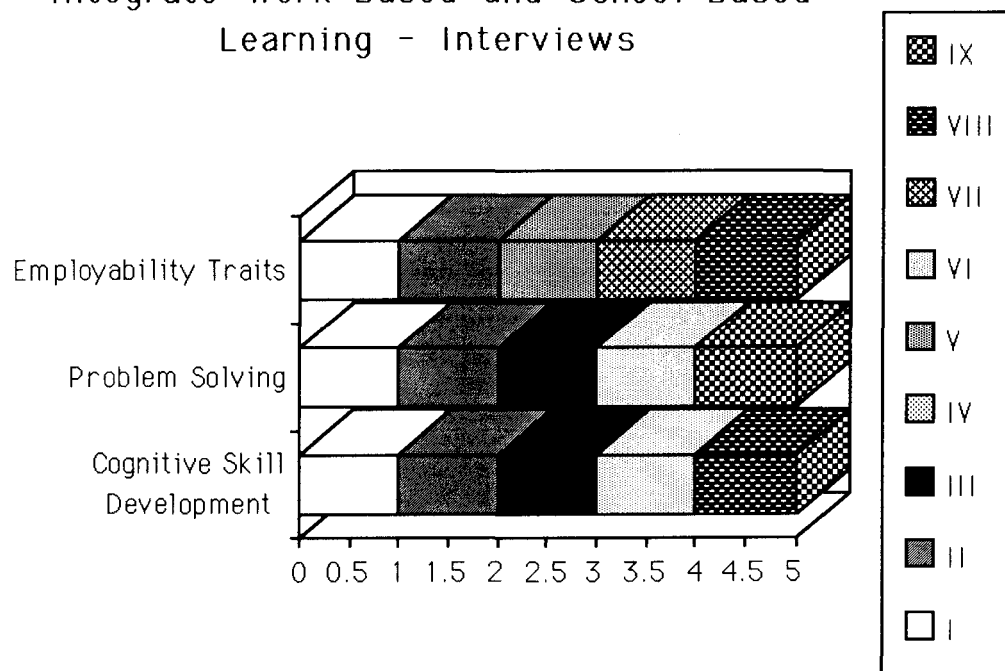
**Major Factors that Integrate Work-Based
and School-Based Learning - Interviews**



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| I. Boston | VI. PYAP |
| II. DuPage Co. | VII. Los Angeles |
| III. Mech Tech | VIII. TIES |
| IV. Tech Prep Plus | IX. Electronic Industry |
| V. Maryland's Tomorrow | |

GRAPH #11

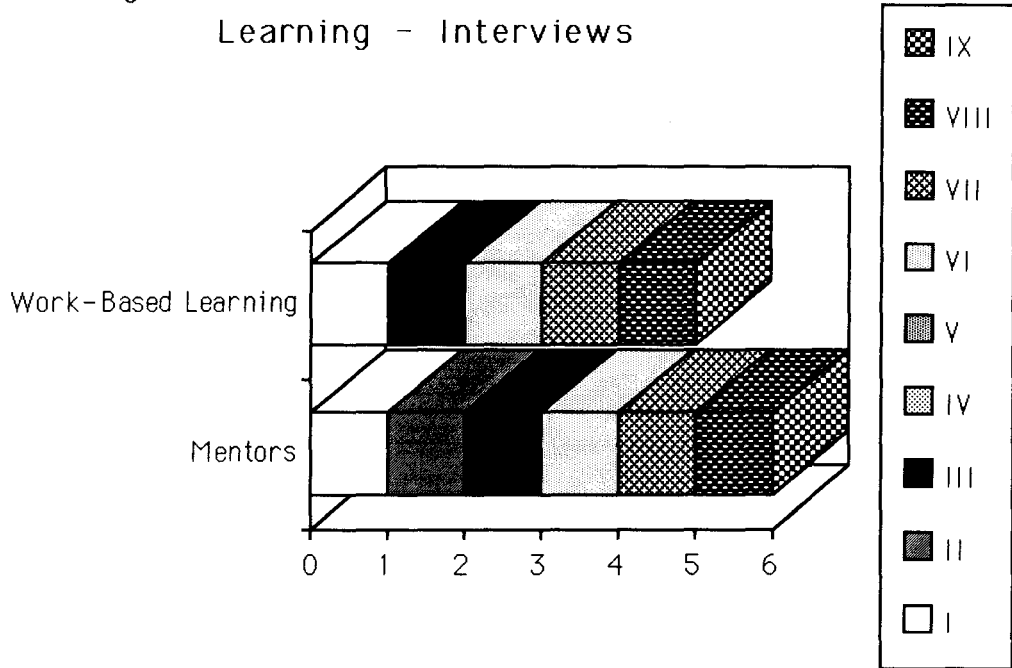
Components of Curriculum Design that Integrate Work-Based and School-Based Learning - Interviews



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| II. DuPage Co. | VII. Los Angeles |
| III. Mech Tech | VIII. TIES |
| IV. Tech Prep Plus | IX. Electronic Industry |
| V. Maryland's Tomorrow | |

GRAPH #12

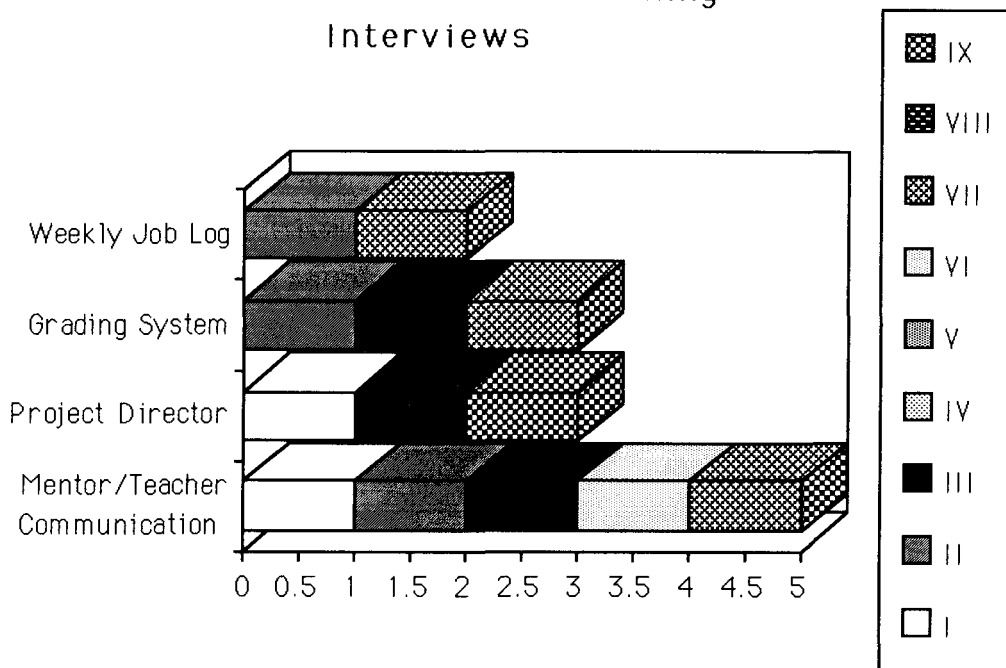
Components of Work Experience that Integrate Work-Based and School-Based Learning - Interviews



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| II. DuPage Co. | VII. Los Angeles |
| III. Mech Tech | VIII. TIES |
| IV. Tech Prep Plus | IX. Electronic Industry |
| V. Maryland's Tomorrow | |

GRAPH #13

Additional Methods to Integrate Work-Based and School-Based Learning - Interviews



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| I. Boston | VI. PYAP |
| II. DuPage Co. | VII. Los Angeles |
| III. Mech Tech | VIII. TIES |
| IV. Tech Prep Plus | IX. Electronic Industry |
| V. Maryland's Tomorrow | |

Cross-Check for Consistency of Information

Data obtained through the analysis of DOL Bi-Monthly and Annual reports revealed commonalities with the information obtained through interviews. Both data sources identified employment and curriculum design as the major ways of integrating work-based and school-based learning.

The interviews made it possible to obtain additional information about how employment and curriculum design integrated work-based and school-based learning. They revealed the importance of including a cognitive skill analysis, problem solving skills, and employability traits in curriculum design. They also showed the importance of mentors and work-based learning as it directly relates to school-based learning. It is important to recognize that three Project Directors felt it was their role to link work-based and school-based learning, that three projects used a grading system as a link, and that two projects used the weekly job log and communication between the mentors and the classroom teacher as an important communication link between the work-site and the school and as a self-assessment tool for the students.

DATA PERTINENT TO RESEARCH QUESTION THREE

How can the findings of SCANS be integrated into an industry-based curriculum that is jointly developed and delivered in conjunction with education?

The information obtained from interview questions 9 through 14 was summarized and analyzed in terms of similarities and differences. These questions were:

- Question 9 - Who was responsible for the design and development of your curriculum?
- Question 10 - Describe if and how your curriculum addresses the five competencies outlined in The Secretary's Commission on Achieving Necessary Skills (SCANS) which includes resources, interpersonal, information, systems and technology.
- Question 11 - How are basic skills being addressed in your project?
- Question 12 - Describe how thinking skills are being enhanced by your curriculum.
- Question 13 - Identify where and when thinking skills are being taught.
- Question 14 - What opportunities exist for students to develop their employability traits?

Within-Site Comparison

The interviewees of the Boston Private Industry Council revealed that the curriculum was developed by World Education, whose writers worked with teachers and work-site professionals. Furthermore, the project had set a goal to integrate all of the SCANS skills into the curriculum. They felt that basic skills, thinking skills, and employability traits should be developed in a school setting and then refined and applied in a work setting. The teachers visited the work-site and obtained summer employment to identify the skills their students would need in the workforce. The Advisory Committee, composed of PIC members and representatives from each of the hospitals and the schools, reviewed the curriculum to insure that it was industry-based.

Initially the project said that basic skill attainment was a pre-requisite for entrance into the program. Within a very short period of time,

however, the project realized that many students at whom the project had been targeted would be screened out of participating, and it did not exclude students based on skill deficiency. The project had not anticipated the need for remediation, but provisions were made to diagnose and address basic skills once the need was recognized. An effort was made to remediate problems before students completed 10th grade, so that they would be able to enter the workforce in 11th grade with requisite basic skills. Thinking and problem solving skills were taught and applied at the work-site. Students developed their employability traits while on the job. *The Competencies* were not formally addressed in the project at this time, but it was a goal to integrate them with the curriculum.

