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ABSTRACT

School-to-work programs in postsecondary education have the potential to help young people find their first full-time jobs and acquire a capacity for learning while they work. Data show cooperative education students' wages are neither higher nor lower than those of non-co-op students. However, one evaluation has found the following: co-op students see a stronger connection between their current job and expected career, report more opportunity for learning in their current jobs, express more interest in their current jobs, and see a closer connection between school and work. Apprenticeship programs at two-year colleges typically involve a three-way partnership among a corporation, relevant trade union, and the college. Training normally takes place in college facilities and is offered by college faculty. Apprentices generally work full time for a period of months and then study full time for another period of months. Most apprenticeship programs linked to two-year colleges allow trainees to earn a certificate of completion for the apprenticeship as well as an associate's degree from the college. However, the tie between employers and colleges is often too tenuous to sustain the training program. Two-year colleges should give increased attention to counseling and placement for students who plan to move directly into the labor market. Evaluation of the effects of postsecondary education and training should take into account the voluntary nature of the decision to enroll in postsecondary education. (Contains 24 references.) (YLB)

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SCHOOL-TO-WORK PROGRAMS IN POSTSECONDARY EDUCATION

The transition from school to work in the United States is neither smooth nor efficient. Although most young Americans start working at paid jobs while they are in high school, these jobs are seldom connected to their studies or career aspirations. After leaving school, with or without a diploma, most young people spend a number of years floundering from one disconnected job to another. To prevent this evident waste of human resources, states and localities, encouraged by federal legislation, have been designing school-to-work systems. This paper focuses on school-to-work programs in two-year colleges.

While community, junior, and technical colleges have always offered some vocational curricula, the number of their offerings has increased and the range of direct linkages with outside organizations has become remarkably wide.

More than two-thirds of two-year institutions offer co-op or work experience, and almost one institution in six offers the classroom component of apprenticeship training. Although nearly nine out of ten two-year schools operate school-based enterprises, the numbers of students involved are tiny—less than a half of a percent. Even co-op and apprenticeship do not enroll very large numbers, accounting for only 2.25 percent and 1.39 percent of the schools' total enrollment, respectively.

Co-op

Evaluations of co-op in two-year colleges have been too sparse and too limited to permit firm conclusions or generalizations. The few evaluations that NCRVE's researchers found are summarized here.

Using data from 840 co-op and non-co-op students, Siedenberg (1989) found that co-op students' wages were neither higher nor lower than the non-co-op graduates.

LaGuardia College in New York is the only two-year college in the U.S. where co-op education is mandatory for all full-time students. The program consists of three three-month, full-time co-op assignments. Most of LaGuardia's students who complete their first co-op assignment go on to complete their degree, and roughly two-thirds of its students continue their education beyond the two-year degree (1983 data, Heinemann, 1988). Employer evaluations reflect employer satisfaction and enthusiastic students.

The most positive results were found by Stern, Stone, Hopkins, McMillion, and Cagampang (1992), who used 1989 baseline data from the NCRVE longitudinal survey to compare 228 co-op students in two-year colleges to 375 non-co-op students at the same colleges, all of whom were employed in the same occupational categories. The co-op students see a stronger connection between their current job and their expected career, report more opportunity for learning in their current jobs, express more interest in their current jobs, and see a closer connection between school and work. The differences were substantial. For example, nearly two-thirds of the co-op students saw a close connection between school and their current job, but less than half of the non-co-op students saw a close connection. Whether these qualitative differences in students' work experiences contribute to subsequent educational or economic outcomes is not yet known.

Traditional Apprenticeship

Two-year colleges have long been active in traditional apprenticeship programs and are expected to play a major role in new apprenticeships.

Three-way partnerships. Apprenticeship programs at two-year colleges typically involve a three-way partnership between a corporation, the relevant trade union, and the college. The majority are in established trades such as shipfitting, machining, pipefitting, and sheet metal working. The maritime industry is beset by severe literacy problems among shipyard workers while, at the same time, technical requirements for the work are increasing. The equivalent of two postsecondary years of education and training are now required for the majority of shipyard work (Cantor, 1992), and the industry has formed partnerships with community colleges. For example, Thomas Nelson Community College provides on-site trade theory classes, advanced technical training, and general education courses as part of the Newport News Shipbuilding and Drydock Company's apprenticeship program (Cantor, 1992); the Community College of Rhode Island offers classroom training as part of the apprenticeship program of the Electric Boat Division of the General Dynamics Corporation (Liston & Ward, 1984).

