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School-to-Work: Accomplishments, Problems, and Prospects **Reports and Recommendations from a National Invitational Conference**

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The school-to-work (STW) movement comprises individuals and organizations in both the public and private sectors who work together to bring about a fundamental change in the way the nation educates its young people and prepares them for the world of work. The goals of the movement are twofold: (a) to enhance the academic learning of all students by connecting subject matter to the world of work, and (b) to ease students' transitions from school to meaningful work. Over the past decade, a variety of reform efforts have been launched to achieve these goals.

A major defining event of the movement was passage of the School-to-Work Opportunities Act of 1994 (STWOA). The goal of this legislation was to create a national workforce development system by providing financial and other incentives for states and localities to develop STW programs that met their particular educational and economic needs but also satisfied a broad set of federal requirements. States received grants under this legislation after establishing statewide partnerships made up of STW stakeholders. The statewide partnerships distributed funds to local partnerships that then worked to establish STW systems in individual schools and districts. By 1999, all 50

states, Puerto Rico, and the District of Columbia had received STWOA development and implementation grants.

Funding from this legislation ceases this year, and it is unlikely that any new initiatives will emerge to continue federal support for the broad STW concept. However, although the U.S. economy has performed very well in recent years, the need to provide STW services for a broad range of students continues. This is particularly true for at-risk students in urban and rural areas.

In this setting, two broad, interrelated issues of educational policy were addressed at a national invitational conference sponsored by the Laboratory for Student Success at Temple University's Center for Research in Human Development and Education and held in Philadelphia on December 4 and 5, 2000. The first policy issue concerned the accomplishments of the movement in curriculum innovation, participant satisfaction, student learning, student labor-market success, and other outcomes. Are some STW interventions clearly successful, and should they be replicated elsewhere? Are there others that have proven to be unsuccessful and should be dropped or modified? Which interventions have been

particularly successful (or unsuccessful) with adolescents at risk?

The second issue addressed by the conference was the future of the STW movement in a world in which federal support is greatly reduced. To what extent and in what ways will states and localities fill the funding gap created by the withdrawal of federal funds? Should state and local support be more targeted towards non-college-bound youth? Is the approach through state and local STW systems established by the STWOA the best way to channel resources to the grassroots level? Which STW activities are most likely to survive in the post-STWOA world?

To answer these questions, the conference brought together 70 economists, educational researchers, and STW program practitioners to share their research and experience with various programs. In this issue of the *CEIC Review*, we have summarized the 19 commissioned papers presented and discussed during the conference. The participants also joined in sessions to hammer out next-step recommendations for the STW movement. These recommendations, along with acknowledgments of Plenary Session Chairs and Discussants, follow the summaries of the papers.



The National Center on Education in the Inner Cities is a unit in the Temple University Center for Research in Human Development and Education, an interdisciplinary center devoted to fostering healthy developmental and educational success of children and families in this nation's urban communities. Inquiries about the work of the Center should be sent to Information Services, CRHDE, Temple University, 1301 Cecil B. Moore Avenue, Philadelphia, PA 19122-6091. Copyright © 2001

New Economy, Old Economy: The Educational Implications

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Many economic analysts have observed that the combination of soaring stock market values and technological innovation since 1995 suggests that America has developed a “new economy.” Despite much speculation about new products and services to be generated, the new economy has been poorly defined. This article investigates its nature, its added value for consumers, and its effects on the labor market and the educational system.

Clearly, the new economy is fundamentally a more efficient, computer-supported version of the old one. As it has in the past, American education can adjust to the demand for new skills, but not without overcoming difficulties posed by rapid change in educational needs, family structure, and rigidities in the educational system.

What Is the New Economy?

The American consumer’s daily experience has not changed radically in the past five years. The chief differences can be attributed to the subtle effects of computer use, which have led to widespread increases in efficiency in the delivery of products and services and to lower costs for such items as home electronics. There is nothing entirely new, however, in increasing computerization, which has been a trend since long before 1995. Businesses have certainly benefited from the most recent changes—for example through business-to-business transactions over the Internet, which cut operating costs—but the changes just give businesses faster and more effective ways to implement existing practices and to identify, reach, and serve consumers.

Thus the new economy is clearly *better* but not necessarily *new*, since it changes how businesses and consumers do things more than what

they produce and buy. A key factor in this improvement has been growth in high-tech production, which has accounted for about a third of GDP growth in recent years, including exports, which have doubled in this sector since 1990. Employment has also improved in high tech, increasing at twice the rate of job growth in the economy as a whole over the past 6 years. Overall, however, high tech is still a very small part of the entire economy.

Stock markets define the new economy less clearly, since the high-tech firms like Microsoft associated with the changes hit unbelievable new market highs but subsequently lost much of those gains, while traditional stocks have languished. Most of the gain in the Nasdaq market was due to about 20 new-economy stocks whose futures were unclear but clearly overrated. The new firms and their products do not seem to have modified the rhythms of the old market processes. Job growth indicates more plainly what is new, as the number of information-technology service jobs has increased to support successful software products, and high-tech manufacturing jobs have grown more rapidly than total manufacturing. But even here major effects can be indirect, as in the most rapid areas of job growth, amusement and motion pictures—both old-economy industries dramatically affected by the computer chip.

Perhaps the notion of the new economy might be applied as well to fundamental changes beyond the high-tech arena, such as immigration, which has reached new highs. As a result, large ethnic enclaves have developed with separate economies that have not been well integrated into the mainstream. Policies like bilingual education have reduced the incentives for integration, and it could be that further cultural and

economic fractionalization will be a key challenge to national progress in the next decade, especially in ethnically diverse and economically important states like California.

What Value Does the New Economy Add?

To succeed, a business must provide something of value, and the success of the consumer-driven economy depends on firms offering “value-added” goods and services that seem more valuable than the price charged suggests. Any such value added to products in the new economy is hard for consumers to see, since it is hidden in the computers that improve them without making them seem entirely new. The major impact of the computer chip is virtually invisible to consumers, contained in business processes that lower costs, raise productivity, and provide more information for better-informed management decisions.

Moreover, there is nothing essentially new about such technologically added value, since for the past few centuries technological innovations have regularly led to similar improvements. All major innovations (electricity, the telephone, the automobile) have spurred investment booms after affecting the economy for a period of time. It took many years actually to convert manufacturing from steam to electricity. Perhaps what really differentiates this new economy from those of the past is the speed at which the new technology permeated the economy.

Although the Internet can produce only information, audio, and video products, its development will have very important implications for communication between consumers and businesses (e.g., the trouble afflicting the U.S. Post Office). Internet

(*New Economy*, continued on p. 33)

The Youth Labor Market in the 1990s: An Overview

Michael A. Leeds and Elizabeth Wheaton, Temple University

In the 1970s, economic inequalities between men and women, Whites and Blacks, and highly and less educated workers diminished but, in the 1980s, differences grew, particularly for the most educated workers, whose real wages grew dramatically while those of less educated workers fell. The convergence and divergence during these decades have led economists to offer various causal explanations, which can be classified under four types: (a) supply and demand, focusing on the effects of the supply and demand for skilled workers on wages and employment; (b) trade, emphasizing the effects of changing trade patterns, especially import growth, on worker well-being; (c) technology, stressing the impact of technological advances and access to technical training on economic opportunity; and (d) government policy, granting a crucial role to civil rights and economic policies like affirmative action and minimum wage laws.

This study examines unemployment and wage patterns in the most recent decade, 1990–1999, in order to determine whether the convergence–divergence patterns have continued. The youth labor market has been chosen for analysis, because it represents the entire labor market well and is more sensitive to economic change, younger workers typically being more vulnerable to job loss and wage decline and being more able to benefit from new opportunities. Youth labor trends can also predict later employment prospects of young workers.

The authors have focused on unemployment to measure the breadth of economic expansion and on wages to measure its depth. They have investigated the youth labor market with respect to the labor market as a whole, educational levels, race, and gender. Analysis of economic data from the Annual Demographic File of

the Current Population Survey (CPS) has shown that except for gains for college-educated Black workers, the 1990s showed no significant convergence or divergence in the youth labor market. Yet since causal factors like the decline of trade unions remained influential, the existing explanations of the trends in earlier decades seem inadequate.

The Overall Economy and the Youth Labor Market

As for American workers as a whole, the 1990s were a good decade for young workers (defined by the authors as those aged 19 to 24 and out of school). U.S. and youth unemployment both declined, though the youth rate remained higher. Young workers' wages also tracked those of prime-age workers, dipping earlier in the decade and rebounding later. Contrary to the expectation that youths would be more affected by economic changes, wages for prime-age workers rose more sharply with the improved economy at the decade's end. The wage gaps at the beginning and end of the decade did not differ significantly.

Despite arguments that minimum-wage policies influence the youth labor market, minimum-wage trends did not correlate strongly with youth unemployment. Hikes in the wage eased joblessness for high-school dropouts, especially Blacks, but the hikes showed little relation to dropouts' real wages. A decline in the percentage of union workers did correlate negatively with youth employment. These findings give us reason to doubt both the policy and the trade explanations for employment patterns.

Education and the Youth Labor Market

According to some models, again, wage returns for education fluctuated in the 1970s and 1980s in response to variations in skilled-worker supply

and demand. Despite technological advances and changes in the percentage of college graduates, neither unemployment nor wages of dropouts, high-school graduates, and college graduates converged or diverged during the 1990s, as supply and demand and technology theories might have predicted.

Unemployment differences between educational groups grew early in the decade and shrank later, remaining steady overall. Unemployment rates were inversely related to education level. Real wages showed similar consistency. Despite early declines and late boosts in wages, differentials remained steady between groups. College graduates earned the most and enjoyed the greatest difference from the other groups, while dropouts' and high-school graduates' pay rates remained close.

Race and the Youth Labor Market

The 1980s saw significant losses for Black youth in the labor market, erasing their virtual wage equality in the late 1970s with White youth at the same schooling level. The weekly wage gap between races rose from 13.6% to 17.9% between 1980 and 1989. The losses were particularly great for Black college graduates, whose pay fell from near equality to 17% below that of White college graduates. The causes of this drop are unclear, since urban job loss, exported labor, union decline, and low minimum wages should have had little impact on Black college graduates.

In the 1990s, modest economic divergences between Blacks and Whites emerged. Unemployment followed the decade's rise and fall, though the rise for Blacks lasted a year longer. The unemployment differential was greater at the end of the decade as the Black–White differential

(**Youth Labor**, continued on p. 33)

Education and Training in an Era of Creative Destruction

Leonard I. Nakamura, Federal Reserve Bank of Philadelphia¹

The American economy is in a period of rapid, accelerating change. The kinds of work done and the corporations employing workers are changing more rapidly than ever before. Because of recent technological advances, both occupations and corporate practices are evolving so quickly that even advanced educational institutions, such as medical schools, struggle to train workers for the future. This rapid change is best described in terms of Joseph Schumpeter's theory of creative destruction, in which the economy is increasingly devoted to continuously creating new products and services, which entails the continuous destruction of old ones. Jobs too are constantly being created and destroyed, and workers must prepare for lifelong job change and its concomitant, recurrent job and career education.

It is unclear how well our educational system, created to serve a more stable, hierarchical economy and thus under increasing stress, will manage this transformation. This study examines economic change over the past 25 years, placing it in historical context, and offers suggestions for coping with the resulting educational problems.

Work in an Era of Creative Destruction

The economy of creative destruction divides workers into creators who innovate and producers who are subjected to constant change as they carry out the creators' plans. Creators imagine new products and then must work to mass-produce them while communicating their value. Although such creations may be accepted on their merits, conflicts often arise as the inventions challenge the economic

status quo. By giving profits of innovation to creators and affording them a wide market, capitalism motivates and enables them to overcome resistance.

Producers, typically still using old mass-production techniques, must learn new skills and increase job-related formal training as the economy becomes more creative. Educators must help them learn quickly and confidently from failures, adapting actively to workplace change. College education is intended to provide intellectual foundations for lifelong learning, but secondary education typically is not. Technology may foster improved education for both creators and producers.

Economic Change in the 20th Century

From 1900 to 1980, large managerial, sales, and clerical staffs, composed largely of high-school graduates, supported the nation's mass-market economy. This carefully managed organization allowed coordinated production and sales within corporations, enabling lasting profitability. Consequently, large firms could control research and development of products, the pace of production, and marketing strategies.

In the past 20 years, however, these conditions have changed drastically. Technical progress in electronics has rapidly automated information processing and communication, accelerating product development and marketing. Rewards for innovative production have risen quickly, as global and niche markets made possible by electronic technology proliferate. In particular, electronics-based changes in retailing—such as product scanning, e-commerce, and superstores—have reduced the cost of selling new products and increased the profitability of innovation. This technology allows start-ups to compete in product development and sales where they could not have in the past, so

creativity now yields more success than stable corporate structures, which may indeed prove to be liabilities. This leveling of the playing field has fostered creative destruction throughout the economy.

As the profitability of creative assets has risen, the stock market value of successful creative corporations has risen, driving up the overall value of the U.S. stock market. But the resulting intense competition has made individual stocks riskier.

Further, consumer spending patterns have changed dramatically over the past decades. The proportion of our budgets spent on necessities—food and clothing—has dropped from 33 to 24%, and recreation expense has become greater among those with lower incomes. New products, many designed to be purchased for style rather than function, are driving the economy as never before.

Occupational Change in the 20th Century

Early in the century, workers who produced goods and services dominated the workforce. At the century's end, less than half of workers are producers. Most employees are now white-collar sales and clerical support personnel or decision-making professionals like executives, service professionals like doctors, and technical or creative professionals like engineers and designers. These levels correspond to educational levels: Statistics show that producers generally do not need a high-school diploma, sales and clerical workers do, and professionals require a college degree.

In the 1990s, two thirds of new jobs went to professionals. Throughout the century, their numbers have grown steadily to about 33% of the workforce, while the number of direct producers has fallen steadily. The percentage of agricultural workers has fallen from 38 to 3% since 1900. That

¹The views expressed here are those of the author and do not necessarily reflect those of the Federal Reserve Bank of Philadelphia or of the Federal Reserve System.

of industrial workers has fallen from 36 to 25%. The percentage of sales and clerical employees grew from 7.5% in 1900 to 28% in 1980, but it has stagnated since then, because advances in electronics have reduced the need for these workers.

Creative positions, one sixth of the professional sector, have grown fastest. These workers, including both science-based workers like programmers and culture-based ones like artists, average, as do other professionals, twice the pay of production workers, but the pay range is widely dispersed. For continuing profitability in this creative economy, new products must constantly be generated, which means that the workforce must constantly change as technologies develop and companies restructure. Technological innovations in the past quarter century have sharply increased the number of science- and art-based creators.

Economic Change and Education

Before 1900, few students attended high school, and those few were primarily on their way to college and professional careers. But the growing mass-production economy required educational change. Companies demanded large clerical and sales forces to administer increasing transaction volume. Since these workers needed high-school-level science, math, and reading skills to perform effectively, a public secondary education movement evolved, improving the U.S. workforce as the number of high-school graduates grew rapidly. As these graduates diminished a high-school diploma's value, the wage gap between graduates and the less educated tended to close, particularly in the first half of the century.

The GI Bill and Vietnam-era student draft deferment fostered rapid growth in the population attending college between 1939 and 1969. As with the secondary education movement, equality increased and the wage differential decreased between college graduates and those less educated.

Since the Vietnam-era bulge in college-educated students was absorbed in the 1970s, the onset of the new era of creative destruction has raised demand for graduates in many fields faster than supply, and the wage premium for higher education has advanced rapidly. As this wage premium has risen, the rate of higher education enrollment has accelerated, but so has the pace of change. Consequently, inequality has risen in the past 20 years.

Crises in Professional Services

The nation's 13 million professional-service workers, including 4 million in medical fields and 7 million educators, possess advanced training, yet rapid innovations have left them struggling to stay current with new developments. The pace of product and knowledge growth is outrunning that of professional education. For instance, rapid progress in medicine, now America's largest industry, challenges doctors with the overwhelming task of assimilating new knowledge. Randomized, controlled trials that provide important results about pharmaceuticals and procedures have multiplied so fast that no busy professional could study all relevant work.

