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Occupation-Specific Versus General Education and Training

By JOHN BISHOP

ABSTRACT: In this article, John Bishop summarizes research from many sources concerning the current debate over occupation-specific versus general education and training. He argues against a recommendation made by the *Economist* magazine that government scale back its support of school-based occupation-specific training and instead focus on academic education. Research shows, to the contrary, that productivity derives directly from social abilities (such as good work habits and people skills) and cognitive skills that are specific to the job and occupation, not from reading, writing, and mathematics skills. Old skills are becoming obsolete more rapidly, so new skills must be learned more frequently. This implies a greater overall need for occupational training, not a reduced need. The rise in job turnover has made employers more reluctant to hire inexperienced workers and provide them skill training, so the need for school-based vocational training has never been greater. Occupational turnover has been declining, so the payback period of occupational skills has been rising.

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GLOBALIZATION and automation have increased the relative demand for skilled workers. Governments have responded by expanding and improving education and training. But what kind of education or training should get priority—generic academic skills or occupation-specific skills? The *Economist* (Training for Jobs 1994) argues that occupation-specific education should be dropped and generic skills should be taught instead:

> Economists have long argued that the returns on general education are higher than those on specific training, because education is transferable whereas many skills tend to be job-specific. Today this case is becoming more compelling still as jobs become less secure, the service sector expands and the life-cycle of vocational skills diminishes and the market puts an even greater premium on the ability to deal with people and process information. (26)

This policy recommendation, however, is based on three false premises:

1. Academic skills are good substitutes for occupation-specific skills.
2. Accelerating skill obsolescence has reduced the payoff to occupational training.
3. Rising job turnover has reduced payoffs to occupational training by schools.

This article examines what research tells about each of these issues.

EVIDENCE THAT OCCUPATIONAL SKILLS ARE ESSENTIAL

In most jobs, productivity derives directly from social abilities (such as good work habits and people skills) and cognitive skills that are specific to the job, the occupation, and the occupational cluster—not from reading, writing, and mathematics skills. When the small and medium-sized employers who provide most of the new jobs in the American economy are asked which skills they look for when hiring, they cite work habits and occupational skills ahead of reading and mathematics skills. In 1987, the owners of small and medium-sized businesses who were members of the National Federation of Independent Business (NFIB) were asked, "Which abilities influence hiring selections the most?"[1] Forty percent ranked "occupational skills (already has them)" as the first choice, and another 14 percent ranked these skills as number two (Table 1).

By contrast, only 6 percent of these American employers ranked "reading, writing, math and reasoning ability" as their first choice, and another 13 percent ranked these skills as second. Leadership and people skills were also seldom ranked at the top. The trait that most directly rivaled occupational skills was "work habits," which was ranked most important 29 percent of the time and ranked number two 36 percent of the time. Only 3 percent of the employers ranked "work habits" in fifth or sixth place. Clearly, good work habits are an important hiring criterion for just about every job.

There is greater disagreement about the importance of already developed occupational skills. For 20 percent of the jobs offered by these employers, previous occupational

TABLE 1
ABILITIES SOUGHT WHEN HIRING

	Percentage Ranked			Mean Rank by Skill	
	#1	#2	#5 or #6	High	Low
Occupational/job skills (already has them)	40	14	20	2.36	3.01
Ability to learn new occupational and job skills	15	26	13	2.96	2.84
Work habits and attitude (trying hard, enthusiasm, punctuality)	29	36	3	2.30	2.20
People skills (teamwork, appearance, getting along with others)	9	15	33	3.79	3.49
Leadership ability (organize, teach and motivate others/solve problems)	1	2	54	5.16	5.33
Reading, writing, math and reasoning ability	6	13	39	5.65	3.83

SOURCE: Analysis of a 1986 survey of members of the National Federation of Independent Business. See Bishop 1995.

skills ranked fifth or sixth. They tended to be the jobs requiring less skill—service and clerical workers, operatives, and sales clerks. In these lower-wage jobs, work habits were the number-one consideration; "ability to learn new occupational and job skills" ranked number two; and "occupational skills (already developed)" ranked number three. "Reading, writing, math and reasoning" was ranked last for the more highly skilled jobs and second from last in the less skilled jobs (Bishop 1995).

From this data, it can be surmised that American high school graduates who are good at reading and mathematics do not get much better jobs than their less accomplished peers in the years immediately after graduation (Bishop 1992). The best starting jobs tend to go to graduates who took vocational courses and/or worked part-time during the school year (Bishop 1995). However, reading and math skills do pay off eventually. They help graduates get into and complete college, and, at work, they help new hires learn the job and occupational specific skills necessary for high productivity.

