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Should Poverty and Inequality Measures be Combined — Source link

Gary S. Fields

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The Impacts of School–Business Partnerships on the Early Labor-Market Success of Students

John H. Bishop
Ferran Mañe

One of the most successful strategies pursued by the school-to-work (STW) movement has been improving communication between schools and employers. At the beginning of the 1980s, most employers hired young workers without paying much attention to student achievement in high school. Even though they were obligated by law to share transcripts with employers when students signed release forms, many high schools were not responding to such requests. For example, in Columbus, Ohio in 1982, Nationwide Insurance sent more than 1,200 requests for transcripts signed by job applicants to high schools and received only ninety-three responses. In other cases, transcripts took so long to arrive that hiring decisions had already been made.

Employers offering the best jobs developed very negative stereotypes of young high-school graduates. Interviewed for a 1990 CBS News special report on educational reform, the personnel director at a large, high-wage company proudly stated, "We don't hire high-school graduates any more; we need *skilled* workers." Recent graduates who were both skilled and disciplined were unable to signal these facts to employers. As a result, recent high-school graduates were effectively frozen out of primary labor-market jobs. They took jobs at low wages in the secondary labor market and hoped that they would be able to establish a record of performance in those jobs that would enable them to get a primary labor-market job sometime later. This meant a long period of churning in the low-wage labor market for everybody.

As a result, young workers with strong basic skills did not earn appreciably more than workers with weak basic skills (Bishop, 1992). Over time, however, those who did a good job were more likely to get further training, promotions, and good recommendations when they moved on, while poor performers were encouraged to leave. Because academic achievement in high school is correlated with job performance (Bishop; Hartigan & Wigdor, 1989), the sorting

process resulted in basic skills assessed during high school having a much larger effect on the labor-market success of thirty-year-olds than of nineteen-year-olds, even when contemporaneous measures of completed schooling were held constant (Altonji & Pierret, in press; Farber & Gibbons, 1996).

The long delays before the benefits of academic achievement in high school started accruing sent students the wrong signal. Teenagers knew that college-educated adults had good jobs and lived in large attractive houses, which explains why more than four out of five said they wanted to go to college. They did not know whether the successful adults in their communities took rigorous courses and studied hard in high school. They observed almost no relationship between the academic achievements of their older friends and the quality of their jobs. So it was reasonable for youngsters to conclude that employers reward credentials, not learning. If that was the conclusion they drew, the best strategy for the bulk of students was to study just hard enough to get the diploma and be admitted to college, but no harder. A 1987 survey of a nationally representative sample of tenth graders found that 62% agreed with the statement, "I don't like to do any more school work than I have to" (*Longitudinal Study of American Youth*, question AA37N).

Recognizing these problems, the Labor Secretary's Commission on Workforce Quality and Labor Market Efficiency recommended that "the business community should . . . show through their hiring and promotion decisions that academic achievements will be rewarded" (1989, p. 9). They also recommended that "high school students who excel in science and mathematics should be rewarded with business internships or grants for further study" (p. 11). The school-to-work (STW) movement has made improved communication between schools and employers one of its key goals. The STW movement has brought many employers into schools and involved them with students as mentors and as sponsors of internships, apprenticeships, job shadowing, and cooperative-education experiences. By 1997, participation rates for ninth and tenth graders had reached 12% for job shadowing, 5% for mentoring, 7.3% for cooperative education, and 5% for internships and apprenticeships. Some 12% of students said they had visited a worksite or worked during school hours as part of a STW program (Bishop, Mañe, & Ruiz-Quintanilla, 2000).

This chapter examines the effects of improved signaling of student achievement in high school on the labor market success of recent high-school graduates. The chapter is organized into three sections. In the first section, we reproduce the argument that Bishop put forward in 1985 that better signaling of student achievement to employers would improve the quality of the jobs that recent high-school graduates could obtain and strengthen incentives to learn. In the second section, we analyze longitudinal data on eighth graders in 1988 and attempt to measure the effect of school–employer partnerships on their subsequent success in the labor market, testing the hypotheses put forward in 1985. The final section of the chapter discusses the research and policy implications of the findings.

