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ABSTRACT

The importance of a skilled and highly educated workforce to economic well-being is widely recognized, and the relationship between skills and income is becoming stronger over time. Largely as a result of growing demand for skilled workers, state-level training programs are becoming increasingly important as complements to federal programs. Although the demand for workers with a bachelor's degree or more is growing rapidly, many future workers will not attend college and will require other types of training. Cost-sharing for worker training and improved communication between businesses and students will help facilitate the transition from school to work. The needs of older workers are also important, as the relative size of the workforce aged 45-64 will grow. Finally, small and rural firms may need some special assistance in modernizing because the difficulty of finding highly trained workers may preclude investment in advanced technology. (Contains 6 tables and 65 footnotes.) (Author/TD)

Workforce Training Issues

The importance of a skilled and highly educated workforce to economic well-being is widely recognized, and the relationship between skills and income is becoming stronger over time. Largely as a result of growing demand for skilled workers, state-level training programs are becoming increasingly important as complements to federal programs. Although the demand for workers with a bachelor's degree or more is growing rapidly, many future workers will not attend college and will require other types of training. Cost-sharing for worker training and improved communication between businesses and students will help facilitate the transition from school to work. The needs of older workers are also important, as the relative size of the workforce aged 45-64 will grow. Finally, small and rural firms may need some special assistance in modernizing, because the difficulty of finding highly trained workers may preclude investment in advanced technology.

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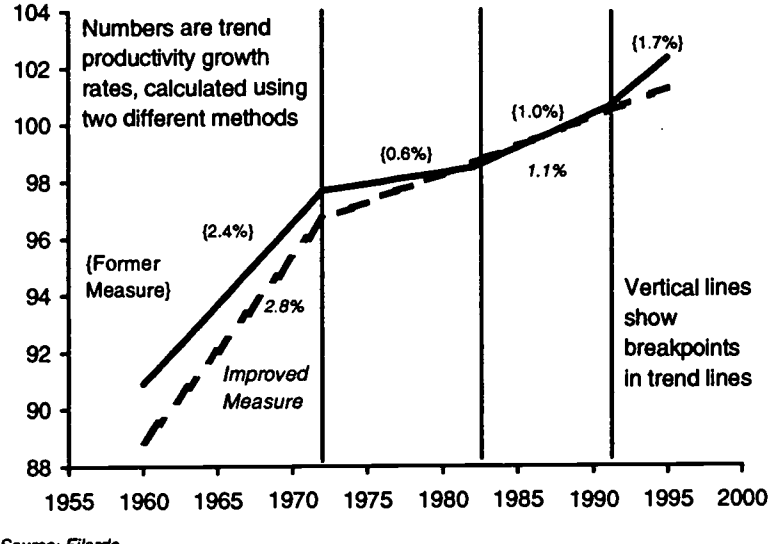
The nation's concern over workforce training is succinctly summarized by the title of a 1990 report from the National Center on Education and the Economy, *America's Choice: High Skills or Low Wages!* The importance of a skilled and highly educated workforce to economic well-being is widely recognized, and the relationship between skills and income is becoming stronger over time as firms shift from Taylorist modes of production to high-performance workplaces.[1]

FIGURE 12.1
Changes in Worker Productivity By Two Measures, 1960-1995



Source: Filardo

Growth in labor productivity, defined as an increase in output per worker, is a key measure of economic well-being, as it in principle leads to more rapid real income growth and higher standards of living in the long-term. However, considerable controversy surrounds the questions of how to *measure* productivity, and whether more widespread use of computers since the early 1990s has raised worker productivity. Conventional calculations suggest worker productivity increased more rap-

[1] DeYoung offers the opposite interpretation: "There is the argument that our state-wide economic woes are primarily due to poor education. As an educator, I would argue the reverse: Kentucky schools are comparatively poor because we have historically not had the sort of industry and leadership to provide good schools . . . I believe that better jobs will bring about better schools." See DeYoung, A. (1994, Spring). Whose KERA is it anyway? *Across the ridge*. Lexington, KY: University of Kentucky Appalachian Center. p. 4. For a related discussion about the interdependence between investment in education and economic growth, see Goetz, S.J. (1993, December). Human capital and rural labor issues. *American Journal of Agricultural Economics, 75,* 1164-1168.

idly after 1990, by 1.7 annually, following two decades of lackluster growth (Figure 12.1). However, an improved method of calculating the index, which will be used in future official calculations by the Bureau of Economic Analysis, reveals a different picture.[2] This improved measure, which takes into account annual output price changes, reveals that average productivity has grown by only 1.1 annually since 1973, suggesting effects of computers on *average* (economy-wide) labor productivity growth have been limited. At the same time, earnings of individuals with higher skills and advanced training have been increasing relative to the earnings of individuals with fewer skills and less training. Thus, the premium paid to workers with more training has been rising over time.