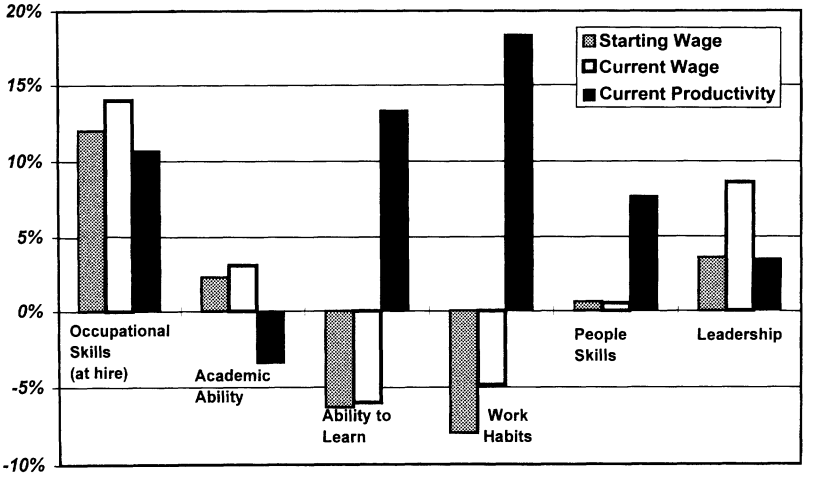
SUCCESS ON THE JOB

Once hired, which abilities predict success on the job? The NFIB survey also provides insight into this question. The responding business owners supplied information on the background and on-the-job success of two employees (A and B) who had recently occupied the same job.[2] After the two employees had been at the firm for a year or more, the employers were asked:

> Which of the two employees (A or B) proved better on each of the following: "occupational and job skills," "ability to learn new occupational and job skills," "work habits and attitudes," "people skills (teamwork, appearance, getting along)," "leadership ability (organize, teach and motivate others)" and as a group "reading, writing, math and reasoning ability"?

They were asked to evaluate whether employee A was "much better" than, "better" than, or "no different" from

FIGURE 1
WAGE AND PRODUCTIVITY EFFECTS OF ABILITIES



SOURCE: Analysis of a 1986 survey of members of the National Federation of Independent Business. See Bishop 1995.

employee B or whether B was "better" or "much better" than A. Since the firms were small, the owners had contact with each worker, and their judgments were probably quite well informed.

In most cases, business owners perceived important differences in ability between their employees. In 78 percent of the cases, the occupational skills of one of the two workers were judged to be "better" or "much better" than the other's. Reading, writing, math, and reasoning skills were judged to be different 58 percent of the time. Generally, those who were strong along one dimension of ability were strong along other dimensions as well.

Which trait contributes most to overall job performance was determined by regressing relative starting wage rate, current (or most recent) wage rate, and global ratings of relative productivity for workers A and B, according to their ranking on each of the six different worker abilities. The analysis controlled for gender, ethnicity, and marital status. For current employees, wage and productivity reports reflected the date of the interview, which was an average of one year after the employee was hired. For separated employees, the productivity report took place "two weeks before leaving the firm" and the wage report took place "at the time of separation." The results for all three labor market outcomes are presented in Figure 1. The bars in Figure 1 represent the percentage differential in wage rates or produc-

tivity that results from one worker being "much better" than another along one of the six ability dimensions, while holding other abilities, tenure, ethnicity, gender, and marital status constant.

Ex-post assessments of relative occupational skill, learning ability, work habits, and people skills all had significant positive relationships with relative global productivity ratings at approximately one year of tenure (represented by the black bar in Figure 1). Employer assessments of a worker's academic skills and leadership ability, by contrast, had no relationship with current overall job performance ratings. Holding demographics and employer evaluations of other traits constant, workers thought to have "much better" occupational skills were judged to be 10.7 percent more productive after about one year on the job.

The impacts of occupational skills on relative wage rates are even more striking. Occupational skills were the only ability that had large positive effects on relative wage rates. Workers thought to be "much better" in occupational skills started with a 12 percent higher wage and were making 14 percent more after a year or so on the job.

Academic skills had no significant effects on wage rates. People skills also had no effects on wage rates. Leadership had modest positive effects on wage rates and initial productivity but not on productivity a year later. The two abilities with the largest impacts on productivity one year later—ex-post assessments of work habits and the ability to learn new occupational and job skills—had significant negative relationships with wage rates (Bishop 1995).