PREDICTIONS AND HYPOTHESES: THE IMPACTS OF SCHOOL–BUSINESS PARTNERSHIPS AND MINIMUM COMPETENCY EXAMINATIONS ON EARLY LABOR-MARKET SUCCESS OF SCHOOL LEAVERS

In a 1985 report, Bishop argued that "schools can help their graduates avoid unemployment and get better jobs by improving the quality and facilitating the flow of employment-related information available to students and their potential employer." He advocated "close linkages between vocational teachers and local employers who hire their graduates" and "job placement and referral services for all students (not just the vocational students) that are based on long-term relationships of trust with local employers" (pp. 98–100).

The report also suggested that high schools could help students by establishing higher standards in both occupational and academic programs and making sure that employers believed the high standards were real and therefore that the negative stereotypes were false.

These considerations have led us to hypothesize that school–business partnerships (SBPs) and Minimum Competency Exams (MCEs) would improve job opportunities of recent school leavers in three ways. First, by improving student achievement and developing character, they raise worker productivity. Even when this does not immediately increase workers' earnings, the effect of academic achievement on wages grows with time and eventually becomes very large.

A second way that SBPs and MCEs improve job opportunities is by sending a signal to employers that *all* the graduates of a high school meet or exceed their hiring standards. Bringing local employers into the school for presentations or meetings gives school personnel the opportunity to show business partners the school's successful programs and introduce them to outstanding students who might be interested in working at the company in the future.

A third way that SBPs can affect job opportunities is by improving the quality of the information that employers have on the achievements and character of recent high-school graduates. If employers become more able to assess the academic achievement of job applicants, this trait will get more weight in their selection decisions. If character traits such as dependability and honesty get better signaled, these traits will take on more importance. School–business partnerships often result in a school (or specific teachers there) becoming trusted referral sources for local employers (Rosenbaum, 2000). When this occurs, we would expect the school's "better" students to be the greatest beneficiary of the relationship (Rosenbaum, DeLuca, Miller, & Roy, 1999). How would "better" be defined? Probably not by test scores alone. Effort, reliability, and social skills would probably matter even more, but our data set lacks good indicators of these character traits. Grade-point averages reflect effort and reliability as well as test scores, so in our data set, the GPA is probably the best single indicator of whom the referral process would most benefit.

Even if schools recommend and refer only their best noncollege-bound students to high-wage employers, these top students will probably not be the only ones to benefit. Their success at the community's more visible high-wage employers will cast doubt on the negative stereotype that has been hurting all recent graduates. A further benefit is that finding work for some students in the primary labor market reduces competition for the secondary labor market—retail sales and fast food—jobs that are customarily filled by youth. This would make it easier for less-qualified students to find work. Thus, the "best" students might get better jobs while the rest of the students might find it easier to get jobs.

The foregoing logic generates a number of testable predictions. Holding constant socioeconomic status and test scores, GPA, attitudes in eighth grade, whether a student gets a diploma or a Graduate Equivalency Diploma (GED), current and past college attendance, and a complete set of other individual and school characteristics, we predict the following:

- Hypothesis 1. Students with average GPAs will, ceteris paribus, do better in the labor market when they attend high schools that are part of a school–business partnership.
- Hypothesis 2. Rewards for academic achievement will be significantly greater at schools that have established SBPs.

Preliminary support for these hypotheses comes from Rosenbaum, DeLuca, Miller, and Roy's (1999) recent study of who gets job-referral assistance from their high schools and the impact of such assistance on students. They found that students with high test scores were more likely to obtain their first job through a school referral or recommendation. They also found that those who got their first job through a high-school contact or referral earned only slightly more in their first job, but nine years later were being paid 17% more than students who got their first job without the help of their high school.

- Hypothesis 3. Students living in MCE states will be paid more. In most MCE states, transcripts indicate whether the student has passed the MCE but not how the student scored on the MCE test. Consequently, state MCEs may not improve the signaling of academic achievement. We do not know whether the districts with local MCEs are putting MCE scores on the high-school transcript or advertising them in some other way, so it is not clear how local MCEs will influence the tendency of employers to offer the best jobs to the best students.

EMPIRICAL ANALYSIS

Data and Specification

We report on an analysis of restricted data on public-school students from the National Education Longitudinal Study (NELS: 88), a longitudinal data set

that followed a nationally representative sample of eighth graders in 1988 through the year 1994. The eighth graders who subsequently dropped out of high school were tested and interviewed in 1992 and 1994, and so are included in the analysis sample.

We created a school–business partnership index by summing "Yes" answers to four questions in the 1992 principals' questionnaire about relationships with the local business community. Table 12.1 presents the exact wording of each question. The mean value for the index across the sample schools is 2.42, and the standard deviation is 1.01.