Therefore, many doctors are unfamiliar with the best treatments, and as a result, they may overmedicate needlessly. One hospital has handled this information crisis by having doctors draw treatment recommendations from an updated database. Yet most doctors have resisted using such tools, fearing limits to their freedom and value in an era when profit considerations tempt administrators to cut medical staff.

Teachers experience similar pressures, since they must teach more information more rapidly to help students integrate new knowledge. Though teachers are less well trained and paid than doctors, they face corresponding demands to learn while working, and busy schedules often leave them inadequately informed. For instance, math and science teachers

may lack training in computer programs for teaching geometry and dissection. Increased computer testing and teaching could free teachers to engage in more analysis of students' abilities, provide more individual rates of learning, and prepare pupils for lifelong computerized learning.

However, few schools have wanted to invest in intensive computerization, and teachers have balked, fearing the daunting amount of learning involved, the emphasis computerization may place on short-term goals, and the radical changes or even job loss that computers may bring. Moreover, educators often lack the interdisciplinary skills needed to teach innovatively according to students' existing talents, perhaps using computers to teach math to artistic students through the geometry of perspective.

Ultimately, however, as computers assume more teaching functions and our economy continues to demand a creative workforce, teachers may cope with crisis by assimilating technological innovations and fostering soft skills like creativity, communication, and cooperation instead of merely disseminating knowledge. Some high schools are already preparing for the future by offering courses in conflict resolution, since such techniques are increasingly useful in a workplace characterized by creative destruction.

Conclusion

The economic changes resulting from electronic advances have led to dissatisfaction with current educational practices. Since the economy will increasingly demand creative and technologically skilled workers, the crisis in education must be addressed, perhaps through using new electronic techniques for enhancing skills. These might help today's students become the lifelong learners who will succeed in the creatively destructive future.



Has School-to-Work Worked?

Alan M. Hershey, Senior Fellow, Mathematica Policy Research, Inc.

The School-to-Work Opportunities Act of 1994 (STWOA) set an ambitious education-reform agenda. It responded to criticism of how American schools were preparing youth for productive careers and of schools' part in maintaining a leading role for American industry in an increasingly competitive global economy. STWOA aimed to improve the way schools prepare students for the future, drawing on theories of how students learn best, models of technical education practiced in Europe, and elements of American vocational education. It envisioned four changes:

- *Local partnerships* among schools, postsecondary education and training institutions, employers, labor, and others would produce graduates with the skills needed in the emerging new economy.
- Students' experiences would increasingly involve learning about careers, formulating goals, and engaging in *career major programs* that would integrate academic and vocational instruction and work-based learning.
- An increased focus on career goals and learning skills in real-world context would *improve outcomes* for students at all ability levels.
- Federal STW funds would be seed money for development of a *durable* system of policies, programs, curriculum, and opportunities for students, lasting beyond the limited period of federal funding.

Evidence of progress in these four dimensions comes in large part from the National Evaluation of STW Implementation, conducted by Mathematica Policy Research, Inc. This study has charted the progress of local STW partnerships nationwide through annual surveys from 1996 through 1999, and it has examined the experiences of high-school seniors in the classes of

1996 and 1998 in eight states.¹ Studies by researchers at Teachers College, Columbia University, have contributed to our understanding of employer roles, curriculum change, and uses of work-based learning. Rigorous measures of the impact of STW programs on student outcomes are rare, but preliminary results are available from a nine-site evaluation, using random assignment, being carried out by Manpower Demonstration Research Corporation.

The Role of Local STW Partnerships

The availability of federal STW funding triggered the creation of local partnerships throughout most of the nation. Federal implementation grants were made in stages from 1994 through 1998, and states have distributed substate grants to a total of 1,894 local partnerships that include over 48% of all public school districts. In most cases, educators lead in establishing the partnership agenda and carrying it out. However, employers are participating in partnership activities in increasing numbers; by 1997, nearly 178,000 employers in 34 reporting states had participated in some aspect of STW programs.

STW partnerships have contributed most of all to the expansion of low-intensity career development activities. The number of employers providing brief job-shadowing experiences for students, for example, has steadily climbed from an average of 15 per school in the school year 1995–1996 to over 20 three years later. From 1996 through 1999, increasing percentages of partnership high schools offered career resource centers, job-shadowing, career-awareness classes,

¹A third survey, of the class of 2000, will add to later evaluation results. In-depth study states were Florida, Kentucky, Maryland, Massachusetts, Michigan, Ohio, Oregon, and Wisconsin. Random samples of students representing the eight states overall were selected each year.

and career planning as part of individual guidance.

Changes in academic curriculum have been more limited, and the use of career majors is most prevalent in the most modest interpretation of the concept. Most often, schools create written course sequences suitable as preparation for various career pathways and use these as guides to help students choose their classes. By 1999, 48% of partnership high schools had adopted this practice, up from 41% in 1996. Less often, schools define programs of study combining academic and vocational classes, cluster together students with similar career interests in these classes, and in some cases require a workplace component. By 1999, about 40% of high schools offered such programs, but most often only for a small segment of the student body.

Workplace learning opportunities such as worksite visits, internships, and community service are being offered to students in more high schools, but usually without the strong connections to the school curriculum that STWOA envisioned. Furthermore, there have been only marginal signs in national surveys of high schools paying increasing attention to integrating academic and vocational instruction or to forging stronger links with postsecondary institutions.

Changes in Student Experiences

Student surveys in the National STW Evaluation reinforce the conclusion that the STWOA has contributed most to increasing participation in low-intensity activities aimed at promoting career awareness. From 1996 to 1998, there was a slight upward shift in the percentage of students who recalled engaging in job-shadowing or a worksite visit. Students in 1998 were more likely to recall school staff asking them to choose and focus on a career goal

and more likely to have taken an academic class related to their career interests. This trend is probably a reflection more of increased guidance efforts than of changes in curriculum content.

Student participation is increasing in the low-intensity work-based activities that schools are offering more commonly, but not in more intensive internships or apprenticeships. In both 1996 and 1998, about 28% of seniors said they had ever obtained a paid or unpaid position through their school. However, there is evidence that internships that students get through school are of higher quality than positions they find on their own in offering opportunities in more diverse industries, more training and evaluation, and better links between workplace and classroom activities.

Expanding student participation in programs that link school-based and work-based learning has been difficult. After several years of implementation efforts, fewer than 3% of students appear involved in a comprehensive program combining career development activities, academic and technical instruction, and related workplace activity. Such programs can be costly for employers and labor-intensive for schools, which must provide staff to develop curriculum, orient and place students, and monitor worksite activity. Moreover, to some teachers and parents, workplace activities constitute a distraction from the core academic objectives and test preparation that must be emphasized in response to increased state efforts to hold schools accountable.

Although exciting examples of STW activities in innovative schools exist, it has generally been difficult to integrate vocational and academic instruction on a large scale. This has been largely because of academic teachers' uncertainty about whether adding more applied learning in their classrooms will jeopardize students' academic performance and chances for college admission.

Student Outcomes

Proponents have argued that STW activities would increase engagement of low-performing students, improve motivation, and enhance success in school and in the transition to work. Research to determine whether such effects are being achieved has proved difficult. The breadth of STW activities makes it hard to define who is an STW student and harder still to define suitable comparison groups, and self-selection into STW programs has been difficult to control for.

Efforts to measure impacts have focused on career academies, a well-defined type of STW program. Some studies of career academies relying on comparison groups have found that participants outperform nonparticipant students on measures such as GPA, attendance, time to graduation, and skill development, but in general the difficulty of controlling for unobservable differences between the two groups has made it impossible to determine whether participation in career academies was the major cause of the difference in outcomes.

However, a more rigorous random-assignment study of career academies is showing that academy students achieve modest academic gains over control-group students, particularly where the academy's structure is personal and nurturing. Gains over controls occur in retention, attendance, academic course taking, and rate of on-time graduation from high school. It is not yet clear whether essential to such impacts is the career focus or simply the kind of smaller learning environment that the academies create.

Conclusion: Sustainability

STWOA has helped foster collaboration between schools and employers and helped change schools, and in some states and localities these efforts are likely to continue beyond the end of federal STW funding. More than half of the states appear likely to continue operating a

state-level STW office. Almost half of the states have passed some kind of legislation to support STW reforms; in a few cases states have created comprehensive reforms to promote STW-type activities, such as Michigan's Career Preparation System. In other cases, however, state laws focus on narrow elements such as employer tax credits for student apprentices, and such steps have not proven to be very important in promoting the growth of STW programs.

Collaborative habits are likely to persist in many areas. The end of federal STW funding, however, may make it more difficult in many locations to dedicate the staff and other resources needed to convene partners for professional development, agenda-setting, and sharing of problems, progress, and useful products. Of the partnerships whose federal funding has already ended, about half appear to have stopped functioning one year later. In some cases, partnerships will continue to function without federal funding, but with perhaps only the most interested schools participating. Many individual schools are likely to find ways to sustain STW activities. The open question is whether local, and in some cases state, funding will be adequate to sustain and cultivate school-employer collaboration, continue the development of workplace activities for students, and expand the use of intensive integrated programs focused on careers.



Look for the next issue of the
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*Taking Small Classes One Step
Further*

School-to-Work Governance

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The 1994 School-to-Work Opportunities Act (STWOA) provided seed money to states for three types of endeavors: work-based learning, school-based learning, and activities linking the two. The act allowed states to decide autonomously how to structure STW governance and implementation systems. States set goals for their STW systems through governor-appointed committees, which typically included state-agency and private-sector representatives.

Some chose comprehensive goals such as systemic school reform; others focused on intermediate goals like improving vocational educational programs; still others chose programmatic goals like instituting skills assessment or business relationships. These objectives were planned within unique state and local policy contexts that shaped each state's STW initiatives.

Since the STWOA funding was designed to "sunset" after five years, sustainability has been an urgent issue. Some states embedded STW programs within existing agencies, while others linked them to larger initiatives, such as the 1998 Workforce Investment Act (WIA).

Over 10 months in 1997 and 1998, researchers of the School-to-Work Governance Project at Rutgers University, sponsored by the U.S. Department of Education, conducted a 37-state STW study. To assess the impact of governance on implementation, researchers interviewed involved respondents by telephone and on-site visits. This article provides an overview of governance and sample analyses of states categorized by goal focus: comprehensive, intermediate, or programmatic.

Governance Decisions

Decisions about objectives led to different governance structures and outcomes. States faced important

structural choices: the STW office's placement within the executive branch, the interaction among stakeholders, and substate governance and implementation. The office's location was most commonly the department of education, while other sites included workforce development boards. Interagency coordination was typically managed through a team whose chief role was to foster communication.

All states also formed governor-appointed stakeholder advisory councils of business-industry leaders and agency members to advise STW policy. Usually this council was already in place as a workforce development council of which STW became a youth component. The councils were limited to a symbolic role with little oversight.

At substate levels, governance varied greatly. In 18 states, one level of local partnership, either regional boards or many local partnerships, was formed, while in 11 states, two levels—regional boards and local partnerships—were created. Local boundaries varied as well, depending on preexisting boundaries like economic development zones, community-college draw areas, and school districts. In state-to-substate articulation, substate partnerships were most commonly left independent within state funding guidelines. Some states targeted substate funding to specific STW activities.

Comprehensive-Goal States

These states linked the STW initiative to educational reform under strong state leadership. STW participation was widespread in these states down to the classroom level, and policy environments were often hospitable, as other initiatives reinforced STW. Researchers closely examined state contexts to understand how goals and governance interrelated.

In *Oregon*, legislation established career-learning standards. Students were to achieve two certificates of mastery, the more advanced requiring both academic and career-related learning. STW programs were implemented locally to improve advanced mastery. Both teachers and students benefited from extended learning experiences like internships, and progress has continued since STWOA funding ended. However, the Office of Professional Technical Education interfered with STW goals insofar as certificate guidelines were unclear and college-bound students were often overlooked. Oregon illustrates the risks of binding STW programs to school reform when leadership does not implement optimally.

Iowa used its local control tradition to pursue comprehensive reform at the level of school districts and curriculum coordinators, linking STW goals to school improvement. Consequently, STW was not seen as a separate educational program but as a realignment of existing ones. An interagency team combining educational and workforce administrators funded local initiatives directly, granting autonomy. Localities have made broad and sustainable curricular STW reforms without duplication or conflict.

Maryland, building on earlier career- and standards-based programs, integrated academic and vocational education through applied learning and career clusters. STW was linked to the state's new High School Assessment (HSA), which includes STW-related skills and community-service components. The Governor's Workforce Investment Board, combining private-sector and state-agency representation, oversaw substate governance built on local labor market teams. STW initiatives were considered less important than academic

HSA goals. Those goals may interfere with career-cluster construction, and the long-term progress of STW initiatives is in doubt.

Intermediate-Goal States

Here, STW activity has been less closely connected to educational reform than in comprehensive-goal states, despite broad purposes like raising students' skill levels or strengthening vocational education statewide. Stakeholder activity has been less coordinated, and the private sector has provided more leadership than the educational system.

In *Ohio*, the lieutenant governor oversaw an independent STW office and interagency implementation, coordination of which was imperfect, while the degree of STW involvement was uneven. Ohio focused on skill development for the emerging workforce, a goal that was supported enthusiastically by both business and labor. Funds were distributed to 12 economic-development regions and to teacher-education programs. Interested parties from many fields planned strategies for STW connections, and local program control was excellent.

However, the lack of accountability to the department of education hindered incentives for district and teacher participation in Ohio, though the state felt this lack eliminated bureaucratic problems and backlash against excessive oversight. Further, the lack of comprehensive goals limited initiatives to local projects.

Where localities have built on existing in-school programs, prospects for sustainability seems greatest. Further professional development may address teacher motivation.

North Carolina created career pathways for developing work skills and knowledge in both K–12 and postsecondary institutions. Its program, JobReady, was integrated with the state's broader Workforce Preparedness Commission. Leadership functioned through the state Job-Ready Partnership Council, which coordinated and monitored statewide and

local progress. In local partnerships were representatives from businesses, vocational schools, and community colleges. Governance transcending agency boundaries helped JobReady function systemically, but the lack of educational-system siting limited school participation. Integration with existing efforts like the state's strong tech-prep structure helped local institutionalization but restricted STW efforts. Where business support is strong, programs may outlast STWOA sunset, though JobReady governance may not. Strong secondary–postsecondary tech-prep articulation requiring computer training and high academic standards may also further JobReady goals.

Colorado focused on integrating workplace competencies with state curricular content standards, but not as a formal educational requirement. Locally, some partnerships succeeded in meshing workplace competencies with district curricula, but the perception of STW as vocational education hindered efforts. Colorado also tried to link STW with workforce development at one-stop career centers. Leadership consisted of an interagency management team overseen by the Workforce Coordinating Council. Local partnerships, many sited at community colleges, were given broad discretion for designing initiatives. As STWOA funding ends, partnerships are reassessing goals and sustainability, since continued state support is uncertain.

Oklahoma, which located its STW office in the Department of Vocational and Technical Education, saw STW primarily as an effort to provide students with exposure to a range of postsecondary options and to equip them with the necessary skills and knowledge to succeed in the workplace and thus to meet local and state needs for a more skilled workforce. Most saw the location of the STW office as a strength, since the department has the staff and commitment for statewide implementation. However, collaboration between the STW effort

and traditional education is occurring at the local and not the state level, because of the longstanding separation of vocational and traditional education.

Programmatic-Goal States

These differ from other states in that STW activity is even less collaborative and less integrated with existing agencies or policies. Often this has resulted not from intent but from unavoidable forces like opposition and fiscal difficulties.