CORRELATIONS BETWEEN JOB KNOWLEDGE AND JOB PERFORMANCE

A third way to assess the importance of occupational skills is to measure them directly and then examine their correlation with ratings of overall job performance. Meta-analyses of the hundreds of empirical validity studies have found that content-valid paper-and-pencil job-knowledge tests are good predictors of job performance. Dunnette's meta-analysis (1972) of 262 studies of occupational competency tests found that their average correlation with supervisory ratings was .51, which is higher than any other predictor, including tests of generic reading and mathematics skills. Vineberg and Joyner's meta-analysis (1982) of studies done in the military came to similar conclusions. Tests assessing job knowledge are also considerably better predictors of ratings of overall job performance than are measures of the personality constructs associated with good work habits (Hough 1988).

When paper-and-pencil tests of occupational knowledge appropriate for the job compete with reading and mathematics tests to predict supervisor ratings of job performance, the job-knowledge tests carry all of the explanatory power, while the reading and mathematics tests carry none. When judged performance on a sample of critical job tasks is the measure of job performance, the beta coefficient on the job-knowledge test is two to four times larger than the beta

coefficient on a basic-skills composite (Hunter 1983).

To summarize, in almost all jobs, productivity derives directly from social abilities (such as good work habits and people skills) that are generic and cognitive skills specific to the job, occupation, or industry—not from reading, writing, and mathematics skills. Reading and math skills contribute to productivity by helping the individual learn the occupation and job-specific skills that are directly productive. Since large improvements in job knowledge are easier to achieve than equivalent (in proportions of a standard deviation) improvements in verbal and mathematical skills, occupation-specific training is highly desirable—if the student is likely to put the knowledge to use by working in the occupation or a closely related one.

SKILL OBSOLESCENCE AND THE DEMAND FOR TRAINING

Skills are becoming obsolescent more rapidly than in the past. But those who argue that this implies a reduced need for occupation-specific skill development have the story exactly backward. Obsolescent occupational skills must be replaced by new occupational skills. If old skills become obsolete more rapidly, then new skills must be learned more frequently. This implies a greater overall need for occupational training, not a reduced need.

Skill obsolescence is greatest in fast-changing fields that are close to the frontier of knowledge, such as the computer industry. It is precisely in these fields that the payoff to skill development is the greatest. Mane's study of data from the National Educational Longitudinal Study of 1988 found that recent high school graduates who had taken computer courses in high school earned significantly more in 1993 than those who had not (Mane 1997). People who use a computer at work are paid 10 percent more per hour than those who do not, even when industry and occupation are held constant (Krueger 1993).

While high rates of obsolescence mean the payoff period is short, they also mean that the supply of workers with the new skills is small, because previous generations of trainees did not learn them. This is a major reason why engineers receive higher starting salaries than violinists. Each violinist competes with a large stock of already trained violinists. Newly minted engineers, by contrast, have skills not taught to earlier generations, so they are competing primarily with others of the same vintage, not also with previous generations of engineering graduates. Graduates of training programs that impart the latest skills gain skills that are in short supply and therefore are well rewarded. In fact, graduates of such training programs may be valued precisely because they bring new ideas to the firm and can teach new skills to coworkers. Thus the labor market responds to high rates of skill obsolescence by paying a higher premium for the new skill.

JOB TURNOVER AND INCENTIVES TO PROVIDE TRAINING

Has the need for expanded, recurrent training been fully met by employers? Probably not. High rates of

job turnover are a major disincentive for employers who are considering training investments. The job turnover of American workers has increased over the past 25 years, making it more costly for firms to provide training. The proportion of the workforce with fewer than 25 months of tenure at their companies rose from 28 percent in 1968 to 40 percent in 1978 and has remained high since. The average tenure of male workers fell 5 percent between 1963 and 1981 (holding age composition constant) and then fell another 8 percent between 1983 and 1987 (Bishop 1995).

The *Economist* cites the high rates of job turnover as justification for scaling back school-based occupational training. Here, again, the argument is exactly backward. The social returns to occupational training are influenced by occupational turnover, not job turnover. Occupational mobility rates in the United States have moved in the opposite direction from job mobility. Occupational mobility fell by 13 to 20 percent between 1978 and 1987 (Markey and Parks 1989), and this drop has raised the social returns on occupational skill development. Since the rise in job turnover rates has reduced employer willingness to finance training, the need for school-based occupational training has increased.

SHOULD SCHOOLS STOP OFFERING TRAINING IN OCCUPATION-SPECIFIC SKILLS?

A good case can be made that workers would be better off if employers, rather than schools, assumed a greater share of the responsibility for providing occupational training. When employers provide training, trainee-time costs tend to be minimal, and productivity increases tend to be large and immediate. There is a high probability that the trainee will use the training in his or her job and be rewarded for doing so. Incentives to keep costs (including trainee-time costs) down, to select effective trainers and training strategies, and to learn the new material are strong and well aligned.