State-Level Responses

Not surprisingly, while the availability of low cost labor was the primary locational criterion for many firms in 1980, according to one survey, that criterion had fallen to fifth place in the early 1990s. It was replaced by the availability of a well qualified and highly productive workforce as the top criterion.[3] Largely as a result of growing demand for skilled workers, combined with declining federal involvement, state-level training programs are becoming increasingly important as complements to federal programs such as JTPA or JOBS.[4]

State-level training programs can provide custom-tailored and flexible training alternatives for local economic development. A 1990 survey by the National Center for Research in Vocational Education found that 47 states had at least one worker training program created and funded by state government. Some programs had been created as recently as the late 1980s. Others, particularly in the South, had begun as early as the 1960s, although many were established in the 1980s.[5]

State training and technical assistance programs are losing their traditional roles of serving primarily for industrial recruitment purposes. Instead, they are also used to retain and expand existing businesses, by allowing local firms to become more competitive.[6] Training programs vary as to which firms are eligible, how much is spent and from each source, and how, by whom and for how long the training is provided and the services offered. Southern states generally provide direct training to firms, rather than compensate firms that provide their own training.[7]

Under "third wave" economic development principles, firms are increasingly asked to share the cost of job training (as well as other state-provided services) as evidence that the service is needed.[8] Referring to potential new firms as "customers" of state government services, Mattoon writes, "[f]undamental to third wave principles is to make certain that customer demand drives program design and objectives."[9] The requirement that firms share in the cost of providing training ensures that programs are discontinued once they are no longer needed. At the same

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[2] Filardo, A.J. (1995, Fourth Quarter). Has the productivity trend steepened in the 1990s? *Economic Review (from the Federal Reserve Bank of Kansas City), 80,* 41-59.

[3] Lyne, J., Venable, T. (1992, October). IDRC's Palm Desert World Congress: Work-force focus draws record-setting attendance. *Site Selection,* 74-80.

[4] JTPA is the Job Training Partnership Act; JOBS is the Job Opportunities and Basic Skills training program. According to LaLonde, 900,000 economically disadvantaged individuals receive services worth $2.6 billion under the JTPA, while 200,000 dislocated workers receive $275 million (152). The JOBS program annually helps 100,000 individuals in job searches and encourages vocational or remedial training, with annual spending of about $16,000 per participant or total spending of $1.7 billion (*op. cit.,* 151).

[5] McDonnell, L.M., Zellman, G.L. (1993). *Education and training for work in the fifty states: A compendium of state policies* (N-3560-NCRVE/UCB). Berkeley, CA: University of California at Berkeley, National Center for Research in Vocational Education.

[6] Otto, D., Morse, G. & Hagey, E. (1990). State educational/technical assistance programs. In B.W. Morse (Ed.), *The retention and expansion of existing businesses* (Chapter 3). Ames, IO: Iowa State University Press.

[7] McDonnell and Zellman. *Education and training for work in the fifty states: A compendium of state policies.*

[8] The Corporation for Enterprise Development describes the first wave as industrial recruitment, prevalent in the 1950s through 1970s, and the second wave as focusing on home-grown, grassroots economic development. In the third wave, emphasis is placed on the state and local organizations and agencies which carry out economic activity (see also Mattoon 12).

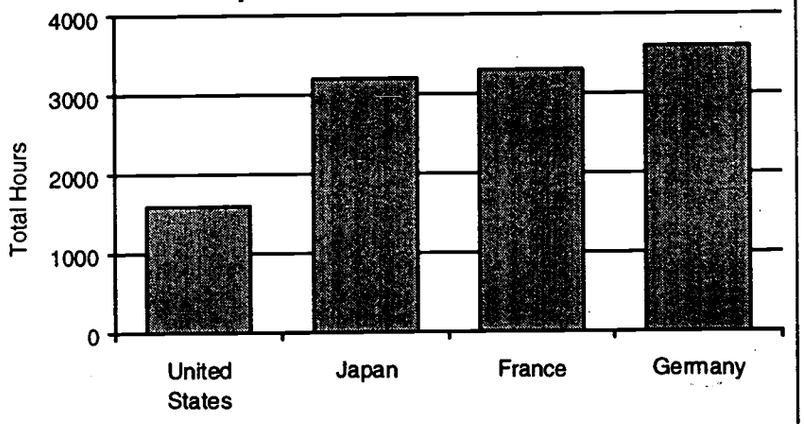
[9] Mattoon, R.H. (1993, May/June). Economic development policy in the 1990s—Are state economic development agencies ready? *Economic Perspectives (from the Federal Reserve Bank of Chicago),* 11-23.

time, Bartik no longer lists industrial training programs under his "new wave" economic development policies, replacing them instead with *entrepreneurial* training programs.[10]

Workforce Preparation

The School-to-Work Transition. The American primary and secondary educational system is coming under increasing criticism for inadequately preparing students for employment. Critics argue that the system holds constant time spent in school by each pupil (12 years), instead of assuring that all pupils meet the same external standards of accomplishment.[11] International comparisons suggest that, for each hour spent by U.S. high school students on core academic subjects, Japanese, French and German students spend more than two hours (Figure 12.2).[12,13]

FIGURE 12.2
Estimated Number of Hours High School Students Spend on Core Academic Subjects



Source: Connor

Also germane to this issue is the fact that 20.4 percent of U.S. children were living in poverty in the mid-1980s, compared with only 4.6 percent in France and 2.8 percent in Germany.[14] Goetz and Debertin found a strong negative correlation between poverty rates and high school test scores in Kentucky: Districts with high poverty rates continue to have lower test scores than districts with low poverty rates, despite significant increases in funding to districts with low incomes and property wealth under KERA.[15]