The STW initiative in *Nebraska* attempted to improve emerging workforce quality with goals varying with the local economy. Where rural environments prevented much job-shadowing or apprenticeship, goals were limited to relating curricula to the working world. Although inadequate state education funding hampered all efforts, statewide implementation of the WorkKeys student-assessment tools saw modest success, as 80% of substate partnerships were involved. STW accomplishments were limited to successful events like career fairs or one-day job-shadowing. Leadership rested in an economic advisory board subcommittee. Substate partnerships varied with the state's urban–rural contrasts. Local control was both a strength and a weakness, since localities had great freedom but effectiveness was hard to assess. Chances for sustainability seem high in urban areas if WIA funds can be leveraged to successful programs, but low involvement and low educational funding in rural areas renders continuance doubtful there.

Conclusion

As indicated, states with comprehensive goals have often integrated STW principles and practices with academic standards. States with intermediate goals have seen less integration with education governance. States with programmatic goals have had to implement STW using less coordination with state agencies.



School-to-Work: The Wisconsin Experience

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School-to-work (STW) initiatives are not new in Wisconsin. Its school districts generally featured vocational-educational programs throughout the industrial era. But by the late 1980s, these programs and the tracking system associated with them needed reform, given the state's unsatisfactory record in workforce development and K-12 achievement. A large-scale policy initiative followed to produce STW reform. This report reviews the background, evolution, and impact of the STW initiative.

Background

Twenty years ago, as certain industries declined in Wisconsin, the economy looked bleak. And the state's vocational programs looked outmoded. In response, a 1987 Education for Employment Act required career-related activities for all K-12 students. In 1990, the state's Commission on Schools for the 21st Century recommended broader initiatives, including business-school partnerships, apprenticeships, and a tech-prep program. These developments paralleled certain national efforts, including President Clinton's youth apprenticeship initiative.

At the same time, Wisconsin also sought to address problems related to low levels of effort and achievement in the schools. Studies throughout the 1980s showed patterns of low expectations and achievement, particularly in high schools, along with inadequate opportunities for students to learn about technology, work, and citizenship. These problems seemed especially acute in Milwaukee.

A common explanation of these issues has held that traditional pedagogy is merely custodial and irrelevant to

¹This synopsis is based on a paper revised and adapted from Schug, M. C., & Western, R. D. (1999), *School to Work in Wisconsin: Inflated Claims, Meager Results*, Thiensville, WI: Wisconsin Policy Research Institute.

students' needs. Meanwhile, situated-learning research has suggested that scholastic learning bears little relation to workplace learning, since the former stresses abstraction and individual thinking while the latter stresses shared cognition and learning linked to action. Theorists have contended that situated learning could provide more usable classroom experiences than traditional methods. Academic subjects could be enriched if teachers engaged students with apprenticeship experience. In recent years, this theory has attracted reformers as an alternative to discredited systems of vocational tracking. The theory has found substantiation in the German apprenticeship system, which has been said to motivate students, facilitate the transition to work, and bind students strongly to the reciprocal responsibilities of the working world. In Wisconsin, the German model impressed the governor and the superintendent of public instruction, who proposed a strong role for apprenticeships in Wisconsin's reforms.

Evolution

Wisconsin embraced the comprehensive vision of the 1994 federal School-to-Work Opportunities Act, which encompassed both school- and work-based programs for career training and job readiness. Milwaukee led with extensive plans for STW reforms. To govern the state's STW programs, a manifold infrastructure was created, including the Governor's Office, Department of Workforce Development, Department of Public Instruction, Wisconsin's Technical College System, and regional STW consortia. This complex administrative scheme made authority and accountability unclear. Acknowledging these administrative problems, the state consolidated STW authority in one Work-Based Learning Board in 1999.

Schools in Wisconsin have implemented STW practices variously, and district programs are in flux. The analysis that follows is based on summary data from state implementation reports, follow-up surveys, and interviews conducted with curriculum directors (CDs) from 45 Wisconsin school districts chosen at random.

State reports from 1995 to 1999 show steady growth in STW participation, preponderantly in school-based activities like career planning. However, few students have participated in workplace activities. While state projections had called for a 20% apprenticeship participation rate by 2000, the 1999 rate was only 1%. The disparity reflects the ease with which teachers can integrate school-based STW activity with regular classroom routines, while work-based learning requires restructuring and new resources. A rise in rates of school-supervised work experience during this time probably reflects Wisconsin's tight labor market.

Most CDs reported STW implementation activity in their districts, usually identifying it with work-based learning. School-based activities mentioned most frequently were career awareness and applied coursework. Connecting activities included business and technical-college articulations. Directors reported that STW had affected many teachers in a general, attitudinal sense, but they saw curricular effects mainly in career-preparatory fields like business and technology. Little STW impact on the required academic curriculum was perceived, and STW activities reported in program audits often involved renaming of field trips and other familiar school practices. Some CDs said that the state's emphasis on academic standards undermined STW implementation.

Reports on student participation and outcomes were mixed. While STW access was open to all and career-awareness activities seemed pervasive,

in high schools, where STW activity was identified as primarily work-based, participation was low and concentrated largely among students not bound for college, although some college-bound students showed enthusiasm for technology-based courses and business apprenticeships. Low apprenticeship participation reflected scheduling demands some students saw as onerous, the limited capacity for work-based placements in many districts, and expense. No CDs could report reliable information on academic effects of STW like improved GPAs or graduation rates. Improvement in students' planning was anecdotally observed, but the impact of STW was not isolable from that of other programs.

Faculty STW involvement was low, concentrated among business, technology, and vocational teachers. In high schools, teachers committed to content often resisted integrated, thematic teaching; some teachers found concepts like "applied academics" unclear. Elementary teachers, though less content-committed, were no more STW-committed. Milwaukee's ambitious goals included STW integration with existing curricular requirements, business and postsecondary partnerships, and staff development. After a phase of intensive staff development, STW progressed in school-based but not work-based components. Despite a subsequent phase focusing on increasing knowledge and engagement, including job-shadowing for teachers, STW in the city's schools showed no significant success as measured by academic achievement, apprenticeship participation, or job placement rates.

Later analysis revealed problems, including unclear STW definitions and goals, uninvolved high-school teachers, and resource-management difficulties. Moreover, the district lacked established measures of STW-influenced improvement, so evidence of it could not be examined. Because of these difficulties, city leaders decided to revitalize vocational education instead of the more comprehensive STW initiative.

Impact

Wisconsin's STW efforts have benefited individual participants, who generally report high satisfaction, and employers, who have employed many of their apprentices. However, statewide impact has been minimal. Workforce conditions that motivated the policy have changed. Wisconsin's economy has rebounded, so it has been hard for schools to commit to STW as a policy predicated on economic decline. Workforce policy must now cope with a severe labor shortage, on which apprenticeships, the most successful component of STW, can have had little effect, given their low participation rate. Thus STW seems unrelated to the economic recovery it hoped to stimulate, and unless apprenticeship participation dramatically grows, it cannot have much future impact.

As an academic reform program, STW now looks marginal, since in the last half decade Wisconsin has stressed statewide reform in curricular standards and examinations. Thus STW programs, not aligned with the new standards and tests, cannot hope to gain administrators' attention. It is likely that the state's commitment to STW as an academic reform will fade, even if vocational schools and apprenticeships expand in some districts.

Conclusions

To suggest what might be learned from Wisconsin's flawed STW initiative, we offer the following critique.

First, the state's experience shows it mistaken to imagine that academic reform can be attained without an academic program. Wisconsin supposed naïvely that teachers would independently create new situated-learning programs for all curricular areas. Instead, teachers decided that STW advocacy for integrated, activity-oriented learning coincided with existing practices, and they innovated little. Recasting curricular goals by recommending more sophisticated conceptions of academic apprenticeship might seem to hold promise, but

that has been tried before, unsuccessfully. Absent new knowledge about better ways of putting the idea to use, it is not likely to work now either.

Second, it is a mistake to try to impose a reform agenda through exhortation instead of demonstrated results. The academic reform envisioned by STW proponents could not have been achieved in the absence of a detailed, systematic, and pilot-tested curriculum to provide teachers with a firm basis for approaching their work in a new way. Even then, teachers might not have found an integrated, activity-oriented approach superior to disciplinary teaching. That question was not squarely presented, however, since the STW alternative was presented only as an idea, without evidence about its effects. The exhortative approach used instead of research, development, and systematic implementation antagonized educators and illustrated politicians' misunderstanding of education as an arena in which program adoption is a goal in itself, regardless of substance and results.

Finally, it is a mistake to conceive of K-12 education initiatives as vast, totalizing projects. Utopian pretension surrounding Wisconsin STW caused antagonism; it also blurred the potential for improvements that might have been gained via focused, work-related innovations. Further, since sweeping vocational-educational policies akin to STW have previously fostered the weak academic curricula that standards-based reform is now trying to correct, it made little sense to expect educators to embrace further threats to standards. STW money could have been used to better effect on a focused initiative offering strengthened work-related programs for those who wanted them. This more measured emphasis would have looked unsatisfactory only to educators who dislike choice and suppose that what is good in education must be good for everybody.



STW in the 1990s: School–Employer Partnerships and Student Outcomes

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Before the school-to-work (STW) movement began improving communication between schools and employers in the past decade, high-school achievement counted little in hiring decisions, because recent graduates could not signal skills and discipline to employers. Most requests for high school transcripts went unanswered, and employers hired workers with demonstrated job skills, freezing most graduates out of the primary labor market. Relegated to the secondary, unskilled market, graduates with strong basic skills saw a long delay before good job performance improved their income. Consequently, high-school students saw little relation between studying and labor-market rewards. Since they observed recent graduates with good grades holding jobs similar to those held by weak scholars, students not bound for college had little motivation to excel. Responding to this problem, the STW movement recommended that businesses reward high-school achievement in hiring and promotion practices and encouraged school–employer connections, including sponsorship of many STW activities.

This article investigates efforts to communicate student achievement to employers and discusses the effects of school–employer connections on the labor-market success of recent high-school graduates. Participation in collaborative STW activities from 1995 to 1997 is examined. It is proposed that better signaling of student achievement improves job quality for high-school graduates and strengthens learning incentives. Analysis of longitudinal data on the labor-market success of secondary students supports that proposal.

STW Participation

Data from the 1997 National Longitudinal Survey of Youth (NLSY) suggest that STW participation is higher than expected. Among 9th and 10th graders, 43% reported participation, commonly in career majors

(19%) and worksite visits or school-hour work (12%), but more rarely in internships or apprenticeships (5%).

Demographically, participants did not differ substantially from nonparticipants. More differences appeared for specific programs and student attributes. For instance, students in school-based enterprises showed above-average family incomes, while those in career majors, cooperative education, and tech-prep showed below-average incomes. African Americans were more likely than others to be involved in internships and apprenticeships but not in school-based enterprises. Handicapped 9th and 10th graders were more likely to be involved in STW, especially in worksite visits. STW participants were more likely to live in unsafe, nonsuburban neighborhoods and to attend vocational and magnet high schools. They were less likely to attend private schools. School size related to participation in specific programs but not to overall involvement.

Policymakers feared that STW participation would reduce academic rigor, so programs were designed to support academic achievement, with apparent success, since participants surveyed took more honors math and science courses as well as more advanced computer courses. Some also feared that STW would become a dumping ground for weaker, non-college-bound students with poor scholastic attitudes. However, participants indicated good attitudes, and their grades, attendance, and likelihood of taking college-entrance exams resembled nonparticipants'. However, they disproportionately reported negative peer influences, with a minority confessing to negative out-of-school behavior evidently unmotivated by social environment.

Participants were also more likely to have worked for pay for longer periods—45% longer hours—and at a greater number of jobs. Hours were

particularly high for students involved in intensive programs like apprenticeships. It seems likely that students who want paid work while in school seek STW involvement. Participants showed higher job satisfaction, but wages for jobs held since age 14 were similar for all but those in internships or apprenticeships, who averaged 20% higher wages. Most students held sales or service jobs obtained through social contacts; no occupational differences appeared between participants and others, except that worksite-visit participation correlated with more employment in skilled, white-collar occupations.

Improving Labor-Market Success for Graduates

In 1988, Bishop proposed that reliable information might encourage employers to reward high secondary-school achievers. Some consequences of increasing employment-related information to employers were predicted: (a) more employment after graduation, with better pay, training, and job security; (b) better jobs distributed more fairly by merit; and (c) greater student effort resulting from perceived rewards. Bishop also advocated policies for improving graduates' credentials, including vocational training, competency certifications, statewide examinations, increased awards for school accomplishments, grading systems accounting for effort and improvement, job-search courses, and employer mentors. Policies for improving school–employer connections were also recommended, including rewarding teachers for placing students; developing long-term teacher–employer relationships; formulating effective, equitable information-release policies; and developing standardized job-search portfolios for students.

Bishop stressed that schools providing job referral services could help students establish contacts and

match student and employer needs. Disadvantaged students, often lacking middle-class families' work contacts, would particularly benefit. The best results would come from informal contacts between employers and vocational teachers, not from official, placement-office contacts. High schools developing and vouching for students' skills would combat the employers' stereotype of the unskilled, undisciplined graduate. In particular, higher standards, measured by minimum competency exams (MCEs) and school-business collaborations (SBCs), could provide assurances to employers.

These two mechanisms could improve job opportunities of recent graduates. Improving students' achievement through MCEs could raise work productivity, which could lead to wage gains. The exams could also increase employer confidence by signaling that all graduates meet hiring standards. SBCs could reinforce MCEs by convincing businesses that schools prepare graduates for work. Moreover, both mechanisms could provide employers with more information for assessing applicants. Academic achievement, which implies effort and reliability, could signal relative character strength among students, as could teacher referrals.

Such opportunities for students at schools requiring MCEs for graduation suggest the three following hypotheses, which were tested while controlling for family background and college attendance:

- Average GPA students will perform better in the labor market when they attend high schools engaged in SBCs.
- Rewards for academic achievement will be greater at schools with SBCs, so that high-GPA graduates will benefit more in the labor market.
- Students at high schools requiring MCEs will obtain higher wages and earnings after graduation than other schools' students.

Some previous research has supported these hypotheses. Obtaining

jobs through high-school contacts correlated with higher test scores and with greater earnings nine years after graduation. MCE requirements were associated with higher wages and earnings five years after graduation, especially for the students in the lowest three quarters of academic performance.

Effects of MCEs and SBCs on Labor-Market Success

In this study, the hypotheses were tested, using data on public-school students from the National Education Longitudinal Study (NELS) of 1988, which followed a national sample of eighth graders from 1988 to 1994. Information on local MCEs and SBCs came from 1990 and 1992 surveys of high-school principals. A school-collaboration index was constructed from questions about school job postings, employer requests for student recommendations, employer partnerships, and business incentives (such as business-sponsored college scholarships) for high-achieving students. School-quality indicators were derived from the principals' questionnaires and NELS data. Early labor-market student outcomes included 1993 and 1994 earnings, wages, unemployment, and occupational level (service, retail, or labor). Analyses were well controlled for a range of academic and demographic variables, including state unemployment figures, although omitted-variable bias remained. Such analyses are susceptible to control-group contamination when STW participants and nonparticipants in the same school are compared, so comparing schools with and without STW programs seemed a better approach, though neither approach eliminates STW-selection bias.

Multiple-regression analyses showed significant correlations supporting the three hypotheses. SBCs significantly reduced unemployment and increased employment, wages, and annual earnings in the first two years after high school, substantiat-

ing the first hypothesis. Mixed support exists for the second prediction. SBCs improved unemployment, wages, and job quality for high-GPA students, but they increased months employed and annual earnings more for low-GPA students than for high. It seems that for low-GPA students, the effect of SBCs on annual earnings resulted from increased labor-force participation. Analysis also supports the third hypothesis: State MCEs raised annual earnings of average and A students by 9% and 14% respectively. MCEs significantly increased employment (but not earnings) of students with C - grades. The impact of local (scored) MCEs differed, positively increasing employment, wages, and earnings of A students, decreasing them for C - students, and having no effect on average students.

School-to-Work Policy Implications

The 1994 School-to-Work Opportunities Act stimulated STW activities, but most students are not attending high schools involved in act programs. Thus much STW activity reported in the 1997 NLSY was not act-funded, suggesting that the imminent end of Act funding may not decrease STW activity significantly. However funded, employer collaborations have tended to improve perceptions of schools' graduates and lead to improved labor-market outcomes.