We expected SBPs to have larger impacts on students with good grades. Consequently, the effects of the partnerships were captured by two variables: the SBP index and an interaction between the SBP index and the student's eighth-grade GPA. The interaction variable was defined as (SBP) × (GPA – 2.91). When we deviate GPA from its mean of 2.91 before constructing the interaction variable, the coefficient for the SBP index becomes an estimate of the impact of SBPs on students who have B to B– averages in eighth grade.

The restricted data identified the state in which each high school is located, and this information was used to construct an indicator variable, *StateMCE*, that was equal to one for students in states that required them to pass a MCE to graduate in 1992 (Alabama, Florida, Georgia, Hawaii, Louisiana, Maryland, Mississippi, Nevada, New Mexico, New Jersey, New York, North Carolina, South Carolina, Tennessee, and Texas) and zero elsewhere. In states that did not have a state MCE, information on local MCEs came from questionnaires completed by the high school principal in 1990 and 1992. In the states with a statewide MCE, local MCE was set equal to zero. The interactions between eighth-grade GPA and the MCE variables were constructed in the same way as for the SBP index.

Models were estimated predicting seven indicators of early labor-market outcomes: earnings in calendar 1993; the total number of months worked in the

Table 12.1
Percentage of Schools Having Different Types of Business Partnerships

Do you have any of the following relationships with your local business community?	% Yes
1. Do employers ask the school to post a listing of job openings?	71.7
2. Do employers ask the school to recommend students for jobs?	88.2
3. School has been adopted by a local business?	40.3
4. A local business sponsors an incentive program in your school?	30.8

twenty-one-month period following high-school graduation; the total number of months unemployed in that period; average monthly earnings; monthly earnings in January–February 1994; the logarithm of the hourly wage rate; and a zero–one variable indicating whether the job is not a service, laborer, or retail sales job. The models predicting these labor-market outcomes included controls for current and past college attendance: a dummy variable for full-time college attendance during the period for which earnings were measured, a dummy for part-time attendance during that period, and the number of semesters of college attendance before the earnings measurement period. Also included were dummies for ever dropping out, obtaining a GED, failing to get either a diploma or a GED, graduating early, and the length of the delay in graduation when graduating late.

Because the outcomes being studied are influenced by a host of other characteristics of the community and the student, we controlled for as many of them as possible in order to increase efficiency and reduce omitted variable bias. Our estimations included controls for a host of student-background characteristics measured in eighth grade: GPA; test scores; whether students took remedial courses; whether they took advanced courses; TV and homework hours; reading for pleasure; whether they were handicapped; family socioeconomic status; a parent-involvement index; family size; family structure; a locus-of-control index; a self-esteem index; hours working for pay during eighth grade (and its square); an index for smoking in eighth grade; dummies for race, ethnicity, and religion; rural, suburban, or urban residence; and ten variables describing the quality of the school. A full description of the variables included in the analysis is available from the authors.

From the principals' questionnaire, we took the following indicators of the quality of the student's secondary school: dummy variables for Catholic schools, for secular private schools, and for schools formed by non-Catholic religious organizations; average teacher salary; pupil-teacher ratio; percentage of students eligible for free lunch; Carnegie units required to graduate; percentage of students who were white; and average enrollment per high-school grade (and its square). Two other measures of the quality of the school attended in tenth grade—the average socioeconomic status and eighth-grade test scores of students at the school—were calculated by averaging student responses for each high school in the NELS: 88 database. In addition, we controlled for the following characteristics of the state: unemployment rate, mean weekly wage in retailing, weekly wage in manufacturing, minimum number of Carnegie units required by the state law, and dummies for four census regions. Our estimations were a decided improvement over the analyses previously conducted using High School and Beyond data because the use of restricted data allowed us to include controls for important variables such as the state unemployment rate and the average earnings in manufacturing and retailing for the state.[1]

Results

Table 12.2 presents the results of our analysis of the capability of partnerships between schools and businesses and high-school graduation test requirements to predict the earnings and employment of high-school graduates and dropouts. Estimated effects of SBPs and networks are given in columns 2 through 5. Estimated effects of State MCEs appear in columns 6 through 9. Local MCE results are given in columns 10 through 13. The first column of each four-column group gives estimated effects for eighth graders with average grades. The coefficient for the interaction with GPA is given in the second column of the group. Predicted effects of the policy on C– students and A students are given in the third and fourth columns of the group. Huber-White standard errors that correct for the clustered sample are given in parentheses underneath the estimated coefficients. The numbers in brackets in the third and fourth column of each four-column group are the *p* value for the null hypothesis that the policy had no effect on C– students and A students, respectively. The statistical significance of each coefficient and of predicted effects is indicated by the number of asterisks to its right or by the plus sign, as indicated in the table.