At the risk of perhaps oversimplifying a complex problem, Bishop provides the following explanations for a lack of learning in schools:

- Easy and entertaining courses drive out rigorous courses
- Peer group norms oppose academic learning
- Teachers become judges instead of mentors
- Standards changes are invisible to colleges and employers
- No labor market reward for high school achievement[16]

[10] Bartik, T. (1991). *Who benefits from state and local economic development policies?* Kalamazoo, MI: W.E. Uphohn Institute for Employment Research.
[11] Tucker, M.S. (1996). Skills standards, qualification systems, and the American workforce. In L.B. Resnick and J.G. Witt (Eds.), *Linking school and work: Roles for standards and assessment* (pp. 23-51). San Francisco, CA: Jossey-Bass Publishers.
[12] National Commission of Time and Learning, as cited by Connor, E. (1995, October). Global competition: Will our human resources measure up? *HR Focus, 72,* 22-23.
[13] Bracey cautions that international comparisons of student performance often portray U.S. schools in an unduly negative manner.
[14] Economic Policy Institute, as cited by Connor. Global competition: Will our human resources measure up?
[15] Goetz, S.J., Debertin, D.L. (1996). Local economic conditions and KERA. *1996 Kentucky Annual Economic Report.* Lexington, KY: University of Kentucky, Center for Business and Economic Research.
[16] Bishop, J.H. (1996). Signaling the competencies of high school students to employers. In L.B. Resnick and J.G. Witt (Eds.), *Linking school and work: Roles for standards and assessment* (Chapter 4). San Francisco, CA: Jossey-Bass Publishers. pp. 82-90.

The latter point also includes the fact that no information is provided to potential employers about students' work habits, rates of absenteeism or problems with the legal system.

Consequently, numerous observers argue that while public high schools more or less adequately prepare the 25 percent or so of students who eventually graduate from college, the 50 percent who do not enter selective postsecondary institutions have little incentive to perform well in school, and are not served well by the present educational system.[17,18] These observers also maintain that the high school diploma provides no information to potential employers other than the fact that the holder had the perseverance to attend 12 years of public school.[19,20] Bishop relates the experience of Nationwide Insurance in 1982, when it requested transcripts from high schools in Columbus, Ohio, to illustrate the limited value of high school experience in sorting students.[21] Only 93 transcripts were received in response to over 1,200 requests, even though students had permitted schools to mail the transcripts and federal legislation *requires* schools to comply with requests in such cases.

This example of poor collaboration between business and high schools stands in sharp contrast to Japanese practices. In Japan, larger firms work closely with local schools to identify promising graduates and these firms interact with schools in much the same way as with other input suppliers, continuously seeking to improve the quality of the inputs or resources employed. In the United States, many of the high school graduates or dropouts seeking to directly enter the labor force flounder for up to 10 years in low skill, minimum wage jobs to gain the experience and work habits demanded by employers willing and able to pay higher wages for longer term, "adult jobs."[22]

The system of school-to-work transition for adolescents who are not college-bound is considerably less formalized and effective in the United States than in Europe and Japan, despite a long history of federal legislation designed to improve the workforce readiness of adolescents and the articulation of labor supply and demand.[23] The southern states of Florida, Georgia, Mississippi, South Carolina, Tennessee and Virginia recently used the Jobs for America's Graduates program to raise high school completion rates and improve the employment prospects of disadvantaged youth.[24] However, many federal programs, particularly those targeted at the disadvantaged, are criticized because they "do not integrate their participants into the economic mainstream."[25,26] Furthermore, the programs are sometimes viewed as welfare projects for the poor rather than genuine job training opportunities.[27]

The recently passed School-to-Work Opportunities Act "provides an incentive for states and localities to establish better relationships between education and business as well as within the educational system."[28] This legislation attempts to solve training problems facing young workers while they are still teenagers, rather than redressing problems only after the workers have drifted

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[17] Smith, H. (1996, April). Is America shorting its students? *Vocational Education Journal, 71,* 28-31.

[18] Glasmeier, A.K., Conroy, M.E. (1993). *Global squeeze on rural America: Opportunities, Threats, and Challenges from NAFTA, GATT, and Processes of Globalization.* Pennsylvania State University, Institute for Policy Research and Evaluation.

[19] Baily, M.N., Burtless, G., Litan, R.E. (1993). Growth with equity: Economic policymaking for the next century. Washington, D.C.: Brookings Institution.

[20] Wirth, A.G. (1992). *Education and work for the year 2000: Choices we face.* San Francisco, CA: Jossey-Bass Publishers.

[21] Bishop. Signaling the competencies of high school students to employers.

[22] Osterman, P. (1994, Autumn). The great American job hunt: Getting started. *Wilson Quarterly,* 46-55.

[23] Barnow, B.S. (1993, Summer). Thirty years of changing federal, state, and local relationships in employment and training programs. *Publius: The Journal of Federalism, 23,* 75-94.

[24] Southern Growth Policies Board. (1993). Measure by measure the South will lead the nation (Final report of the 1992 Commission on the Future of the South). Research Triangle Park, NC: Author.

[25] LaLonde, R.J. (1995, Spring). The promise of public sector-sponsored training programs. *Journal of Economic Perspectives, 9,* 149-168. p. 165.