Further, STW programs harm no students, benefiting all in some way. SBCs—unlike MCEs, which may hurt weaker students academically—give labor-market benefits without harm. Like earlier research, this study shows that SBCs, lacking negative impact on test scores, dropout rates, or college attendance rates, may be the most helpful aspect of the STW movement. Building such connections takes time and commitment, but five years of earnings benefits for a student cohort far surpass the likely annual costs of building a collaborative network for those students.



Developing Work-Based Learning Pedagogies

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Nationwide participation in work-based learning (WBL) is significant, involving over 25% of high-school seniors and large numbers of businesses in school-sponsored work. Researchers have attempted to measure the benefits of WBL, but they have paid less attention to the processes of teaching and learning—the pedagogy—of WBL. This article explains WBL pedagogy and its purposes, then asserts principles underlying WBL teaching and learning, including the need for professional development. The authors favor a critical, reflective pedagogy.

Defining Pedagogy in a WBL Context

Standard definitions of pedagogy are school-based, referring to strategies and tactics used to produce learning in classrooms and based on assumptions about how people learn and what they should be taught. However, since WBL students learn in the workplace, a broader definition is needed. Pedagogy encompasses features of a learner's social experience that shape the learner's engagement in creating or using new kinds of knowledge. Pedagogy is not merely teaching techniques and plans; rather, several factors intersect in it: the activities the learner participates in, the shared body of knowledge that members of the activities use, the social relations among members through which they organize their activities, and the resources they draw on to accomplish their purposes.

Pedagogy may be incidental, as in most WBL, a natural byproduct of the ongoing practices of a work group focused on producing something other than knowledge. Or pedagogy may be intentional, as in schools, focused on knowledge as the product. Understanding this distinction can help teachers, coordinators, and others involved in WBL envision peda-

gogy as more than teacher-driven, intentional classroom learning. Pedagogy also encompasses the incidental workplace learning that can shape the knowledge of the student worker as strongly as teachers' strategies can. The student worker's pedagogical context encompasses work and school, and educators must be aware of what is learned, and how, in both situations.

Pedagogical Models

WBL instructors and program designers have a fundamental choice to make about the political implications of their pedagogical approaches, which affect not only what students learn but also the way they relate to people and institutions and the sense of agency they develop.

Although oversimplified for the purposes of analysis and not mutually exclusive, two alternative pedagogical models for WBL can be contrasted to illustrate elements of teachers' choices. The first model can be called *functionalist* pedagogy, which assumes that the aim of WBL is to prepare students to perform functions in a workplace and economy in which required knowledge, skills, and social relations are understood as stable. The functionalist teacher assumes that we can identify workplace needs and teach them straightforwardly, focusing on core functional skills and traditional work habits. The functionalist model is an old one informing much current discourse on WBL.

The second model can be called *critical* pedagogy, which assumes that the aim of WBL is not just to train new workers but to create conditions for understanding and critiquing the existing work system, seen as socially constructed, possibly flawed, and subject to students' questioning and change. The critical approach endeavors to help youth change distri-

butions of power and knowledge in work cultures as active learners, even as they develop functional skills. The critical model also has many precedents.

In practice, these models differ in various ways. First, preparation varies, as the functionalist approach tells students what they need to know to succeed at work, while the critical approach encourages them to question and make sense of experience. Second, instruction in processing experience varies, as the functionalist teacher encourages students to conform to supervisors' expectations, while the critical teacher helps them construct understandings of their roles as learner and worker. Finally, forms of evaluation vary, as from the functionalist perspective, success equals demonstration of job readiness, while from the critical perspective, success equals understanding work systems and developing students' identities within the work community. Though the models overlap, educators should be more aware of both. Observations of WBL programs indicate that the dominant approach is functionalist, suggesting lack of understanding of critical pedagogy.

Principles Underlying Critical Pedagogy

Several strategic principles underlie critical pedagogy for WBL. First, program coordinators need to conduct a *learning opportunities analysis* of potential placement sites on the basis of the broadened conception of pedagogy. In numerous programs, placement practice seems to assume that knowledge-rich organizations will inevitably make rich learning environments. But learning theory suggests another premise: that the amount of knowledge-use the intern can participate in is more important than the knowledge existing in the organization. A placement may

involve many highly skilled people performing highly complex tasks in which a student cannot engage meaningfully, so educational potential may be lost. Therefore, before designing classroom strategies, program coordinators must think about how students' experiences in proposed sites will unfold. An intern serving as a file clerk in a large law firm, for example, is likely to be exposed to less complex knowledge than an intern serving as an animal clinic who sees operations and assists veterinarians. Coordinators would need to plan supplementary pedagogy differently for these two interns.

Second, *reflection* is indispensable to the WBL process. Without efforts to question work organization, students will slip into unexamined attitudes towards work implicitly taught on the job, some of which, like acceptance of authoritarian supervision and unjust hierarchies, need to be reflected on so that students can develop individual attitudes about work. Much thought within the pragmatist and constructivist philosophical traditions supports reflective participation of learners in constructing knowledge. Empirically, it has been shown for college-level service learning that specific, extended reflection fosters academic and personal growth.

The peculiar position of the intern creates a superb opportunity for such reflection, because she simultaneously occupies two different roles: worker and student. As worker, she is supposed to be competent at performing functional tasks; as student, she is assumed to need to learn. The dialectical tension between these roles generates a powerful dynamic toward trying to make sense of the work. A school-based WBL program that provides dialogue and adult guidance for resolving workplace issues can help participants develop a transformative, reflective experience transcending the on-the-job training every worker receives. Examples are given to show that awareness of critical pedagogy can help interns avoid such limita-

tions of the functionalist approach as unreflective acceptance of counter-productive managerial practices.

A third principle for critical WBL pedagogy is that *connections to academic knowledge are extremely important*, going beyond applying concepts to work experience, since applied knowledge learned in school is not necessarily transferable to the workplace. Thus students should be encouraged not only to relate academic knowledge to work applications but to examine the relations critically, looking for differences, contradictions, and problems. Academic knowledge must supplement work knowledge, and both must be subjected to reflection. An intern in a physical-therapy clinic, for instance, should be exposed not only to medical but also to psychosocial factors affecting the patients she serves.

Fourth, teachers must not just disseminate information but *help students construct knowledge themselves*, encouraging a practical learning community that fosters critical discourse about WBL among students. Moving beyond traditional didacticism, teachers can learn to introduce critical concepts and ask probing questions to help students interpret their experiences and learn from each other.

Finally, critical pedagogy is *the responsibility of the school-based instructor*, not the work-based supervisor. The critical perspective is usually not appropriate at work, and school instructors are best situated to help students understand why that is so. Long-term changes in WBL may result in workplaces more congenial to critical inquiry but, until then, such reflection is best practiced in school. The authors have elsewhere identified specific pedagogical tactics schools use in good WBL programs, such as learning plans, journals, and seminars. These tactics support the broader strategies of critical pedagogy, especially examining relationships and activities to understand their underlying assumptions and values by means

of a group process of collaborative inquiry about work and ideas.

Professional Development for WBL Educators

Whether educators choose functionalist or critical pedagogy for WBL programs, they will need professional development, since traditional forms of teacher education do not prepare them for this kind of work. The active and contextual nature of WBL means that instruction must be different from customary academic subject instruction in the classroom. Yet the increased emphasis nationally on WBL has not had a discernible impact on teacher training and certification.

What educators wish to foster in the students—the ability to think critically about work and worker issues and to participate in a community of practice facilitating such reflection and discussion—should first be fostered in the WBL instructors. Hence teachers and other school staff need experiential education. Guidelines for and examples of teacher internships are given in the article. Worksite visits can have a significant impact on teachers. As for students, it is important for teacher interns to reflect on their experiences.

Conclusion

The critical approach has been criticized as an elitist practice available primarily to the privileged. The idea that WBL chiefly functions to make students better learners and not to prepare them for jobs can be condemned on the grounds that getting jobs is most important for working-class and poor students who have limited links to the culture of learning. Reflection on work, society, and life is indeed a privilege in our society, but it should not be. Critical pedagogy gives all students, not just the privileged, the opportunity and the ability to understand their worlds more fully and to take charge of their lives. Teaching can have no higher purpose.



The Impact of School-to-Work on Minority Youth

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The difficulties of the school-to-work transition have concerned policymakers for many years. Unemployment rates for youth leaving school continue to grow, with teenage unemployment at 14.4% in August 2000 (27.8% for Black youth), much higher than the national average. Youth earning power has also declined, with weekly earnings of workers aged 16 to 24 dropping significantly in the past 15 years, especially for those lacking high school diplomas. The frequent job-hopping of young workers also reflects the difficult transition, as many young workers find themselves without stable careers.

In the past decade, school-to-work (STW) programs have attempted to resolve such problems. By minority students, however, these programs are often viewed with skepticism. The perception is that the tracking of minority youth into traditional vocational education programs in the past has had negative effects. Lack of school-employer collaboration, the replacement of academic courses by job training, and tracking into low-skill jobs have been associated with such negative impacts. Attempting to correct these deficiencies, the STW movement has offered innovations to strengthen school-employer bonds, integrate academics with work content, and provide opportunities at all skill levels. All states have received federal STW funding, many instituting their own STW initiatives.

This study examines differences in STW participation of racial and ethnic minorities and analyzes the positive impact of participation on academic and work outcomes for minorities. The study analyzes interview data collected in the National Longitudinal Survey of Youth for 1997 (NLSY97) and a 1998 follow-up survey, which followed the school-to-work transition of 8,984 students aged 12 to

16 in 1996. Included here are 2,204 Black (non-Hispanic), 1,771 Hispanic, and a majority of White (non-Hispanic) adolescents.

STW Involvement of Minorities

School and employer participation in STW programs has expanded in the 1990s. Has minority involvement also increased? Minority participation in traditional vocational programs exceeds the national rate, and according to NLSY97, Black youth also participate more in the new STW programs, but Hispanics participate less. Follow-up data corroborate this finding.

In two STW program categories, career majors (a course sequence based on an occupational goal) and STW preparatory programs (from employee job-shadowing to intensive apprenticeships to comprehensive tech-prep programs including work and postsecondary preparation), STW involvement increased from 1997 to 1998, growing from about a third to about half of NLSY97 students. As in 1997, Black youth's overall participation rate was highest in 1998—51.2%—and Hispanic youth's lowest—41%—with similar differentials for the two categories. Whatever the category, STW participation increased with grade level, rising from 37.8 to 66.7% of Blacks from 10th to 12th grade, with an even sharper rise for Hispanics. The survey also showed that minority youth participate in the more intensive tech-prep and apprenticeship programs more than Whites, indicating that they are not being channeled into less intensive programs.

The results indicate cause for concern in the lower STW participation of Hispanic youth. Reasons for lower Hispanic involvement were examined through probit analysis of the variables affecting STW involvement. The results suggest that immigrant status is critical in lower Hispanic involvement. About 43.2% of Hispanic

youth in NLSY97 were born outside the U.S., a much greater percentage than for Whites and Blacks. Of Hispanic immigrants, 36.1% showed STW involvement, while 47.2% of Hispanic nonimmigrants took part, about the same as did Whites.

A possible cause of lower immigrant involvement in STW programs is limited English proficiency, which may force Hispanic and other immigrants into special school language programs that are not integrated with STW activities. In the NLSY97 sample, 65% of Hispanic youth lived in households not using English as the language of communication.

Consequences of STW Programs for Minority Youth

Existing evidence on the outcomes of STW programs has been mixed. Improved job skills and expectations have been found, but studies of effects on academic achievement have yielded conflicting results. Moreover, research showing positive correlations has not often established causal relations because of the absence of controls from before STW participation. The study examines causal relationships between participation in STW programs and various student outcomes by using 1997 data from initial NLSY97 interviews as well as the recently released 1998 follow-up interviews. This data set allows controls for background variables and can determine before-and-after effects.

IMPACT ON MATH AND SCIENCE COURSES

The impact of STW participation on the number of math and science courses taken by high-school minority students was found to be highly significant. Although a multivariate analysis of the determinants of math and science course taking using the NLSY97 showed no significant effect of STW participation on the math and

science courses taken by White youth, it found a significant impact for minorities, both Black and Hispanic. On average, minority students participating in STW programs took one more math and science course in the year following their STW participation than other students, holding other factors constant. Participation in STW programs also increased the number of math and science courses taken by minority students during the same year the STW was occurring, but this effect was not as significant. This suggests that STW participation enhances the math and science curriculum for minority youth not so much by requiring that students take such courses as part of the STW program as by motivating students to take them in the future.

IMPACT ON HOURS WORKED

Understandably, STW involvement motivates students to work. However, work may also spur students to enroll in STW programs. To analyze this

complex causal interconnection, the author investigated the effects of STW participation until 1997 on hours worked the following year, controlling for demographic and school variables. The analysis indicated that STW involvement in 1997 correlated positively with 1998 hours worked, holding other things constant. This suggests that there is a causal relationship inducing STW participants at any given time to increase their hours worked at a later time. Indeed, participation in STW programs in any particular year is associated with 45 extra hours of work in the following year for Blacks, 43 hours for Hispanics, and 36 for Whites. These results indicate a clear link between STW participation and subsequent labor-market participation.

IMPACT ON SCHOOL RETENTION

Some existing studies have shown that STW involvement increases high-school graduation rates, while others have indicated that the increased incentives for labor-market

participation linked to STW reduce retention. A probit analysis of the factors determining dropout rates in the NLSY97 demonstrates that, controlling for demographic and school-related background variables, STW participation is negatively associated with the likelihood of dropping out of school, though it does increase student work hours. By stimulating students to take career-oriented academics more seriously, STW programs motivate students to stay in school while at the same time increasing their work hours, particularly among minorities. No conflict was found between school retention and increased labor-market participation among STW participants in the NLSY97.

Conclusions

The study provides evidence of the positive effects of STW programs on minority youth. In general, the STW

(**Minority Youth**, continued on p. 35)

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The School-to-Work Movement

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Career Academies and High-School Reform Before, During, and After the School-to-Work Movement

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Educational reformers interested in improving the transition from school to work have been keenly interested in reconfiguring high schools to promote the combination of vocational and academic educational paths. Combining these two traditional paths can improve students' chances of college and career success. Reasons for integrating the paths include supporting the strong economic motives for continuing to postsecondary education and mitigating the effects of increasing after-school work hours.

After decades of development and evaluation, career academies based on integrated paths have been found effective in improving high-school students' performance and postgraduation options. Though not the only form of vocational-academic integration, career academies are distinguished by their durability, definability, and dependability in producing student success. This paper describes the academies' evolution, reviews their assessment, and explains their role in reconstructing high schools.

Evolution

After their 1969 inception as an electrical academy in a Philadelphia high school, the number of career academies grew steadily for two decades; since 1990, their growth has accelerated, particularly in California. Until the mid-1990s, career academies existed only as smaller units within high schools, but since then, numerous high schools have converted themselves entirely into career academies or into other small learning communities. Career academies can be defined by three basic features:

- First, they are small learning communities comprised of a cluster of students sharing some teachers and classes. Both academic and technical teachers are dedicated to the academy's

instructional and administrative concerns.

- Second, they combine college-preparatory curriculum with a career theme, such as health care or business. Academic courses meeting graduation and college entrance requirements are linked with career-focused courses. Teachers may coordinate both course types and teach work skills in both. Work-based learning opportunities link curriculum to career-related work.
- Third, career academies form employer partnerships. Community business representatives may advise academies, speak to classes, mentor students, supervise internships, and provide financial support.

The first career academies in Philadelphia focused on retention and vocational preparation, but soon they evolved to include college preparation. In 1981, California established computer and electronics academies, and the success of these and similar academies led to strong legislative support. California academies, now ranging over 25 career fields, advanced the notion of simultaneous college and career preparation.

Other regions, especially cities, have established career academies on the California model. In the 1980s, American Express joined with other companies, now more than 100, to create the National Academy Foundation. The foundation provides curriculum, technical support, and professional development for teachers. Its college-oriented, 11th- and 12th-grade academies are moving towards adding earlier years of high school and more coordination with academic classes.