Figures 12.1 and 12.2 present a visual representation of our model's predictions of the impact of SBPs and state MCEs, respectively, on early labor-market outcomes and how they vary by the student's GPA in eighth grade. The figures are based on analysis of 1994 data on NELS: 88 students who were in the eighth grade in 1988, controlled for attitudes, socioeconomic status, GPA, eighth-grade test scores, and state and high-school characteristics.

The bars in Figure 12.1 represent the predicted effect of a two-unit increase in the SBP index. For the unemployment rate and the probability of getting a good job, the bars represent changes in probability. For earnings, months worked, and hourly wage, the bars represent percentage change from the baseline. Thus, the percentage effect of a two-unit change in the SBP index on the annual earnings of students with B to B– averages is 4.05% ([2 * $108]/$5,330, where $5,330 is the mean annual earnings in the sample). For C– students, the predicted effect is 9.9% ([2 * $264]/$5,330). The asterisks and plus signs above or below a bar indicate the statistical significance of the effect being pictured. Bars that lack these signs describe predicted effects that are not significantly different from zero at the 10% level on a one-tailed test. Because the regressions control for whether students graduated from high school and for whether they attended college, we are measuring the short-run effects of graduation requirements on labor-market success net of effects that operate through the probability of graduating from high school or attending college.

Our first finding is that school–business partnerships significantly reduced unemployment in the two years after leaving high school and significantly increased employment, annual earnings, and hourly wage rates. The quality of the jobs students got after leaving high school also improved significantly. Hypothesis 1, therefore, received strong support.

Table 12.2
Effect of SBPs and MCEs on Employment Outcomes after High School

	Mean (SD)	School–Business P'ships	P'ship x 8th Grade GPA	P'ship for C–Student	P'ship for A Student	State MCE (SMCE)	SMCE x 8th Grade GPA	SMCE on C–Student	SMCE on A Student	Local MCE (LMCE)	LMCE x 8th Grade GPA	LMCE on C–Student	LMCE on A Student	R^2 # Obs.
1993 Annual Earnings	$5,330 (5394)	108* (62)	-130* (77)	264** [.04]	-39 [.67]	476** (190)	264+ (192)	159 [.63]	774*** [.002]	2 (240)	682*** (233)	-816** [.045]	773** [.014]	.2358 8307
Total Months Worked	13.41 (7.45)	.178** (.09)	-.077 (.106)	.27* [.092]	.09 [.53]	.137 (.274)	-.421* (.240)	.64+ [.11]	-.34 [.38]	-.065 (.285)	.73** (.30)	-.94** [.049]	.76* [.074]	.1376 9747
Total Months Unemploy.	1.78 (4.09)	-.13*** (.046)	-.039 (.057)	-.08 [.32]	-.17** [.013]	-.131 (.143)	.022 (.133)	-.157 [.50]	-.106 [.57]	-.018 (.150)	.042 (.162)	.068 [.80]	.029 [.89]	.0591 9747
Average Earnings / Mo.	$528 (505)	3.6 (5.9)	2.1 (6.6)	1.1 [.93]	6.0 [.47]	43.1*** (16.6)	10.9 (15.5)	30 [.27]	55*** [.01]	6.1 (20.4)	26.0 (20.6)	25 [.49]	35 [.49]	.1990 9595
Spr. 1994 Earn. / Mo.	$517 (642)	3.9 (7.6)	4.5 (8.7)	-1.5 [.92]	9.0 [.39]	19.1 (22.4)	18.6 (19.9)	-3.2 [.93]	40.1+ [.16]	-6.3 (25.6)	54.3** (26.7)	-71.5+ [.11]	55.1+ [.12]	.1761 9377
Log. Hourly Wage Rate	1.292 (.556)	.0035 (.0064)	.0088 (.008)	-.007 [.57]	.013+ [.19]	.0027 (.019)	.0066 (.018)	-.005 [.86]	.010 [.71]	.000 (.025)	.061*** (.024)	-.073* [.06]	.069** [.05]	.0874 9696
Good Job [1–0]	.570 (.495)	.096*** (.035)	.068* (.041)	.014 [.76]	.173*** [.008]	.088 (.108)	-.158* (.094)	.278** [.043]	-.09 [.53]	-.013 (.113)	-.221* (.124)	.252+ [.12]	-.263+ [.196]	.0205 4459