Most of the costs of employer-sponsored training are paid by employers, not by employees in the form of lower wages during training (Bishop 1994). Nevertheless, trainees receive substantial wage increases after such training. This training is a "great deal" for the worker. The sum of the benefits of training accruing to employers, employees, and others in society (for example, the social benefits) are much larger than the social costs (Bishop 1995).

The problem with employer training is that there is too little of it. The major beneficiary of training—the worker—is often poorly informed about costs and benefits and lacks the resources and access to capital markets necessary to pay for training. Employers pay most of the costs of the training provided at workplaces, but many of the benefits accrue to others: the worker and future employers of the worker (Bishop 1994). Because trainees are generally paid while receiving training, and because trainers frequently interact with trainees one on one, hourly costs are very high. High costs also result because most employers are too small to achieve economies of scale and specialization in providing

training. Finally, public subsidies are generally not available when occupational training is provided by an employer.

Since the hourly costs of providing training in occupational skills are very high for employers, employers quite naturally seek to have others—schools or other employers—do it for them. They prefer to hire already trained and experienced workers. When such workers are unavailable, they select relatives and family friends for trainee positions to reduce turnover and fulfill family obligations. This situation, of course, means that young people who are not part of social networks that include small business owners and managers are unable to get their foot in the door. Since costs are high and turnover substantial, most American employers pursue a just-in-time training strategy, where training is only in the skills needed for the current job. Training is undertaken only when it is expected to quickly yield very high returns.

When making training investment decisions, employers are comparing the costs they incur to the increase in productivity (net of resulting wage increases) of the workers expected to remain at the firm. Benefits received by other employers or the worker will have zero weight in their calculation. The result inevitably is underinvestment (from society's point of view) in employer training that develops general skills.

WHAT WOULD HAPPEN IF SCHOOL-BASED TRAINING WAS ELIMINATED?

If schools were to withdraw from the occupational training market, employers would become the sole provider of occupation-specific training. Since separation rates are high for most American companies, employers would not be willing to assume this task without some inducement. Government could offer employers training subsidies, but such a scheme would be difficult to administer and would probably cost more than the current school-based occupational training system.

In the absence of massive subsidies of employer training, shortages of skilled labor would develop, and wage premiums for occupational skills formerly learned in school would rise. Lacking immediately useful skills, school leavers would find it more difficult to find work and would have to accept lower wage rates. Some employers would substitute less skilled workers for the now more expensive skilled workers, and let the quality of the service they provide deteriorate. Others would find ways to substitute machines for people or arrange for workers located in other countries to perform the work (for example, many American companies now have software-writing subsidiaries in Bulgaria, Russia, and India). Eventually, the scarcity of skilled workers would become so severe and the wage differential between unskilled and skilled workers so large that employers would find it profitable to provide occupational skill training. In the new equilibrium, however, the society would have fewer skilled workers, a lower standard of living, and a more unequal distribution of earnings.

The *Economist* made its case for general, rather than occupation-

specific, education on a priori grounds. The a priori argument is unconvincing, however. In societies with high rates of job turnover such as the United States, employers cannot be expected to pick up the entire burden of teaching occupational skills. Schools and colleges need to be a part of the occupational training picture.

But mounting effective occupational training programs is not an easy task. The rapid obsolescence of occupational skills makes it more difficult to keep curricula, equipment, and teaching staff up to date. Graduates of vocational programs are often unable to—or simply choose not to—locate jobs in the occupation for which they prepared. This is apparently the price one pays for allowing students to select the occupation for which they will prepare, rather than having employers select who will receive training, as occurs in apprenticeship systems. Is the price paid too high? How successful are American vocational-technical education programs in preparing young people for skilled work?

HOW EFFECTIVE ARE AMERICAN VOCATIONAL-TECHNICAL SCHOOLS AND COLLEGES?

What has research taught us about the effectiveness of vocational education in the United States? This summary of that research is organized around eight questions.

How large are the economic benefits of postsecondary vocational education? In 1992, 25- to 34-year-old full-time, full-year workers with two-year associate's degrees earned 21-28 percent more than high school graduates. Those with some college but no degree earned 14-15 percent more than high school graduates (U.S. Bureau of the Census 1993, tab. 30). Percentage impacts were generally larger for African Americans and females than for white males. Seventy percent of associate's degrees and 98 percent of other nonbaccalaureate certificates are awarded in vocational lines of study (National Center for Education Statistics 1993, 245). Workers who report that training from a two-year college helped them qualify for their current job earned 13 percent more in 1991 than other workers with the same amount of schooling, tenure, and potential work experience (Bowers and Swaim 1992).