[26] See also Doeringer, P.B. (1994). Can the U.S. system of workplace training survive global competition? In S. Asefa and W.C. Huang (Eds.), *Human capital and economic development* (pp. 91-107). Kalamazoo, MI: Upjohn Institute for Employment Research.

[27] For example, Buechtemann, C.F., Schupp, J., Soloff, D. (1993). Roads to work: School-to-work transition patterns in Germany and the United States. *Industrial Relations Journal, 24,* 97-111.

[28] Bragg, D.D., Hamm, R.E. (1995, August/September). The opportunities for school-to-work: A national study of work-based learning in U.S. community colleges. *Community College Journal, 65,* 39-44. p. 40.

between minimum wage jobs. Even so, some groups in the U.S. believe that a formalized school-to-work transition system is incompatible with a free enterprise economy and that federal legislation such as the CAREERS Act leads to a "government-controlled and managed national system for human resources development."[29] Also, Hollenbeck writes that "[m]ost economists who have reviewed these [school-to-work] programs [to facilitate youth employment and learning] sense that the benefits in the form of student productivity and potential reduced hiring costs do not offset the program costs,"[30] suggesting there are no easy solutions to the problem of facilitating the metamorphosis of young adults into productive employees.

At the same time, growing emphasis on worker skills and high performance in the workplace is increasing pressure on schools to supply graduates who have mastered basic academic skills similar to those mastered by graduates in other industrialized countries.[31] Tucker envisions the creation of a three-tiered skills standard system, ranging from standards for highly specific jobs (tier III) to standards for "groups or clusters of occupations requiring broadly similar skills" in tier II, and tier I standards "for what everyone in the society ought to know and be able to do to be successful at work, as a citizen, and as a family member." The latter would include a "deep understanding of the core subjects in the curriculum...[and]...the generic skills needed in high-performance work environments."[32]

Private Sector Training Efforts. U.S. firms spend notoriously little on advanced worker training relative to other industrialized countries.[33,34,35] One reason is the potential for "pirating" of trained workers by other firms. Large German and other European firms, in contrast, allocate considerable resources to apprenticeships, recognizing that society as a whole may be better off as a result, even if the firm providing the training is unable to retain the trained worker.[36] European governments are also experimenting with other schemes to reduce the incidence of pirating. For example, Gitter describes a levy-grant system of corporate taxes designed to permit public funding of worker training.[37]

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[29] Ivins, M. (1996, April 9). Conservative critics derailing practical work-training reform. *Lexington Herald-Leader*, p. A11.
[30] Hollenbeck, K. (1996, Spring). School-to-work programs to facilitate youth employment and learning. Employment Research. Kalamazoo, MI: Uphohn Institute for Employment Research. p. 3.
[31] For example, Toch, T. (1996, April 1). The case for tough standards. *U.S. News & World Report*, 52-56.
[32] Tucker, M.S. Skills standards, qualification systems, and the American workforce. pp. 31-32.
[33] Marshall, R., Tucker, M. (1992, October). Building a smarter work force. *Technology Review*, 52-60.
[34] Bartel, A.P. (1994). Workplace training in the United States: Is it underproduced? In S. Asefa and W.C. Huang (Eds.), *Human capital and economic development* (pp. 109-125). Kalamazoo, MI: Upjohn Institute for Employment Research.
[35] Eisen, P. (1993, October). A new game plan for American workers. *Vocational Education Journal, 68,* 18 ff.
[36] The German apprenticeship system is not without problems. Presently, fewer and fewer adolescents are pursuing that particular training path, electing instead to enroll in universities and colleges. In addition, the system is expensive, contributing to the high cost of labor in that country. For related discussions see McKenny, M. (1996, February 29). German system of apprentices is costly, creates a work force caste. *Lexington Herald-Leader*. p. A13; and Bailey, T. (1991, March). Jobs of the future and the education they will require: Evidence from occupational forecasts. *Educational Researcher, 20,* 11-20; and Hamilton, S.F. (1993, April). Prospects for an American-style youth apprenticeship system. *Educational Researcher, 22,* 11-16. Cantor, J.A. (1995). Apprenticeships link community-technical colleges and business and industry for workforce training. *Community college Journal of Research and Practice, 19,* 47-71. provides a more favorable assessment of apprenticeships.
[37] Gitter, R.J. (1992, April). Job training in Europe: Lessons from abroad. *Monthly Labor Review, 115,* 25-29.