Note: Analysis of NELS: 88 data on public high-school students in 1990 interviewed in 1994. The *StateMCE* variable is a 1 for AL, FL, GA, HI, LA, MD, MS, NV, MN, NJ, NY, NC, SC, TN, and TX. Models control for when the respondent got a high-school diploma, whether the respondent was in college full time during spring 1994, whether she was a part-time student in spring 1994, the number of months spent attending college full-time, and months spent attending part time. Models contain a full set of background variables measured in the eighth grade: family socioeconomic status; books in the home; single parent; parents divorced; number of siblings; test scores; GPA in eighth grade; TV hours; homework hours; read-for-fun index; smoking; dummies for gender, ethnicity, religion, handicapped status, in advanced courses, in remedial courses, and central city and rural school location; locus-of-control index; self-esteem index; and hours working for pay. The characteristics of the school the student attended during tenth grade (or had attended prior to dropping out) in the model were private control (three types); teacher salary; percentage student body white; percentage free-lunch eligible; mean eighth-grade test score; mean family socioeconomic status; and enrollment per grade, plus its square. Characteristics of the state controlled were unemployment rate; weekly wages in retailing and manufacturing; and dummies for four census regions, named in the text. Models were not weighted. Numbers in parentheses below the coefficient are Huber-White standard errors that correct for clustering by school. Rows 1 to 6 of the table present linear regression results. Row 7 has the results of a logistic regression. The numbers in brackets in columns 4, 5, 8, 9, 12, and 13 are the p values for a hypothesis test that the SBPs' and MCEs' effects on A students and C– students are significantly different from zero.

\+ Statistically significant at 10% level on a one-tailed test.

* Statistically significant at 5% level on a one-tailed test.

** Statistically significant at 5% level on a two-tailed test.

*** Statistically significant at 1% level on a two-tailed test.

Figure 12.1
Effect of a Two-Unit Increase in the SBP Index on Labor-Market Outcomes after High School of Students with Different Grades

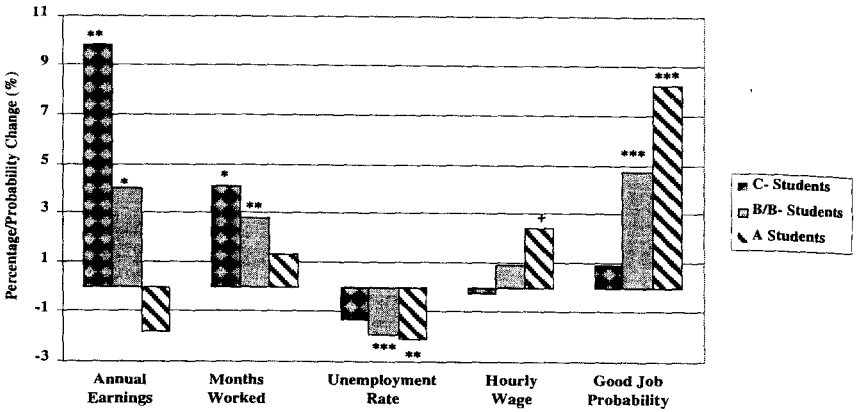
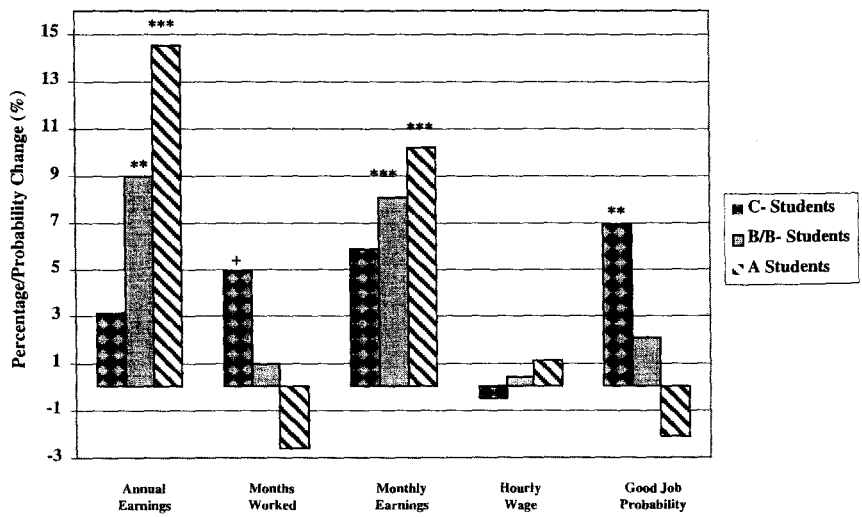