Effects on Performance

Fifteen years of California studies indicate that academy students out-

perform similar students in their schools in attendance, credits earned, grades, and graduation rates. Although state-funded academies in California must recruit a majority of disadvantaged students, dropout rates are half the general rate. Academic improvement is continuous. Postgraduation evaluations have shown academy graduates as likely as their schoolmates to be enrolled in postsecondary schools. Both academic-track and career-academy graduates are more likely to enroll in a four-year college than general-track graduates, though career-academy students are less academically advantaged than general-track ones.

Further, academy graduates are more likely to have low-income, minority backgrounds. But this accounted for, they are more likely to graduate than other students in their districts, indicating that academies help low-income students finish high school and college. Moreover, lower academic standards are not involved in the results. Although courses within academies awarded lower grades than nonacademy courses, academy students obtained higher grades than nonacademy students. Similar results appear in studies outside California.

Self-selection, however, casts doubt on evaluations of career academies, since performance may result from the initiative or parental support of the students who choose academy enrollment and not from the academy's curriculum. Similarly, although students in small schools like academies are less likely to drop out, graduation-encouraging characteristics of the communities of the successful students cannot be ruled out as causes.

The random-assignment procedure, very rare in school-structure research, can eliminate this uncertainty. The Manpower Demonstration Research Corporation conducted a ma-

major, random-assignment, 10-site study beginning in 1993. The organization created a list of career-academy applicants and randomly chose those who would and would not be admitted. The latter constituted the control group; unlike comparison groups in other studies, its members shared the experimental group's ambition and other traits.

The Manpower results confirm earlier findings: students in career academies earn more credits toward graduation and are more likely to participate in activities like volunteer projects than controls. The greatest differences are among the career-academy subgroup of students at highest risk of school failure, whose attendance, credits, extracurricular participation, and avoidance of criminal behavior surpass the control subgroup's and whose dropout rate is 11% lower.

However, the Manpower study raised two troubling issues. First, students in career academies score no higher on standardized tests than controls, suggesting that academies do not affect the best-regarded measure of learning. The earnings benefits of completing an additional year of high school have proven greater than those of one grade-equivalent year of test-score gain, so the academies' graduation-rate benefit may outweigh their lack of effect on scores. It remains unclear, nonetheless, whether the instruction is better in academies. Experimental students reported greater academic support than controls, and many developed college aspirations, but no quantitative evidence of increased learning in career academies has arisen.

Second, the Manpower study left it undetermined whether the teachers in career academies are the schools' better ones; academy teachers are not better educated or experienced, but since they are not randomly assigned, they may be superior in less tangible ways. The superiority of academy students could arise from a shift of better teachers to the academy from

the rest of the school. Since only long-term performance comparisons after academy introduction could determine the impact and causes of such a shift, it may be impossible to determine how academies affect schoolwide performance.

Reconstructing High Schools

One reason why the number of career academies has grown is that they are compatible with several major high-school reform initiatives, including school-to-work, the Coalition of Essential Schools, and the small-schools movement. Like career academies, school-to-work programs like the High Schools that Work project attempt to teach career skills and prepare students for postsecondary specialization. Indeed, academies have been recognized as school reform models. Essential Schools, which focus on improving the intellectual, social, and ethical qualities of schools, have endorsed the academic quality of career academies, which fulfill many Essential-School principles, such as fostering deep and active engagement in learning, and personal relationships among students and teachers. Indeed, many Essential Schools contain career academies.

Moreover, the broader small-schools movement, now supported by federal and foundation funding, focuses on developing personal learning communities, for which career academies provide effective models. As high schools decentralize, career academies may prove useful units of subdivision. Thus, among multiple strategies for reconstructing high schools, career academies are an effective element.

High Schools to Small Learning Communities

The Manpower study, limited to career academies within high schools, cannot suggest what benefits the current transformation of large high schools into groups of small learning communities may have. Preliminary results are promising in New York,

Philadelphia, and Chicago, where substantial numbers of students have been enrolled in small learning communities. Small but significant gains over traditional high-school students have been seen, such as fewer absences, higher grades, and in some cases lower dropout rates. Since the benefits of career academies may not generalize when they are instituted comprehensively, eliminating self-selection, before initiating widespread reform we should determine whether career academies and other small learning communities really do improve performance when implemented schoolwide.

Foreseeable problems of institutionalized small learning communities include loss of voluntarism, overloading the community's capacity to provide school-to-work partnerships, and the return of tracking in a hierarchy of small learning communities. Monitoring inequitable enrollment would combat this problem, as would creating career- or theme-based small learning communities to recruit teachers and students.

Conclusion

Rigorous evaluations have found that career academies within larger high schools improve academic performance and retention. Growing numbers of secondary institutions are not only adopting career academies but grouping all students and teachers into such small learning communities. Whether this larger reconstruction will have the same benefits is an urgent question for future research. As the school-to-work movement loses the attention of educators more focused on standards and accountability because of students' rising college aspirations, among its legacies will be new employer-educator partnerships and higher career awareness aligned with postsecondary goals. Combining standards with career preparation, career academies may be one of the most valuable and enduring legacies of the movement.



High Schools' Role in College and Workforce Preparation: Do College-for-All Policies Make High School Irrelevant?

James E. Rosenbaum, Northwestern University

The struggles of youth without college degrees constitute a labor-market crisis, as they move from one dead-end job to another, unable to develop skills, status, and earnings. Employers complain that these employees lack basic skills, which must be provided on the job. Growing shortages of skilled workers suggest that educational reform must address improving the abilities and opportunities of high-school graduates. This article shows that schools have misunderstood work-entry problems by focusing on college entry and that students have misunderstood incentives for achievement. Moreover, many other nations communicate incentives effectively, and American schools could improve incentives and job entry.

Schools View Students' Problems Too Narrowly

High schools have responded to the poor labor market primarily by encouraging college-for-all policies, leading the majority of seniors to plan college degrees, even those who perform worst. However, their expectations will be largely disappointed, since only 37.6% of those planning a degree receive one in the 10 years following graduation. Thus college-for-all policies seem unrealistic, overlooking that many students are really work-bound, especially those with lower grades. Of those graduates with high-school Cs or lower planning bachelor's degrees, only 16.1% attain the degree after 10 years. Also overlooked is that many college students are not prepared—40% of seniors lack ninth-grade basic skills—and soon drop out. Despite good intentions, high-school counselors underinform students about the effort required to graduate college, encouraging their unrealistic expectations without exploring the well-paid careers, such as building trades and financial services,

that would be more realistic options for many.

Furthermore, school policies focus too narrowly on academic achievement, overlooking soft skills like motivation, dependability, attention to quality, and social interaction, which many employers value above academic skills yet feel unprepared to teach. Even such a basic skill as effort remains unexercised, since students believe that academic effort bears little relation to their futures. Moreover, behaviors like absenteeism, insubordination, and incomplete work are tolerated in high schools, while employers value the opposite behaviors in young workers.

Students Need a Clearer View of Incentives

Educational policies also fail to give students a clear understanding of incentives for mastery of both academic and soft skills. Teachers are exhorted to increase students' motivation, but the rewards for such efforts remain obscure. Institutions need mechanisms for communicating the value of students' actions for college and career goals. Instead, schools often indicate that school behavior is irrelevant to immediate goals, since colleges' open-admissions policies allow even weak students to enroll. Further, employers ignore high-school performance records in hiring, partly because they do not consider them trustworthy or cannot obtain them. Instead of using high-school performance in hiring decisions, they limit graduates to entry-level work until they prove themselves. As a result, students cannot tell if or how their goals are attainable.

Incentives in Other Nations

Many other nations provide clearer incentives for achievement that Americans could use as policy models. Their educational systems

clearly link school performance and career outcomes. In the German system, for example, work-bound students strive for apprenticeships that lead to respected occupations, knowing that secondary-school grades affect selection for those opportunities. Afterwards, apprentice certification gives German youth a sense of accomplishment rare for U.S. youth. Unlike our unemployed graduates, unemployed German apprentices feel unlucky, not incompetent. Similarly, in Japan, high-school grades are linked to entry into respected occupations for the work-bound. If their achievement is too low for their goals, Japanese students know it in advance and see reasons to increase effort or lower expectations.

Improving Labor-Market Entry Policies

MAKING ACHIEVEMENT RELEVANT TO GOALS

U.S. schools already have a system, College Board Testing, linking academic achievement to goals on the foreign model, but it only extends to the minority of students aspiring to selective colleges. Test results inform high-achieving students well before graduation of the likelihood of admission and of the need for increased effort. Low-achieving students, who typically aspire only to open-admissions institutions, lack such incentives, which apprenticeships or more rigorous college admissions standards could provide. The perceived gap between high-school performance and job success could also be bridged by educating students about research showing that better high-school grades and soft skills predict better earnings. A rise of one letter grade (from C to B) is associated with a 12% earnings gain 9 years after high school, and soft skills like attendance, deportment, sociability, and leadership also improve earnings.

Further, high schools could link job-finding aid to achievement and inform students about research that indicates that job entry through a school contact increases nine-year earnings potential by 17%. Counselors and other educators should stop keeping students in the dark about the consequences of their performance, even if they withhold information only to be kind to students or to placate parents.

IMPROVING COLLEGE AND EMPLOYER CONTACTS

Improved student contacts with colleges and employers can clarify incentives for achievement. Two reforms have been promising, despite difficulties aligning these high-school experiences with later demands. First, tech-prep programs articulate junior and senior year curriculum with community-college technology programs, teaching students about college and occupational demands and making for a seamless college transition. Tech-prep success indicates that a student is prepared for college, and failure motivates efforts to improve and to adjust goals. Unfortunately, existing tech-prep programs often have below-standard requirements, leaving students ignorant of college-level demands. Further reform should focus on integrating those demands into the preparatory curriculum.

Second, youth apprenticeship and cooperative learning (co-op) programs give some students the work experiences they need to improve their chances for success in the labor market. Apprenticeships coordinate school and workplace learning under close supervision. However, they are so expensive that few U.S. employers are willing to contribute to funding for them. In co-ops, sometimes seen as inexpensive apprenticeships, students are released from some classes to work in positions that ideally provide more training than average jobs. In practice, however, co-ops are average jobs with little training and few postgraduation opportunities. While

apprenticeships increase a student's earning potential, co-ops usually do not, unless students are able to secure jobs at the same company that provides their co-op experience. These potentially useful programs could be improved through expansion, increased quality, better training, and improved communication of a given student's job readiness.

IMPROVING SIGNALS OF STUDENT VALUE

Unlike Germany's and Japan's, our high schools do not clearly convey graduates' readiness for college or employment. Several policies could begin to solve that problem. First, colleges involved in tech-prep could adopt standardized placement tests of college readiness. Well before graduation, these tests could indicate academic quality clearly to high schools, colleges, and students themselves, allowing time for backup plans. Second, high schools could provide employers with better signals of soft skills. Indeed, by reflecting attendance, discipline, and motivation, grades already do this to some extent, and further signals of student qualities could be developed. Some high schools have already created employability ratings tailored to employers' needs, and these schools have reported increased student motivation. Further research on the effects of such ratings is needed.

Third, high schools could build more trustworthy employer relationships, for instance through vocational teachers, so that the best-qualified students could more easily be hired. Employers indicate that such relationships aid hiring and give them dependable information. Unfortunately, however, connections between schools and employers are still unfortunately rare; only 8% of seniors get jobs through school contacts, despite the clear advantages. Hiring through contacts may limit the applicant pool, but large applicant pools do not help employers if they cannot assess applicants' quality. Hiring selectively seems preferable to hiring randomly.

Teachers can build relationships through trade experience, careful applicant screening, and candor.

Employers and teachers should establish reciprocity, so that both parties value the relationship for meeting mutual needs and not for extrinsic benefits, such as teachers pleasing administrators by placing weak students or businesses improving public relations by extensive co-op hiring. When extrinsic benefits are central, teacher-employer relationships have little reason to develop. In such cases, sacrifices for reciprocity's sake, like better student screening despite administrators' demands and more intensive yet less visible apprenticeships, could establish the trust needed to foster the relationship.

Conclusion

Unfortunately, current policies work against improved school-employer contacts, since vocational programs and their well-connected teachers are being curtailed in favor of college-for-all policies. To reverse this trend, vocational education should expand in high schools and community colleges. Teachers with good trade contacts should be retained and rewarded for making good placements in industry and colleges. Teachers and counselors should also be encouraged to give employers candid information about students and to be forthright with students about their abilities and opportunities. These policies could encourage employers to see high schools as valuable sources of hiring information.

Other steps could include acquainting counselors with noncollege options and evaluating students' college and career abilities more accurately and consistently. The underlying conditions for such policies are present; the key is making the institutional actors aware of the importance of improving students' opportunities for job-entry success.



Is the School-to-Work Movement on the Right Track?

Robert I. Lerman, American University

In the late 1980s and early 1990s, policymakers debated the employment and wage problems facing work-bound youth and the weak skills of American workers. Interest in formal school-to-work (STW) transition programs on the European model grew, leading to a proposed 1992 Youth Apprenticeship Act, state STW initiatives, and the 1994 passage of the School-to-Work Opportunities Act (STWOA) granting states federal funds and STW guidelines. Like the 1994 National Skill Standards Act (NSSA), which formed a board to develop skill standards and STW goals, STWOA represented a rapid transformation of problem to policy.

However, the expectations for an effective STW system have gone unrealized, as government interest in education moved elsewhere despite growing business interest in STW. Another problem has been emphasis on moderate interventions for all students instead of intensive approaches for some. This article discusses motivations for the STW movement, failures in intensive programs and skill standards, and results of research on STW initiatives. It argues for an apprenticeship system and recommends redirecting the movement towards its original goals.

STW Policy Motivations

Among motives impelling STW policy, central was the need to improve opportunities for youth who would not graduate college. Over the past 15 years, it was recognized that both their educational and labor-market problems needed attention. As demand for skilled workers increased, young people's abilities fell, foreboding earnings decline for those without adequate skills. The perception of weak skills led employers to lower expectations, reinforcing difficulties in finding satisfactory work and stimulating youth job-hopping and unem-

ployment. In response, schools invested more in improving academic outcomes, with mixed success. Pointing out that motivation is important in raising performance, STW advocates proposed that helping students see the relation of school to careers would boost motivation. Thus they favored teaching subjects in a real-world context.

Meanwhile, though job-training programs targeting disadvantaged youth showed little effect on outcomes, broader STW programs promised to academically motivate at-risk students at all socioeconomic levels. Further, weaknesses in vocational programs led to scaling them back in favor of college preparatory or alternative programs with career components, including career academies and apprenticeships.

By the early 1990s, international models led policymakers to believe that the STW transition could be improved by establishing career-related standards and especially by intensive work-based learning (WBL) culminating in occupational certification. A WBL system would clarify reasons for educational effort, provide contextual learning instead of fragmented knowledge, improve links between training and career standards, and expose at-risk youth to constructive peers and adult mentors. The system would also give portable skill credentials, increase productivity and income, provide disadvantaged youth with formal access to good career opportunities, and reduce crime and premarital parenthood by offering incentives for avoiding these dangers.

Reformers believed that these advantages would flow from systemic change, not from separate local programs without intensive involvement. Instead, however, low-intensity, local programs have characterized the STW movement. How did STW policy fail to achieve systemic change?

Failures of STW Policy

As the process of shaping the STWOA unfolded, tensions arose over the extent to which the government would direct policy and endorse an intensive, apprenticeship-style system. Labor worried that weak standards would devalue registered apprenticeships. Many policymakers worried that apprenticeships would track students, limiting college opportunities; would be too demanding for the academically underprepared students who might be the most interested; and would yield too few job openings. Further, concerns about too strong a federal role while government was downsizing led to adopting procedural, not substantive, requirements.