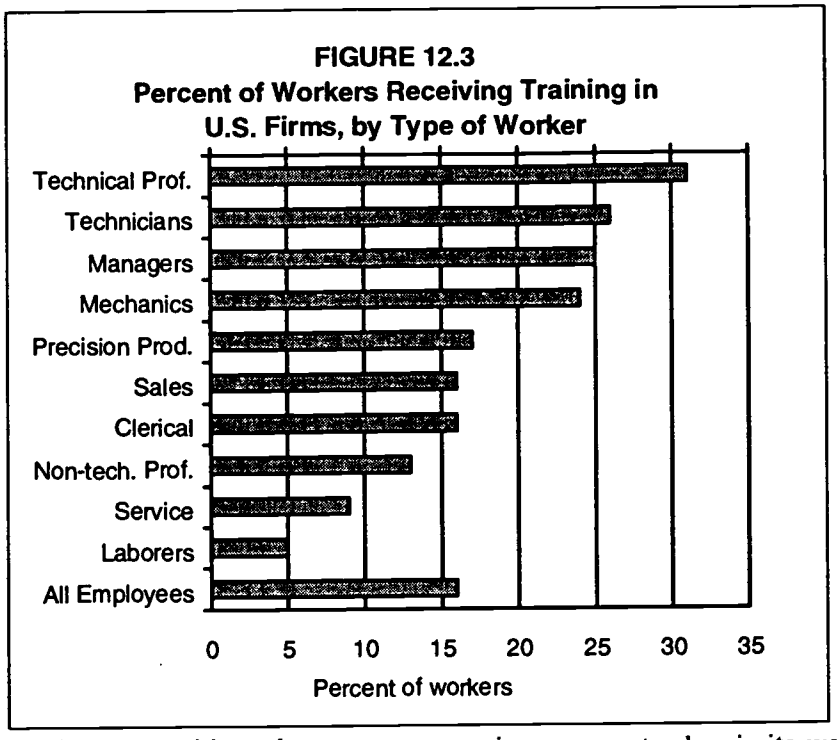


FIGURE 12.3
Percent of Workers Receiving Training in U.S. Firms, by Type of Worker

A related peculiarity is the fact that when U.S. companies do train employees, they focus more on workers who have already acquired relatively more skills and education (Figure 12.3).[38] A vice president for the American Society for Training and Development expresses concern about the short-sighted view of training as a cost rather than an investment by U.S. firms and the resulting lack of training: "Because new technology and new products can be easily copied within three to six months . . . the only ongoing competitive edge any company in any country has is its workforce."[39] Skills of current and potential employees most in need of enhancement according to one survey include written communication (65 of 455 companies responding); interpersonal communications (62); customer service (59); basic computer (49); relevant technical (41); organizational (35) and cross-cultural (28).[40]

Historically, apprenticeship training has not been important in preparing American workers for employment. The rate of apprentices per 1,000 workers in the labor force has decreased to under 2.5 in 1992 since 1949, when the rate peaked at 3.8.[41] The apprenticeship system has also historically not attracted large numbers of minorities and women trainees, who are forecast to constitute a large share of new entrants into the labor force by the year 2000.[42] Kentucky ranked 43rd out of 50 states in 1991 in apprenticeships per worker and experienced a decline of almost 5 in the number of positions between 1987 and 1991. Fewer than 2 of all high school graduates now receive apprenticeship training; moreover, they represent only 0.2 of the U.S. workforce.[43,44] McDonalds Corp., which employs more than one in ten teenagers nationwide, recently initiated an apprenticeship program, "not to consign kids to fast-food or other low level careers but to make the workplaces they're already in as learning-oriented as possible. Students may choose to aim for management careers in food services or they may use the skills they've learned as a stepping stone to other careers."[45]

Work-based learning (WBL) programs are relatively new strategies designed to improve school-to-work transitions. They can be defined as:

[38] Based on American Society for Training and Development data, as cited by Connor. Global competition: Will our human resources measure up?
[39] Quoted in Connor. Global competition: Will our human resources measure up?
[40] Olsten Forum on Human Resource Trends, as cited by New workforce requires new priorities. (1992, January). *HR Focus, 69,* 13.
[41] Bureau of Apprenticeship Training. (n.d.). *National apprentice and program data.* Mimeograph.
[42] Johnston, W.B., Packer, A.E. (1987, June). *Workforce 2000: Work and workers for the twenty-first century.* Indianapolis, IN: Hudson Institute.
[43] Baily et al. Growth with equity: Economic policymaking for the next century.
[44] Buechtemann et al. Roads to work: School-to-work transition patterns in Germany and the United States.
[45] Stone, J.R. (1996, February). When opportunity flees. *Vocational Education Journal, 71,* 26 ff. p. 58.

. . . instructional programs that deliberately use the workplace as a site for student learning. Work-based learning programs are formal, structured, and strategically organized by instructional staff, employers, and sometimes other groups to link learning in the workplace to students' college-based learning experiences. Work-based learning programs have formal instructional plans that directly relate students' work-based learning activities to their career goals . . . Instructional programs that involve youth apprenticeships, clinical experiences, school-based enterprises, and formal registered apprenticeships are examples of work-based learning programs.[46]

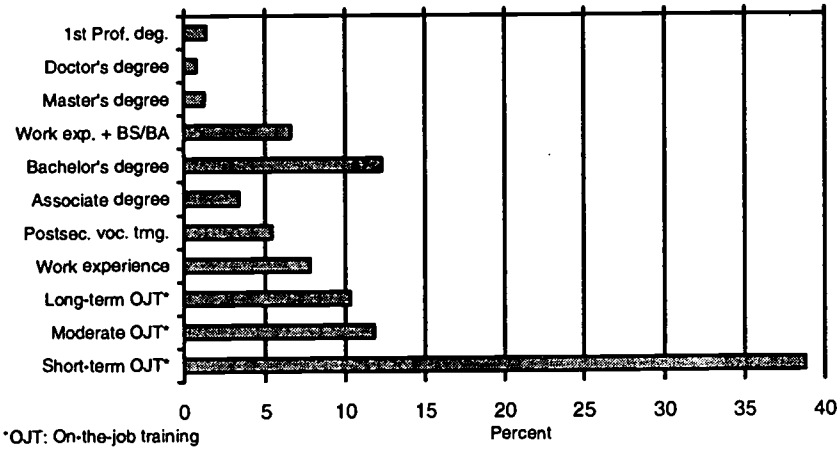
Alternatively, Hoerner defines WBL programs as "[t]he knowledge/learning imparted to every student from the beginning of schooling that maintains a theme or focus that people work in order to live and that there is a positive 'connectedness' between the schooling process and productive lives."[47] Already, numerous examples of formal and informal collaborative arrangements, designed to improve the transition of young workers into the workplace, exist between private businesses and public schools including the Louisville Education and Employment Partnership.[48] But, the number of students involved remains small,[49] and many programs tend to be superficial.[50]