The members of the DuPage County School-to-Work Transition project revealed that the curriculum was jointly developed, that several of the SCANS skill were taught and a goal had been set to integrate *The Competencies* into the curriculum. Sears identified the essential skills that a repair technician should develop, and then Sears technical writers and school personnel worked together to produce the industry- based curriculum. Students completed a math screening test upon entering the program, and remedial help was available based on need. Basic skills, thinking skills, and employability traits were integrated into the school-delivered curriculum, and thinking skills and employability traits were being refined and applied at the work-site. Technology was the only SCANS *Competency* that was formally addressed in the curriculum, though a goal had been set to integrate the missing skills.

The Maryland Department of Economic and Employment Development project interviews revealed that the curriculum was developed differently in each of the three programs. Using the DACUM process, the Mech Tech project completed a cognitive task analysis as a basis of curriculum development; this insured that the curriculum was industry-based. Basic academic skills including math, science, technical reading, and communication were taught in the high school. Thinking and problem solving skills and employability traits were addressed through OJT. The SCANS Competencies were not formally addressed in the Mech Tech program.

Maryland's Tech Prep Plus project neither allocated money to develop

curriculum nor offered students a structured work-based learning experience. The project did participate in the DACUM process, however, and a course sequence was developed to guide students through high school and into community college. Neither basic skills, thinking skills, employability traits, nor SCANS *Competencies* were formally addressed.

The Maryland's Tomorrow project toured industry to develop curriculum based on student needs during their job-shadowing experience. Remedial help was available for students before and after school. The project neither the students a structured work-based learning experience nor formally addressed basic skills, thinking skills or SCANS *Competencies*. Employability traits were reviewed with students toward the end of their job shadowing experience.

Interviews with members of the Pennsylvania Youth Apprenticeship Program revealed that an innovative interdisciplinary, industry-based curriculum was developed by five teachers and a professor from the University of Pittsburgh; funding was provided through a grant from the Heinz Foundation. The teachers visited industry to identify the skills their students would need in the workforce. These metalworking industry identified the essential skills that the curriculum team interfaced with SCANS *Foundation* skills, though SCANS *Competencies* were not formally integrated into the curriculum. Basic skills, thinking skills, and employability traits were integrated into the curriculum and applied in school and at the work-site.

Interviews with Los Angeles Unified School District project members revealed that a curriculum writing team developed the industry-based curriculum; the team included a curriculum writer and four members representing education, industry and the City of Los Angeles. Basic skills, thinking skills, and the SCANS skills were formally integrated into the curriculum and applied on the work-site, and employability traits were address in the work-site. Students were enrolled in high school courses in the mornings; they spent their afternoons in the classroom one afternoon per week and at the work-site four afternoons a week, where they were visited by teachers. Diagnostic testing and the weekly job log identified basic skill deficiencies, and prescriptive teaching in the classroom corrected those deficiencies. The Los Angeles school system cross-

referenced each SCANS skill with proficiency tests to determine where it was addressed in the curriculum. A curriculum development goal called for SCANS skills to be integrated into the curriculum and addressed in school or at the work-site.

The members of the Together in Education project revealed that business developed the industry-based curriculum offered in the school setting. The work-based learning component was delivered through OJT, which integrated basic skills and thinking skills. A conscious effort to integrate all of the SCANS skills was made, but that goal had not yet been actualized. The bank, the industry partner, approached the school faculty council concerning an interdisciplinary curriculum to prepare students for work. It offered a career exploration unit to 9th graders and an after-school class on employability traits, job search skills, and interview preparation.

Interviews with the Electronic Industries Foundation project revealed that industry wrote the competency-based curriculum under the direction of two university professors; the program targeted an "at risk" student population. Though thinking skills and basic skills were integrated into the curriculum, SCANS skills were not formally so. The school was given curriculum and lab equipment, and its existing curriculum was modified. Basic skill instruction was excluded because students who had failed to master basic skills were not admitted, but after the program began a math tutor was hired to offer the students remedial assistance. Critical thinking, diagnostic problem solving, and trouble shooting were integrated into the curriculum and lab activities. Structured work-based learning through work experience had not been actualized at the time of this study, but the classroom was after the work-site, giving the students the opportunity to develop employability traits there.

Across-Site Comparison

A comparison of data across the nine project sites indicated that the SCANS skills and competencies can be integrated into an industry-based curriculum and delivered in a school setting, at the work-site, or in both sites.

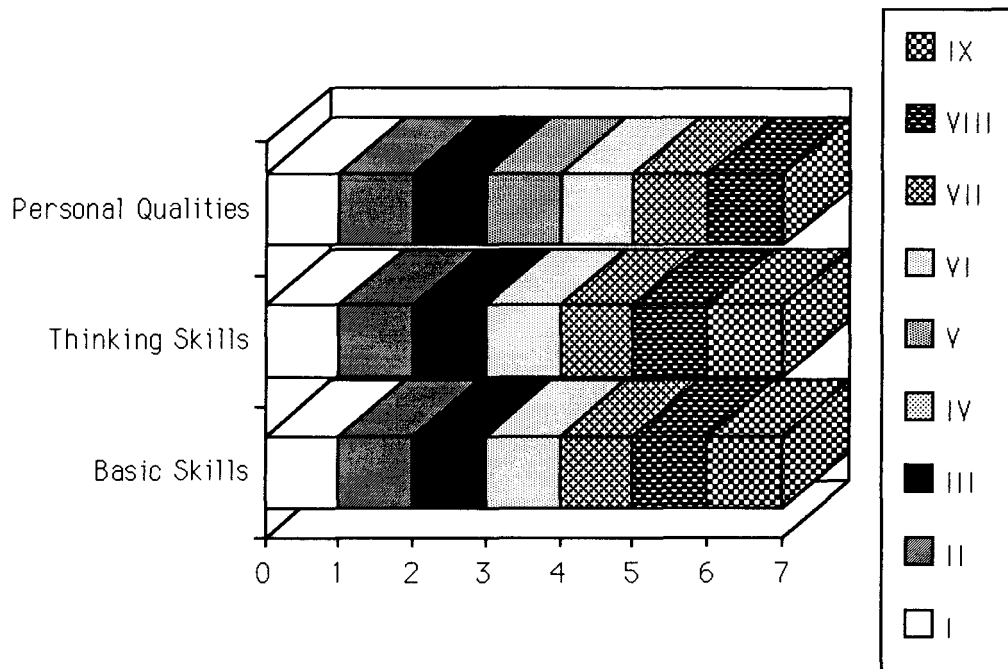
Seven sites integrated basic skill instruction into their industry-based curriculum, six in the school setting and one at the work-site. Seven sites integrated thinking skills, two in the school setting, two at the work-site, and four at both. Seven sites integrated personal quality skills. No project had yet integrated the SCANS *Competencies*, but five sites had set goals to do so.

Eight sites had an industry-based curriculum. In five of these the curriculum was jointly developed and in two it was developed by business alone. Two sites did not have structured work-based learning. Remedial help was offered to the students in the school setting in five project sites.

The first illustration shows the sites integrating SCANS. The second illustration illustrates who developed the industry-based curriculum.

GRAPH #14

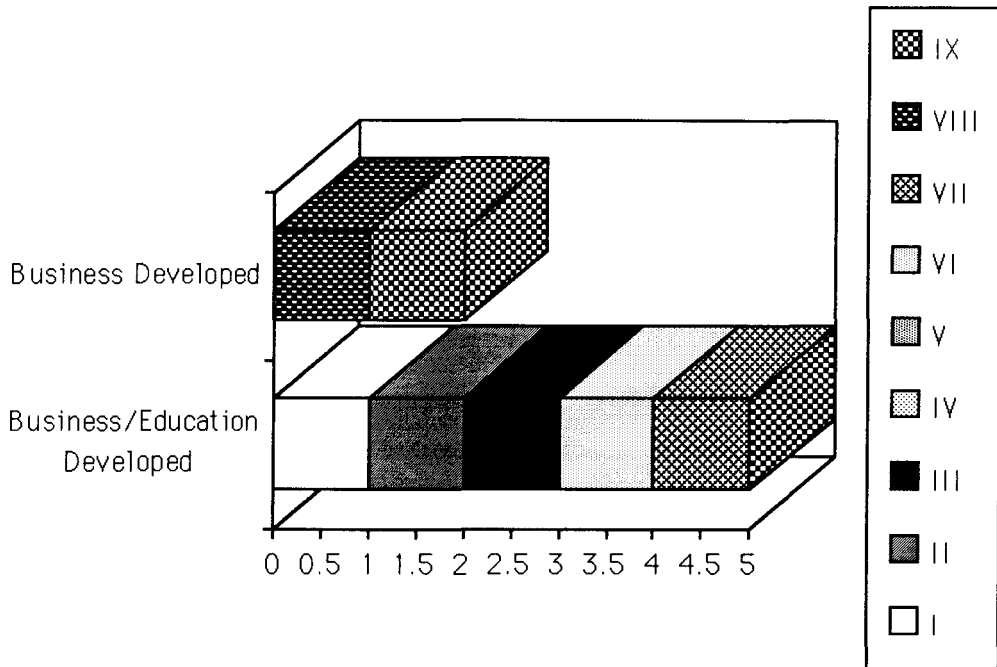
SCANS Foundation Skills - Interviews



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| I. Boston | VI. PYAP |
| II. DuPage Co. | VII. Los Angeles |
| III. Mech Tech | VIII. TIES |
| IV. Tech Prep Plus | IX. Electronic Industry |
| V. Maryland's Tomorrow | |

GRAPH #15

Origin of Industry-Based Curriculum -
Interviews



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|------------------------|-------------------------|
| I. Boston | VI. PYAP |
| II. DuPage Co. | VII. Los Angeles |
| III. Mech Tech | VIII. TIES |
| IV. Tech Prep Plus | IX. Electronic Industry |
| V. Maryland's Tomorrow | |

Cross-Check for Consistency of Information

Data obtained through the analysis of the DOL Bi-monthly and Annual reports reveals a commonality with the information obtained through interviews. Both data sources revealed that the SCANS *Foundations Skills* can be integrated into an industry-based curriculum jointly developed and delivered in conjunction with education. Both data sources indicated that six project sites had done so, and that one site had integrated two out of three *Foundation skills*.