Figure 12.2
Effect of Having a State MCE on Labor-Market Outcomes after High School of Students with Different Grades



Our second hypothesis, that SBPs would tend to benefit high-GPA students more than low-GPA students, received mixed support. As predicted, the effects of SBPs on unemployment, wage rates, and job quality were significantly larger for high-GPA students. On the other hand, SBPs had larger effects on the months employed and annual earnings of low-GPA students than of high-GPA

students. Apparently, SBPs benefit high-and low-GPA students in different ways. For high-GPA students, they improve job quality and lower unemployment. For low-GPA students, job quality does not improve, but employment and earnings increase, partly because unemployment declines but mainly because labor force participation rises. This pattern of results is consistent with the queue model of youth employment put forward at the end of the first section. SBPs appear to help the best (high-GPA) students get better primary labor-market jobs. The exit of these high-GPA students from the secondary labor market may be creating opportunities for low-GPA students to get full-time work that would not have been available to them in the absence of the SBPs.

Our third hypothesis, that Minimum Competency Exams increase wage rates and earnings, received substantial support. Although State MCEs showed no effect on wage rates, they did show significant effects on both annual and monthly earnings of students with average and above-average grades. State MCEs increased the annual earnings of students with average grades by 9% and the earnings of A students by 14%. State MCEs significantly increased employment of students with C– grades, but their estimated impact on annual earnings was only 2.9%, not large enough to be statistically significant.

The effects of local MCEs were different. Local MCEs clearly increased the rewards for the traits that are captured by eighth-grade GPA. The coefficient for the interaction between GPA and a local MCE was significantly positive in the models predicting annual earnings, months employed, hourly wage rate, and monthly earnings in January–February 1994. Our results imply that local MCEs had significant positive effects on the employment, wage rates, and earnings of A students and significant negative effects on the employment, wage rates, and earnings of C– students. They had no effects on students with average grades.

Do School–Business Partnerships Have Negative Side Effects?

Do negative effects on other important student outcomes offset the positive labor-market effects of SBPs? For example, does employer involvement with the school induce some to drop out of high school or to delay graduation? Have partnerships induced students to study harder as intended, or have they distracted the school and students from academic goals? Does the improved access to jobs reduce the number of young people who attend college?

To answer these questions, we estimated models predicting student responses to questions about how hard they were working and direct measures of how much they learned between eighth and twelfth grade. In addition, logit models were estimated that predicted dropping out of high school, getting a GED rather than a regular diploma, taking more time to complete high school, not graduating from high school before 1994, and college attendance.

The estimations found no significant effects of SBPs on most of the outcomes studied. The indexes for working hard and for challenging courses were no different in schools with SBPs. Test-score gains were not significantly different. Dropout rates, overall high-school completion rates (regular diploma plus GED), and college-attendance rates were no different. However, there were two significant differences. First, students in schools with partnerships were less likely to graduate late. Because delays in graduating from high school significantly reduce earnings, this is a very positive outcome. Students from partnership schools were also significantly less likely to get a GED and more likely to get a conventional diploma instead. This too is a very positive outcome because people with regular high-school diplomas earn considerably more than those with GED credentials.

IMPLICATIONS FOR SCHOOL-TO-WORK RESEARCH AND POLICY

STW Program Effectiveness Cannot Be Measured by Comparing STW Participants to Nonparticipating Students at a School

There are two serious problems with such an evaluation methodology: selection bias and leakage of program impacts into the control group (contamination of the control group is an alternate descriptor of the problem). Comparing students at schools that do and do not have STW programs is a better approach. Selection problems can bias school-level analyses, but at least the control-group-contamination problem is avoided.