To meet the demand for auto repair mechanics, most major American and Japanese manufacturers have forged links with their local auto dealers, the dealers' trade associations, and community colleges. General Motors operates over 500 apprenticeship programs involving two-year colleges (Cantor, 1991).

The programs. The training normally takes place in college facilities and is offered by the college faculty. The dean or director of vocational education at the college receives a rough outline of the course from the employer—or from an employer/union training advisory board—then prepares a curriculum for review.

Apprentices in the program generally work full-time for a period of months and then study full-time for another period of months. In GM's Automotive Services Excellence Program, apprentices participate in a six-part cycle consisting of five to eight weeks of full-time school followed by five to eight weeks on the job. Apprentices work an eight-hour day in both cycles (Casner-Lotto, 1988). In other programs, apprentices put in classroom time after work. In a Pennsylvania machine technology program, for example, trainees spend two nights each week at a community college during their apprenticeship (Whitworth, 1982).

Most apprenticeship programs linked to two-year colleges allow trainees to earn a certificate of completion for the apprenticeship as well as an associate's degree from the college. The classroom component usually consists of both general and technical courses. The U.S. Navy's shipyard program, for example, consists of

This paper is drawn from portions of *Research on School-to-Work Transition Programs in the United States*, by David Stern, Neal Finkelstein, James R. Stone III, John Latting, and Carolyn Dornsife, 1994. (NCRVE Report No. MDS-771.) Berkeley: University of California, National Center for Research in Vocational Education.

courses in expository writing, technical writing, arithmetic, chemistry, physics, a social science elective, drafting, and blueprint reading (Cantor, 1988). Rancho Santiago Community College's offerings on behalf of the Santa Ana fire department consist of eight core courses that are prerequisite for fire fighter certification. These same classes also provide 24 units toward an associate's degree in Fire Science Technology (Cantor, 1992).

Trainees normally pay the standard college tuition for their courses, and buy their own books and tools. The sponsoring organization supplies equipment, uniforms, and wages for on-the-job phases of the training. The college provides instructors, classrooms, and administrative expenses. Many training programs are more extensively supported by the sponsor. Chrysler provides for its trainees a $1,500 grant toward educational costs, a salary of 160 percent of the sponsoring dealership's minimum wage during both phases of the training, and a $.50 per hour raise after each semester. In addition, Chrysler places $1.00 in escrow for every hour worked and studied by the trainee, and awards the entire amount to the trainee upon completion of the program, at which time he or she is guaranteed two years of full-time employment (Cantor, 1991) .

The selection process for these programs is often quite rigorous, as applications can far outnumber available places. One program, sponsored by The International Brotherhood of Electrical Workers (IBEW) Local #3, receives 2,000 to 4,000 applicants annually for its 700 apprenticeship positions (Cantor, 1991). Sponsors use interviews and ability tests as well as high school transcripts in the selection process.

The future. Despite the efforts of community, junio and technical colleges to provide inexpensive, flexible, high-quality training programs, t e future of their relationships with industry is unclear. In California in 1984, community colleges accounted for three-fourths of the apprenticeship instruction run by educational institutions. By 1987, however, community colleges accounted for only half of such instruction (Farland & Anderson, 1988). In California, at least, sponsors were turning more to regional vocational programs and adult schools to provide the classroom component. The NCRVE research team has learned that the tie between employers and colleges is often too tenuous to sustain the training program.

Career Counseling and Job Placement

Career counseling and job placement offices of some kind have become nearly universal on two-year community and technical college campuses. However, the major responsibility for finding jobs for vocational/technical graduates falls on students themselves, with help from their instructors rather than from the placement services (Stern, 1992). Further, counseling and placement services have been more successful at helping students who want to move on to further education than those who want to move into the labor market. Those who have already experienced success in the academic context—the academically able and those intending to transfer to four-year colleges—are better served by two-year college counseling and placement offices than those who have been less successful in the academic environment. The NCRVE report recommends that two-year colleges give increased attention to counseling and placement for students who plan to move directly into the labor market.

Relevance of School-to-Work Programs to Subsequent Employment

The NCRVE research team believes that evaluations of the effects of postsecondary education and training should take into account the voluntary nature of the decision to enroll in postsecondary education. To inform policy, it is not enough to measure the difference in well-being between those who do and do not enroll. The question is whether those who do not (or who do) enroll would be better off if they did (or did not).

The measurement difficulties are daunting. Choices that individuals make—for example, whether to enter a postsecondary institution, what kind, which one, which fields to study, whether to hold a paid job while in school—are very likely affected by unmeasured personal factors that also affect subsequent economic success. Even random-assignment experiments, which are designed to eliminate the influence of unmeasured variables, can create problems that affect the evaluation. For instance, the disappointment felt by individuals who are turned away from a program can have a discouraging effect on their behavior and, consequently, on their chances for success.