Consequently, the final act emphasized career majors instead of youth apprenticeships, leaving the nature of the WBL recommended unclear and its implementation in the states' hands. Confusingly, the act stipulated an industry-recognized skill certificate that could connect with national skill standards. The act articulated too many goals, recommending a national framework, portable credentials, and school-based career activities, but also local STW partnerships with relative autonomy. Was the act to benefit all students or just the work-bound? Was its chief goal to improve instruction, increase college attendance, or ease STW transition? Governance was too divided among government leaders, educators, and private-sector leaders who could most effectively implement WBL.

A key failure stemmed from emphasis during the first, eight-state funding phase on including all students in STW instead of on developing WBL. Consequently, officials concentrated on career exploration instead of career experience. To avoid limiting STW initiatives inequitably to the work-bound, states centered initiatives on school-based, exploratory

activities like job-shadowing and career-awareness training unrelated to specific vocational preparation. Meanwhile, the failure of NNSA to create national skill credentials or to integrate them with STW made the STWOA stipulation that students master certifiable skills impracticable.

Results of Research on STW Initiatives

Some states have nevertheless successfully given priority to intensive WBL initiatives. Wisconsin has developed 20 skill standards in varied fields, each based on rigorous academic and work competencies delivered through technical colleges or apprenticeships, which have been limited mainly by high schools' unwillingness to support participation. Research conducted by Jobs for the Future (JFF) shows that efforts to make learning more work-based have struggled against perceptions that participants would learn less and be less college-ready. Some cities succeeded in promoting WBL widely without linking STW too closely with stigmatized vocational education.

However, the nature of WBL in the JFF research is unclear, and evidence for academic gains reported is undercut by the lack of comparison groups. A Mathematica Policy Research study of initial implementation indicates that education-employer partnerships grew and STW participation rose for all students from 1996 to 1998. But students participated mostly in low-intensity activities; only 3% participated in both a career-focused school program and WBL.

National STW evidence from the 1997 National Longitudinal Survey of Youth (NLSY97) demonstrates that STW is hardly universal; only 14% of schools offered apprenticeships, only 64% any STW program. The link between school and student reports on STW participation is surprisingly weak, with participation reports almost as high in schools not reporting STW as in involved schools. Fewer than 5% of high-school students re-

ported apprenticeships; they were likely to be African-American, low-income, and work-bound students. The author's analysis of NLSY97 and its 1998 follow-up shows over 30% of students involved in a WBL activity, but 38% of those had worked no WBL hours in the previous year, while only 20% had worked over 100 hours.

Negative trends in WBL involvement should not all be attributed to STWOA failures, since the act did stimulate career-oriented activities just when traditional vocational education declined. The act's stress on academic achievement as occupationally important aligns with this trend, but it remains unclear how STW activities will surpass the vocational education they replace. Overall, STWOA has stimulated more school-employer interaction, created substantial WBL opportunities, and motivated students, without, however, creating an STW system that would establish new routes to rewarding careers for the work-bound.

The Case for Apprenticeships

Opposition to an apprenticeship-style system is based on a misunderstanding of egalitarianism. An appropriate egalitarianism requires equal opportunity but not a single pathway to success. Requiring those more capable in less academic settings to compete academically reduces equality and creates frustration in schools and the labor market. Research also argues for an apprenticeship-style system, showing that, in developed nations, apprenticeship entry to skilled careers for low-income students is the best educational route to success and social mobility. While vocational stratification can limit educational opportunity, it protects occupational opportunity, since few vocationally stratified students drop out without marketable skills. Further, employer-based apprenticeships yield considerably better outcomes than school-based training.

Another argument remains against employer-based apprentice-

ships. Human capital theorists argue that since apprenticeship benefits accrue primarily to workers, especially if they change firms, employers have little incentive to offer the training.

However, other theorists have countered that productivity gains through low turnover likely in a highly skilled labor market (since negative perceptions about skilled workers who change firms make change risky) may outweigh employer losses in wages, allowing for economical training. Moreover, an apprenticeship system seems practical now in the U.S., especially since many jobs require skills not taught in college and many students will not complete college.

Conclusions

Other nations have shown that successful apprenticeship programs demand widespread reform. To initiate reform, three concrete steps could be taken.

- Lead industries could model a STW system, create standards, and work with educators on training delivery. Hiring incentives could attract participants, and benefits of these initiatives could be assessed.
- Governments could designate occupations for training models, develop standards in these areas, involve schools, and offer internships. This program could raise government workers' quality and build private-sector trust in governmental commitment to reform.
- Regional skill certification could be promoted to document existing standards; develop consensus about new ones; and coordinate standards across industries, regions, and postsecondary institutions.

Further steps to reform STW transition could also be taken. Whether apprenticeship initiatives are the focus or not, it is crucial to rethink the goals of STW for the 21st-century workforce.



What's Next for School-to-Career: An Assessment of Progress and Prospects

Richard Kazis and Hilary Pennington, *Jobs for the Future*

After a decade's progress, the school-to-career (STC) movement stands at a crossroads. With federal support, many schools have developed successful programs using contextual, career-based learning to prepare students for new workplace challenges. However, since federal funding for STC is ending, it is imperative to develop strategies for progress based on what has been learned so far. *Jobs for the Future* has undertaken an inquiry into the future of STC. This paper reviews the results of that inquiry, focusing on the evolution, strengths and weaknesses, and future prospects for STC.

The Rise of School-to-Career

The STC movement was propelled in the late 1980s by concerns about American youth's educational and economic prospects, including poor high-school quality, the need for better workplace preparation, and student disengagement from studies and the adult work world. By the early 1990s, consensus had emerged on the need for reforms guided by the following tenets: (a) young people need more help successfully moving to the increasingly complex career world; (b) effective solutions must address education and careers through contextual learning, work-based learning, and career exploration; (c) schools must enter new relationships with community and business partners; (d) reform must go beyond innovative programs to districtwide approaches; (e) given our national political context, reform must be initiated by states, localities, and private-sector leaders, supported but not governed centrally; and (f) gradual and flexible implementation is preferable to top-down national programs for meeting local needs. This consensus informed the 1994 School-to-Work Opportunities Act (STWOA), which committed more than \$1.5 billion in federal sup-

port to states for STC development between 1994 and 2001.

The broad reach of STWOA created difficult implementation choices for practitioners. Implementers had to decide whether reform was directed to all students or just those not college-bound; whether initiatives should focus on high-school reform or broaden to K–16 education; whether improved classroom practices or work experience was more important; whether reform should focus on school or employer activities; and whether governance and accountability should rest with schools, employers, or government. Competing responses resulted in great variations in implementation. Lessons emerging from these reform experiments allow us to assess the STC movement's strengths and weaknesses.

School-to-Career Today: Progress and Challenges

Although STC programs are improving many students' learning, the movement's profile as a reform strategy has receded, for reasons that analysis of its implementation clarifies. Federal STWOA funds, which distributed across 50 states amounted to only \$4.32 per K–12 student for the 1997–1998 fiscal year, have been broadly invested in establishing school–employer partnerships and expanding school-based career activities. Some states have changed patterns of STC policy in lasting ways. Numerous initiatives have improved student attendance, coursework rigor, retention, college-attendance rates, and first-job wages.

However, implementation of STC policy has been slow and uneven, with some communities investing too much in isolated activities having little impact. Given the complexities involved, the temptation to spread resources, and the short time for showing results, such slow progress is understandable. It provides warnings

and hope for continued implementation.

PROGRESS

Several key benefits deserve highlighting. First, *employer engagement* has increased steadily, involving about one fourth of U.S. firms in partnerships and one third in work-based learning. This participation has given many students access to better work and training while furnishing employers with a more stable youth workforce. Second, *local partnerships* were created, led by public-school and postsecondary educators as well as private-sector leaders. These collaborations have facilitated creative, effective STC activities in communities across the nation. Third, the *number of students involved* has grown significantly, with STC activities becoming as common among seniors in college-preparatory curricula as among others. Involvement in intensive, work-based programs has attracted more work-bound students, and participation in career-related classes has risen dramatically among African Americans.

Fourth, *student satisfaction* in STC has risen, especially for individualized experiences like job-shadowing and internships which give them contact with workplace mentors. Fifth, STC participation has *increased the likelihood of college attendance* among minority and disadvantaged youth. Finally, involvement has *increased motivation*, as STC students choose more college preparatory courses, attend more regularly, and spend more time on homework than their peers. However, improvement on standardized test-score indicators of academic progress has not been clearly demonstrated.

CHALLENGES

If the positive outcomes associated with STC participation do not ac-

count for the relative weakening of STC as a national reform strategy, then what does? Research and experience suggest four contributing factors. First, *shifting political realities* have undercut the movement, as attacks from the right, resonating with parental fears about tracking and choice reduction, weakened political support. Second, the *complexity and ambition* of envisioned reforms have been a significant obstacle. Integration and assessment of efforts to link school- and work-based learning have understandably involved costly planning and experimentation. In some communities, complexities and restraints on resources have prevented movement from planning to implementation.

Third, *implementation choices* have unintentionally weakened public support and effectiveness. In some communities, STC was implemented as a K–12 initiative focused on elementary students, which limited the opportunities available for secondary students. Given the short lifetime of funding, moreover, implementers rushed to measure results, making scale, not quality, the chief measure of early success. Consequently, districts frequently favored less intensive activities such as career fairs and job-shadowing days for which quantitative results were easy to deliver. Further, reformers employed a rhetoric that STC activities should be for all students, a laudable idea but one that drew political opposition on the grounds of limiting young people's choices.

Fourth, STC initiatives have become increasingly *isolated from standards-driven reform*, the decade's dominant reform effort. No inherent conflict exists between standards and STC reforms, since STC activities provide motivation and instructional strategies that many see as essential to raising standards. But competition for resources, limited evidence of academic achievement gains, and the housing of STC governance not in curriculum and instruction but in vo-

educational education offices pitted the movements against each other. Moreover, the connection of standards to testing made it hard to integrate STC's contextual approaches to learning with test-focused, core-subject instruction. As pressure to produce higher scores grew while few results demonstrated that STC involvement improved achievement, states and districts saw incorporation of STC strategies into the curriculum as a high-risk approach with little guarantee of success.

The Future of School-to-Career

Paradoxically, as federal support wanes, enthusiasm for high-school reforms linking education to careers waxes. School–community partnerships are growing, and career-based learning communities in larger high schools are expanding. There is reason for long-term optimism, since the task of schools in the future will be to help students master the knowledge that will increasingly lie at the heart of work. Hence contextual, experiential, and work-connected schooling is likely to become less controversial. The challenge will be to develop strategies to transform schools effectively and equitably to structures that can promote the development of the range of skills needed for success in today's economy.

Several developments might kindle renewed interest in STC approaches in the coming years: (a) crises in high-school achievement and college retention, which could encourage experimentation with alternative structures and pedagogies incorporating STC elements; (b) recognition of the limits of standards-driven reform strategies at the high-school level may have the same effect; and (c) employer interest in certification of work-related competencies might spur curricular and pedagogical reforms.

However, significant hurdles stand in the path of these developments, not the least of which is the winding down of federal support for

STC. In 1999, Jobs for the Future made a series of recommendations for sustaining STC as the STWOA began to sunset. It was urged that stakeholders support leading innovators, focus on academic outcomes and long-term postsecondary results, strengthen school–employer partnerships, reach out to potential allies in higher education and in alternative schools, and provide support for a nongovernmental research and documentation center for STC service.

Here the authors propose five strategies that can help STC survive, grow, and rebuild in the long term. First, stakeholders should *focus on high schools*, especially urban ones, to help students cross the school-to-work bridge. Second, they should *focus on postsecondary connections*, establishing creative partnerships linking high-school and college curricula and sharing STC pedagogies to combat college attrition and address employer needs. Third, they should *promote STC principles within other reform movements* with common interests such as career academies and the Workforce Investment Act's youth programming and planning. Fourth, they should *fund long-term community partnerships* at the local level that connect schools and employers. Finally, they should *fund research to improve design and implementation*, focusing on long-term achievement and alternative measures of nonacademic skills to substantiate the case for STC reform.

These strategies, in sum, can promote the STC agenda by sustaining successful efforts, improving quality, and demonstrating results. STC progress need not end with federal funding, though it will take time before these concerns and strategies move once again into the educational mainstream. Hard—and strategic—work to replace that support within communities can accelerate the pendulum swing back toward STC principles and practices in our high schools.



A Melding of International Perspectives on Vocational/Technical Education

Robert Zemsky, *University of Pennsylvania*

American educators usually look to the success and openness of our institutions for policy guidance. However, crises occasionally lead us to look abroad for solutions, which happened in the 1980s and 1990s, when math and science achievement and youth workforce preparation fell well below international standards. The 1990 report, *America's Choice: High Skills or Low Wages*, argued that America could learn about youth training from models like Japan's on-the-job training and Germany's apprenticeship system. Leaders of the national school-to-work (STW) movement sent study teams abroad for solutions, sometimes overlooking foreign training systems' problems.

However, the economic boom of the later 1990s has weakened motives to reform workforce preparation. STW programs have provided some career education, yet vocational training has continued to dwindle to an opportunity limited to weak or disadvantaged students. Today, most American youth find rewarding occupations independently, combining job and educational experience into a viable career path. Meanwhile, other countries have begun to question their training systems and to look elsewhere for successful models.

One result was a multinational study of vocational/technical education sponsored by the University of Pennsylvania. The study undertook weeklong visits to communities in four countries: the United States, Singapore, Switzerland, and Japan. A research team, including a senior scholar from each country and a senior Swiss government official, organized individual and group interviews led by the country's senior scholar. Interviews took place at several locations at each site: two companies, two vocational/technical education providers, two secondary schools focusing on work-bound students, and two

focusing on university-bound students. Teachers, students, managers, and young workers were interviewed. Fieldwork began in 1997 in the U.S. and ended in Japan in 1998. This paper reports on the issues for each country's vocational/technical programs, offering conclusions on the status of those programs, which face the worldwide college-for-all trend.

The United States: Lehigh Valley, Pennsylvania

Unlike the other countries, the United States lacks a single, historically based educational vision and is characterized by rapid economic change, as evidenced in the Lehigh Valley's decline in manufacturing and the youth population. Young people often leave the Valley to seek educational and economic opportunities elsewhere. As in the rest of the nation, this area's retention and college attendance rates are rising as the perceived value of college education rises.

The study group arrived at several generalizations about vocational/technical education and the STW transition in the Lehigh Valley and most of the country. First, while college ambitions rise, vocational education is becoming less formal and more attuned to the area's growing service economy. This has led to anger among local manufacturers, who feel schools are not preparing enough students for the work they offer. Second, vocational training faces a growing stigma associated with skilled labor and manufacturing. While the social role of vocational training diminishes, local manufacturers show little responsibility for the success of vocational schools. Third, Lehigh Valley vocational/technical programs offer much more occupational choice than do programs in other countries, and most students receive little occupational training before graduation. The na-

tional trend towards college education, related to technological advances and global competition, remains in conflict with the needs of this local economy.

Embodying the conflict is the requirement that vocational-track students take morning high-school classes before traveling to vocational school in the afternoon. Meant to prevent segregation of vocational students, the move merely makes them seem less accomplished than their academically tracked peers. Yet at the vocational school, they seem quite capable and proud of their achievements. The divide between vocational students and others represents a prevailing national attitude that defines good jobs as professional and stigmatizes even highly skilled labor as demeaning.

The City-State of Singapore

A blend of Asian and British culture, Singapore's planned economy manifests competition and a strong work ethic. Education, conducted in English, is universal. At each level, rigorous testing determines a student's educational path. After passage of the British O-level exams, the most advantaged track leads to junior colleges and thence to universities. A second track leads to one of the country's polytechnics, which prepare students for occupations requiring advanced schooling but not a university degree. For those adept in math and science but not English, this provides an alternative to O-level English difficulties.

Finally, many students are tracked into the Institute for Technical Education, which both trains technical and mechanical workers and acculturates the large number of non-Singaporean workers. While as an importer not an exporter of youth and talent, Singapore differs from the Lehigh Valley, both areas share a growing college mania

and attach stigma to vocational/technical education.