DATA PERTINENT TO RESEARCH QUESTION FOUR

What perceptual differences exist between business and education and how do they impact the project?

The information obtained from interview questions 15 and 17 were summarized and analyzed in terms of similarities and differences. These questions were:

- Question 15 - What were your greatest challenges during the planning and implementation stages of this project?
- Question 17 - How have your perceptions of your business/education partner changed since the project began?

Within-Site Comparison

In interviews with members of the Boston Private Industry Council, question 15 revealed that the Project Director felt that business and education live in two different worlds and that business had a negative opinion of education. In the initial stages of curriculum development, education was excluded because business had a negative perception of education's ability to develop curriculum. The educational representative felt that business did not understand school culture and therefore had difficulty understanding why the school did not want to hold classes outside in the work-site. Education also thought that it was important for the work-site instructor to hold proper teacher certification. The business representative could not understand why work-site professionals did not have the authority to supervise students in the work place.

Interview question 17 revealed that the Project Director felt that the project needed to move beyond the Boston Compact and move students beyond entry-level positions so that when they completed the project they would enter the career ladder at a higher than entry-level position. The educational representative commented on the level of good will of the hospital personnel, who cared about students and preparing them for the future. The business representative was concerned about how educational standards and expectations are lower today than in the past. A concern was expressed about the lack of respect for teachers, the amount of time that was spent disciplining students, and the lack of resources that were available for educating students.

In interviews with members of the DuPage County School-to-Work Transition project, interview question 15 revealed that the Project Director was concerned about the bureaucratic nature of schools and the impact the recession had on hiring students. The business representative was anxious about the need to teach remedial skills to meet the instructional needs of high school students. The educational representative was concerned that business did not anticipate the lack of employment available for high school students based on the recession.

Interview question 17 revealed that the Project Director was also concerned about differences in organizational culture between business and education. The educational representative was tired of being the victim of “education bashing” and dealing with the business mystique that business has the answer to everything. The business representative stated that it was time for business to stop complaining about students and get involved in helping school write their curriculum and become technologically literate. The business representative felt it was important for business to get business technology into the schools.

In interviews with Mech Tech, Tech Prep Plus and Maryland’s Tomorrow project members, interview question 15 revealed that the economy caused business to reconsider its commitment to education. Business became concerned about the bottom line and reduced or eliminated the number of students in their work-sites. The educational representative stated that if schools were to accept work-based learning business must sustain its commitment to education.

Interview question 17 revealed that the Project Director did not anticipate how well business responded during hard economic times. The educational representatives were challenged by the difficulty they had in obtaining a commitment from business. The Project Director and the educators' perceptions about the commitment of business in difficult economic times were in direct conflict with each other. The Project Director thought that secondary education and the community college have a closer working relationship than they do. The Project Director’s perception was that vocational education did not want to change and was very threatened by business.

In interviews with members of the Pennsylvania Youth Apprenticeship

Program, interview question 15 revealed that the Project Director was concerned about the negative image of vocational education and how it would impact student participation in the apprenticeship program. The business representative said that the partnership was a challenge because everyone knew where they were going but did not have a prototype to follow. The educational representative indicated that school officials do not have experience in the work world and could benefit from summer jobs to help them understand what goes on in the work-site. It was felt that the school system does not want to give up control and that vocational educators are afraid of changing their role and fear their job could be shifted to a mentor at the work-site.

Interview question 17 revealed that the Project Director expected business to remain committed to working in a partnership even in difficult economic times, although reality dictated that business is driven by the economy and thus their commitment is affected by the current economic climate. The Project Director expressed concern about the teachers' lack of self-confidence and their lack of pride in their profession.

In interviews with the Los Angeles Unified School District project personnel, interview question 15 revealed that the Project Director was challenged by getting all of the partners to reach for the same vision. The business representative was concerned about the separate worlds business and education occupy, feeling that their goals often differ and this project challenged them to work together for the common goal of preparing students for work.

Interview question 17 revealed that the Director thought that business only looked at the bottom line but was surprised to see business also looked at the future benefits from training students. The business representative felt that the school's role was to teach basic skills and not to find jobs for students. There was a common belief that students can't learn when they have so many social problems. The business representative saw the difference it made in a student's life to have a job and be involved in this program. The business representative believes that business/education partnerships have the resources to help students overcome the social problems that surround them.

In the interviews with the Together in Education project personnel,

interview question 15 revealed that the Project Director was challenged by bringing business and education together. The business representative felt it was important for business to be able to see how educational reform impacted them. The first managers involved in the project were risk takers. After the manager experienced success with the student other managers wanted to jump on aboard. The educational representative was sensitive about the bank's hiring freeze and inability to meet student employment needs.

Interview question 17 revealed that the business representative never thought the project would be challenged by a hiring freeze at the bank. The business partner grew to respect education and its challenge of budget cuts and layoffs. The business representative was surprised at the difficulty in entering into the school and establish a working relationship.

The Electronic Industries Foundation project personnel interviewed revealed in question 15 that the Project Director was challenged to bring business and education together during hard economic times. The educational representative was concerned about the students lack of work ethic and that business had not provided enough equipment.

Interview question 17 revealed that business viewed schools as wanting money and materials and displaying a "what have you done for me lately attitude." The educator's view was that business can afford to provide equipment but that local companies "have not been meeting my needs."

Across-Site Comparison

A comparison of data across the nine project sites indicated that all sites felt that developing a collaborative relationship with their partner was their greatest challenge. Business and education were found to have different cultures, purposes, and goals. They felt that participating in a business/education partnership helps to change the stereotype perceptions that business has about education and education has about business. In order for business and education to work collaboratively, they believe, it is necessary for them to move beyond the finger-pointing stage of their relationship and work together to produce a quality workforce. The collaborative relationships developed in all the project sites caused the participants to obtain a greater understanding of their partner.

There were some surprises. Educators were surprised about the level of good will of business; “I was surprised to see how much they care about kids.” Business was surprised to see the lack of self-confidence the teachers had and also the lack of pride teachers had in their profession. Project Directors were startled by the educator’s attitude of “what have you done for me lately” and how committed business was to the project during difficult economic times in four project sites. Economic downturn had negative effects on five project sites.

Cross-Check for Consistency of Information

Data obtained through the analysis of the DOL Bi-monthly and Annual reports reveals a commonalty with the information obtained through interviews. Both data sources revealed that business and education identified their greatest challenge to be developing a collaborative relationship. It was difficult to develop common goals at first because each member entered the partnership with stereotype notions about their partner. Two projects submitted a written report that addressed the perceptual differences and how they impacted the project. One Project Director was unaware of how state budget-cuts impacted education and staff reductions until working on this project. Another Project Director was unaware of how educational budget constraints impacted the ability to reduce class size until participating in this project. Business and education partners developed realistic perceptions about their partner as they worked collaboratively to overcome turf issues and prepare the future workforce. Collaborative partnerships had a positive effect on the projects.

DATA PERTINENT TO RESEARCH QUESTION FIVE

What systemic change needs to occur within business and education in order to reform current educational practices that prepare our future workforce?

The information obtained from interview question 18 was summarized and analyzed in terms of similarities and differences. This question is:

- Question 18 - Identify the systemic change that needs to take place within your organization to maximize your project's success in transitioning students.

Within-Site Comparison

Interviews with members of the Boston Private Industry Council provided suggestions for educational systemic change from the Project Director and the educational representative. They believed that secondary education must be reformed by through a change in curricular content that connects students with employment and the world of work. They felt that secondary educational reform can be enhanced by the restructuring of the vocational education system into a Tech Prep format. They also felt that the assessment system in high school must change to be outcome-based to mirror life, believing that "students should be evaluated in school as they are on the job." They felt that business education partnerships should play an essential role in systemic change.

The suggestions for business systemic change came from the Project Director and the business representative. The Project Director felt it was insufficient to merely create entry-level employment for students; the Director also felt that connecting students with a Tech Prep program was essential to create employment opportunities beyond an entry-level positions. The business representative felt that corporate culture needed to change to involve business in education so that employees would be empowered to interact with education.

The DuPage County School-to-Work Transition project provided suggestions for educational systemic change from the Project Director and both Key Personnel. They believed that educational reform requires a strong business/education partnership that must work together to address change in teaching methodology, curriculum content, and student assessment. They felt that teaching methodology must include an

opportunity for students to work one-on-one with a mentor in the work-site. Furthermore, curriculum must include structured work-based learning activities that give students an opportunity to apply academic learning, SCANS *Foundations Skills* must be integrated into the curriculum, and assessment must be outcome-based. They felt that the public attitude toward those who do not attend college must be changed and that the Tech Prep system was a vehicle for actualizing such a change.

The suggestions for business systemic change came from the Project Director and the business representative. They felt that business must look beyond short term profits and make a long term commitment to invest in the people that they employ and accept responsibility to help educate the future workforce. They felt that, as a community service, business should prepare mentors to work with students in the work-site.

The suggestions for governmental systemic change came from the business representative, who felt that government should take responsibility for removing people from the unemployment roles and into job training activities, and also that government should offer business tax credits to offset student salaries when they are in a training program.

Interviews from all three of Maryland's projects Mech Tech, Tech Prep Plus, and Maryland's Tomorrow provided suggestions for educational systemic change from the Project Director and all the Key Personnel. They believed that the vocational education system must be restructured to include a Tech Prep system. They also believed that the higher education system in this country should change to facilitate a connection between all levels of education so that students could move effortlessly from secondary education to the community college and/or university level. They felt that teaching methodology, curriculum content, and student assessment need to change. They felt it was important to expose teachers to the workforce so that they can see what their students need to know and change their teaching methodology to include a team approach, to integrate industry-based curriculum, and to use an outcomes-based assessment system. In order to accommodate students' need for job exploration, they suggested integrating career education in the curriculum.

The suggestions for business systemic change came from both education and business Key Personnel. They felt that business needs to

invest in the education and training of the future workforce, working in partnership with education. They suggested that one way to accomplish this would be to sponsor workshops for teachers and principals so that they could see what students need to know to be successful in the workplace. They felt that business should give workers the opportunity to make decisions that effect them. They suggested that business needed to insure that curricular changes were industry-based.

