

Question Scan Summary Report

Question: What are some models of employers and post-secondary institutions collaboration in addressing workforce development needs, and what are the criteria for success?

Databases Searched:

ERIC	EconLit
CBCA Complete	

Web Sites Searched: (fugitive literature)

The National Centre for Vocational Education Research (Australia)	VOCED the UNESCO/NCRER
BC Stats	Statistics Canada
Canadian Career Development Foundation	Council of Ministers of Education, Canada
Canadian Federation of Students	Canadian Policy Research Networks
Canadian Association of University Teachers	Human Resources and Skills Development Canada
Association of Universities and Colleges of Canada	Government of Canada Publications
Association of Canadian Community Colleges	Canadian Conference Board
Canadian Alliance of Student Associations	Canadian Labour and Business Centre
The Alliance of Sector Councils	

Search Strategy:

Colleg* or universit* or higher education or continuing education AND employ* or industry or business AND cooperation or collaboration AND labour force development or labour needs

Summary Table:

Summary Breakdown	# of Articles
Number of relevant articles located (duplicates removed)	61
Literature focusing on:	
• On-site workplace specific or basic skills training	13
• Programs meeting an identified industry or sectoral workforce need (healthcare, construction, film, etc.)	14
• Co-operative Programs	6
• General discussion of Partnership Programs	28
Sources:	
• Corporate / Government/ Organization	60
• Academic Journals	1
Published between 1990-1995	38
Published between 1996-2006	23
Canadian Focus	6
American Focus	50
Other geographic regions	5

Summary of key articles:

On-site Workplace Specific or Basic Skills Training

De Zeeuw, R., & Klemme, J. (1995). *A Workplace Skill Building Project*
 Authors examine one Iowa manufacturing company's resolution for addressing rapid technological changes within industry. Coilcraft Inc. entered into a partnership with Business/Industry Training Institute of Northwest Iowa Community College to prepare employees to "use new technology and operating methods" and encourage the employees "to continue in training needed to be competitive in the labour market."

Programs Meeting an Identified Industry or Sectoral Workforce Need

Gallego, A. (2003) *Community Colleges and Economic Development*
 The author argues that sustained economic growth is dependent on collaborations between industry, business, PSE, and key public and private sector entities. Gallego highlights the experiences of two counties in California by describing partnerships between community colleges and the bioscience industry. The colleges developed a "multi-faceted approach to ensuring that they are matching job-training programs to the workforce needs of the 21st century". The bioscience association and individual companies work with the colleges to plan for future and current workforce needs.

Co-operative Programs

Cantor, J. A. (1992). *Apprenticeship 2000: A model for community college collaboration with business and industry. Results of a National Study Involving Three Industries*. U.S.; New York:

This study developed a theoretical model of collaboration through a case study of business and colleges cooperative engagement in apprenticeships. “Several significant model components were suggested across industries and geographic regions that can serve as catalysts for community college cooperative apprenticeship program development.” It argues that the dual enrolment of apprentices in associate degree programs as the most cost-effective mechanism.

General discussion of Partnership Programs

Clagett, C. A., & Alexander, H. J. (1995). *Maryland Community College Workforce Training Evaluation and Needs Assessment Survey*

Through a survey of employers in Maryland, this study sought to develop a profile of organizations served by the continuing education and community services in Maryland to “determine employer satisfaction with training, and identify future workforce training needs”. It outlined the composition of the respondents and highlighted findings from the survey.

Fujimoto, J. (1994). *Partnership 2000: Improving the workforce through partnerships*

This report describes Partnership 2000, “a joint collaborative effort of labour, education, and industry in California created to address the needs of employees through vocational and technical education provided by community colleges and affiliated training institutions”. It outlines the goals of the partnership and highlights exemplary collaborations between community college and different industrial partners.

Feasibility Comments:

The literature on post-secondary institutions and employer collaboration is diverse in terms of its focus as represented by the identified themes above. There are few studies which meet the criteria of models and examples of collaboration, especially within a Canadian context. Based on these observations, a further review of evidence on this question is not suggested.

References

Canada Inclusion

- Bergeron, F., & Nakitsas, G. (2001). *How to Collaborate Through the Ups and Downs in Our Economy? A successful college/cégep/employer/union partnership in the steel industry*. Retrieved 08/02, 2006 from <http://www.accc.ca/ftp/pubs/studies/Steel.pdf>
This study will review the relationship that has been established between the steel industry through CSTEC and the education/training institutions (primarily the colleges/cégeps). It will describe the forces that brought the parties together and the difficulties in forming and maintaining this relationship. Finally, it will outline the lessons learned. This paper will also highlight the important role that government can play in supporting these partnerships. This case study will look at each of the human resource challenges outlined above and examine the steps that were taken to address them.
- Bloom, M. R., Brady, P., & Kitagawa, K. (1998). *Simon Fraser University's Integrated Studies Program: Developing employability skills through engagement with the Western Canon of Great Books*. Retrieved 08/02, 2006 from <http://www.conferenceboard.ca/education/pdf/case-2.pdf>
Simon Fraser University is developing the employability skills of adults who have completed half of a four-year degree by exposing them to the great books tradition in a program that allows them to work, on a part-time basis, toward a Bachelor of General Studies degree in the liberal arts. The Integrated Studies Program is a new type of undergraduate degree completion program, tailored to developing the employability skills of mid-career adults and giving them an opportunity to obtain a Bachelor of General Studies degree in liberal arts. It is a three-year program intended for employees who have completed half of a four-year degree and who wish to finish their degree on a part-time basis. It helps those with specialized work backgrounds become more flexible and better able to take on new roles in their organizations.
- Kitagawa, K. (1998). *New Brunswick Youth Apprenticeship Program: Balancing academic aspirations with labour force requirements*. Retrieved 08/02, 2006 from <http://www.conferenceboard.ca/education/pdf/case-7.pdf>
The New Brunswick Department of Education recognizes that a well-educated and technically skilled workforce is central to the productivity and competitiveness of New Brunswick's businesses and industries in the global economy. The Department also acknowledges the critical shortage of such workers. Accordingly, they have developed the Youth Apprenticeship Program to meet the demand for educated and skilled workers and to

facilitate the successful school-to-postsecondary education and/or school-to-work transition of secondary students.

Kitagawa, K. (1998). *Seneca College is developing students' employability skills through its co-operative education programs. It uses the Co-operative Educators of Ontario's common curriculum, Working to Learn, in its co-op programs. Co-operative education links the student, the college and employers in an exceptional academic partnership. Although individual programs vary from college to college, co-op programs formally integrate students' academic studies with relevant work experience.* Retrieved 08/02, 2006 from <http://www.conferenceboard.ca/education/pdf/case-20.pdf>
Seneca College is developing students' employability skills through its co-operative education programs.

Kitagawa, K. (1998). *Syncrude Canada Ltd.'s ERIC Program: Teaching the skills that enable employee to manage change.* Retrieved 08/02, 2006 from <http://www.conferenceboard.ca/education/pdf/case-17.pdf>
Syncrude, in partnership with Keyano College in Fort McMurray, developed and launched ERIC (Effective Reading in Context) Canada's first workplace literacy program. The program was initially designed to enhance supervisors' key employability skills such as reading comprehension, writing, numeracy and the confidence and ability to deal with organizational change (including the involvement of work teams in projecting and managing budgets), technological advances, issues relating to multi-skilling and all of the skill- and knowledge related challenges of the information age.

The Canadian Association of Motive Power Educators (CAMPE), The Canadian Automotive Repair and Service Council (CARS), & LMG The Labour Market Group Inc. (2001). *How can 29 Colleges/Institutions/School Boards Collaborate Nationally?* Retrieved 08/02, 2006 from <http://www.accc.ca/ftp/pubs/studies/CAMPE.pdf>
Collaboration has become a tenet in the Canadian automotive industry. Specifically, collaboration between the Canadian Association of Motive Power Educators (CAMPE) and the Canadian Automotive Repair and Service (CARS) Council has helped these organizations to help address many of the core labour market issues that have plagued Canada's "after-sales" service and repair industry for years. Several important lessons have emerged from the CAMPE-CARS experience. This report outlines the progress made to date and identifies the six major lessons that have been learned in order to enable other groups to benefit from the CAMPE-CARS experience.

USA Inclusion

An Assessment of the Sunshine State Skills and Industry Services Training Programs. Report 4. (1990). U.S.; Florida:

This study examines the intent and operation of postsecondary education linkages with business and industry. Following an introduction, chapter II describes the Industry Services Training Program, which provides occupational training for jobs created by new, expanding, and diversified industry, and the Sunshine State Skills Program, which helps to form partnerships between community colleges and businesses to train new employees or help upgrade the competencies of present employees. It also describes related economic development initiatives within Florida and selected programs outside of Florida. Chapter III contains a description of the study design and findings from interviews conducted with economic development initiative constituencies, i.e., individuals representing local education agencies, business and industry, and state agencies. Chapter IV reviews the issues identified for this study and makes recommendations. Recommendations include: (1) to maintain the two programs, but to provide for closer coordination; (2) to provide training not already available in order to promote economic development; (3) to support only advanced technical skill training needs at a level commensurate with community college offerings; (4) to monitor the common training needs identified; (5) to continue use of the Targeted Industrial Cluster List; (6) to avoid company dependence on the program for staff development needs; and (7) to maintain data to evaluate program effectiveness.