Conclusion. The general conclusion from this discussion is that the free market system has difficulty articulating the supply of and demand for the specific types of skills needed by the workers who do not eventually graduate from college. Lack of information, which in turn leads to high transaction costs between buyers and sellers (in this case of labor services), is a classic reason why markets sometimes fail to allocate resources effectively. This appears to be the case here too: employers are unable to size up high school graduates because of the unreliable information conveyed by a diploma, and high school graduates have limited knowledge of employers' expectations in terms of the skills they need to possess. The problem also has elements of a Catch-22 situation: firms fail to adopt new, productivity-enhancing technologies because skilled workers are not available, and workers do not invest in the skills because firms fail to adopt the technologies. Thus, it is common for newspapers to write about employers unable to find skilled and qualified workers in the local labor market, even in the presence of high local unemployment rates.

Future Training Needs

Krugman cautions that "technological advance . . . does not always increase the need for skilled labor"[51] and other writers predict that—at least nationwide—the supply of college graduates may outstrip the demand for such workers, particularly in

FIGURE 12.4
Projected Employment by Education & Training, Year 2005



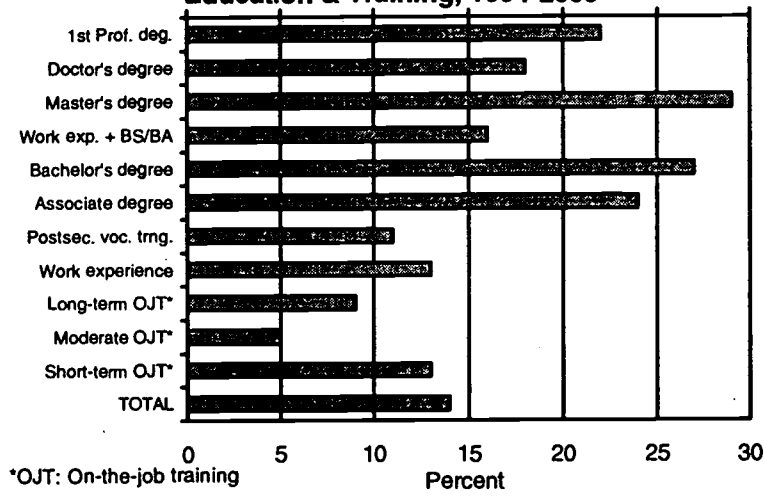
*OJT: On-the-job training

Source: Bureau of Labor Statistics

[46] Bragg and Hamm. The opportunities for school-to-work: A national study of work-based learning in U.S. community colleges. p. 41.
[47] Hoerner, J.L. (1995, November/December). Education for a new ERA. *Vocational Education Journal, 70,* 22-24. p. 23.
[48] Quid pro quo. (1994, May). *Vocational Education Journal, 69,* 22 ff. p. 23.
[49] Vo, C-D.H. (1996, February). Selling self-interest. *Vocational Education Journal, 71,* 22-25.
[50] Clark, D.M. (1996, January). Industry-education collaboration that works. *Education Digest, 61,* 60-63.
[51] Krugman, P. (1994, Autumn). Technology's revenge. *Wilson Quarterly,* 56-64. p. 63.

certain areas such as advanced technical training.[52,53] This leads to the question: what are future training needs for the workforce? One answer to this question is provided by the Bureau of Labor Statistics (BLS), which attempts to forecast growth of the workforce by education and training category (Figure 12.4).[54] According to these estimates, 60.9 percent out of the 145 million estimated total jobs in the year 2005 will require some form of on-the-job training, down from 62.7 percent of all jobs in 1994. Nearly two out of five jobs in the year 2005 will require only short-term on-the-job training. The relative demand for employees with postsecondary vocational training is forecast to decline by 0.2 percentage points (from 5.6 to 5.4), while the demand for employees having only work experience is expected to drop by 0.1 percentage points (from 7.9 to 7.8).

FIGURE 12.5
Projected Employment Growth by Education & Training, 1994-2005



*OJT: On-the-job training

Source: Bureau of Labor Statistics

Another way of analyzing these numbers is to calculate for each educational attainment category the expected relative increase in employment numbers due to job growth (Figure 12.5). This analysis shows that the demand for individuals with Master's degrees (29) is expected to grow most rapidly in relative terms, followed by Bachelor's (27) and Associate's (24) degree holders, respectively. The smallest *relative* increases in demand are forecast to occur for on-the-job training (long- and moderate-term) and postsecondary vocational training. Even so, because the number of positions requiring short-term on-the-job training is so large (Figure 12.4), the absolute increase in this category will dominate employment growth in the other educational categories. The second largest absolute increase in demand (after short-term on-the-job training) is forecast to occur for workers with Bachelor's degrees. Their share of all employees is estimated to increase from 11.0 to 12.3 (or 3.8 million individuals).