The suggestion for governmental systemic change came from the Project Director, who believed that the government should mandate the implementation of a national Youth Apprenticeship Program

The interviews of the Pennsylvania Youth Apprentice Program personnel provided suggestions for educational systemic change from the Project Director and the education representative. They felt that educational reform must be based on a business/education partnership. They felt Tech Prep systems should be put in place, that education should get rid of middle management, and that teachers and students should be empowered and responsible for their own learning. Furthermore, they believed that teaching methodology should incorporate a team approach, that curriculum should be industry-based, that outcome -based portfolio assessment should be used, and that teacher certification requirements should change to allow work-site professionals to teach.

The suggestions for business systemic change came from the Project Director and the education representative. Business trains managers but not workers, they felt; furthermore, business must invest in training its present and future workforce and should require a Certificate of Initial Mastery proposed in the National Youth Apprenticeship Act.

Suggestions for educational systemic change came from the Los Angeles Unified School District Project Director and the business representative, who felt that teaching methodology should be addressed through university teacher training and the certification system, and it should include an opportunity for instructors to visit the workforce and identify what students will need to know when they enter the workforce. They felt that curriculum should be industry- based and integrate the SCANS *Foundations* and *Competencies*, that outcome-based assessment should be implemented, that the school should guarantee that a student is prepared

to work, and that if the employer identifies basic skill problems the school system should warrantee their product and work with the student to eliminate the deficiencies. They believed that mentors must be trained to work individually with a student in the work-site, that students should rotate through several jobs so they could view the characteristics of job and related working conditions, and that Tech Prep options must be integrated to give students the opportunity to continue their education beyond high school. The project members valued its business/education partnership and felt that together they could enact systemic change in education.

The suggestions for business systemic change were addressed by the Project Director and the business representative. Business needs to look beyond bottom line profits and begin to invest in human resource development and in students.

Three members of the Together in Education project including the Project Director and two Key Personnel representing business and education were interviewed. The interviews revealed that systemic change needs to occur within business and education in order to reform current educational practices that prepare our future workforce.

The suggestions for educational systemic change came from the educational representative, who felt that educational reform must include a business/education partnership that insists upon the integration of an industry-based curriculum, and an outcome -based assessment system.

Suggestions for business systemic change were given by the Project Director, who stated that business must create a training category that will allow students to rotate through several jobs to determine what the job is like and to be able to assess the working environment. The Director also felt that business must evaluate the training it offers its employees.

Suggested educational systemic change came from the Electronic Industries Foundation Project Director who believed that "education needs to look outside itself to become aware that students need to be educated to enter the workforce, not just to go on to college." The Project Director also believed that learning is a life long process and that education should institute a Tech Prep system.

A suggestion for business systemic change came from the Project

Director, who believed that business needs to become involved in business/education partnerships.

Suggestions for governmental systemic change also came from the Project Director, who felt that the government should revise the educational funding system, and that it should offer business tax incentives for hiring students as well as supply “seed” money to duplicate and replicate projects that work.

Across-Site Comparison

A comparison of data across the nine project sites indicated that all agreed with the need to change corporate culture so that American business will look beyond the bottom line of short-term profit and focus on the long-term goal of preparing our future workforce. Five projects agreed that business systemic change includes training students at the work-site.

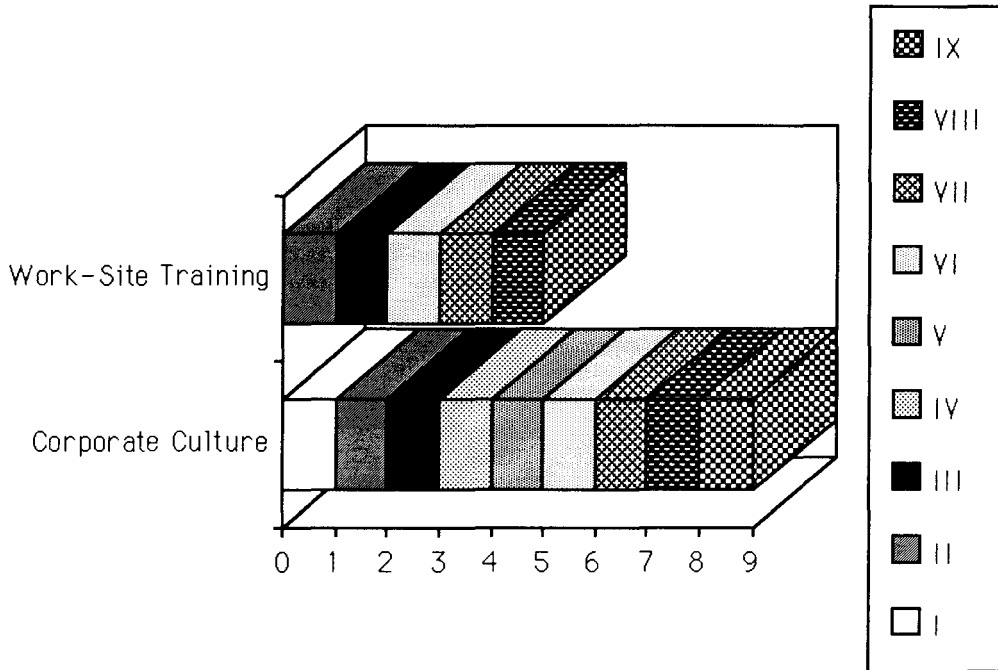
A comparison of data across the nine project sites revealed that all project sites agreed that education needs to form strong business/education partnerships to address educational systemic change. Eight sites believed that education must create a Tech Prep system, and eight sites felt that industry-based curriculum was necessary. Eight sites also mentioned that student assessment must become outcome- and competency-based. Six sites indicated that teaching methodology needs to incorporate cooperative learning, and four felt it was important to include career exploration activities.

Two project sites reported that the government should provide tax incentives to business to defray the cost of a student training wage.

The following illustrations summarize business systemic changes and educational systemic changes.

GRAPH #16

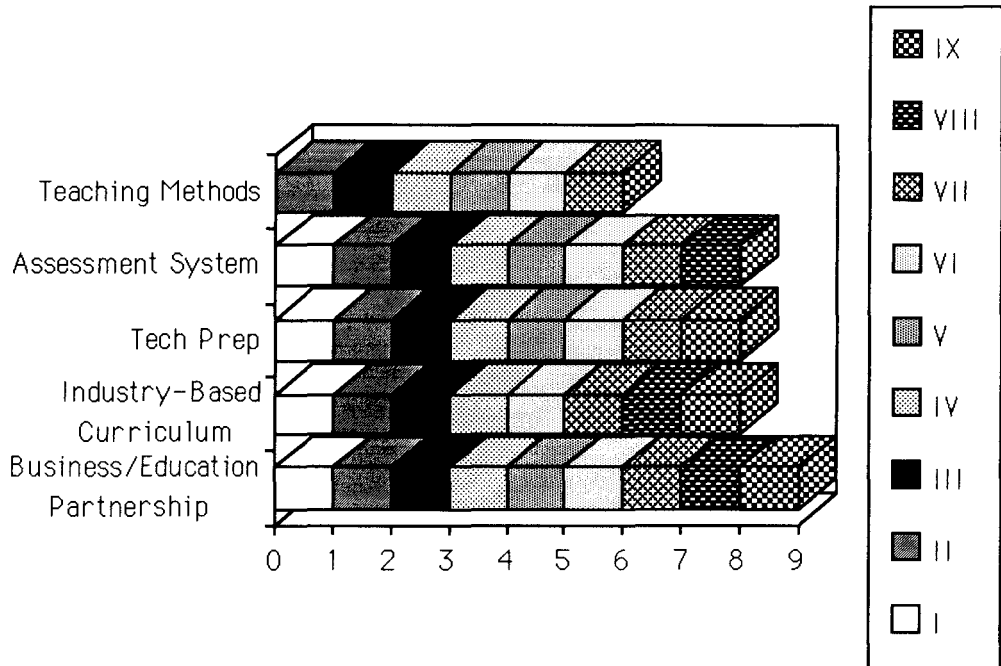
**Systemic Change Needed Within Business
- Interviews**



- | | |
|------------------------|-------------------------|
| I. Boston | VI. PYAP |
| II. DuPage Co. | VII. Los Angeles |
| III. Mech Tech | VIII. TIES |
| IV. Tech Prep Plus | IX. Electronic Industry |
| V. Maryland's Tomorrow | |

GRAPH #17

**Systemic Change Needed Within Education
- Interviews**



- | | |
|-------------------------------|--------------------------------|
| I. Boston | VI. PYAP |
| II. DuPage Co. | VII. Los Angeles |
| III. Mech Tech | VIII. TIES |
| IV. Tech Prep Plus | IX. Electronic Industry |
| V. Maryland's Tomorrow | |

Cross-Check for Consistency of Information

Data obtained through the analysis of the DOL bi-monthly and annual reports reveals a communality with the information obtained through interviews. Both the data sources identified that business would need to change its corporate culture in order to devote time and attention to training students in the work-site. Both the data sources identified that education would need to build strong business/education partnerships, modify curricular content to include an industry-based curriculum, and implement a Tech Prep system.

The interviews provided additional information about the need to include career exploration activities to help students make a career choice. Two sites felt that the government should provide tax incentives for business to help them defray the cost of a student training wage.

CHAPTER IV

ANALYSIS OF THE MULTIPLE DATA SOURCES

The rating criteria outlined in the original application package indicated that the grantees were responsible for developing a program design that focused on the following four principles:

- **High Standards:** School-to-Work transition programs must enable youth to attain the same achievement levels required of all who may graduate from high school.
- **Stay-in-School:** School-to-Work transition programs must motivate youth to stay in school, meet high standards and become productive citizens.
- **Linking Work and Learn:** School-to-Work transition programs must embody direct relationships between education at work and in the classroom. The curriculum and work experience must complement each other and include direct linkages between the classroom instructor and the work place mentor.
- **Employment and Careers:** School-to-Work transition programs should lead to initial employment and a significant chance for continued employment and educational growth.⁹⁷

The analysis of the multiple data sources used the following procedures:

- The four principles were used during the analysis of data in the first three research questions to measure compliance with the original project selection rating criteria.

⁹⁷ Solicitation for Grant Application (SGA) Package, "School-to-Work Transition Demonstration Projects," (Washington, D.C.: U.S. Department of Labor, 1990) p.6.