Articulated Curriculum for Agricultural Occupations. 2 + 2. Second Year Final Report. (1990). U.S.; Texas:

The Agriculture 2+2 Curriculum Development Project was an articulated training program linking the last 2 years of secondary and the first 2 years of postsecondary training designed to prepare students for employment in 3 or more agricultural technology occupations. The curriculum provided for the development of saleable skills after grade 12 and advanced employment in technical agriculture at the associate degree level. Administrators developed and implemented a competency-based program using input from secondary schools, postsecondary institutions, business, industry, the Texas Higher Education Coordinating Board, and the Texas Education Association. Three procedures were executed in the second project year: instructional materials were identified; a basic certificate program with course outlines was developed; and a "how-to" manual was developed.

ATIP: Automotive Technician Internship Program. (1992). U.S.; California:

The Automotive Technology Department (ATD) of De Anza College (DAC) in Cupertino, California, in partnership with the Automotive Service Council of California, received funding to develop and implement a 2-year, competency-based certification program for automotive service technicians. Students in the Automotive Technician Internship Program (ATIP) receive paid training at non-union shops as part of a classroom/laboratory training internship. During the 2 years of the program, students are provided with 2 days a week of full-time classes, a minimum of 3 days a week paid internship with a participating

independent auto repair shop, and full-time employment during the summer. Through the cooperation of the Occupational Training Institute at DAC, Private Industry Councils in the local area, and the Department of Social Services, specialized recruitment was undertaken to encourage disadvantaged, minority, and women to participate in the project. Students in the ATIP begin internship employment at \$6/hour and receive pay increases of \$.75/hour with each program module completed, reaching \$12.75/hour at completion of the Associate of Arts degree. Of the 26 students who started the ATIP program, a total of 10 graduated in 1992, 6 students dropped-out and 9 students are continuing the program in 1992-93. Poor economic conditions, resulting in a decrease in the number of participating shops, did not allow for a new group of students to begin the ATIP program in fall 1992. A project budget analysis with data tables, a review ATD course offerings and certificate options, detailed course outlines for 10 ATIP courses, sample internship agreements, and promotional materials are included.

Central Florida Film Production Technology Training Program. Final Report. (1990). U.S.; Florida:

The Central Florida Film Production Technology Training program provided training to prepare persons for employment in the motion picture industry. Students were trained in stagecraft, sound, set construction, camera/editing, and post production. The project also developed a curriculum model that could be used for establishing an Associate in Science degree in film production technology, unique in the nation. The project was conducted by a partnership of Universal Studios Florida and Valencia Community College. The course combined hands-on classroom instruction with participation in the production of a feature-length film. Curriculum development involved seminars with working professionals in the five subject areas, using the Developing a Curriculum (DACUM) process. Students were recruited for each of three 15-week classes. More than 2,000 people applied for the training, 163 were placed in the program, and 134 students (83 men, 51 women) completed course requirements. Program evaluation showed that the program met its goals of training film production personnel, forming college-industry linkages, and developing a curriculum. The curriculum will be distributed through information retrieval systems and the Florida State Department of Education. In addition, the student film will be distributed commercially or non-commercially.

CREATE's Tech Prep Implementation Guide. CREATE's 4+2+2. (1993). U.S.; Oklahoma:

This guide, developed through the Consortium to Restructure Education through Academic and Technological Excellence (CREATE), a partnership among high schools, a vocational-technical center, a community college, and universities in Oklahoma, presents information, resources, and examples for development and implementation of a tech prep program in the state. The integration of academic and vocational training enhances the high school

student's opportunity for employment upon graduation from high school and provides articulation toward a certificate or a two-year degree. CREATE's 4+2+2 plan encourages students to pursue the 4-year baccalaureate degree if their career choice requires it. The guide is organized in 12 sections that cover the following topics: (1) introduction (definition of tech prep and rationale for it); (2) the development and functioning of CREATE; (3) curriculum development; (4) articulation, including steps for successful articulation and a sample articulation plan; (5) staff development; (6) business and industry collaboration and partnership models; (7) guidance and counselling, including a counsellor handbook; (8) marketing; (9) implementation steps; (10) program evaluation; (11) several local, state, and federal resources; and (12) a nine-item bibliography.

Employer Specific Training Program for Program Year 1988-89. Annual Report to the Governor and Legislature. (1990). U.S.; New York:

The Employer Specific Skills Training Program helps build the superior work force called for by the National Alliance of Business and other significant employer, union, government, and educational groups. Through a combination of state and federal funds, the New York State Department of Education has crafted a flexible and responsible program. Employers receive assistance from the program to assess their workers' training needs and to develop custom-designed curricula. The employers and workers also benefit from expert instruction delivered by professional educators. In addition, the program provides financial support for the training. Employer contributions of cash and employee-release time have totalled \$27 million. Some 35,000 workers upgraded their skills through the program and 6,900 persons were trained for permanent jobs in new-hire training programs during program year 1988-89. Business entrepreneurs and managers have also been beneficiaries of the program. Almost 3,500 firms, the vast majority of which were small firms with 100 or fewer employees, have been served. About 16 percent of those firms were minority-owned, and 14 percent were women-owned. In addition, 2,500 entrepreneurs improved their business planning and management skills.

Health Careers Project for People in Public Housing. (1991). U.S.; Florida:

A serious shortage of qualified health care professionals is forcing hospitals and health care agencies to undertake costly recruitment and hiring of foreign nurses and other health care professionals to meet staffing needs. Hospitals in Dade County spend from \$2,900 to \$20,000 per recruit, not including salary. The Health Careers Project for People in Public Housing (HCP) seeks to bridge the educational and training needs of individuals on public assistance with waiting job opportunities in the health care setting. The HCP operates as a partnership between the Medical Center Campus, the Private Industry Council/South Florida Employment Training Consortium, and the Metro-Dade Housing and Urban Development (HUD). Education and training are provided in four program areas: Phlebotomy, Respiratory Therapy Assistant, Medical Record Transcription, and Medical Assistant. The program provides funds for

tuition, books, fees, and uniforms, as well as support for child care, transportation, and meal allowances. In addition to academic courses, the program offers follow-up counselling on financial management and provides information on low-mortgage home ownership plans. Following a period of recruitment and orientation, instruction began in October 1990 with a total of 41 students. The 10 students in the 180-hour Phlebotomy program were female, single heads of household who were not employed prior to the program. All 10 students graduated on schedule 2 months later, and 100% were subsequently employed with starting salaries of at least \$16,640. A profile of three program graduates and an enrolment information flyer are included.

POWER for Progress: A Model for Partnerships in Workplace Literacy. (1990). U.S.; Illinois:

Project POWER is an educational program developed jointly by Triton College, River Grove, Illinois, and the Labour Management Center of the Mid-Metro Economic Development Group, for employees of local companies who are interested in improving basic skills in English, reading, mathematics, and writing, as well as for employees who want to prepare for the General Educational Development test. POWER is an acronym for Partnerships for On-site Workplace Education and Retraining and the objectives of the program, which officially began in October 1988 and ended in March 1990, were established to meet regional training requirements. The objectives were: (1) to increase existing coordination between education, business, and labour; (2) to increase the number of companies and, subsequently, the number of employees who participate in workplace literacy programs; and (3) to increase work-related literacy skills of employees to officially establish performance levels needed for the job. The classes were planned cooperatively by Triton College and the companies. They were held within the company, meeting twice per week for 2 hours per session, for 10-15 weeks. Classes are work related, use work-release time, are free, provide child care and transportation assistance as needed, offer academic and personal counselling and tutors, and provide confidential assessment results. Benefits to participants include improved communication on and off the job, better job options and opportunities, increased promotability, preparation for technological advances at work, and improved confidence.

Project T.E.A.M. (Technical Education Advancement Modules). Training Methodology. (1990). U.S.; South Carolina:

Project TEAM (Technical Education Advancement Modules), a cooperative demonstration program for high technology training, created an introductory technical training program for unemployed, underemployed, and existing industrial employees needing upgrading and a consumer education package emphasizing the benefits of technical training. The curriculum and training focus of the project began with an assessment of employee needs in terms of the skill and aptitude requirements of industrial positions, especially in

Greenville County, South Carolina. From this assessment, 15 training modules were developed. Some modules were generic and applicable to a variety of technical job categories; the remainder addressed employer-specific needs. This report describes the curriculum development and training focus of Project TEAM, which consisted of two phases: (1) the industry training certification program (a pre-employment generic training package); and (2) in-plant training (specific courseware matched to individual company needs). This report contains a detailed description of the steps taken in developing the curriculum, along with sample documents from the project. Information included describes needs assessment; curriculum development and development of pre-employment package; recruiting industry partners; public advertising/information distribution; assessment; training; job skills training/counselling; employment applications/interviews; in-house training; and remedial instruction.