Implications and Issues for Kentucky

The Kentucky Educational Reform Act of 1990 (KERA) provides a potential basis for developing a first-class, internationally competitive workforce in the state; the reform goals are in many ways consistent with high-performance (HP) workplace principles.[55] Spending per pupil and teacher salaries in Kentucky are converging on national averages under KERA (Figure 12.6),

[52] Bailey, T. (1991, March). Jobs of the future and the education they will require: Evidence from occupational forecasts. *Educational Researcher, 20,* 11-20.

[53] See also Kuttner, R. (1996, June 17). Is worker training really the answer? *Business Week,* 26.

[54] See Bailey (1991) for a discussion of the limitations of such forecasts.

[55] As DeYoung suggests, however, some groups (social meliorists) would argue that elements of KERA designed to prepare students to be socially and economically productive members of the workforce "primarily enhance the mindless economic development trajectories of a culture losing touch with human and community needs." See DeYoung. Whose KERA is it anyway? p. 4.

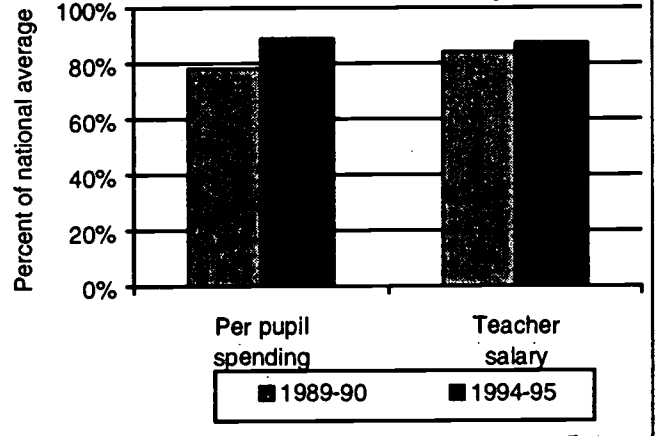
although they remain below those averages.[56] Given the fact that per capita income in the state in 1994 was only 81.7 percent of the national average, Kentucky is spending proportionally more per pupil and in terms of teacher salary than would be predicted on the basis of income alone. Yet, the only way in which the state can ever hope to raise income levels to or above the national average may be through even greater investments in education. Companies such as Lexmark, Square-D and Toyota Motor Manufacturing are proof that Kentucky firms and workers can switch to modern, post-Taylorist management techniques and be both nationally and internationally competitive.

A number of important activities are underway in the state to improve the transition of high school students into the workforce. Here it is possible only to provide a brief synopsis of some of these efforts. The state's School-to-Work program has the goal of helping "students become well prepared for the workplace by:

- Involving parents in helping children select a career goal
- Blending school based learning with work based learning
- Providing students with the opportunity to select a career major or an occupational cluster
- Bringing schools and businesses together to provide high quality, work based learning experiences
- Emphasizing the practical application of knowledge through integrated school/business educational programs of high quality, work based learning experiences"[57]

As a general principle, the School-to-Work program relies heavily on local partnerships among "employers, labor, schools, parents, community, and government."[58] It is based on contextual or work based learning, it integrates workplace competencies into the school curriculum and attempts to raise academic standards by providing a strong focus on careers. In Kentucky efforts are also devoted to developing "common languages" between educators and businesses, and creating a system of skills standards as well as skill certification. The state is launching initiatives in this regard using a Skills Standards Advisory Board.

FIGURE 12.6
Per Pupil Spending and Teacher Salaries in Kentucky



Source: Data from National Education Association, American Legislative Exchange Council and KY EDC

One-Stop Career Centers are another attempt to improve the functioning of labor markets in Kentucky and elsewhere in the nation, by integrating the large number of training/employment programs available into a single system. These centers act as job- and training-related informa-

[56] It is imprudent to conclude that higher spending on education automatically leads to a more competitive workforce. Indeed, cynics might point out that average SAT scores nationwide fell from just under 960 in 1967 to 900 in 1992 even as real per pupil expenditures more than doubled from $2,500 to $5,500. See Hanushek, E.A. (1993). Can equity be separated from efficiency in school finance debates? In P. Hoffman (Ed.), *Essays on the economics of education* (pp. 35-73). Kalamazoo, MI: Uphohn Institute for Employment Research. p. 39. Furthermore, the U.S. spends more per pupil than any of its industrial competitors at the primary and secondary levels (U.S. Bureau of the Census, Table 1370), and yet apparently fails to provide comparable levels of education.

[57] Kentucky Department of Education. (1996). *School-to-work.* [On-line] Available: www.kde.state.ky.us/tech_ed/stw.html.

[58] Kentucky Department of Education. *School-to-work.*

tion clearinghouses for both employers and workers, with the goal of reducing transaction costs involved in articulating labor supply and demand.