- Innovative and unique program elements were noted as they were discovered through the analysis of the first three research questions. Innovative program elements introduced a new element to the DOL projects and unique elements were the sole example in the DOL projects.
- The fundamental differences between business and education caused challenging issues to emerge for project personnel. These emerging issues and their implications for the education leader were identified throughout the analysis of the research questions.

ANALYSIS OF DATA, RESEARCH QUESTION ONE

How do the projects enable students to enter an industry-based career path?

Research question one addressed the design principle that focused on employment and careers. According to that principle, school-to-work transition programs should lead to initial employment and provide the opportunity for continued employment and educational growth.

Multiple data sources revealed that work experience and the Tech Prep system enable students to enter an industry-based career path. The majority of the projects were in compliance with the original rating criteria. They were able to transition students into initial employment with an opportunity for educational growth, continued employment, and advancement opportunities beyond an entry-level position. Although all nine projects designed their program to contain a work component, only six were able to actualize a work component.

The interviews revealed that two of the Maryland projects, Maryland's Tech Prep Plus and Maryland's Tomorrow, indicated that their grant did not include funds to finance student salaries and that employers were not able to hire students because of the economic recession.

The Electronic Industry project offered two top students a job, but the students declined the offer because they would need to relocate; the Project Director indicated that the industry viewed the students as immature based on this decision. Limiting the structured work-based learning experience to only top students as opposed to offering a general experience for additional students is not in compliance with the original rating criteria. This practice is consistent with the differences between the

business and education sectors outlined in Chapter II. The business sector “can target its product and select its customers,” whereas the education sector “must serve all students assigned to it.”⁹⁸ The education leader is challenged with an equal access issue in addition to non-compliance with the original rating criteria.

Interviews revealed that job availability in several projects was impacted by the economic recession. The Boston, DuPage County and Los Angeles projects were able to provide the work component, but they were unable to find employment for all students. The Bank of America was subject to takeover by Security Pacific, which resulted in a hiring freeze that limited the number of jobs that were available for students. The employers in Maryland’s Mech Tech project were primarily small shop owners who were unable to hire additional students when the manufacturing industry felt the impact of the recession.

The educational and business leaders were challenged to include cost-effective methods that provided work-site experiences for their students. Business and education proposed solutions that raised additional issues in each of the project sites and involved approaches that highlight the differences between the business and education sectors. In the business sector there is a “powerful and autonomous chief executive and board of directors, ” whereas in the education sector the “chief executive operates under constraints imposed by independent state and local boards and state officials.”⁹⁹ The education leader was challenged to create a meaningful work experience of each student while answering to local and state boards and officials, while the business leader, answering only to the CEO, was able to function as an autonomous decision maker. The different points of view challenged collaborative efforts and raised issues that have implications for the education leader, including those of academic credit, teacher certification, and liability.

The DOL reports revealed that Pro Tech, the Boston project, included the unique element of a job rotation experience. Though the student work experience was limited to one job, the project's clinical rotation gave the

⁹⁸ Business Strategies That Work : A Planning Guide for Education Restructuring(Washington, D.C.: National Alliance of Business, 1990) p.6.

⁹⁹ Ibid.

students an opportunity to see eight different departments in a hospital while under the direction of a hospital professional. Business and education personnel felt the clinical rotation enhanced the work-site experience for the student because it gave the students the opportunity to explore additional careers within the hospital setting. Education personnel, interested in remaining in compliance with state regulations, insisted that students could not receive academic credit for instruction if the clinical rotation were a paid experience, and they were uncomfortable with a non-certified teacher supervising students in the work-site. The dilemma was temporarily resolved by the clinical rotation being a non-paid experience and a hospital professional teaching a curriculum that was approved by the educational sector. The certification issue raised the question about the teacher certification process, and the non-paid rotation created a liability situation for the school because the business personnel stated that the hospital was not liable for the students unless they were employees. These issues were unresolved, and must be addressed.

DOL reports indicated that the education leader of the DuPage County School-to-Work Transition Project responded to the lack of job availability by creating a unique extended campus experience that enabled students to rotate through three work-site departments. The students worked one-on-one with a work-site mentor, spending a week each in the parts department, the small engine repair, and the small appliance repair departments. Interviews revealed that the activity was not created to replace structured work-based learning but to expose the students to the work-site during a non-paid experience. The extended campus activity challenged the education leader with the liability issue concerning who is legally responsible for students in the work-site under the supervision of an uncertified work-site mentor. This issue is unresolved. Business personnel indicated that they were only responsible for paid employees, and therefore the school was liable for the students; education personnel indicated that they might obtain insurance to cover the student on the work-site. The resolution of an economic issue created two new issues that must be addressed, a liability issue and a certification issue.

The education leader of Workforce LA Youth Academy indicated during an interview that both the business community and the school district were feeling the impact of the economic recession. The business personnel stated in an interview that they were cutting back the number of jobs that were able to offer students and that the school district was experiencing funding cuts. The education leader introduced the unique idea of expanding the Los Angeles model to include the banking industry and called upon the Bank of America project for technical assistance in replicating the Bank of America project in Los Angeles. The expansion of the Los Angeles model to the banking industry increased job availability to Los Angeles youth.

Together in Education was unable to provide work for additional students due to a potential take-over. The business leader was able, however, to replicate this Bank of America project in Arizona and in Los Angeles.

In addition to work experience, the data sources revealed that a Tech Prep system of articulated credit enabled students continue their education beyond high school and enter an industry-based career path. Six of the nine projects were based on the Tech Prep Plus model outlined in Chapter 2. They linked secondary and post-secondary education through a structured work-based learning experience and allowed students to accumulate credit toward an associate degree while attending high school. Students entered the workforce at an entry-level position in high school, continued working while they obtained their associates degree and advanced in the established career path based on the completion of the degree and the work experience they accumulated.

Three projects were not in compliance with the original rating criteria because they did not offer a structured work-based learning experience for students. Maryland's Tech Prep Plus had no work experience, Maryland's Tomorrow had neither a work experience nor an articulated credit agreement, and Together in Education had no articulated credit agreement with a community college. One of the reasons these project sites did not receive the DOL Extension Grant in 1992 was that they did not provide a link for post-secondary training as outlined in The National Youth Apprenticeship Act of 1992 and the grant solicitation criteria .

ANALYSIS OF DATA, RESEARCH QUESTION TWO

How do work-based and school-based learning integrate?

Research question two addresses the design principle that focused on linking work and learning. According to that principle, the school-to-work transition programs must link work-based and school-based learning, and the curriculum and work experience must compliment each other and link the classroom instructor and the work-site mentor.

Multiple data sources revealed that curriculum design and work experience integrate work-based and school-based learning. Additional methods that integrate work-based and school-based learning include: mentor/teacher communication, the Project Director, the grading system and the weekly job log.

Six projects were in compliance with the original rating criteria requiring that there be a direct relationship between education in the classroom and in the work-site. Five of the six projects were in compliance with the original rating criteria requiring a communication link between the classroom teacher and the mentor. One of the six projects that was in compliance did not have work-site mentors because the project had not fully developed the work experience. The other three projects were not in compliance because they had not developed a work experience.

Five projects have introduced innovative or unique elements that link work-based and school-based learning through curricular design.

Although they differed in how the curriculum was produced, the Pro Tech project and the Pennsylvania Youth Apprenticeship Program developed an innovative approach to revising high school curriculum that links school and the work-site. Interviews of the Project Director and Key Personnel in the two projects revealed that interdisciplinary curricula were developed that applied to industry, the Pro Tech curriculum to the health-care industry and the Pennsylvania Youth Apprenticeship Program curriculum to the manufacturing industry. Students enrolled in the school-to-work programs were clustered for math, science, and communications instruction in their high school.

The DuPage County School-to-Work Transition Project and the Electronic Industry project developed an innovative approach to revising vocational high school curriculum. In these cases, industry and education personnel collaborated to produce the curriculum. Sears technical writers and the Davea Career Center instructor collaboratively wrote the Repair Technician and Heating and Air Conditioning curriculum, and the Electronic Industry Foundation in conjunction with two college professors wrote the electronics curriculum.

The Together in Education project developed an unique way to teach job search skills. Bank of America personnel teach two classes in a high school setting.

Two projects have introduced innovative and unique elements that link work-based and school-based learning through work experience. The DuPage County School-to-Work Transition Project and the Pennsylvania Youth Apprenticeship project have developed innovative structured work-based learning that occurred as part of the work experience. Both programs completed a cognitive skill analysis that was used to create a list of activities the student must master during on-the-job training. The projects linked work-based and school-based learning through mentor/teacher communication, Project Directors, the grading system, and a weekly job log.

Six of the nine projects had work-site mentors. Five of these six projects indicated through interviews that the communication between the classroom teacher and the work-site mentor was an important factor that links the work-based and school-based learning. In the sixth, business personnel taught the school-based portion of the curriculum, and so the communication between the mentor and the classroom teacher was not an issue.

Five projects indicated in interviews that communication was an important and challenging issue. Four of the five projects addressed the issue by having the teacher regularly visit the work-site to observe the student and talk to the work-site mentor. The Boston Pro Tech project was unique in that its teachers were employed by the work-site in the summer. The Together in Education project was unique in that work-site personnel visited the school regularly.

The Los Angeles Unified School District project developed an innovative weekly job log used in conjunction with regular teacher visits. It required the student and the mentor to confer each week to complete the log. Students were asked to identify the academic skills that were needed to perform tasks on-the-job. The students completed a self-analysis regarding their competence in applying the academic skills on-the job and were given the opportunity to request remedial help from their classroom instructor. The log required the mentor to comment on the students' attendance and performance for the week and to inform the classroom instructor of concerns they may have regarding the student. The students were given the responsibility of completing the log and presenting it to their teacher on a weekly basis. The DuPage County School-to-Work Transition project and the Pennsylvania Youth Apprenticeship Program adopted the weekly job log after networking with Los Angeles project personnel.

Three Project Directors indicated during interviews that they were an important link between work-based and school-based learning. This situation could lead to a "cult of personality" issue and has implications for the education leader. The review of the literature revealed that institutionalizing a project or obtaining top-down commitment to the project is essential if the project is to survive; a cult of personality occurs when the strength of the project relies on a person rather than the process of institutionalizing the project. It is important that the education leader work to institutionalize the project so that a change in personnel not jeopardize the project.