Supermarket Careers. A Partnership in Training. Final Report. (1990). U.S.; New Jersey:

A partnership between the Bergen County Vocational-Technical Schools (New Jersey), the Wakefern Food Corporation/Shoprite, and Cornell University developed and implemented supermarket skills training programs. The programs were held in two vocational schools that educate mentally handicapped students, aged 14-21, during daytime hours and adult handicapped persons during evening hours. Program goals were to: (1) prepare learning disabled students for career alternatives in the supermarket industry; (2) place them in unsubsidized employment; and (3) heighten public and corporate awareness of the value of handicapped persons as reliable, stable employees. The project included the set-up of two classroom shops to simulate supermarket operations, development of curriculum, instruction, cooperative work experience for students, evaluation, and dissemination. Forty secondary students were trained in vocational classes that met 5 days per week for 2.5 hours each day. Three days per week in late afternoon, an additional 30 adult handicapped students took the program. External evaluation of the program showed that it had met its goals, and the program won many local and national awards.

Telecommunications Cooperative Training Program. A Cooperative Demonstration Project (High Technology). Final Performance Report. (1992). U.S.; Georgia:

Ben Hill-Irwin Technical Institute and the Georgia Interconnect Association designed and developed jointly a project to provide basic knowledge and practical application skills training. The curriculum included all necessary competencies for a student to graduate as a communications network technician. To compensate for the added expense of relocating to a cooperative workplace for practical experience training, students were paid a stipend and limited travel allowance. The program consisted of four quarters of academic training at the institution and two quarters of practical work

experience with a participating telecommunications company. Implementation required student and employer recruitment, student placement, student evaluation, and record keeping. Thirty-two students were accepted into the program in four different groups; 26 completed 4 academic quarters and were awarded diplomas, and 22 were placed and completed at least 1 quarter of co-op. Fourteen companies employed co-op students.

The Higher Education-Economy Tie: A sampling of exemplary programs in the west. (1992). *Higher Education and the Economy of the West. Working Paper #3*. U.S.; Colorado:

This paper, one of a series from the Western Interstate Commission for Higher Education's project "Higher Education and the Economy of the West," describes 31 programs in 16 western states which illustrates higher education's contribution to the economy. Four school-university partnerships are described: the Pueblo School District 60/University of Southern Colorado Alliance, the California Academic Partnership program, the Puget Sound Educational Consortium, and the Bakersfield (California) College Tech Forestry program. State government-university initiatives include: the Center for the Advancement and Study of Tourism (South Dakota), the Morrison Institute for Public Policy (Arizona), the Utah Partnership for Educational and Economic Development, Total Quality Improvement in the North Dakota University system, and the Spokane Intercollegiate Research and Technology Institute. The small business outreach programs include: the South Dakota Business and Education Institute, the Center for Business and Economic Research (Nevada), the Idaho Small Business Development Center, the Small Business Development Center Network (Hawaii), Minnesota SURE Access, the Montana Entrepreneurship Center, and the Spokane Business Incubator. Technology transfer and workforce training programs listed include: the Engineering and Environmental Research Center (South Dakota), Optical Sciences Center (Arizona), Project S.U.C.C.E.S.S. (Hawaii), Labour Education and Research Center (Oregon), Public Utility Research and Training Institute (Wyoming), and Maricopa County (Arizona) Community Colleges. Outreach programs for rural and underserved populations are: the Alaska Native Health Center Program, the Regional Services Institute (Oregon), Area Health Education Centers (Arizona and New Mexico), and the Central Oregon Consortium for Higher Education, and Electronic Distance Education (Utah). There are four regional initiatives: the WAMI (Washington, Alaska, Montana, and Idaho) medical education programs, Western Interstate Commission for Higher Education, NorthWestNet, and the Western Institute of Nursing.

The Power of Partnership: Economic development program of the California community colleges. Annual Report 1992-1993. (1994). U.S.; California: California Community Colleges (CCC's) provide a state-wide network of centers and programs to assist the state's businesses and industries with education, training, and information services. This report describes outcomes for these economic development partnerships between the CCC's and

business, industry, and government during the 1992-93 fiscal year, focusing on programs and services directly funded by the Chancellor's Office. Following introductory materials, including a list of development partnerships and their locations, part one provides an overview of the CCC's Economic Development Network (ED>Net), describing partnerships with government and industry and efforts to provide technical assistance to colleges to improve the delivery of these services. Part two reviews the CCC's economic development agenda, highlighting partnerships for local economic development; strategies for defence conversion; programs to enhance workforce skills; and job opportunities created through small business support, including programs for special populations and new services for business. Part three focuses on efforts to meet changing workforce needs, including new and updated curricula, employer-based training, and technology transfer to help defend workers find new jobs, and customized contract services. A special insert provides descriptions of seven partnerships between CCC's and small businesses to establish economic development programs, focusing on the development and results of the programs.

West Hills College Cooperative Training Network. Final Performance and Financial Status Report. (1990). U.S.; California:

A cooperative training network was developed by West Hills Community College (Coalinga, California), in conjunction with government agencies/private businesses, to train students in truck driving skills. Emphasis was placed on training women, members of minority groups, and disadvantaged persons. During the project, an advisory council was established with business and industry representatives, the curriculum for the truck driving program was redesigned to include a competency-based format and driving recommendations set by the Professional Truck Driving Institute of America, government/industry partners were recruited and cross-trained at workshops, approximately 80 students were trained, and the program was evaluated. Program evaluation showed that the program was very successful in meeting its objectives, except that it fell short in recruiting the number of minority group students (30 percent) and females, handicapped, and otherwise disadvantaged students (30 percent) specified by the project proposal.

Women in Education for Apprenticeship and Non-Traditional Employment. Final Performance Report. (1991). U.S.; Oregon:

This report describes a partnership between Portland Community College (Oregon), private industry, and public agencies to develop and implement a comprehensive program to recruit, train, and place women in apprenticeship and other non-traditional employment in the building trades. The Building Futures in Industry and Trades (B-FIT) program's final performance report, budget statement, and third-party evaluation are included in this package. These sections briefly describe the high graduation and employment rates of initial participants in the program. The majority of the document is an appendix

containing the following project information: (1) course description; (2) industrial skills training course outline; (3) training objectives; (4) 13 B-FIT course content guides; (5) sample class schedule; (6) student orientation/screening procedures; (7) news articles; (8) job placement status report; and (9) advisory committee. The 13 B-FIT courses outlined in this document are: (1) applied construction I; (2) electrical/mechanical trades I; (3) basic trade builders math; (4) orientation to vocational training for skilled trades and industry; (5) targeting occupations in skilled trades and industry; (6) health and fitness for industry I; (7) applied construction II; (8) electrical/mechanical trades II; (9) contemporary worksite issues; (10) health and fitness for industry II; (11) microcomputers; (12) welding; and (13) cooperative education--building construction. Each course includes some or all of the following elements: an introduction, comments on course activities and design, prerequisite knowledge and skills, evaluation, instructional goals and objectives, and worksheets.

Agan, J. L. (1994). *Carroll Technical Institute and Southwire Company's Educational Renewal Program*. U.S.; Georgia:

As part of an effort to meet the specific educational needs of local business and industry, a cooperative educational renewal program was developed between Carroll Technical Institute (CTI) in Carrollton, Georgia, and the Southwire Company, a local producer of aluminium and copper materials. A thorough training needs assessment was conducted and, due to the classified nature of Southwire's manufacturing processes, CTI's involvement was limited to areas from basic literacy skills through front-line supervision. Critical job tasks were identified and analyzed to determine how competent workers use literacy skill applications in their jobs and a group of diagnostic tests were administered. The results indicated a serious deficiency in basic academic skills. As a solution the research program included three district components: workplace literacy, secretarial training, and an Applied Manufacturing Technology (AMT) diploma program in supervision. The workplace literacy component, taught on the CTI campus, was designed to raise the literacy level of Southwire employees to improve their job performance and has served 254 employees since 1987. The secretarial certification program was designed to increase the skill levels of Southwire secretaries who could not demonstrate an acceptable level of competence on the exemption test. It has resulted in reports of improved productivity, reduced absenteeism, and higher morale within secretarial staff. The AMT program consists of a core of general academic courses, selected fundamental technical courses, and academic credit for related work experience.

Beston, W. C. (1994). *Corporate Training and Tech Prep*. U.S.; New York:

To respond to local industry training needs, Broome Community College (BCC), in Binghamton, New York, has long provided long and short term training, workshops, seminars, and credit courses for regional companies and forged ongoing partnerships with local businesses. One such partnership has

been formed with Universal Instruments (UI), a manufacturer of automation equipment for electronics assembly and testing. The partnership has adapted the concepts of Tech Prep education to establish a non-credit certificate program in applied technology at UI. The six-course program is targeted at UI employees without college degrees working in technical positions and offers instruction in math, principles of technology, communication, and problem-solving. A total of 36 students were placed in the initial certificate program, the graduates of which are eligible to enter one of several Associate in Technology degree programs at BCC which are designed to maintain a competent and skilled workforce. The certificate program uses video tapes, hands-on and laboratory experiences, and applied academics, rather than traditional lecture methods, and results have been encouraging. Employee feedback has been extremely positive and UI officials have indicated that updated employee skills have been a tremendous asset to the company.