The Kentucky Tech(nology) System consists of schools that provide secondary and postsecondary training in the vocational-technical area. The system makes available customized training for new and existing businesses, and also provides worker assessment services, including "career inventories, interest inventories, psychomotor skills and academic potential as well as prehire assessment."[59] Presently, Tech Prep programs are offered at over 111 sites in the state. These four-year programs lead to diplomas or associate degrees in technical-vocational areas, and represent an alternative to college preparation courses, starting in high school with the 11th grade. The State of Kentucky provides training funds to businesses through the Bluegrass State Skills Corporation, under the auspices of the Cabinet for Economic Development.

At present relatively little is known about the cost-effectiveness of the various training programs operated within the state, and the total number of students or workers affected. For example, data on numbers of students benefiting from School-to-Work programs and various partnerships in different parts of the state (including rural areas) are not readily available. Similarly, information is generally not available on how long workers trained under the Tech Prep program remain in their jobs, what their earnings would be with and without the training, etc. Research is needed to shed light on the returns to these programs, and which aspects of the different training programs work well and could be used in other areas of the state, or in other programs. Furthermore, it would be valuable to compare the cost of a skills standard system with the cost of the worker assessment services provided by the Kentucky Tech System. Also, to determine where tax dollars should be spent so as to maximize returns to taxpayers, it would be important to know the relative costs and benefits of spending more on students now in high school, as opposed to training them later in their lives at public expense within different careers.

In this context, the following trends and issues are likely to be of particular importance to Kentucky over the next decade.

A. To the extent that Kentucky's demographic structure follows that of the U.S. South, the state will experience a small net decline in the population aged 20-45 years between 1993 and 2010, and a sizable increase in "mature workers" who will require additional training to participate effectively in the new economy.[60] This is driven in part by an increased focus on quality standards and skills certificates in the workplace. Training institutions and firms will need to upgrade the skills of existing, "mature" workers and this re-education will likely include expanded training of adults in colleges, universities and technical schools. Another group of workers whose training needs may warrant further attention is that of adolescents who have dropped out of high school and, in some cases, the workforce.

An important unresolved issue in this regard is also, who bears the cost of this training (i.e., the private and/or the public sector), and should the training be in terms of general or firm-specific skills (i.e., in terms of skills that are useful only to the firm) or skills that would be of use to the worker even if the firm later ceases to operate? It appears that public-private partnerships will become increasingly important in the future to ensure that effective training programs are available for workers, and to help facilitate the transition of adolescents into the workforce.

B. Primary, secondary and postsecondary schools increasingly need to lay a foundation for the three L's of education demanded in the new economy, *lifelong learning*, or "learning to earn," in addition to teaching core fundamentals of reading, writing and arithmetic.[61] In addition, greater attention may need to be paid to entrepreneurship training. According to a 1995 Gallup Poll,[62]

[59] Kentucky Cabinet for Economic Development. (1995). *Kentucky: resources for economic development–McCreary County*. Frankfort, KY: Kentucky Cabinet for Economic Development Division of Research. p. 23.

[60] MDC, Inc. (1996). *The state of the South*. Chapel Hill, NC: Author.

[61] See also Tapscott, D. (1995). *The digital economy: Promise and peril in the age of networked intelligence*. New York, NY: McGraw-Hill.

[62] Ashmore, M.C. (1996, April). Starting at the top. *Vocational Education Journal*, 35 ff.

nearly 70 percent of high school graduates nationwide were interested in starting their own businesses but lacked information about the process.

C. Unlike the nation as a whole, Kentucky remains a relatively rural state. More than one half of the state's population lives in rural areas, compared with less than one quarter in the nation as a whole. Recent research suggests that small manufacturers in rural areas have lower adoption rates of new technologies than their urban counterparts, in part because smaller firms have greater difficulty finding skilled workers;[63,64] thus, the Catch-22 problem of investment in advanced training by workers and adoption of modern technology by firms is likely even more pronounced in rural areas. Government decisionmakers in Kentucky should not ignore small rural firms as a dynamic source of economic growth, and should consider devoting additional resources to helping these enterprises modernize (for example, through information networks for entrepreneurs, by fostering ties between firms, universities, community colleges and technical schools, encouraging more apprenticeship and vocational training, etc.). A related challenge is to break the existing connection between low school achievement and high rates of poverty in some rural and urban districts.[65]

Summary and Conclusion

By way of summary, the following concerns are likely to be of particular importance to Kentucky over the next decade:

- A significant increase in the relative size of the workforce aged 45-64 and the attendant training needs of those workers
- The need to improve workforce preparation of adolescents, both in and out of the workforce, recognizing that not all will necessarily work in high-performance jobs
- Developing institutions and arrangements for sharing of training costs by firms to improve on-the-job training and productivity

The problems associated with moving an economy from mass manufacturing to one that relies on highly skilled workers who produce high quality and custom-tailored goods and services should not be underestimated. Furthermore, while social returns to investments in education to society have been universally shown to greatly exceed the costs, the benefits do not accrue immediately and a long-term perspective is essential. In Kentucky the payoffs in terms of higher personal incomes and state tax revenues to investing in the skills of the existing workforce, facilitating the transition of youth into the workforce, and creating a culture of lifelong learning, will likely more than compensate for the costs of these activities.

[63] Wirth. *Education and work for the year 2000: choices we face.*
[64] Rosenfeld, S. (1992). *Smart firms in small towns.* Washington, D.C.: The Aspen Institute State Policy Program.
[65] Goetz and Debertin. Local economic conditions and KERA.

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