It is equally important for the education leader to recognize the Project Director's role as the "third party intermediary" discussed in Chapter 2. It is the third party's intermediary role to:

- articulate its strategic and immediate workforce needs and workplace requirements;
- understand the needs and current status of the local school system;
- comprehend the governance, financing, and operations of the education system;

- understand the leverage points, roles, responsibilities, and relationships among the various parties in the education system; and
- direct corporate resources and expertise to improve schools.¹⁰⁰

Three projects developed a grading system that links work-based and school-based learning. The Pennsylvania Youth Apprenticeship project developed a unique portfolio assessment system requiring students to complete a manufacturing project that integrated work-based and school-based learning. The student project included a research paper that traced the historical development of the manufacturing technique and significant impact the manufacturing technique has had on society. The student had to apply the necessary mathematics and scientific concepts to create an item that was an example of the manufacturing technique.

The curriculum design, work experience, work-site and school-site communication, and assessment system that link work-based and school-based learning have implications for the education leader as the DOL Youth Apprenticeship demonstration projects are being institutionalized across the United States. A goal of the 1992 DOL Youth Apprenticeship Grant was to create a critical mass of youth apprenticeship programs across the United States through the broad-scale replication efforts required in the original rating criteria.¹⁰¹

The Council of Chief State School Officers disseminated DOL funds to create youth apprenticeship projects in six states, including California, Iowa, Maine, Michigan, Oregon, and Wisconsin.¹⁰²

The extension grants were awarded to the Boston Private Industry Council; the Los Angeles Unified School District; the Maryland Department of Economic and Employment Development (Baltimore; 1 of 3 sites was renewed); the National Alliance of Business (Washington, D.C.; 1 of 2 sites was renewed); and the Pennsylvania Department of Commerce (Harrisburg).

100 J. R. Reingold, Corporate Action Agenda The Business of Improving Public Education (Washington, D.C.: National Alliance of Business, 1990), p. 4.

101 "National Youth Apprenticeship Grant Solicitation," Federal Register 57 (Washington, D.C.: U.S. Department of Labor, 1992), p.28988.

102 "Department of Labor Awards Grants to Six States," Student Apprenticeship News, 4 (1992), p. 6.

DOL awarded Youth Apprenticeship Grants to ten new organizations in addition to the five DOL Continuation Grants. The new grant recipients included the Boston Private Industry Council; Craftsmanship 2000, Inc.; the Flint Board of Education; the Gwinnett County Public Schools; the Illinois State Board of Education; the Middle Georgia Technical Institute; the Oakland Unified School District; the Scripps Ranch High School; the Seminole School District and Siemens Stromberg-Carlson; and the Toledo Area Private Industry Council.¹⁰³

The education leader must be prepared to work collaboratively with business to development and implement an interdisciplinary curriculum, a work experience, a communication system, and an assessment system that link work-based and school-based learning.

¹⁰³ *National Youth Apprenticeship 1992 Demonstration Sites*, (Washington, D.C.,: U.S. Department of Labor, 1992),p. 1.

ANALYSIS OF DATA. RESEARCH QUESTION THREE

How can the findings of SCANS be integrated into an industry-based curriculum that is jointly developed and delivered in conjunction with education?

Research question three addressed two of the design principles that focused on high standards and students staying in school.. According to the principle, school-to-work transition programs must enable youth to attain the same achievement levels required of all high school graduates, to motivate students to stay in school, and to motivate students to become productive citizens.

Multiple data sources revealed that the SCANS findings can be integrated into an industry-based curriculum and delivered in the work-site and the school. SCANS *Foundation Skills* consist of basic skills, thinking skills and personal qualities. Mastery of these skills enabled students to meet and exceed the achievement level of high school graduates; work experience motivated students to stay in school and requires them to apply basic and thinking skills in the workplace; and mastery of personal qualities enabled students to become productive citizens. Seven of the nine projects integrated the *Foundation Skills* into their industry-based curriculum, thereby meeting and exceeding compliance with the original criteria rating. None of the projects integrated the *Competencies* into their curriculum, but five projects had set goals to integrate them.

The Los Angeles school district was the only DOL project to develop a unique SCANS skill identification element obtained by cross referencing the SCANS skills with proficiency tests to identify where they were addressed in the curriculum.

Chapter II outlined the Characteristics of Today's and Tomorrow's Workplace and the Characteristics of Today's and Tomorrow's Schools.¹⁰⁴ Business leaders can offer technical assistance to schools to actualize the evolution that must occur in schools. The education leader is challenged to implement the findings of the SCANS report "What Work Requires of Schools," and begin the formation of tomorrow's schools. There are implications for the education leader to work collaboratively with

¹⁰⁴ The Secretary's Commission on Achieving Necessary Skills, *What Work Requires of Schools: A SCANS Report for America 2000*, (1990), p. 3.

business and draw upon their experience in managing the change that must occur in order for schools to become a high performance organization.

ANALYSIS OF DATA QUESTION FOUR

What perceptual differences exist between business and education and how do they impact the project?

Research question four addressed the importance of business and education understanding their common characteristics, their fundamental differences, and how educational reform can be enhanced when they work collaboratively.

Multiple data sources revealed that developing a collaborative relationship between partners was the greatest challenge in all nine projects. Project personnel entered the partnership with stereotypical or negative notions about their respective partners.

Interviews revealed that business personnel entered the partnership believing that:

- educational standards and expectations were lower than in the past;
- there was a lack of respect for teachers;
- too much time was spent disciplining students;
- students lack basic skills;
- educators do not have real work experience and therefore do not know how to educate students for work;
- the school system does not want to give up control;
- vocational education was afraid of changing their role and fear they will lose their job to a work-site mentor;
- teachers lack self confidence and lack pride in their profession; and
- students can't learn when they have so many social problems.

Interviews revealed that education personnel entered the partnership believing that:

- business did not understand school culture;
- they were the victim of education bashing;
- they were tired of dealing with the mystique that business has all the answers; and

- a downturn in the economy would cause business to withdraw its commitment to education.

Interviews revealed that the Project Director entered the partnership believing that:

- business had a negative opinion of education;
- education doesn't want to change and it was threatened by business; and
- the negative image of vocational education may have a negative impact on the project.

Despite the stereotypical or negative view a partner brought to the project, their collaborative relationship helped them identify their common characteristics, their fundamental differences, and the strengths each partner brought to the project. The Project Directors played a third party role and helped business and education to identify their roles in the project.

A review of the literature identified the findings of business led initiatives to form partnerships with education. Chapter II outlined the:

- Common Characteristics of Successful Businesses and Effective Schools;¹⁰⁵
- Differences Between the Business and Education Sectors;¹⁰⁶
- The Role Each Partner Plays in Successful School-to-Work Transition Projects;¹⁰⁷ and
- Five Functional Areas of Expertise that Business Can Share With Education.¹⁰⁸

These findings have implications for the education leader. The education leader needs to recognize that the common characteristics of successful businesses and effective schools provide a strong foundation for the business/education partnership and that their differences can provide a creative synergy that leads to educational reform. It is important for the

105 A Blueprint for Business on Restructuring Education (Washington , D.C.: National Alliance of Business, 1989), p. 7.

106 Business Strategies That Work A Planning Guide for Education Restructuring (Washington, D.C.: National Alliance of Business, 1990), p. 6.

107 Who Will Do The Work? A Business Guide for Preparing Tomorrow's Workforce (Washington D.C.: National Alliance of Business, 1989), p. 4.

108 Business Strategies That Work A Planning Guide for Education Restructuring (Washington, D.C.: National Alliance of Business, 1990), p. ix.

education leaders to look beyond the stereotyped perceptions of their business partner, and to provide leadership in developing the common goal of educating our future workforce. The education leaders need to recognize and draw upon the strengths of their business partner as they collaboratively address educational reform issues..

The interviews revealed examples of how the fundamental differences between the perceptions of business/education partners can be used to strengthen the educational programs they offer students. Business personnel in the Together in Education project were appalled to discover that their education partners accepted an 80% student attendance rate as standard. The Bank of America indicated that an 80% attendance rate in the workforce would translate into the unacceptable situation of an employee being absent from work one day per week. The Bank of America urged their education partners to raise their expectations for student attendance, and the inner city high school changed its attendance policy. Bank of American personnel came to the school each week to teach a class in job preparation strategies that emphasized the importance of regular attendance in school and on the job. The high school raised its student attendance rate by 6% during the 1991-92 school year.

The DuPage County School-to-Work Transition Project presented another example of how a perceptual difference between business and education can serve to strengthen an educational program. When Sears discovered that it was acceptable for students to master a concept at an 80% competency rate, the business personnel felt it was mandatory to raise student performance expectations immediately. The education personnel indicated that education universally accepts competency to be achieved at the 80% level. Sears stated that they require their technicians to fix 100% of the merchandise they are to repair. An 80% competency level would mean that a technician would correctly repair an appliance in only eight out of ten service calls. Education personnel changed their expectations to require students to repeat a learning module until they reach 100% mastery.

Education personnel are challenged to look beyond their standard operating procedures to learn from their business partner. The collaborative efforts of the DOL grantees resulted in an increased

understanding of the similarities and differences between business and education and how they can be used to influence educational reform. Increased understanding between business and education partners led to the following comments that were revealed in interviews.

- Education personnel from the Boston Pro Tech project commented on the level of good will among hospital personnel. “I was surprised to see how much they care about kids.”
- Business personnel from the DuPage County School-to-Work Transition Project stated “It is time for us to stop complaining about the education system and what students can’t do and get involved in helping schools write curriculum and become technologically literate.”
- Business personnel from the Los Angeles Unified School District projects commented on the difference that employment makes in a student’s life. “I used to believe that educators gave up on kids due to all of their personal and social problems. Working on this project helped me see that teachers dedicate their lives to these kids. I believe that partnerships have the resources to help kids overcome the social problems around them.”
- Business personnel in the Together in Education project made the comment. “My respect for education has grown since I became involved in this project. Business needs to help make society aware of the impact budget cuts and teacher layoffs have on students and learning. We must create a funding system that supports educating our future workforce.”

These comments have implications for the education leader to create business/education partnerships to address educational reform issues. The comments reveal the strength that a collaborative relationship brings to changing perceptions. The business/education partnership provides a strong foundation for education leaders in their role as change agent.