California Community Colleges. (1997). *Economic Development Network (ED>Net): 1995-96 Report to the Governor and the Legislature*. U.S.; California:

The Economic Development Network (ED>Net) of the California Community Colleges was designed to advance the state's economic growth and competitiveness by coordinating and facilitating workforce improvement, technology deployment, and business development initiatives. This report reviews outcomes for ED>Net for 1995-96 based on reports prepared by funded projects. First, ED>Net is described and information is provided on program goals, methods through which employers can access ED>Net services, barriers to access, programs developed in response to the closure of 22 military bases in California, and resources available through the Locally-Based Statewide Economic Development Coordination Network and InfoNet/ED>Net telecommunications partnership. Status reports of 1995-96 accomplishments, including information on the purpose, clients served, and sample activities, are then presented for the Locally-Based Statewide Leadership and Technical Assistance program and contract education. Outcomes are then described for ED>Net initiatives related to advanced transportation technologies, biotechnologies, environmental technologies, health care delivery, international trade development, small business applications, applied competitive technologies, and workplace literacy. Status reports are then provided for the following annual projects: Model Programs for Community Economic Development, Employer-Based Training, Faculty In-Service/Intensive In-Service Training, and Worksite Experience for Vocational Faculty and Vocational Counsellors In-Service Training. Finally, recommendations for program improvement are presented.

Cantor, J. A. (1992). *Apprenticeship 2000: A model for community college collaboration with business and industry. Results of a National Study Involving Three Industries*. U.S.; New York:

Business is recognizing that the associate degree is a necessity in high

technology fields. Innovative practices link businesses with community colleges, allowing apprentices to gain basic job skills and a higher education. A research study explored three industries and their relationship with community colleges: automotive, construction, and maritime. The research design, a structured case study, developed a theoretical model against which data collected was analyzed. A national search for businesses and colleges cooperatively engaging in apprenticeships was undertaken. College participation varied from program to program. Several significant model components were suggested across industries and geographic regions that can serve as catalysts for community college cooperative apprenticeship program development. It was concluded that apprenticeship is a mechanism for bringing together human and capital resources. Dual enrolment of apprentices in associate degree programs should be promoted because it is the most cost-effective mechanism for organized labour to provide worker training and control its ultimate delivery and quality.

Cantor, J. A. (1992). *Apprenticeship and Community Colleges: Collaborations for tomorrow's workforce. A Final Report of a Research Project*. U.S.; New York: This monograph focuses on job training delivered through employer-sponsored cooperative apprenticeships with the community college. Following an introduction, chapter 2 looks at job training and cooperative apprenticeships, including recent legislative efforts to promote linkages and cooperative apprenticeships through tech prep initiatives. Chapter 3 discusses the community college, long in the business of serving the community and its economic needs and affairs. Chapter 4 reviews the issues of community economic development and associated issues and relationships of job training as provided by the community college. Chapter 5 describes the case study method used to identify and review factors influencing successful cooperative apprenticeship linkages and presents an overview of the programs reviewed and analyzed: (1) the automotive industry, including professional association groups, manufacturers, and dealerships; (2) electrical and construction labour union sponsored programs; (3) the maritime industry and U.S. government; and (4) professional firefighters and emergency services personnel. Chapters 6-9 analyze the data uncovered relating to the four programs and their uses of cooperative apprenticeships for training and human resource development. Chapter 10 describes a model for cooperative apprenticeship between business and industry, labour, government, professional organizations, the community college, and the local community.

Carnes, J. (1991). *Northeast Texas Agricultural Literacy Network A-Lit-NeT: A rural college partnership project. Final Report*. U.S.; Texas: In northeast Texas, 47% of the adults over the age of 25 have not graduated from high school. Area agricultural businesses are rapidly implementing new technologies and quality control measures, both of which require literate and highly trainable workers. To meet these needs, a partnership project was undertaken between Northeast Texas Community College (NTCC) and the

Northeast Texas Quality Work Force Planning Committee ("Vision-NeT") aimed at enhancing workplace literacy in targeted agricultural industries and occupations. The four goals of the project were to identify industries and occupations with high employment demands; conduct a literacy audit of employees at selected businesses to determine the relationship between workplace literacy and productivity; integrate the results of the literacy audit into the existing Agriculture 2 + 2 (Tech-Prep) and literacy programs; and disseminate the findings of the literacy audit at a Vision-NeT quarterly symposium. Using a labour market information system, three key industries with high projected employment demand were identified (i.e., food and kindred products, agricultural production-livestock, and forestry) and a prioritized list of target occupations was developed. A literacy audit of area poultry businesses led to the development of a literacy and occupational skills matrix for use in determining the training needs of specific occupations on-site, as well as to evaluate and improve occupational education curricula. Finally, as a result of attending the Vision-NeT symposium, Lonestar Steel, together with a local union, entered into a training partnership with NTCC which is currently providing workplace literacy classes to 35 employees/members. Recommendations included: (1) enhance communications between business and education by avoiding "educationese"; (2) business and education must reach consensus on the definition of basic skills; (3) a more workable taxonomy of basic workplace skills should be developed; (4) where possible inventories of job duties and tasks should be used to focus literacy audits; (5) community and junior colleges should use a team approach to literacy audits; and (6) in-service training should be provided to community and junior college staff on conducting literacy audits.

Clagett, C. A., & Alexander, H. J. (1995). *Maryland Community College Workforce Training Evaluation and Needs Assessment Survey*. U.S.; Maryland:

In January 1995, the Maryland Association of Deans and Directors of Continuing Education/Community Services undertook a study of all state organizations that had received workforce training under contract arrangements during 1993-94. The study sought to develop a profile of organizations served, determine employer satisfaction with training, and identify future workforce training needs. A total of 1,021 employers were surveyed, with responses being received from 561, representing organizations ranging in size from less than 25 employees to firms with over 5,000 workers. Government, manufacturing, and healthcare represented 63% of the respondents. An analysis of responses indicated the following: (1) the median number of employees participating in contract training at each site was 25, while the primary goal of training for 74% of the respondents was to upgrade the quality of employee performance in a current job; (2) cost-effectiveness was cited by 69% of respondents regarding their choice of a community college for training; (3) 60% of respondents were very satisfied with the training and 37% were satisfied; (4) 96% would recommend their community

college to others, 57% indicated that they would definitely use the college again, and 36% that they probably would; (5) top anticipated employee training needs cited by respondents were computer applications, interpersonal relations, written/oral communications, and customer service training; (6) top anticipated management training needs were supervision/leadership, total quality management/continuous improvement, and personnel and labour law; and (7) top anticipated needs for training-related services were customized job-skill training, help in seeking funds for training, and analysis to assess employee needs.

De Zeeuw, R., & Klemme, J. (1995). *A Workplace Skill Building Project*. U.S.; Iowa:

Early in 1991, a partnership project was initiated between the Business/Industry Training Institute of Northwest Iowa Community College and Coilcraft, Inc. The Iowa Coilcraft plant had undergone rapid changes in recent years from a labour-intensive, custom-built, manual, task-oriented process to a highly automated, training-intensive, machine-oriented process. Instead of training on the floor, employees must now receive several days of classroom-style training before they are even allowed into production. In June 1992, approximately 27% of the Coilcraft workforce tested below 8th grade in reading and 30% tested below 8th grade in math. As a result, a \$303,000 National Workplace Literacy grant was sought and obtained. The program sought to establish a literacy program for 160 to 300 workers; prepare a minimum of 160 workers to use new technology and operating methods; and encourage 160 workers to continue participating in training needed to be competitive in the labour market. Following a 12-week start-up phase, three successive training blocks of 15 weeks each were offered, providing reading, math, and writing classes during normal work hours for each shift of work. Since the blocks were successive, a worker could finish all subjects as needed. Outcomes of the project include: (1) 419 workers were assessed and given individual development plans; (2) 142 completed literacy training; (3) 119 completed basic team skills training; (4) 18 completed leadership/facilitator skills training; and (5) 14 workers completed 64 general education diploma tests.

Fox Valley Technical College. (1995). *Strategic Business Plan for Economic Development Contract Services, July 1995-June 1997*. U.S.; Wisconsin: This plan describes the contract training and technical assistance services provided by Wisconsin's Fox Valley Technical College (FVTC) to area employers, focusing on the status of the services and ways to improve delivery for the July 1995 to June 1997 period. Following an executive summary, the second section focuses on contract services provided, reviewing types of contract services, training and technical assistance topics available to clients, related services, areas of potential expansion, and procedures for dealing with competitive service providers in the district. Section III highlights the markets to be served, presenting business, industry,

and government data by district and county, while section IV reviews the status of the FVTC program from 1990-91 to 1994-95, highlighting the number of employers served, number of employees trained, revenue generated, and strengths and opportunities. The next section provides projections for contract services for 1994-95 through 1996-97, focusing on projected revenue, state aid from enrolment, employers served, and employees trained. The final sections review FTVC marketing and operational objectives and provide a list targeted client accounts.