The measurement issue has further complications. Since many young people drift from job to job while dropping in and out of postsecondary education, an actual work experience may be the precipitating factor in forming a stable attachment to a line of work or a particular employer. Having first identified desirable work, the young person returns to or starts school to fill in missing qualifications or become eligible for advancement. Clearly, for many students, work experience and schooling jointly affect subsequent career success, which in turn makes it difficult to measure the effect of the schooling itself. And, of course, employment during college and subsequent success in the labor market might both result from the student's ability or ambition.

However, work during college has been found to be positively associated with earnings a few years later, even allowing for such personal factors as students' ability or ambition (San, 1986). Although some evidence indicates that working while in college increases the probability of dropping out (Kohen, Nestel, & Karmas, 1978; Ehrenberg & Sherman, 1987), this effect is smaller if students are working on campus (Astin, 1975; Ehrenberg & Sherman, 1987).

Results for two-year colleges. Data from 1987 (Kominski, 1990, Table 2) reveal that holders of associate's degrees earn $4,000 to $7,000 more than high school graduates. More recent data, from the March 1992 Current Population Survey (CPS) reveal that individuals with associate's degrees earn from $1,000 to $9,500 more than those with only a high school diploma or its equivalent (U.S. Bureau of the Census, 1992).

These earnings differentials may reflect prior differences between recipients of associate's degrees and high school graduates rather than the effect of the additional schooling. Individuals who obtain associate's degrees tend to come from more educated or affluent families than those who complete high school only, and they possess more of certain abilities that lead to both higher educational attainment and

higher earnings. It is necessary to account for these and other factors.

Such accounting is now possible with detailed data from longitudinal datasets such as the High School and Beyond (HSB) survey and the National Longitudinal Study of the High School Class of 1972 (NLS72). The HSB seniors in 1980 were resurveyed in 1986, when most of them were around the age of 24. The NLS72 group was also re-surveyed in 1986, when most of them were around the age of 32.

As expected, all estimates of earnings differences, when controlled for ability, work experience, and demographic characteristics, are less than the simple, uncontrolled differences observed in the Survey of Income and Program Participation (SIPP) and CPS data. Horn (1989) found that those who complete a two-year vocational program earn roughly $3,000 a year more than those who complete high school only. But Hollenbeck (1992) found the difference to be about $1,800, and Lyke, Gabe, and Aleman (1991) found an insignificant difference between community college and high school graduates. Grubb (1992, 1993) found that a vocational associate's degree increases earnings by about $3,000 a year for females but does not contribute much to additional earnings for males. Looking at associate's degrees in nonvocational fields, Grubb (1992, 1993) and Kane and Rouse (1992) found little or no gain in earnings for men or women, except for those with associate's degrees in math or science.

Since most students who enter two-year colleges do not complete associate's degrees, it is important to estimate the payoff from taking courses and not finishing the degree. Again, estimates vary. Hollenbeck (1992) found increased earnings for noncompleters in the HSB data, and Kane and Rouse (1992) found increased earnings for noncompleters in the NLS72 data. But Grubb (1993) found few effects for noncompleters. The authors of the NCRVE report find it difficult to know what to make of these divergent results. Grubb warns that the variety of programs and local circumstances make it hazardous to generalize about effects.

Results for Proprietary Vocational Schools. Lyke, Gabe, and Aleman (1991) found that proprietary school graduates make about $1,000 a year more than high school graduates. This is more than the earnings advantage they found for individuals with associate's degrees (vocational and academic together). Hollenbeck (1992) estimated an increase of approximately $2,000 a year from a year in proprietary school—again, somewhat more than his estimate of the increased earnings from a community college vocational certificate or degree.

Looking at a somewhat older group, Grubb (1991) and Kane and Rouse (1992) found an earnings gain of $1,000 to $2,000 for proprietary school graduates. For noncompleters, Grubb (1991) found no significant increase in earnings.

Conclusion

Research on school-to-work programs in postsecondary education is still limited, and the complexity of the programs makes it difficult to know which elements produce positive effects. Nonetheless, it is evident that school-to-work programs have the potential to help young people not only to find their first full-time jobs, but also to acquire a capacity for learning while they work, which will help them throughout their working lives. What is needed now is local creativity and entrepreneurship in creating new program ideas coupled with thorough assessment to provide feedback on how the ideas are faring in practice.

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