ANALYSIS OF DATA, RESEARCH QUESTION FIVE

What systemic change needs to occur within business and education in order to reform current educational practices that prepare our future workforce?

Research question five identified the systemic change that needs to occur within business, and education in order to reform the current educational practices that prepare our future workforce.

Multiple data sources verified that systemic changes need to occur in business and education. The data found in the across-site comparison was synthesized in order to make the following recommendations for such change:

- business needs to look beyond the bottom line of short-term profit and begin to focus on the long-term goal of preparing our future workforce;
- business and education need to collaboratively form strong partnerships in order to address systemic change in education;
- education needs to create a Tech Prep system that connects students with post-secondary education and will allow them to enter a career beyond the entry-level;
- education needs to revise curricular content by integrating industry-based curriculum that links work-based and school-based learning;
- education must change student assessment to be outcome and competency-based;
- educational teaching methodology must incorporate cooperative learning so that students learn to function as a member of a team; and
- education should include career exploration activities that give students an opportunity to make an educated career choices.

These recommendations challenge business and education leaders to work collaboratively to enact systemic change within business and educational organizations. A review of the literature revealed that the business systemic change can be actualized by changing the corporate culture from a traditional business model to a high-performance business model. A review of the literature revealed that educational systemic change can be actualized by moving from the schools of today to the

schools of tomorrow. The Characteristics of Today's and Tomorrow's Workplace and the Characteristics of Today's and Tomorrow's Schools are outlined in Chapter II.¹⁰⁹

The findings of this dissertation produce recommendations for educational systemic change that go beyond the characteristics found in the review of the literature. Findings indicating the need for educational systemic change are noted in the areas of curricular content and teaching methodology and include the formation of business/education partnerships to help actualize change, the development of a Tech Prep system that enables students to enter a career beyond entry-level, the need for an outcome- and performance-based assessment system, and the need for career exploration activities that enable students to make an educated career choice.

The recommendations have implications for education leaders in their multi-faceted leadership role as change agent, strategic planner, community relations specialist, political strategist, student assessment and curriculum developer, staff developer, teacher supervisor and evaluator, fiscal agent, and career/guidance counselor. The DOL School-to-Work Transition Demonstration Projects offer several models of how to enact systemic change in education in various instructional settings, and in urban, suburban and rural locations around the United States. The Boston Pro Tech, the Los Angeles Unified School District project and the Together in Education project in San Francisco provide models for systemic change located in a comprehensive urban high school. Maryland's Mech Tech in metropolitan Baltimore and Tech Prep Plus projects in suburban and rural southern Maryland provide models for systemic change at a community college level. The Chicago suburban DuPage County School-to-Work Transition Program, the Pennsylvania Youth Apprenticeship project in Pittsburgh, Philadelphia, Erie, and York-Lancaster, Maryland's Tomorrow in rural Carroll County, and the Electronic Industries Foundation project in urban Passaic County provide models for systemic change in a vocational school.

109 The Secretary's Commission on Achieving Necessary Skills, *What Work Requires of Schools: A SCANS Report for America 2000*, (1990), p. 3.

CHAPTER V

SUMMARY, CONCLUSIONS, RECOMMENDATIONS AND SUGGESTIONS FOR FURTHER STUDY

SUMMARY

The challenges of global competition have focused America's attention on how we educate the American worker. During the 1980s several commissions studied our economic dilemma and purposed the restructuring of the America education system. In 1990, the U.S. Department of Labor created School-to-Work Transition Grants. The grants were business-driven initiatives awarded to create pilot projects. The partnerships were designed to reform the educational practices that prepare America's future workforce. The U.S. Department of Labor grantees developed nine project sites to demonstrate how school-to-work transition could reform education.

The purpose of this study was to analyze the essential components of the school-to-work transition projects that were funded by the U.S. Department of Labor in 1990. The study analyzed the five major points that follow:

- how the projects enabled students to enter industry-based career paths;
- how work-based and school-based learning integrate;
- how the findings of SCANS could be integrated into an industry-based curriculum that was jointly developed and delivered in conjunction with business and education;
- what perceptual differences exist between business and education that can impact school-to-work transition projects; and

- what systemic change must occur within business and education so reform in current educational practices will better prepare our future workforce.

A review of the literature produced a comprehensive presentation of information relevant to school-to-work transition. The review included an overview of how the rise and fall of America's productivity rate influenced systemic change within business and education, an overview of the educational reform movement, the findings of business-led educational reform initiatives, and an outline of school-to-work transition models.

An overview of how America's rise and fall of economic productivity heightened awareness that systemic change needs to occur within business and education in order to reform the educational system. American has experienced a serious decline in her productivity rate since the mid 1970s. The possibility of America forfeiting the world standard productivity rate led to the work of national commissions. In 1983, the National Commission on Excellence in Education called the U.S. a nation at risk, which gave rise to the educational reform movement.

An overview of the educational reform movement of the 1980s revealed how the work of the national commissions served as a catalyst for the 1990 DOL School-to-Work Transition Demonstration projects. In 1990, the DOL also initiated the Secretary's Commission on Achieving Necessary Skills (SCANS), outlined the skills students need to develop to be successful in the workplace. This work challenged DOL project grantees to integrate the SCANS findings as they developed their demonstration sites. In 1992, the nine project sites applied for a continuation grant. The Federal Register that announced the 1992 grant solicitation incorporated the youth apprenticeship criteria outlined in the National Youth Apprenticeship Act. The apprenticeship activities were included in the grant to strengthen the transition of America's youth from school-to-work. Five of the original nine project sites received a continuation grant, including the Boston Private Industry Council's project, the DuPage County School-to-Work Transition project, the Mech Tech project from Maryland's Department of Economic and Employment Development, the Pennsylvania Youth Apprenticeship Program, and the Los Angeles Unified School District's project.

The findings of business-led educational reform during the 1980s was presented. The Boston Compact, created in 1982, was one of the first and the best known business/education partnerships. The outcome of the Boston Compact was that the business community gave priority hiring to high school graduates, that local colleges and universities agreed to admit more high school graduates and that trade unions agreed to recruit high school graduates to apprenticeship programs. The DOL School-to-Work Transition Demonstration projects were challenged to go beyond the outcomes of the Boston Compact to include the development of a learning system that would connect work-based and school-based learning.

The review of the literature revealed eight work-related education models that had served as the basic foundation of business and education partnerships. The demonstration projects funded by the DOL were based on six of these models, including the Academy Model, the Cooperative Education Model, the Tech Prep Model, the Tech Prep Plus Model, the Work-Site Model, and the Youth Apprenticeship Model. Each project site used elements of established work-related models to create its own version of a school-to-work transition model.

This multi-site study used a qualitative research approach for the collection and analysis of multiple data sources. Project descriptions, seventy-two bi-monthly and twelve annual reports were obtained from the U.S. Department of Labor's Office of Work-based Learning. Twenty-one interviews were conducted with Key Personnel, including Project Directors and business and education leaders from each project site. Triangulation was used to control bias in the study and to compare and cross-check the consistency of information gathered. Glaser's constant comparative method was used to code and analyze the data. Comparisons were made within sites, across sites and between key project personnel.

Five major research questions provided the structure for the study. The multiple data sources were presented and analyzed in terms of the five research questions. The research findings were presented in a question-answer format.

CONCLUSIONS

- Business/education partnerships raised complex legal, financial and political issues for the education leader.
- Business/education partnerships introduced innovative curricula and structured work-based learning activities, as well as facilitate communication between the work-site mentor and the classroom teacher, thus forging direct links between education in the classroom and that at the work-site.
- Business/education partnerships lay foundations for tomorrow's schools by implementing the SCANS *Foundations Skills* and *Competencies*.
- Business/education partnerships increase the partners' understanding of common characteristics, fundamental differences and how educational reform can be enhanced when they work together.
- Business/education partnerships model systemic change in educating America's future workforce.
- Business/education partnerships are less effective when impacted by an economic recession; and
- Business/education partnerships afford high school graduates the opportunity to transition into an entry level position, or to continue in the Tech Prep Plus program that leads to an associates degree and advanced placement in an industry-based career path.

RECOMMENDATIONS

- Education leaders should anticipate and develop strategies to address complex legal, financial and political aspects of transition issues that emerged in business/education partnerships.
- Education leaders should work collaboratively with business on a broad scale to develop and implement interdisciplinary curriculum, a structured work-based learning experience an assessment system and a communication system that links work-based and school-based learning.
- The education leader should supervise an audit to determine how the SCANS skills are integrated into curricular content. An interdisciplinary teacher team should work with business representatives to develop an industry-based curriculum that integrates the findings of SCANS.
- Education administrators should expand business/education partnerships to address educational reform that prepares students for the world of work.
- Program models that enact systemic change in education should be replicated throughout the United States creating a critical mass, and institutionalizing programs that transition students into the workforce.
- Business partners should look beyond short-term profit goals and focus on developing the future workforce by investing human resources to educate students at the work-site.

- Business should look beyond the economic recession and should live up to its original commitment to work collaboratively with education to education the future workforce.

SUGGESTIONS FOR FURTHER STUDY

- Conduct a study that compares the essential components of the DOL School-to-Work Transition Demonstration Projects with the essential components of the 1992 DOL Youth Apprenticeship programs.
- Conduct a three year follow-up study focused on students who completed the program at the nine DOL project sites. Determine the percentage of students that went directly into the workforce, the percentage that completed an associates or four year degree, the percentage that work in a position directly related to their training, and the level of students satisfaction gained through program participation.
- Conduct a follow-up study in 1995 to determine which systemic changes outlined in the study were actualized within business and education.
- Conduct a study to determine if business has sustained a long-term commitment to education by continuing to educate students in the work-site, placing them in positions beyond entry-level and offering advancement opportunities to experienced student workers.
- Conduct a study to determine the viability of the Youth Apprenticeship American Style and Tech Prep Plus models in the year 2000.

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APPENDIX A

APPENDIX A : INTERVIEW INSTRUMENT

Describe your project and outline your goals.

What role do you play in your project?

Outline the career ladder that illustrates the hierarchy of your industry-based career path.

Describe how the students in your project transition into entry-level positions on the career ladder.

What provisions are made that allow students to progress beyond entry-level position?

Describe the work-based learning component of your project.

Describe the school-based learning component of your project.

How does your project link work-based and school-based learning

Who was responsible for the design and development of your curriculum?