Fujimoto, J. (1994). *Partnership 2000: Improving the workforce through partnerships*. U.S.; California:

Partnership 2000 is a joint collaborative effort of labour, education, and industry in California created to address the needs of employees through vocational and technical education provided by community colleges and affiliated training institutions. Partnership 2000's long-range goals are to: (1) improve student access to vocational education programs; (2) promote private sector and community college participation and coordination; (3) increase student job placement or further educational opportunities; (4) develop faculty renewal and regency programs with industry; (5) revise vocational education curricula to incorporate new technology; (6) orient faculty to the use of high technology to teach and train students; (7) stimulate discussions to focus on vocational education issues from global and national perspectives. Part I of this report describes Partnership 2000, its formation, and goals. Part II highlights some exemplary partnerships formed through the program, including partnerships between community colleges and public utilities; a project involving the Los Angeles Community College District, the Los Angeles Unified School District, and the Industry Education Council of California in planning 2+2+2 curricula in the areas of aeronautics, fashion merchandising, and manufacturing; a high technology demonstration project; and a health care issues forum. Part III describes the Partnership 2000 process, highlighting the formation of ED>NET. Part IV relates experiences with exemplary aviation partnerships, while part V summarizes 1993-93 Partnership 2000 activities, including forums, and faculty and student internships. Finally, part VI offers comments on the future of Partnership 2000.

Fujimoto, M. J., & Carraway, C. T. (1991). *Partnership 2000: A bridge to a more effective California workforce and a continuing challenge for educational excellence*. U.S.; California:

The goals and activities of Partnership 2000, a federally funded project administered by Los Angeles Mission College for the California community colleges, are described in this report. Introductory material indicates that Partnership 2000 was undertaken to link business, industry, government, labour, and the state's community colleges in cooperative economic development efforts pertaining to issues development, resource development, faculty growth, student internships, and articulation agreements. Following an outline of project objectives and anticipated outcomes, specific activities are

reviewed, including: (1) an aviation articulation conference held at San Jose State University; (2) a health care issues forum held at San Diego City College; (3) a manufacturing technology issues forum held at Los Angeles Trade-Technical College; (4) a high technology demonstration project implemented at Los Angeles City College; and (5) the Responsive Energy Technology Symposium and International Exhibition convened in San Diego. Each review contains a summary of activities and pertinent issues, and a series of recommendations. Following a brief summary of future industries which Partnership 2000 plans to target, the dissemination of project materials and internal evaluation procedures are discussed.

Gallego, A. (2003). *Community Colleges and Economic Development*. U.S.; California:

This document argues that regions that sustain economic growth or recover rapidly from economic slumps are often the same communities that have aggressively developed and continue to strengthen collaborations with business and industry, universities, community colleges, high schools, and other key public and private sector entities. In San Diego and Imperial counties in California there are 6 community college districts, serving a total of more than 200,000 students each semester. These community colleges have developed a multi-faceted approach to ensuring that they are matching job-training programs to the workforce needs of the 21st century. The districts have developed the San Diego-Imperial Counties Community College Association, which aims to collaborate on training programs. The Association includes university administrators in its meetings, and intends to expand to include business and industry at the leadership level. This document describes the collaboration between the community colleges and the bioscience industry in the San Diego region. The colleges work with a bioscience association, as well as with individual companies, to plan for future and current workforce needs. Also describes regional economic development centers funded by the state of California, which include the Center for Applied Competitive Technologies at San Diego and Workplace Learning Resource Centers.

Helm, P. (1996). *Corridors to Economic Growth and Employment: 1994-95 final report to the governor and the legislature*. U.S.; California:

The Economic Development Network (ED>Net) of the California Community Colleges was designed to advance the state's economic growth and competitiveness by coordinating and facilitating workforce improvement, technology deployment, and business development initiatives. This report reviews outcomes for ED>Net for 1994-95 based on reports prepared by funded projects. First, ED>Net is described and information is provided on the historical context to and purposes for its foundation, methods through which employers can access its services, project funding categories, and barriers to access at the state and federal levels. Status reports, including information on the purpose, clients served, and sample activities, are then presented for the

following ED>Net services: (1) Small Business Development/Business Resource and Assistance centers; (2) Centers for International Trade Development; (3) Workplace Learning Resources Centers; (4) Locally-Based State-wide Leadership and Technical Assistance programs; (5) Regional Environmental Business Resource and Assistance centers; (6) Centers for Applied Competitive Technologies; (7) contract education; (8) the Locally-Based State-wide Economic Development Coordination Network; (9) the Model Programs for Community Economic Development project; and (10) the Employer-Based Training and Faculty In-Service/Intensive In-Service Training programs.

Hightower, C. (1993). *The Partnership for Today That Works for Tomorrow: The professional automotive training center at shoreline community college*. U.S.; Washington:

The Professional Automotive Training Center (PATC) is a 28,150 square foot automotive technician training center located on the campus of Shoreline Community College (SCC) in Washington. The complex is the result of a partnership between SCC and the 230 automotive dealerships of the Puget Sound Automotive Dealers Association and is designed to provide comprehensive, competency-based and career-oriented workforce training under conditions that duplicate the actual working environment of a modern car dealership. Under the sponsorship of dealerships, students in PATC programs alternate quarters of academic study with on-site work at the dealership, an arrangement which has yielded a 100% employment rate for program completers. The PATC's largest offering is in automotive technician training, although the Center also offers training in all dealership support departments, including finance and insurance, parts management, warranty claims, dealership accounting, and automotive detailing. While sales training classes are offered, the PATC does not itself sell cars. The PATC also offers a wide variety of upgrading and retraining programs for dealership personnel. Primary funding for PATC's construction was raised privately through the efforts of the Shoreline College Foundation, a non-profit corporation. Additional funding came through the private-sector sale of special "certificates of participation," authorized by the State Board for Community and Technical Colleges. Enrolment during the 1992-93 academic year included 67 students in the Associate in Applied Arts and Science degree programs, 355 students in the certificate classes, and about 3,500 students in technician training programs for individual automotive manufacturers.

Illinois Community College Board. (1998). *Report on Business/Industry Services Grants, Fiscal Year 1997*. U.S.; Illinois:

The Illinois Community College Board (ICCB) has utilized its workforce preparation grant resources to provide an array of services to local businesses and new entrepreneurs. Community colleges in Illinois provided services that resulted in the start-up, expansion, development, and retention of several thousand jobs and companies. These services included: (1) customized job

training; (2) industrial, attraction, retention, and expansion activities; (3) entrepreneurship workshops and seminars for business owners and operators; (4) individualized counselling and management assistance; (5) contract procurement assistance; (6) workshops and non-credit courses; (7) employment, training, and job search services; and (8) small business incubators. The ICCB workforce preparation grant funds allowed for economic development and employee training during a time of great change, technological and otherwise, in the workplace.

Illinois State Board of Education. (1996). *Workforce Preparation Action Plan*.

U.S.; Illinois:

The Illinois Workforce Preparation Action Plan was developed to set workforce preparation policy directions and improve coordination of programs and services in the state. This report provides information on the goals, objectives, activities, and implementation of the Plan. Following a preamble and list of the Action Plan Task Force membership, the first part of the report describes the following six goals of the Plan: (1) academic and technical skills development; (2) current workforce skill advancement; (3) access to career information, education, and training; (4) transitions to work; (5) linking classroom and workplace learning; and (6) collaboration, quality, and accountability of the programs. Specific objectives and activities for each goal are then listed in detail. Next, implementation plans are presented for each goal, objective, and activity, highlighting the collaborators and local partners involved and describing tactics to be used to develop, implement, and evaluate each objective and activity. Finally, 47 current workforce preparation activities are summarized, including activities in the areas of academic standards, adult education, alternative education, student assessment, career and labour market information, international education, cooperative work study programs, customized job training and business assistance, education-to-work transition, learning technology, teacher professional development, and welfare reform.

Illinois State Board of Education. (1995). *Itawamba Community College and Tecumseh Products Company: A high performance work force development partnership*. U.S.; Mississippi:

Since 1976, Mississippi's Itawamba Community College (ICC) and Tecumseh Products Company (TPC) have maintained a cooperative relationship providing the firm with support and services stemming from ICC's Skill/Tech One-Stop Career Center. The support offered to TPC has included the following: (1) since 1976, 105 pre-employment classes have been held for more than 900 prospective employees; (2) adult basic education classes have been offered in-plant since 1985; (3) apprenticeship training curricula has been developed for electronic technicians, manufacturing technicians, tool and die makers, and tool grinders; (4) between 1986 and 1990, TPC and ICC engaged in employee upgrade training and retraining programs to help employees cope with production changes; (5) since January 1991, TPC has received more than \$271,257 in state support for customized training and

more than \$1.75 million is planned for 1995; (6) ICC has offered leadership and management training programs for TPC employees since 1991; (7) technical training based on credit courses offered at the college; (8) ICC and Mississippi State University have created 3 videotapes which have trained over 600 employees; (9) a cooperative summer employment program provides quality temporary summer employees for TPC while giving ICC students hands-on experience; (10) ICC faculty spend 4 to 6 weeks working in the plant during the summer; and (11) generous donations from TPC's Herrick Foundation have allowed ICC to develop the Center for Advanced Manufacturing Technology.

Jackson, M. (1999). *College/Business Activities Report*. U.S.; Maryland: This report presents findings of a survey of postsecondary educational institutions in Maryland concerning their efforts to provide specialized education and training programs for employees of Maryland businesses. All 16 community public colleges, 12 public four-year campuses, 13 independent institutions, and one private career school responded to the survey. The study found an impressive number and variety of cooperative activities in Maryland's postsecondary institutions and the business community. Institutions provided information about their activities in the following areas: (1) partnerships between business/industry and postsecondary institutions designed to provide specialized educational and training programs for employees; (2) customized job training or education programs for workers; (3) special programs, including the use of vouchers, specifically designed to help displaced workers or welfare recipients; and (4) short-term collaborative ventures between business/industry and postsecondary educational institutions. Following a summary chapter, chapters describe activities of community colleges, public four-year colleges and universities, independent colleges and universities, private career schools, and advanced technology centers. A summary table shows the types of joint activities reported for each institution.