This context frames several key features of Singaporean attitudes towards vocational training. First, the testing and tracking system puts enormous pressure on youth not to disappoint by scoring low on the clearly hierarchizing exams. Second, expectations for those tracked into the Institute for Technical Education are quite low, though the institute provides a sophisticated vocational program. Through this study, Singapore was looking for ways to improve the status of the institute. Third, Singapore increasingly offers second-chance routes out of institute enrollment and into polytechnics and then universities, but these routes further lower the status of the institute.

Finally, Singapore provides few work-school links; at all levels, work socialization takes place only after full-time work begins. Especially at the top, this causes problems as school competition gives way to work cooperation. Perhaps the country should consider planning more youth work opportunities, which market forces do not create as easily as in the United States. In the future, Singapore's educational system will probably remain controlled and competitive, and the prestige of vocational/technical education will rise only with difficulty.

Switzerland: St. Gallen

Switzerland boasts one of the world's oldest and most respected apprenticeship systems, involving employer-state partnerships, for much of its youth. The employer largely pays for training in exchange for the worker's labor in the final, productive apprenticeship year. Historically, prestigious careers have begun with apprenticeships. This system is now under pressure, as many Swiss enterprises have joined multinational corporations, while the country imports more non-European immigrant workers. Leaders worry that if immigrants' children increasingly dominate the ap-

prenticeship system, it will seem less desirable to natives. This admired training system is not immune to the prevalent stigma on vocational/technical education.

Swiss education reflects worldwide socioeconomic trends. Swiss youth associate university education with social status and economic mobility, which are increasingly linked with ethnic identity. Competition for university entrance and the most desirable apprenticeships will likely increase ethnic conflict. Moreover, Swiss economic restructuring is redefining work. The study revealed that apprenticeships do not teach technical skills that firms see as essential for future success in the global market. Even in banks, where apprenticeships have been prestigious, managers expect to hire more university graduates with sophisticated financial skills.

Thus the apprenticeship system is being squeezed above and below, as large firms question their commitment while small firms become less able to provide skills for the changing economy. If the trend towards university study continues and traditional work acculturation withers, how will the country prepare its youth for work? If university-bound youth are given more part-time opportunities before graduation, that may accelerate ethnic differentiation. However, Switzerland possesses the resources and experience to solve such problems.

Japan: Hamamatsu

Like its economy, Japan's educational system is in turmoil, largely because of a population decline halving the number of students graduating from high school and lessening university placement competition. Thus a system thriving on competition is left without motives to compete. Meanwhile, a new trend towards youth job-shifting makes it likely that Japanese firms will invest less heavily in on-the-job training than in the preceding era of lifelong employment.

The Hamamatsu study added insight related to vocational/technical

education in relation to these trends. First, Japanese students seem less motivated to excel and more willing to choose less demanding educational and occupational paths. Second, youth job-shifting seems motivated by increasing self-interest, as career advancement replaces loyalty as a key concern. Third, Japan's formerly strong vocational secondary system now seems a weak alternative to the academic-track system. The schools seem more notable for cocurricular programs like sports than for good technical training. Fourth, young people place unexpected emphasis on collecting special educational credentials piecemeal instead of developing skills comprehensively.

Finally, the link between employment and university education remains unclear. Perhaps because top universities emphasize graduate research training, students have little idea of what, beyond scientific and technical knowledge, universities give them for workplace success. Mitigating such concerns are the skill, energy, and discipline that still characterize Japanese students, even as they struggle with their country's large-scale changes.

Conclusion

This multinational study suggests that the quest for higher education has become universal in industrial nations, at the expense of vocational/technical education, which has been stigmatized as the educational path for immigrants and the disadvantaged, further widening the economic gap between the university-educated and others. College mania threatens to overwhelm traditional means of training skilled workers, whether in vocational schools or apprenticeships. In the future, countries should heed each other's solutions to this problem and respond to market trends that make current policy regarding vocational/technical education increasingly irrelevant.



Tomorrow's Workforce Sits in Today's Classrooms: School-to-Career in Philadelphia

Mary Jane Clancy, Melissa Orner, and Rico Rodriguez, School District of Philadelphia, Pennsylvania

Since 1992, school-to-career (STC) reform in Philadelphia has involved hundreds of business and community partners in improving the district through systematic efforts to link schools to the city's economic and community development needs. This report describes the history, components, assessment, and prospects of Philadelphia STC.

History

In 1994, the new district superintendent developed a 10-point reform plan, Children Achieving, for a district plagued by low achievement, social problems, and negative community image. The plan focused on improving all students' achievement in this largely minority, low-income district, the country's fifth largest, through reforming instruction, restructuring, and connecting the district to the local workforce. In 1996, the district established a federally supported STC initiative to build that connection. Business, community, and city leaders developed STC policy and linked it to broader economic initiatives. A workteam of educators headed implementation and evaluation.

Components

Philadelphia's STC system encompasses six key components.

- *Resource Boards* led by major employers coordinate efforts, leverage resources, and provide opportunities for city youth. Each board works with one of 22 geographic school "clusters" to improve attendance, increase opportunities for work-based learning (WBL), and build new schools.
- *Instructional Change* includes STC competency as a district standard and projects as a requirement for promotion and graduation. Extensive professional development is provided in STC-related methodologies. High schools have been restructured into Small Learning Communities (SLCs), most with ca-

reer-related themes. An interdisciplinary teaching team works with the same students all four years, linking instruction to career themes and WBL.

- *Stakeholder Partnerships* led by industry executives link the city's growth industries to schools. Partnerships advise SLCs, offering teacher professional development, increasing student STC activities, and adjusting curriculum to industry standards.
- Partnerships have created *Work-based Learning* experiences for 3,000 juniors and seniors. Trained worksite mentors and individualized learning plans connect workplace experiences and class instruction.
- A *Service Learning* requirement for all students combines problem-based learning with career exposure and connects with a citizenship requirement.
- To *Reach All Students*, the district has initiated educational planning and WBL programs for special education and alternative students like dropouts and the formerly incarcerated.

Assessment

Controlled district assessment and independent researchers have concentrated on WBL, which provides isolable data. A comparative study of 440 WBL-participating graduates showed better attendance, graduation rates, and GPA than similarly achieving nonparticipants. Longer WBL placements had greater effects. GPA rose significantly for those reporting negative peer influences. A similar 1997 postgraduation comparative survey of WBL participants showed more WBL participants reporting good employment preparation. Many received job offers from WBL employers, and most rated their WBL highly. Employed WBL graduates were more likely to be working in chosen career areas. Participants felt as prepared for college as others and were attending college comparably.

Other studies have shown that WBL keeps special-needs students attending school and employed after graduation. Teachers rate STC highly. Evidence of STC success lies in the success of Children Achieving reforms, to which STC has been integral. District test scores have risen steadily for four years, and the first elementary cohort benefiting fully from reforms improved markedly in eighth-grade achievement in 2000. High schools have also improved, as graduation rates have risen between 1996 and 2000. Further assessment is planned, focusing on effects of Service Learning and WBL on postgraduation outcomes.

Prospects

Theory suggests that major reform is easier when change has reached a critical "tipping point," so district STC policymakers and practitioners should focus on finding tipping points crucial in changing professional and public perception. Though community support for STC reform is strong, it could be better harnessed. Most Philadelphians surveyed agreed that public schools should prepare students for careers through internships, mentoring, and school-business partnerships. Their support of STC urges practices that exceed tipping points and sustain districtwide career preparation. Service Learning, which integrates students and community, should expand, as should WBL, which helps change workplace perceptions of students.

A change of leadership makes the future of Philadelphia STC reform uncertain. But the Workforce Investment Act aligns youth workforce development with academic achievement, and the new district administration supports business involvement, so further reform seems likely. An intermediary organization coordinating partnerships with business also promises to foster district STC reform.



School-to-Work in Middle Schools: Right Track and Fast Track Programs

Shellonda Rucker, Tallahassee School District, Tallahassee, Florida

Work-based learning (WBL) yields benefits that classroom education alone cannot provide. In Tallahassee, Florida, two middle schools established two WBL programs, one for at-risk eighth-graders, Right Track, and the other for accelerated learners in that grade, Fast Track. This report describes the programs, their WBL activities, and their successes, problems, and solutions.

Programs, Participants, Curriculum

The initiatives were instituted at middle schools serving about 700 students each, mostly inner-city Black youth. Most students are poor and disadvantaged in other ways; 18% report family incarceration. Most are minority students, and most are female. However, both programs strive to blur socioeconomic lines, focusing on building academic, work, and life skills.

In Right Track, 60 students with low socioeconomic status and academic and behavioral difficulties, sometimes including prior arrests, receive support for successful performance. Grant-funded by the state justice department, Right Track seeks to keep high-risk youth out of the justice system. Participants receive training in employability, career exploration, interviewing, gender equity, and time management. Those maintaining a 2.00 GPA and improved discipline and attendance move in February to internships in occupational fields of interest.

In Fast Track, 35 more capable yet often underachieving pupils work to complete core-subject requirements by March, supported by teachers, peer collaboration, and independent study. They receive work training similar to Right Track students'. If they complete core subjects with a B grade, they gain internships in chosen career fields. Internship qualifications include meeting disciplinary standards, completing resumes, and submitting recommendations.

Curriculum integrates workplace competencies with core subjects

through thematic units. For participants, 4 hours of after-school meetings weekly expand workplace knowledge. Tutoring is offered. At both institutions, programs are integrated with regular schedules, except for program-related Fast Track field trips.

Work-based Learning

Community partners provide internships and mentoring time. Partners include government agencies, universities, and small businesses; they sponsor field trips and guest speakers before moving on to internship commitments. Partners are chosen on the basis of students' career goals, ranging across medical, legal, educational, public service, and business fields.

Right Track students intern for 16 weeks, working 3 hours for 3 days weekly; 2 days they receive after-school tutoring. Stipend rates depend on school performance and work evaluations; students earn up to \$450, paid biweekly. Fast Track interns work up to 20 hours weekly for 8 weeks. Their work is scheduled around classes. Students are regularly evaluated on job performance. They receive up to \$295 when the internship ends. Earnings differences stem from the programs' different funding sources. Grant-funded Right Track enjoys more support, partly because students' needs are greater. Fast Track, supported only by school improvement funds, has more limited support.

Successes

The programs have motivated underprivileged students to meet Florida performance standards. Administrators created annual objectives for Right Track participants: that under 10% be arrested, 75% avoid suspension or expulsion, 70% attend school at a 94% rate, 80% earn at least a 2.00 GPA, and 80% move to internships. In three funding years, all objectives have been met except the last, because too few internships could be found.

Fast Track success stems from completed internships and positive student responses. In the past two years, 87% of these students have experienced internship rewards, learning enough to decide whether to pursue career paths. Another sign of success is sustained business–community involvement.

Problems and Solutions

Although successful, the programs have encountered problems. The original program coordinator was unable to meet the heavy workload demands. Students dropped out, objectives went unmet, and the coordinator eventually resigned. Hiring a coordinator successful with the programs' typical students, an internship aide, and local university interns interested in criminal justice solved the problem. Work transport also posed a challenge resolved by providing passes and training for students to use public transportation. As an alternative, the programs leased a minivan. Transportation costs totaled only \$8,000. Finally, improving low achievement without sacrificing program opportunities proved difficult. Since both program activities and remediation were scheduled immediately after school, program participation lagged. The coordinator recently decided to incorporate remediation into regular meetings; results remain unclear.

Future

Tallahassee should continue supporting these programs that benefit both students and community. The coordinator hopes to gain continued school-district funding and grants for staffing and stipends, now that grant support has ended. Plans also include adding success-assessment data like student statements and standardized test scores in order to gain even greater support for sustaining the programs.



School-to-Work at Marshfield High School

Arnold L. Roblan, Principal, Marshfield High School, Coos Bay, Oregon

Marshfield High School (MHS) in Coos Bay, Oregon, has undergone a school-to-work (STW) restructuring since the 1991 Oregon Educational Act for the 21st Century established Certificates of Advanced Mastery (CAMs) for seniors and other reforms. The certification program identified basic STW components and six occupational focus areas for school restructuring. This report explains the context, restructuring, programs, and results of reform at MHS.

Context

The school is located in a small, Pacific Coast town in rural, economically depressed Coos County, which has little diversity or industry, great mobility, and a traditional reliance on the declining lumber and fishing industries. District poverty is reflected in reduced or free lunch eligibility: 31.64%. In response to area economic needs and government initiatives, the district strove to give every student career exploration and work-based learning experiences.

Restructuring

Guiding principles included coordinating state and district goals, serving disadvantaged students, aligning programs with staff strengths, providing professional development, stressing work-based curriculum and school enterprises, and using community resources. Accordingly, departments were reorganized into CAM strands linked to focus areas. Teachers chose strands, and inservice training was provided. Counselors instituted educational plans for students. Every class introduced STW principles; teachers were encouraged to create school enterprises and course work experiences. For all strands, MHS instituted community career-education experiences, for which learning managers and students developed work-based study programs.

Programs

Each focus area involves successful STW activities, including CAM courses

and school-based enterprises. The *Arts and Communication* area encompasses the most students and programs. Highlights include a nonprofit radio station, a professional television course, and integration of the school newspaper with the local one. The *Business and Management* area includes business courses, a school store for at-risk sophomores, and business partnerships. Special education students participate in a work-skills program to prepare for summer employment. Other students manage an in-school bank branch and work as school-district secretaries.

In *Health Services*, instructors place students in medical work, for which biology and medical-terminology courses prepare them. Students in *Human Resources* may coenroll in a community-college early childhood program, study psychology, and assist community social-service agencies. Or they may participate in a cadet-teaching course, working daily with district teachers and recording their experiences in an e-mail journal.

The *Industrial Engineering Systems* focus provides a block of math, science, and technology classes. Students use computer-assisted drafting, invent projects, and visit high-tech worksites. Alternatively, students can follow a computer-networking program resulting in A+ certification. A *Natural Resource Systems* block allows pupils to learn riparian zone analysis skills transferable to government work. They collect, analyze, and report on physical and biological data, sharing results with local landowners. A related estuary studies course focuses on chemical and bacterial analysis. In this course, students apprentice in the summer with local scientists.

Other programs include business-sponsored professional development providing educators with work-based learning relevant to their teaching. Activities include a symposium featuring practical activities related to workplace issues and cooperation with business

leaders on evolving classroom activities. Teachers can also visit local medical facilities, where they interview employees, learn about procedures, and develop curricular projects. Further, teacher internships provide them with more extended worksite learning offering practical experience to incorporate in classrooms.

Results

MHS has improved academically since Oregon instituted STW reform; these gains may be linked to STW programs. Recently, SAT gains have been consistent. Although the school's socioeconomic status is low, other test scores have been increasing and are near state averages. The dropout rate has declined. Moreover, evidence of job-related learning appeared in a 1994 survey including randomly selected MHS students. It showed that most had engaged in vocational activities in the previous year, could match desired jobs to CAM strands, and could list three skills those jobs required. Finally, statistics indicate that CAM students have better attendance and discipline than the total school population and that CAM participation has significantly increased.

The school has encountered some obstacles, since teacher retirements have made it difficult to continue programs, and colleges sometimes reject graduates' work-based courses, though the courses meet the traditional entrance standards. But despite obstacles, curricular modification now extends to all grades, reinforcing state career-related learning standards. Another accomplishment has been the institution for all students of a capstone experience in a chosen career area, either in school or in community employment. Marshfield's STW restructuring has brightened the futures of its graduates and its community.



School-to-Work in a Technical High School: A Model for Secondary-Education Reform

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Illustrating innovations inspired by the 1990s' school-to-work (STW) movement is the Metropolitan Regional Career and Technical Center (the Met) in Providence, Rhode Island, a state-funded, independent laboratory school. Designed and then operated by two Annenberg Fellows who had spent their careers as secondary educators, the Met has modeled state secondary-education reform based on what we know about student learning, including STW principles. Since opening in 1996 with one ninth-grade class, the Met has spread to two sites with all secondary grades and 100 students each. Four more urban sites are planned in the next 2 years.

Beyond a commitment to small size allowing for collegial discussion, the Met is committed to principles shared by many STW programs: that students are most motivated and learn most deeply when working on what interests them in an applied, realistic context, and that learners thrive on individual connections with adults and immersion in the world of adult standards, values, and work. This report outlines the Met's structure, internship model, and student assessment.