Describe if and how your curriculum addresses the five competencies outlined in The Secretary's Commission on Achieving Necessary Skills (SCANS) which includes: resources, interpersonal, information, systems and technology.

How are basic skills being addressed in your project?

Describe how thinking skills are being enhanced by your curriculum.

Identify where and when thinking skills are being taught.

What opportunities exist for students to develop their employability traits?

What were your greatest challenges during the planning and implementation stages of this project?

Identify the essential elements of your project that contribute to your success in the transition of students from school to the workforce.

How have your perceptions of your business/education partner changed since the project began?

Identify the systemic change that needs to take place within your organization to maximize your project's success in transitioning students.

What plans do you have to modify, expand or replicate your project?

Other comments.

APPENDIX B

APPENDIX B: THE SCANS COMPETENCIES ¹¹⁰

RESOURCES

Allocates Time: Selects relevant, goal related activities, ranks them in order of importance, allocates time to activities, and understands, prepares, and follows schedules.

Allocates Money: Uses or prepares budgets, including making cost and revenue forecasts, keeps detailed records to track budget performance, and makes appropriate adjustments.

Allocates Material and Facility Resources: Acquires, stores, and distributes materials, supplies, parts, equipment, space, or final products in order to make the best use of them.

Allocates Human Resources: Assesses knowledge and skills and distributes work accordingly, evaluates perform-performance, and provides feedback.

INTERPERSONAL

Participates as a Member of a Team: Works cooperatively with others and contributes to group with ideas, suggestions, and effort.

Teaches Others: Helps others learn.

Serves Clients/Customers: Works and communicates with clients and customers to satisfy their expectations.

Exercises Leadership: Communicates thoughts, feelings, and ideas to justify a position, encourages, persuades, convinces, or otherwise motivates an individual or groups, including responsibly challenging existing procedures, policies, or authority.

Negotiates: Works towards an agreement that may involve exchanging specific resources or resolving divergent interests.

Works with Cultural Diversity: Works well with men and women and with a variety of ethnic, social, or educational backgrounds.

¹¹⁰ The Secretary's Commission on Achieving Necessary Skills, What Work Requires of Schools: A SCANS Report for America 2000, 1991, C-1, C-2.

INFORMATION

Acquires and Evaluates Information: Identifies need for data, obtains it from existing sources or creates it, and evaluates its relevance and accuracy.

Organizes and Maintains Information: Organizes, processes, and maintains written or computerized records and other forms of information in a systematic fashion.

Interprets and Communicates Information: Selects and analyzes information and communicates the results to others using oral, written, illustration, pictorial, or multi-media methods.

Uses Computers to Process Information: Employs computers to acquire, organize, analyze, and communicate information.

SYSTEMS

Understands Systems: Knows how social, organizational, and technological systems work and operates effectively within them.

Monitors and Corrects Performance: distinguishes trends, predicts impact of actions on system operations, diagnoses deviations in the function of a system/organization, and takes necessary action to correct performance.

Improves and Designs Systems: Makes suggestions to modify existing systems to improve products or services, and develops new or alternative systems.

TECHNOLOGY

Selects Technology: Judges which set of procedures, tools, or machines, including computers and their programs, will produce the desired results.

Applies Technology to Task: Understands the overall intent and the proper procedures for setting up and operating machines, including computers and their programming systems.

Maintains and Troubleshoots Technology: Prevents, identifies, or solves problems in machines, computers, and other technologies.

APPENDIX C

APPENDIX C: THE SCANS FOUNDATION¹¹¹**BASIC SKILLS**

Reading: Locates, understands, and interprets written information in prose and document including manuals, illustrations, and schedules to perform tasks, learns from text by determining the main idea or essential message; identifies relevant details, facts, and specifications; infers or locates the meaning of unknown or technical vocabulary; and judges the accuracy, appropriateness, style, and plausibility of reports, proposals, or theories of other writers.

Writing: Communicates thoughts, ideas, information, and messages in writing; records information completely and accurately; composes and creates documents such as letters, directions, manuals, reports, proposals, illustrations, flow charts; uses language, style, organization, and format appropriate to the subject matter, purpose, and audience. Includes supporting documentation and attends to level of detail; checks, edits, and revises for correct information, appropriate emphasis, form, grammar, spelling, and punctuation.

Arithmetic: Performs basic computations; uses basic numerical concepts such as whole numbers and percentages in practical situations; makes reasonable estimates of arithmetic results without a calculator; and uses tables, illustrations, diagrams, and charts to obtain or convey quantitative information.

Mathematics: Approaches practical problems by choosing appropriately from a variety of mathematical techniques; uses quantitative data to construct logical explanations for real world situations; expresses mathematical ideas and concepts orally and in writing; and understands the role of chance in the occurrence and prediction of events.

Listening: Receives, attends to, interprets, and responds to verbal messages and other cues such as body language in ways that are appropriate to the purpose; for example, to comprehend; to learn; to critically evaluate; to appreciate; or to support the speaker.

¹¹¹ The Secretary's Commission on Achieving Necessary Skills, What Work Requires of Schools: A SCANS Report for America 2000, 1991,C-1, C-2.

Speaking: Organizes ideas and communicates oral messages appropriate to listeners and situations; participates in conversation, discussion, and group presentations; selects an appropriate medium for conveying a message; uses verbal language and other cues such as body language appropriate in style, tone, and level of complexity to the audience and the occasion; speaks clearly and communicates a message; understands and responds to listener feedback; and asks questions when needed.

THINKING SKILLS

Creative Thinking: Uses imagination freely, combines ideas or information in new ways, makes connections between seemingly unrelated ideas, and reshapes goals in ways that reveal new possibilities.

Decision Making: Specifies goals and constraints, generates alternatives, consider risks, and evaluates and chooses best alternatives.

Problem Solving: Recognizes that a problem exists (i.e., there is a discrepancy between what is and what should or could be). identifies possible reasons for the discrepancy, and devises and implements a plan of action to resolve it. Evaluates and monitors progress, and revises plan as indicated by findings.

Seeing Things in the Mind's Eye: Organizes and processes symbols, pictures, illustrations, objects or other information; for example, sees a building from a blueprint, a system's operation from schematics, the flow of work activities from narrative descriptions, or the taste of food from reading a recipe.

Knowing How to Learn: Recognizes and can use learning techniques to apply and adapt new knowledge and skills in both familiar and changing situations. Involves being aware of learning tools such as personal learning styles (visual, aural, etc.), formal learning strategies (note taking or clustering items that share some characteristics), and informal learning strategies (awareness of unidentified false assumptions that may lead to faulty conclusions).

Reasoning: Discovers a rule or principle underlying the relationship between two or more objects and applies it in solving a problem. For example, uses logic to draw conclusions from available information, extracts rules or principles from a set of objects or written text; applies

rules and principles to a new situation, or determines which conclusions are correct when given a set of facts and a set of conclusions.

PERSONAL QUALITIES

Responsibility: Exerts a high level of effort and perseverance towards goal attainment. Works hard to become excellent at doing tasks by setting high standards, paying attention to details, working well, and displaying a high level of concentration even when assigned an unpleasant task.

Displays high standards of attendance, punctuality, enthusiasm, vitality, and optimism in approaching and completing tasks.

Self-Esteem: Believes in own self-worth and maintains a positive view of self; demonstrates knowledge of own skills and abilities; is aware of impact on others; and knows own emotional capacity and needs and how to address them.

Sociability: Demonstrates understanding, friendliness, adaptability, empathy, and politeness in new and on-going group settings. Asserts self in familiar and unfamiliar social situations; relates well to others; responds appropriately as the situation requires; and takes an interest in what others say and do.

Self-Management: Assesses own knowledge, skills, and abilities accurately; sets well defined and realistic personal goals; monitors progress toward goal attainment and motivates self through goal achievement; exhibits self control and responds to feedback unemotionally and non-defensively; is a "self-starter."

Integrity/Honesty: Can be trusted. Recognizes when faced with making a decision or exhibiting behavior that may break with commonly-held personal or societal values; understands the impact of violating these beliefs and codes on an organization, self, and others; and chooses an ethical course of action.

APPENDIX D

APPENDIX D: LETTER**LETTER OF INTRODUCTION**

Jocelyn L. Booth
40W100 Burlington Rd.
St. Charles, IL. 60175

Dear DOL project grantee,

Thank you for your interest in participating in this study concerning the essential elements in school-to-work transition as identified through the demonstration projects sponsored by the U.S. Department of Labor in 1990.

If your time and travel arrangements permit, I would like to interview you in person during the next DOL quarterly meeting. I will be contacting you by phone to schedule a interview. Please reserve a minimum of one and a half hours to complete the interview. I can arrange to meet you in Washington, D.C. a few days prior to or after the DOL quarterly meeting dates.

I appreciate your willingness to participate in this research project.

Sincerely,

Jocelyn L. Booth

APPENDIX E

APPENDIX E: LETTER**LETTER OF APPRECIATION**

Jocelyn L. Booth
40W100 Burlington Rd.
St. Charles, IL. 60175

Dear DOL Project Grantee,

Thank you for participating in the interview process. Your input will be included in the analysis of the essential elements of school-to-work transition as revealed through the demonstration projects that were sponsored by the U.S. Department of Labor in 1990.

As we agreed during the time of the interview, I will not identify you by name but will identify you by your role in the project as Project Director, business representative, or educational representative.

I appreciate the time and effort you devoted to this research project. I wish you continued success in your project and admire the challenge you have accepted to reform educational practices that prepare America's future workforce.

Sincerely,

Jocelyn L. Booth

APPROVAL SHEET

The dissertation submitted by Jocelyn Lee Booth has been read and approved by the following committee:

Dr. M. P. Heller

Professor

Educational Leadership and Policy Studies, Loyola University -
Chicago, Illinois.

Dr. Edward Rancic

Assistant Professor

Educational Leadership and Policy Studies, Loyola University -
Chicago, Illinois.

Dr. Howard Smucker

Assistant Professor

Educational Administration, Aurora University - Aurora, Illinois.

The final copies have been examined by the director of the dissertation and the signature which appears below verifies the fact that any necessary changes have been incorporated and that the dissertation is now given final approval by the committee with reference to content and form.

The dissertation is therefore accepted in partial fulfillment of the requirements for the degree of Doctor of Education.

April 14, 1993
Date


Director's Signature