Lane, T. (2000). *An Evaluation of California's Community College Based Economic Development Programs (ED>Net)*. U.S.; California: This study describes economic outcomes of California's ED>Net (California Community College Economic Network) program, an alliance between community colleges and California businesses. ED>Net's purpose is to advance the state's economic growth by providing job-related education and services to businesses and organizations. This report develops summative performance indicators (the program's impact in the economy) and formative indicators (the program's operating efficiency). Part 1 of the report describes ED>Net's Service Delivery Programs: (1) Regional Workforce Preparation and Economic Development; (2) Workplace Learning Centers; (3) Small Business Development Centers; (4) Centers for Applied Competitive Technology; (5) Centers for International Trade Development; (6) Advanced Transportation Technologies; (7) Industry Driven Regional Education and Training Collaborative; and (8) Job Development Incentive Training Fund. Other

programs described in Part 1 are Capacity Building Programs, Service Delivery and Capacity Building Programs, and Administration and Coordination Programs. Part 2 details the impact of ED>Net programs. From 1996 to 1997, the growth of median profitability per company receiving ED>Net services was 18%, while the growth rate of those not receiving services was 17.7%. A sampling of ED>Net participant companies showed that total employment increased by 6% from 1997 to 1998, while the increase in non-ED>Net companies was 0.9%.

Lindeman, L. W., & Boerner, H. (1993). *The Development of a Generic Pharmaceutical Training Institute*. U.S.; New York:

The manufacture of generic drugs is a growing industry, generally composed of small companies that are more dependent than brand-name companies on hiring entry-level workers. To provide standardized training for employees in the generic drug manufacturing field, the Generic Pharmaceutical Training Institute (GPTI) was established by a partnership between Rockland Community College (RCC), in New York, private industry, and government agencies. The GPTI was designed to assist the development of a close working relationship between the New York-based generic drug manufacturing industry and RCC, recruiting employees to be trained for immediate entry into the industry and providing instruction for the upgrading of skills of experienced industry technicians. The GPTI curriculum features 11 units, each of which contains measurable learning objectives and mastery levels, developed in-house and shared with the Federal Drug Administration for recommendations. Three training cycles per year are expected, with each cycle involving about 30 participants who will earn a stipend of \$190 per week. The GPTI is administered by a team of RCC and industry partners who meet on a monthly basis to evaluate progress toward goals and objectives. Challenges encountered have included delays in the acquisition of laboratory equipment, budget issues due to industry professionals donating their time as teachers, and the need for close communication among the partners.

Ohio Board of Regents. (2000). *Business Performance Improvement--Examples of Successful Partnerships*. U.S.; Ohio:

This report contains 36 1 or 2-page profiles of successful partnerships between Ohio businesses and industries and the EnterpriseOhio Network, a consortium of Ohio's two-year colleges and businesses formed to meet the state's work force development needs. The success stories illustrate how the EnterpriseOhio Network campuses and Ohio business, industry, and public sector organizations have collaborated to develop and apply powerful skill-building solutions to address both short- and long-term development issues. Some examples of the training solutions that have been implemented through the Network include the following: (1) a cost-effective approach to ISO 9000 certification training; (2) language training and training to upgrade employee skills in response to new technologies; (3) improved productivity through employee cross-training and customized computer training program; (4)

training to provide employees with tools for quality control; (5) sophisticated machinist training for high-technology environments; (6) improving quality and profitability through technical writing training; (7) human resource development training to aid production floor reorganization; (8) school-to-work partnership to address future needs of electricians; and (9) internal auditor training to support a continuous improvement strategy.

Ohio Board of Regents. (1997). *Ohio's Economic Advantage. Enhancing Workforce Performance. Improving Business Results. Increasing Global Competitiveness*. U.S.; Ohio:

This booklet contains 36 one-page "success stories" that reveal how the two-year colleges and the vocational and adult education system in Ohio are responding to business and industry needs with innovative problem solving and effective partnerships. Each profile includes a challenge, a solution, results, and comments from business persons that were helped by programs of the colleges or the vocational and adult educational system. Subjects of some of the programs profiled include the following: improving quality and productivity through statistical process control training; reducing overtime and scrap costs by assessing high-tech skills; improving productivity through employee cross-training; increasing the availability of trained automotive technicians; overcoming barriers to employment in rural southwest Ohio; improving quality and profitability through technical writing; upgrading employee skills in response to new technologies; implementing industry-driven skill standards through a state-wide initiative; reducing employee turnover through pre-employment training; using a cost-effective consortium approach to ISO 9000 certification training; opening a new facility with employees fully trained and certified; reducing employee pre-screening and training costs with a simulated production program; matching an employer's specific protocol with customized training; addressing the future need for electricians through school-to-work partnership; improving performance by developing employees' math application skills; and providing sophisticated machinist training for high-technology environments.

O'Shea, D. (2001). *Capital Area Education and Careers Partnership School-to-Career Grant: An assessment of year three activities*. U.S.; Texas:

Based on interviews and document analysis, an evaluation of Year 3 of the Capital Area Education and Careers Partnership (CAECP) assessed its initiatives to help youth and young adults advance their educational and workplace achievements in pursuit of satisfying, productive careers. CAECP improved school-based learning activity objectives by making available career information materials and software; maintained a large roster of speakers; conducted a regional career fair; and promoted credit articulation, curriculum development, academic credit for summer internships, and summer internship evaluation procedures. CAECP surpassed performance targets for almost all these work-based learning activity objectives: educator participation in industry visits; student job-shadowing; work-based student learning experiences; and

employer participation in activities. CAECP met many of these key connecting activity objectives: strengthened ties with and built upon CAECP's success; developed and deepened linkages between institutions and curricula; and developed a marketing strategy. CAECP did not do well eliciting the participation of more employers and teachers in career development opportunities. Recommendations regarding the continuous operational challenges CAECP faced included the following: continue work to reduce the divide between academic core/college orientations and career and technology tracking; promote strategies that help school districts recruit and retain certified, skilled instructors; and promote development of an automated information management system.

Pfeifer, G. C., & Carlson, C. E. (1993). *Understanding Your Customer's Culture: The key to college/corporate partnerships*. U.S.; New York: Since 1987, Dutchess Community College (DCC), in New York, and IBM Corporation have been forging a partnership which revolves around the Manufacturing Technical Training School (MTTS), a program designed to enhance the skills and education of IBM's production workforce. MTTS's three-phase curriculum has evolved to include the changing training needs of IBM's employees, while at the same time overlapping with DCC's Computer Integrated Manufacturing Program. Employees who complete all three phases acquire 75% of the credits required for an associate degree. The key to successful college-business partnerships is a willingness to resolve conflicts based on the realization that each organization possesses a distinct culture that shapes the assumptions and expectations of individual members. Colleges planning to offer re-education programs with business/industry should recognize that programs carrying academic credit bring more of a college's culture to a partnership than do non-credit programs; be aware that the buyer/vendor relationship with which business is accustomed will not produce successful programs; ascertain the most important aspects of the industry's culture and management style; and develop a pool of faculty who are flexible with regard to extended class hours and off-site locations and willing to accommodate changes in course content. A list of references, enrolment statistics, curricula descriptions, tutoring guidelines, selected final grade patterns, and a chart of mediation strategies are included.

Philippi, J. W., Mikulecky, L., & Lloyd, P. (1998). *Project ALERT. Workplace Education. External Evaluators Reports*. U.S.; Michigan: This document contains four evaluations of Project ALERT (Adult Literacy Enhanced & Redefined through Training), a workplace literacy partnership of Wayne State University, the Detroit Public Schools, and several city organizations, unions, and manufacturers in the automobile industry that was formed to meet employees' job-specific basic skills application needs in manufacturing and service operations, through the development of whole language curriculum and training. The reports are "External Evaluator's Final Report" by Jorie W. Philippi and "Year Two Report, January 1997," "Report on

Site Visits, March 1996," and "Formative Evaluation Report, August 1995" (Larry Mikulecky, Paul Lloyd). Extensive onsite investigations and job analysis resulted in development of customized whole language, interactive multimedia, and learner-centered training. During the 3-year project 78 courses in communications skills, mathematics, and job-specific skills were presented to 683 employees. Philippi's evaluation using a modified Context-Input-Process-Product (CIPP) model found that there was a good deal of consensus about program goals among the partners and the participants, with the only area of divergence being that some participants expected to acquire a broader range of skills than the courses addressed. The curriculum materials were determined to be very good, especially the multimedia CD-ROMs, although not as many workplace examples were used as intended. Deadlines for the project were met, and participants mastered course work. Although employees and supervisors reported transfer of training and improvement in work productivity, not enough data were collected to determine the validity of these reported outcomes.