Effects of School-to-Work Programs Are Not Limited to Those Participating in STW Activities

The school-to-work movement's emphasis on collaborating with local employers is intended to improve employer perceptions of the quality of all of the school's graduates, not just the STW students. Our analysis of NELS: 88 data suggests that this goal may have been achieved. Students from schools with business partnerships and networks experienced less unemployment, were more consistently employed, earned more, and got higher-level jobs. The STW movement's practice of building collaborative networks with local employers may be the most important mechanism by which STW programs help students.

School–Business Partnerships Are a Cost-Effective Strategy for Helping Students

Building such networks takes time and the commitment of school staff. But these direct costs are small when compared to the benefits that students receive.

Our analysis suggests that a two-unit increase in the SBP index was associated with a $216 increase in annual earnings. If a school has 400 ninth graders, and the earnings benefit lasts for just five years, the total earnings benefit of the two-unit increase in collaboration would be $432,000 for each one-year student cohort—much more than ten times what schools of that size would be likely to be spending annually to build and maintain the collaborative network. One particularly attractive aspect of the policy is that no student group appears to be hurt by the policy and all groups are helped in some way. For unemployment, wages, and job quality, benefits are larger for high-GPA students than low-GPA students. For employment and earnings, however, benefits are larger for low-GPA students.

Another attractive feature of SBPs is that one does not have to trade off positive labor-market effects for negative effects on some other front.[2] We tested the hypothesis that SBPs might lower test-score gains, high-school enrollment and completion rates, and college attendance. This hypothesis was rejected in every case. Test-score gains, dropout rates, and college attendance rates were the same. The only significant relationship was with the probability of a delay in graduating from high school and with the proportion of graduates who get the GED credential. Schools with business networks had fewer students delaying their graduation and fewer getting the GED.

NOTES

1. These controls for school characteristics and region may not, however, have been sufficient to avoid omitted-variable bias entirely. States and school districts with SBPs or MCE exams may have differed along unmeasured dimensions having direct effects on labor-market outcomes.

2. By contrast, MCEs increase earnings and college attendance rates, but they also reduce the number of students who get the regular high-school diploma within six years of completing eighth grade. As one might suspect, it is the students who are doing poorly in eighth grade who are most likely to have their graduation delayed or prevented. The positive effects of MCEs go disproportionately to the students whose eighth-grade GPA indicates they are either smarter or trying harder (Bishop, Mañe, Bishop, & Moriarty, 2001).

REFERENCES

Altonji, J., & Pierret, C. (in press). Employer learning and statistical discrimination. *Quarterly Journal of Economics.*

Bishop, J. H. (1985). *Preparing Youth for Employment.* Columbus, OH: National Center for Research in Vocational Education. (ERIC Document Reproduction Service No. ED 254644).

Bishop, J. H. (1992). Impact of academic competencies on wages, unemployment, and job performance. *Carnegie-Rochester Conference Series on Public Policy, 37,* 127–194.

Bishop, J. H., Mañe, F., Bishop, M., & Moriarty, J. (2001). The role of end-of-course exams and minimum competency exams in standards-based reforms. *Brookings Papers on Education Policy, 4,* 267–345.

Bishop, J. H., Mañe, F., & Ruiz-Quintanilla, A. (2000). *Who participates in school-to-work programs: Initial tabulations.* Washington, DC: National School-to-Work Office.

CBS News (Producer). (1990, September 6). America's toughest assignment: solving the education crisis. New York: Author.

Commission on Workforce Quality and Labor Market Efficiency. (1989). *Investing in people: A strategy to address America's workforce crisis.* Washington, DC: Department of Labor.

Farber, H., & Gibbons, R. (1996). Learning and wage dynamics. *Quarterly Journal of Economics, 111,* 1007–47.

Hartigan, J., & Wigdor, A. (Eds.). (1989). *Fairness in employment testing.* Washington, DC: National Academy Press.

Longitudinal study of American youth [Data file]. (1987). Retrieved from Longitudinal Study of American Youth website: http://www.lsay.org.

Rosenbaum, J. E. (2000). Teachers' social construction of employer linkages. *Providing career options to the forgotten half* (Rose Monograph Series, American Sociological Association). New York: Russell Sage Foundation.

Rosenbaum, J. E., DeLuca, S., Miller, S. R., & Roy, K. (1999). *Pathways to work: Short and long-term effects of personal and institutional ties.* Evanston, IL: Northwestern University, Institute of Policy Research.