Structure

The Met serves a diverse, mostly urban-minority student body (22% African American and 32% Latino), about half economically disadvantaged and over a third ESL. Unlike many urban high schools, the Met has high attendance and low dropout rates. The staff includes 2 principals, 16 certified teachers (advisors), 2 counselors, a Workplace Learning Coordinator (WLC), and comprehensive support staff. Emphasizing personal involvement, its curriculum is framed by 4-year learning goals, including competencies in communication, quantitative reasoning, empirical reasoning, social reasoning, and personal qualities. Collaborating with advisors, parents, and workplace men-

tors, students write quarterly learning plans for achieving goals.

Met students are grouped in advisories, eight per site, two per grade level, each consisting of 12 to 14 students and their advisor. Students remain for 4 years in the same advisory, building close relationships to facilitate learning. Advisors collaborate in weekly and summer staff development, evolving pedagogy, discussing student issues, and providing mutual support. Cooperating with workplace mentors, they make site visits on student workdays to discuss student progress and update projects. Advisor involvement has proven essential for developing mentors' commitments to students.

Learning through Internship

Central to the curriculum is Learning through Internship (LTI). In ninth grade, pupils explore career interests to develop a search for a mentor in their area of interest. Eventually they conduct informational interviews and job shadows. These lead to internships allowing pursuit of interests through work that builds knowledge and skills. Students usually work 2 days weekly, supervised by mentors, who prepare them for the adult roles of worker and team member. All 9th through 11th graders are engaged in LTIs. Seniors pursue Senior Thesis Projects planned with their learning teams. Projects usually involve LTIs and mentors and result in community contributions. As students learn from each other, starting businesses and inventing products, understanding deepens.

To facilitate searches, the WLC develops relationships with businesses and organizations, recruits mentors, and identifies appropriate internships. Many students find the search challenging, and some have multiple LTIs in one year. The Met recommends that LTIs last at least 3 months; most last 4 to 9 months.

Academic instruction and LTIs are fully integrated, as advisor-mentor cooperation permits work and school learning to intersect. For instance, one student assigned to write about cat licensing for the ASPCA learned at work about effects of poor licensing on cats, and at school she researched relevant policies. While her mentor collaborated with her on statistical content, her advisor helped her develop contextual writing skills.

Student Assessment

Met students are assessed traditionally and through demonstrating skill mastery and learning-goal progress. Pupils maintain work portfolios and present LTI projects before peers, parents, advisors, and mentors. Products are assessed against workplace standards. Students hold exit interviews with their mentors to evaluate internships, and mentors complete surveys to aid student improvement. Moreover, both advisors and students write quarterly narratives evaluating progress. All students take the standardized tests required by the state as well as PSATs, SATs, and ACTs.

Conclusions

One Met graduate remarked, "I know that the values and spirit behind my school will always be with me because they're in me." That sense that school shapes individuals is what the Met instills by connecting school and work through close relationships. Met students learn more deeply than those in traditionally modeled schools about the consequences of performance and about the expectations and issues of the workplace. Schools like the Met can help students mature with a more realistic view of the world and their place in it. Such secondary institutions should be attempted more widely.



School-to-Work in Macomb County, Michigan

James Jacobs, Columbia University; and George Harrison, Macomb Intermediate School District

Integrating educational reforms with existing practices is important in school-to-work (STW) reform, which connects classrooms with workplaces to improve achievement and career preparation. This report reviews efforts to establish a STW and tech-prep (TP) system linking secondary and postsecondary education in Macomb County, Michigan. Reviewed are the context, implementation, difficulties, and successes of the system.

Context

The suburban, industrial county is dominated by the automotive industry. Serving the population of 735,000 are 21 school districts. One large community college draws many county graduates. Education here has traditionally prepared students for the automotive industry through apprenticeships and cooperative education. Vocational education has been incorporated in secondary schools. In the late 1980s, automotive-industry computerization leading to upgraded training and to job-training partnership legislation set the stage for systemic reform.

Implementation

The county's STW program, housed at the county community college, was aligned with TP there, where private-sector STW activities had long centered. The automotive industry needed postsecondary skills, so secondary-postsecondary alignment became essential. Efforts were aimed at the college-bound, and TP was marketed as a college transfer program. The STW grant written for federal funding established initiatives in secondary-postsecondary education, liberal arts and occupational curriculum, and classroom- and work-based learning. Governing board members overseeing the initiative established lasting school-business relationships. The program emphasized work-based learning through specific occupational training. Extensive implementation of apprenticeships and cooperative education, teacher training, and involvement of local

companies in training established the work-based learning foundation.

The governing board funded only specific projects, rewarding innovation while giving school officials project management experience. The board set broad themes, but districts and community-college administrators created projects. Each proposal had to involve public educators, the private sector, and the community college, reinforcing crucial links. Moreover, to create a public role for STW reform, information on projects and outcomes had to be advertised through publications and conferences.

Since the county's industries include much of Detroit's metropolitan area and many Macomb residents work outside the county, Macomb STW developed a strong regional outreach, especially to link the suburbs and Detroit. Racial integration was a spillover benefit, aligning education with the area's integrated industries. Macomb pooled resources with other STW consortia to coordinate TP programs in four counties, allowing smooth transition to community colleges for regional high-school students. Regional marketing was also cooperative.

Barriers

Among the 1990s' competing school reforms, STW support was hard to sustain. Housing STW under different state agencies hampered efforts. Another problem stemmed from suspicion between educators and business leaders about funds management. Further, the state political climate aroused resistance to STW, since all reform was associated with a governor opposed to teachers' unions. Local problems arose when vocational educators used STW to support their declining programs instead of cooperating with systemic changes.

Secondary-postsecondary relations created significant barriers. Systemic reform conflicted with administrators' desires to control funds and curriculum. Lack of support for wider goals led to rejection of some

grant proposals. Further, system-building steps like research and regionalizing were resisted, since they only indirectly helped students and involved collaboration, which neither side trusted. Other barriers were lack of interest in postsecondary curriculum integration and fears that innovation would upset collective bargaining contracts.

Research and Measures of Success

To measure success, 5-year high-school follow-up surveys and economic and occupational forecasts were implemented. The surveys helped foster local support and sharing of high-school remediation and performance data with colleges. The forecasts helped educators relate skill-building efforts to real trends. Further information on successful implementation and integration was compiled. Highlights included increased attendance, graduation rates, standardized-test scores, college enrollment, educator training, and work-based-learning involvement. School-college partnerships and countywide information sharing also increased. Districts instituted career guidance and career fairs. Career awareness and development were included in accreditation and school improvement plans, and the county won state awards for innovation.

These results indicate the extent of Macomb's STW implementation. Once reforms are fully integrated, further research on student outcomes will be more meaningful. Efforts have been most successful in integrating secondary with postsecondary career and academic instruction. Transformed into the new Michigan Career Preparation System, STW and TP in the county continue fostering secondary-postsecondary alliances and career counseling. As national STW funding ends, leadership passes to other hands that can carry the integrative process further. That may be the truest measure of success for the county's STW reforms.



(**New Economy**, continued from p. 2)

value may be more costly to generate than the gain in value for consumers can support, as the losses of Amazon.com illustrate. Even the rapid expansion of world markets has limited value, since computers have made for larger and more efficient marketing efforts but not for new products.

Implications for the Educational System

As have earlier technological shifts, the computer-technology-driven economy has changed the U.S. labor market by creating demands for new skills and talents that cannot be immediately met by the workforce. The educational system traditionally responds slowly to such demands, but it does meet them. A more crucial problem presently is the large group of workers who have not mastered basic reading, writing, and math skills. Workers with the basic skills can be trained for more focused, specialized jobs in the marketplace. In the meantime, the rising wages of workers with the new skills will induce changes in the educational system in response to these new skill needs.

Moreover, demographic changes are contributing to an unprecedented shortage of college-educated workers, as college graduates are now leaving the labor force as quickly as they enter, leading educators and policymakers to perceive a need for more college graduates. At the same time, blue- and pink-collar jobs in manufacturing and service sectors are requiring fewer skills for entry, because computerization has increased the reliability and performance of many processes. Thus, low-skilled workers who might otherwise depend on welfare have the opportunity to gain basic work and social skills that their schools may not have provided.

Another worrisome development for the educational system to address may be the deficit in basic financial expertise. Since stock investments are now almost as large as housing in American families' portfolios, and

since strong savings and financial sophistication must support future economic growth and investment, the future will require financially sophisticated workers and consumers. Here schools face a challenge, since a recent series of studies by the American Financial Services Associate Education Foundation has shown that the financial knowledge of high-school students has declined between 1997 and 2000. Of all seniors tested, 59% failed, scoring below 60%. Introduction of entrepreneurial principles in schools may help improve students' financial knowledge.

However new our economy may be, educators and all Americans must worry about how children are going to gain the knowledge and skills, the human capital, needed to manage wisely the financial capital their parents have earned.



(**Youth Labor**, continued from p. 3)

grew from 3.0 to 4.1%, though both groups ended the decade with lower unemployment than in 1990. Wages for both races also followed the decade's fall and rise, with the decline and recovery somewhat steeper for Blacks. The differences in hourly pay rose slightly—less than \$0.25 per hour—over the decade.

Overall figures mask larger differences between racial subgroups of gender and education. For male Black youth, unemployment rose more quickly and declined less steadily than for White men. Since female White youth showed a rise in unemployment at the decade's end, Black females showed a greater convergence with White females than did the male subgroups. Racial wage gaps did not change appreciably for men, but Black women drew equal with White women after a decline in pay earlier in the decade.

Education also made for different impacts by race, as the wages of White and Black dropouts were similar, but Black youth without diplomas were

far more likely to lack jobs. Black dropout unemployment peaked in 1994 at more than double the White rate. While the rate declined by 1999, 27% of Black dropouts remained jobless. Still, over the decade, Black unemployment fell 5.5% while White joblessness fell only 1%. A similar unemployment pattern appeared for young Black high-school graduates. Though these graduates saw less unemployment, they did not show the same gains over the decade as Black dropouts.

Wage differentials, meanwhile, grew to about 11% between White and Black high-school graduates, as wages for Whites grew while those for Blacks remained flat. Young Black college graduates made the greatest gains in the decade, with unemployment differentials between the races falling from 7.5% to 2.5%. Since wages of Blacks with college degrees rose by 58% and their White counterparts' 23%, at the decade's end, the real wages of Blacks were 19.5% higher than Whites'.

A worrisome trend tempered this encouraging change, however, as all young workers, especially Blacks, shifted to lower educational levels over the decade. Although a statistical adjustment by the CPS played a role in this change, the percentage of Blacks with college degrees rose only slightly, while the percentage of dropouts rose strikingly. Since dropouts show greater unemployment and lower wages, this shift explains why Blacks as a whole did not benefit significantly during the 1990s. Finally, while racial differentials give little support to the common explanations for economic variations, they do show that good economic times decrease economic inequality between races, and the converse is also true.

Gender and the Youth Labor Market

In the 1970s and 1980s, the wage gap between young males and females gradually closed, as women enjoyed pay growth in the service sector and male wages were eroded by the

(**Youth Labor**, continued on p. 35)

Next-Step Recommendations

The participants forged recommendations for action at three levels of governance: local, state, and federal. They also offered general recommendations.

Local Recommendations

- Promote STW leadership at the district and school levels.
- Continue and develop existing career-awareness programs.
- Implement new career-development continuum/curriculum at the district and school levels.
- Improve inservice training for high-school counselors about STW programs and vocational choice in today's economy.
- Include STW in the professional development programs of both districts and schools.
- Institute financial support for stipends, summer internships, and substitute pay.
- Include STW in other efforts towards educational reform, such as Comprehensive School Reform Demonstration programs.
- Find employer champions, and increase employer involvement.
- Network with business communities.
- Develop leveraged relationships with business partners.
- Support teacher-business exchanges and internships.
- Share community resources for STW, including volunteer mentors and parents.
- Integrate STW partnerships with other groups, such as Workforce Investment Act coalitions, or at least foster communication between them.
- Foster partnerships with postsecondary institutions, especially articulations between high schools and community colleges.
- Evaluate schools on the success of graduates in the workplace and postsecondary institutions.

State Recommendations

- Provide STW leadership in the state, and establish ongoing STW funding.
- Link STW with other educational, labor, and economic efforts in the state.
- Review and realign state education regulations to include career education through work-based learning experiences.
- Incorporate aspects of STW certification requirements for certification of teachers and other educators.
- Include STW outcomes in state education standards through establishing interdisciplinary, contextual, and structured work-based learning.
- Support educational standards by establishing STW models for teaching to standards and for professional development.
- Encourage sharing of best practices and lessons learned with other states.
- Follow up on STW programs with longitudinal studies of education and workplace outcomes (including degrees, income, and defined career path) of state high-school graduates after five or more years, and publish the results.

Federal Recommendations

- Define leadership clearly to give the movement identity and to articulate a clear vision and framework for implementation.
- Work with other key industries as a major employer to develop, evaluate, and revise usable skill standards, beginning with pilot-industry standards to guide further STW development after STWOA sunset.
- Connect national standards to internships and academic credit, with possible links to community colleges' tech-prep programs.

- Support best practices by funding research that helps students reach state standards, encouraging conferences and other means of discussion, and documenting and distributing data on best practices like career academies.
- Broaden Workforce Investment Act student-eligibility guidelines to permit greater STW participation.
- Establish a national data clearinghouse to gather data about successful STW models.
- Operate a strong research and evaluation component, with focuses on program improvement and redesign of skill standards.
- Collect and quickly distribute STW research reports in the National STW Office.

General Recommendations

- Develop funding sources creatively through marketing and resource mapping.
- Convince businesses and community leaders that STW values and goals accord with theirs.
- Link schools and workplaces more closely by fostering more intensive, industry-driven initiatives tied to broader economic development.
- Promote STW to companies as potential sources of free labor, good publicity, and efficient recruiting.
- Promote STW to students and parents as providing a variety of postsecondary education and work options to choose from.
- Include STW training in all preservice teacher-education curricula.
- Encourage nontraditional learning methods in STW programs to support lifelong learning.
- Implement comprehensive rather than piecemeal plans at all levels.



(Youth Labor, continued from p. 33)

decline of union-supported manufacturing jobs. Unlike in earlier decades, young women did not see significant relative pay gains in the 1990s. Their real wages stayed at 8 to 12% below men's. This pattern remained when the genders were analyzed by race. Young White women lagged behind White men in wages throughout the decade, and Black women's wages fell below men's in all but two years.

Pay differentials analyzed by educational level showed similar patterns: Women were paid less at all levels, with little convergence or divergence, except in 1999, when the genders' wages for college graduates and high-school dropouts converged, perhaps anomalously. The wage gap was smaller for college graduates and less stable for dropouts.

Paradoxically, young women experienced lower unemployment for most of the decade, despite low wages, their joblessness equaling that of men only in 1999. This difference and the decade-end convergence were similar between genders for both Whites and Blacks, though the pattern was less steady for Blacks.

Conclusion

This analysis demonstrates that the youth labor market in the 1990s showed neither the major convergences nor the divergences expected on the basis of the key explanations for shifts in equality during the two preceding decades. Further study is needed to determine the significance of and contributing factors to such economic differentials, both in the youth labor market and in the wider economy.



(Minority Youth, continued from p. 17)

participation of minority youth exceeds that of Whites. But although Black students have the highest STW participation rate, Hispanics have the lowest. The influence of immigrant

status on Hispanic participation merits further study. STW programs motivate greater math and science study for minority youth and decrease dropout rates for all students. Although they also stimulate greater labor-market participation, no evidence was found that, among STW participants, there is a conflict between school retention and increased hours worked. STW participants worked longer hours, but they were also more motivated to stay in school.

In the past, vocational education programs were criticized for tracking minority youth out of college-bound careers and moving them instead towards relatively unskilled, low-wage occupations. Analysis of the NLSY97 has found, however, that STW programs are not subject to these criticisms.



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