Rayman, P., & Others. (1990). *Massachusetts Workplace Education Initiative. Year 3 Evaluation. Final Report*. U.S.; Massachusetts:

An evaluation of the Massachusetts Workplace Education Initiative brings together three phases: (1) a pilot outcome study conducted with a sample of six local workplace education programs and featuring the perspectives of workers, labour, and management; (2) program profiles for seven federally funded workplace education programs coordinated by the State of Massachusetts, Department of Education; and (3) an analysis of workplace education needs in the health care industry in Massachusetts. Perspectives of unions and management are reviewed in terms of demographics, areas of convergence, and specific interests. The discussion of the adult learner perspective takes into consideration ethnographic and gender differences. The program profiles include the following: Chinese American Civic Association/South Cove Manor Nursing Home; Mount Wachusett Community College/Digital Electric Corporation; Labour Education Center/Chamberlain Manufacturing Corporation; Employment Connections, Inc./Spir-it, Inc.; Quinsigamond Community College/Kennedy Die Castings Company; Lawrence Adult Learning Center/Friction Materials, Inc.; and the American Federation of State, County and Municipal Employees, Local 1776, and the University of Massachusetts. Recommendations are offered for program enhancement, program coordination, evaluation process, and marketing. Among them are the following: promote awareness of gender, age, and educational or skill level diversity; conduct cultural training workshops on-site; allocate more money on materials and resources such as dictionaries and texts; provide counselling services; include adult learners on program advisory boards; report pilot study results back to participants; and assess the magnitude of barriers to class attendance such as lack of child care, transportation, or scheduling flexibility.

Saint Louis Community College. (1995). *Skills Today for Advancement Tomorrow (STAT). A National Workplace Literacy Partnership. Final Performance Report*. U.S.; Missouri:

The 18-month Skills Today for Advancement Tomorrow (STAT) program, a partnership among St. Louis Community College, the St. Louis Public Schools' Adult Basic Education Program, and Blue Cross and Blue Shield of Missouri, had the following objectives: (1) provide counselling and training for 370 current Blue Cross and Blue Shield workers; (2) develop a training referral system for 60 unemployed disadvantaged adults; (3) develop model assessment and evaluation systems for health care benefits workers; (4) develop and validate competency-based basic skills curriculum; and (5) develop and implement innovative methods for involving workers in all aspects of STAT's program development. During the program, 515 participants were served with classes for the Blue Cross/Blue Shield workers; 60 clients were served through the partnership between the Adult Basic Education program and the STAT program; model assessment tools and model curricula were developed; and worker involvement was encouraged through one-to-one counselling, feedback questionnaires and focus group sessions. Participants from the insurance company improved their performance ratings and customer satisfaction ratings.

Schneider, A. L. (1991). *Columbia/Willamette Skill Builders Consortium. Final Performance Report. English in the Workplace (Beginning and Intermediate). Instructors' Reports and Curriculum Materials*. U.S.; Oregon:

Interviews with managers and other staff were used to assess the communication and language development needs of limited-English-proficient (LEP) workers at Lattice Works of Oregon (LWO) Corporation. Task analysis was used by Portland Community College (Portland) to develop a curriculum for twice-weekly classes held before or after shift changes. The curriculum focused on the critical communication tasks of following directions, clarifying directions, giving directions, giving clarifying information, and giving feedback. A buddy system was developed to encourage English use in the workplace. Fall-winter classes had 24 beginning and 13 intermediate participants. Spring and summer classes were modified based on student needs. Job materials, technologies, and tasks/activities were incorporated into the curriculum. Problems encountered included the following: (1) diversity of student needs; (2) lack of time to customize materials; (3) expectations of the company and workers differing from what was offered; and (4) students having to attend classes on their own time. Positive aspects were broad management support, the buddy system, and convenient class location. The following recommendations resulted: (1) the workplace focus of the project should be made clearer to company and workers, and classes should be held on company time; (2) workers should be involved in curriculum development; (3) there should be a site coordinator; and (4) expressed needs should be clearly matched with the type of instructional format.

Skinner, N. (1990). *Forming the Future with a Unique Partnership*. U.S.; Oregon: In 1988 the Oregon Precision Metal Fabricators Association (OPMFA) asked Clackamas Community College (CCC) to develop and conduct a training program specifically for the precision sheet metal industry. The aim of the partnership was to train new workers and to upgrade skills of current employees. OPMFA equipped the Advanced Technology Center (ATC); CCC provided curriculum development and recruitment. The ATC implemented two 9-month certificate programs in precision sheet metal technology and screw machine technology and an ongoing 6-week program designed to give students entry-level skills applicable to either industry and to the metal manufacturing industry at large. Recruiting efforts and a placement program were undertaken. CCC began a partnership with four other local community colleges to form the Oregon Advanced Technology Consortium (OATC), the mission of which would be to improve the competitiveness of Oregon industry through technology transfer and technical training. The OATC proposed to accomplish this in three ways: through information collection and dissemination; through advanced technical training; and through applied research. Activities in each area were undertaken. Long-term goals of the ATC and the OATC were development of 2+2 programs with area high schools, development of an apprenticeship program, and development of an associate degree in precision metal manufacturing.

Smith, M. (1991). *Columbia/Willamette Skill Builders Consortium. Final Performance Report*. U.S.; Oregon: A workplace basic skills program was designed to complement technical training for mixing personnel at the Portland Bakery of Nabisco, Inc. Management, the union, and Portland Community College (Oregon) collaborated in the program. The company released workers on company time to attend classes prior to, during, and after the technical training component. Prior to the training, 65 employees from the mixing and assembly departments were assessed for reading and math computation competencies. A math training class was delivered during each 5-week technical training session. It addressed competencies in decimals and fractions. Individual Education Plans were developed for 16 employees who were diagnosed as having learning problems that made them at risk for successfully completing technical training. The program, called Skills Enhancement Training, was a support system before, during, and after technical training. Feedback from management, supervisors, and workers indicated the program was a success.

Warner, L. A. (1993). *A Model Solution to the Allied Health Personnel Shortage: Initiation of a respiratory care technology program at Catawba Valley Community College, Hickory, North Carolina. A Case Study*. U.S.; North Carolina: In 1991, the Northwest Area Health Education Center in North Carolina conducted a needs assessment of area hospitals, revealing that Respiratory Care (RC) departments in Catawba and Alexander counties would require 29

technicians and therapists within 3 years. A survey of area high school students identified 44 students interested in RC. In addition, a survey of currently employed RC personnel in the area revealed another 24 potential students in need of skills upgrading. Finally, a third survey indicated that nearly 75% of credentialed personnel working in RC were trained on-the-job or had graduated from a correspondence program. In an effort to address this need for a formal RC training program in the area, Catawba Valley Community College in Hickory, North Carolina, established an advisory committee to seek funding for initiation of a training program at the college. Two local hospitals pledged financial support, several regional RC departments offered to donate equipment, and many local hospitals volunteered to be clinical sites for student training. A curriculum, planned in accordance with accreditation and health care standards, was submitted to the North Carolina Department of Community Colleges (NCDCC). In July 1991, NCDCC approved the program, which enrolled its first students a month later. In August 1992, 11 students graduated from the program and are now working in area hospitals. From beginning to end, the establishment of the program took over two years, but today the northwest region of North Carolina has a Respiratory Care Technology Program. Steps for establishing similar Allied Health programs include demonstrating need, getting local health care institutions involved, and obtaining institutional support.

Washington State Workforce Training and Education Coordinating Board. (1996). *An Evaluation of Washington State's Job Skills Program*. U.S.; Washington: The Job Skills Program (JSP) in Washington State provides job training customized to meet the needs of employers through partnerships of employers and training institutions. The JSP funds up to one-half the cost of training, with employers providing a match. Training can be provided for new employees, for upgrading employees receiving promotions, or for retraining to prevent job loss. During 1991-93, 36 projects were funded, involving 18 community and technical colleges and 105 companies throughout the state. A total of 4,238 participants were trained, 2,556 of them new employees. The program was evaluated based upon three sources of data: a Northwest Policy Center telephone survey of firms funded by JSP between July 1993 and June 1995; matches between program records and Employment Security Department wage data files; and JSP administrative records for July 1, 1991-June 30, 1995. The evaluation showed that, overall, employers were very satisfied with the program, which resulted in substantial increases in worker earnings. Employers reported improvements in productivity, job growth, employee retention, and employee training investments. Areas for improvement include promoting a closer relationship between educational institutions and employers, reducing paperwork, and clarifying potential employees' expectations at the beginning of the project.

White, E. C. (1994). *Food Processors Skills Building Project. Evaluation Report*. U.S.; Oregon:

The Food Processors Skills Building project was undertaken by four Oregon community colleges, with funds from the Oregon Economic Development Department and 11 local food processing companies, to address basic skills needs in the food processing industry through the development and implementation of an industry-specific curriculum. Based on employer needs assessments, the project steering committee decided to focus on these seven curricular areas: reading, writing, mathematics, reasoning, English as a Second Language, Spanish for supervisors, and communication. Using the new curriculum, the colleges offered 26 pilot classes for their local food processing partners between November 1993 and June 1994. Outcomes of the pilot project included the following: (1) company representatives reported significant improvements in project participants' general job performance; (2) worker evaluations indicated increased confidence and movement towards personal and work-oriented goals; and (3) 9 of the 11 companies had classes scheduled beyond the project's duration or had expressed serious interest in continuing the program. Important elements in the success of the project were that the project developed a series of models for implementation; every company identified a representative to serve as a link with the steering committee, the colleges, and instructor; and the partnerships provided opportunities for continuous feedback. In addition, assistance was sought from the companies in marketing and promoting the programs, and the colleges were able to examine the long-term impact of college industry partnerships.

Wulf, D., & Others. (1991). *Evaluation of the Job Retraining Program*. U.S.; Iowa: Iowa's Job Retraining Program was evaluated through a review of operations, surveys/interviews with community college staff, and survey responses from 43% of the business participants. Resulting recommendations were as follows: (1) retaining the program in the Department of Economic Development rather than transferring it to the state's 15 community colleges; (2) improving program planning by having the community colleges submit a list of "probable" applications for the first 6 months of the fiscal year and then another for the second 6 months; (3) eliminating the requirement that businesses meet only one of three criteria to be eligible for a grant or forgivable loan or at least providing a measurable way to judge an increase in the quality of positions; (4) encouraging smaller companies to participate by proposing alternative funding and reducing or eliminating the required one-to-one match; (5) asking the Department of Education to offer community colleges some incentives for providing Job Retraining Program instructors; and (6) using a single form on which businesses can provide available information for evaluation.

Zeiss, T. (1991). *Creating a Literate Society: College-Business-Community partnerships*. U.S.; District of Columbia: Brief descriptions are provided of 16 model literacy initiatives undertaken by community colleges in conjunction with local businesses or community groups. Following introductory comments by Barbara Bush, Tony Zeiss, H. James Owen, and Roy Romer, "Literacy: America's Great Deficit," by Earnestine

Thomas-Wilson-Robertson and Tony Zeiss, reviews trends affecting the workforce including demographic changes, population migration, access to education and jobs, workplace diversity, women and minorities in the work force, and urban problems. The bulk of the report consists of project descriptions, outlining the unique features, funding sources, operations, and outcomes of the following programs: (1) Developmental English and the Reading Center (C. S. Mott Community College, Michigan); (2) Targeted Learning Center (Clackamas Community College, Oregon); (3) People Educating People and Basic Education Skills Training (College of DuPage, Illinois); (4) Project SPHERE and Project ABLE (Community College of Rhode Island); (5) FOCUS (Delaware County Community College); (6) Center for Basic and Pre-Technical Education (Hawkeye Institute of Technology, Iowa); (7) Center for Adult Basic Education and Literacy (Joliet Junior College, Illinois); (8) Filene's Workplace Education Project (Massachusetts Bay Community College); (9) Regina Workplace Literacy Program (Mississippi Gulf Coast Community College); (10) Workplace Literacy Skill Builders Program (Mt. Hood Community College, Oregon); (11) Initiative for Work Force Excellence (Piedmont Technical College, South Carolina); (12) Columbia-Willamette Workplace Literacy Consortium (Portland Community College, Oregon); (13) Vision 2000 Learning Centers (Pueblo Community College, Colorado); (14) Academic Assistance Program (Quincy Junior College, Massachusetts); (15) Learning Development Center/Stein Initiative (Red Rocks Community College, Colorado); and (16) Perdue Self Development Project (Vincennes University, Indiana). In the concluding chapters, Tony Zeiss and Robert M. Ady consider literacy and work force development as major national challenges.

Others Inclusion

Clayton, B., Blom, K., Bateman, A. & Carden, P. (2004). *What Works Where You Are?*

The Implementation of Training Packages in Rural Australia. Retrieved 06/28, 2006 from <http://www.ncver.edu.au/research/proj/nr2003.pdf>

The purpose of this research was to investigate the implementation of training packages in rural areas and the ways in which providers, community and industry stakeholders interact to achieve positive training outcomes.

Stakeholders include training providers (public, private, VET in Schools and adult and community education [ACE]); New Apprenticeship Centres and group training companies; enterprises and industry representatives; government agencies; community organizations and learners.

Knappsey, K. (1999). *Framing the Future: People, Places, and Projects*. Australia; Victoria:

This publication describes six Framing the Future (FTF) staff development projects that use work-based learning with different project teams and learning activities varying from general awareness to specific skills development in

Australia. "The Center for Human Services--Working for Its People" describes a project that introduced a Community Services Training Package to provide assessment opportunities dependent on students' circumstances and needs. "Chubb--Framing Its Own Future" tells how FTF found out from staff who will use the training package, what is important, and what support/resources they need to get the most out of training. "Embracing the Future: Sydney Institute of Technology" describes how FTF provided a forum to establish a dialog on how heads of studies could manage their changing roles and to plan future roles. "The Future for Children--TAFE SA Child Studies Program" discusses a project to share and promote ideas and models of how institutes work closely with industry to provide more flexible and effective training. "Seeing Food Afresh--Victorian Food Industry Training Board" focuses on introducing and implementing a training package for the seafood industry. "Sowing the Seeds for the Future: University of Ballarat SMB TAFE Campus" describes how three departments--rural, hospitality, and building studies--used FTF to provide training in a changing environment with industry as an active partner in the learning process. (YLB)

Kuruvilla, S., Erickson, C. L., & Hwang, A. (2002). An Assessment of the Singapore Skills Development System: Does it constitute a viable model for other developing countries? *World Development*, 30(8), 1461-76. In this paper, we briefly describe the institutional background of Singapore's successful national skills development model. We devise a tentative framework to evaluate national level skills development efforts, and we use it to assess the Singapore model. We argue that the model has the potential to move constantly toward higher skills equilibrium. We question however, the long-term sustainability of the model, and whether it is transferable to other developing countries. We conclude with some principles that other countries might use in organizing their own skills development systems.

Minguez , R., Herrero, A., Bernabé, M. & Ispizua, R. (2004). *University-Industry Collaboration: Learning and working together*. Retrieved 06/28, 2006 from http://www.iadat.org/iadate2004/abstract_web/IADAT-e2004_44.pdf The Faculty of Engineering of Bilbao was granted the responsibility for the development of an intense scientific, technical and educational activity by the creation of the "Ormazabal Work-Place (OWP)" in 2001. The company's laboratory at university was provided with the necessary structure and equipment to assure the success of the research activities. At present there are 4 students with scholarships at the OWP who are working during the mornings and attending regular classes in the afternoons. In addition, there are 4 researchers from the university and 4 engineers from the Ormazabal Industrial Group tutoring these students. This paper explains the general objective the Ormazabal Work Place has: the integral instruction of the students in several fields of engineering and management. This education should ensure all the necessities of the enterprises and in particular, the requirements of the promoting company, i.e. Ormazabal Group. The training of

the students is sustained in the research, development and innovation and is focused on their professional improvement and their probable future integration in the company. The Faculty of Engineering will provide the students an applied formation in real R&D projects. The professors involved in this project will be taking part in a process of technology transferring and at the same time they will be investigating in their own areas of knowledge. The project has different purposes for the promoting enterprise: leadership, knowledge management, globalization and internationalization, co-operation with public institutions or development of his own R&D institutional plan. In the OWP the use of the information and communication technologies is widely integrated in the educational system and their effective use allows quickening the processes of knowledge generation and transferring. This paper also shows the results of a pilot experience run in the OWP. The goal is to obtain a consistent Project Management Model, valid for distributed execution work teams and easy to deploy in temporary organizations. The project has followed a classical technology transfer methodology: gathering user requirements, developing an organizational model, selecting a supporting IT tool, piloting the model in the OWP and validating and disseminating the results. In order to facilitate the fast deployment in distributed teams the model has been supported on commercial Web-based collaboration tools offered through Application Service Providers (ASP). Access is provided just through standard web browsers, anywhere and anytime. The paper confirms the key components of the model, the functional requirements derived for the collaborative tool, the main barriers encountered during the implementation and a first description of achievable benefits: optimized project management resources (because of reduced communication, control and travel costs between the company and the faculty), reduction of over costs due to deviations (due to better coordination among tasks, easier risk management) and smaller costs of failed projects (owing to an easier coordination among projects and the improved visibility of the projects to the executive team for a faster alignment to changing research needs).

Nørgaard, B., & Fink, F. K. *Continuing Engineering Education as Facilitated Work Based Learning*. Retrieved 06/28, 2006 from <http://elite.aau.dk/fkf/Publications/2004%20Nantes%20-%20CEE%20as%20WBL.pdf>

This paper describes a method for Facilitated Work Based Learning (FWBL) where more than 25 years of experience with Problem Based Learning is transformed into an industrial context. FWBL is for individuals/groups of employees in a given company who in co-operation with the university establish a training programme where the employees at their work continuously go through a well-defined and tailor-made learning process. FWBL is based on the competence strategy of the company and the optimal solution would be to integrate the training programme in relevant development projects in the company. The learning process is facilitated and supervised by lecturers from the university. The method FWBL is currently being further

developed in a two years EU Leonardo Pilot Project entitled Continuing Engineering Education as Work Based Learning. Based on the different experiences brought into the project the partners will run cases in UK, Portugal, Spain and Denmark. This paper however will have focus on ‘the relation between Problem Based Learning and Facilitated Work Based Learning’ and will present the current results of the case studies within this focus area. More precisely a FWBL training programme consists of 3 phases a description on the first phase is given in this paper.