How large are the benefits of government-sponsored vocational training programs targeted on high school dropouts and other economically disadvantaged youths? Solid evidence on the impact of government training programs on dropouts under the age of 22 comes from studies with strong randomized designs. During the 2.5-year follow-up period, young men with arrest records prior to entering training programs under the Job Training Partnership Act (JTPA) earned $6800 less than arrestees who were randomly assigned to not receive JTPA training. Subsidized on-the-job training lowered the earnings of those without an arrest record by $578 for women and $3012 for men. The only positive finding for JTPA youths was a 9 percent increase in

the earnings of women receiving classroom training. The stigmatizing character of the programs may be one of the reasons for their failure. Although JTPA training fails to help young people, adults benefit substantially. For adults, payback periods were generally less than two years. The second-chance government training programs that work best are the ones that focus on teaching occupation-specific skills (integrating any basic skill teaching with occupational training) and that are well connected to the labor market.

Does high school vocational education lower dropout rates? The answer is yes. Kulik's review (1994) of the literature concludes that participating in vocational education lowers dropout rates.

How large are the economic benefits of secondary vocational education? Graduates of vocational training programs in secondary schools are not paid as well as those who have earned postsecondary diplomas and associate's degrees. Nevertheless, they earn substantially more than other high school graduates who do not go to college. Altonji (1988) found that four trade and technical courses substituted for a mix of academic courses raised wage rates by 5-10 percent, depending on specification. Kang and Bishop (1989) found that, in 1981, males who completed four trade and technical courses earned 21-35 percent more one year after graduation than those who took academic courses only. Young women with four credits of business and office courses earned 40 percent extra. However, the benefits of high school vocational education diminish with time (Campbell et al. 1986). The fact that high school vocational education is successful with an age group that second-chance programs are unable to help suggests that priority needs to be given to keeping educationally disadvantaged youths in school, where they can benefit from mainstream vocational training programs.

Do the benefits of getting a vocational education depend on getting a training-related job? The answer to this question is yes. All of the studies that have examined this issue (Campbell et al. 1986; Rumberger and Daymont 1982; Grubb 1992, 1997; National Center for Education Statistics 1993) have found that the economic benefits of taking vocational rather than academic courses are much greater when a training-related job is obtained. This was true for all levels of occupation-specific education: secondary, community college, and four-year baccalaureate programs. Effects were particularly positive for those who entered the field they trained for and stayed in that field. Campbell et al. (1987) found that graduates of high school vocational programs who spent 100 percent of their time after high school in the field for which they trained earned 31 percent more than those who never had a training-related job. Training programs for sales clerk jobs were the exception. Graduates of distributive education programs earned less if they obtained training-

related sales jobs. For trainees, the benefit of vocational education largely comes from the access it confers to higher-wage occupations. This suggests that school-based vocational education programs should avoid training young people for low-wage, low-skill jobs, even when high training-related placement rates can be guaranteed.

To what extent are occupation-specific skills learned in school being used in the labor market? Forty-three percent of employed graduates who completed two or more vocational courses in a specific field had jobs at the time they were interviewed in 1985 that matched their field of training (Campbell et al. 1987). Using a similar procedure of matching training fields against the jobs of 25- to 64-year-olds, Grubb (1997) found that jobs matched an individual's vocational major 61 percent of the time for bachelor's degree recipients; 47 percent of the time for male, and 63 percent of the time for female, associate's degree recipients; 55 percent of the time for certificate holders; and generally between 40 and 50 percent of the time for those with some college but no degree. Mangum and Ball (1989) found that employer-sponsored training had higher utilization rates: 85 percent for company training and 71 percent for apprenticeship. Apprenticeship training in Germany is also more likely to lead to relevant jobs. Six months after completing their training, 68 percent of those with civilian jobs were employed in the occupation (much more narrowly defined) for which they were trained (Federal Institute for Vocational Training 1986). These results suggest that one way to increase training-related placement rates is to have employers cooperate with schools in the delivery of training. Other ways to increase the proportion of students who work in the occupation for which they train is to improve career guidance, offer training in expanding occupations, and upgrade the quality and relevance of the training.

Does studying occupation-specific skills in school lower achievement in the academic arena? At the end of high school, the gap between vocational and academic students is about one standard deviation, or about 3.5 grade-level equivalents. Much of this gap, however, preexisted the student's entry into vocational education (Kulik 1994). Indeed, students who have difficulty with academic subjects often seek out vocational courses precisely because they offer different settings and different modes of learning. Kulik concluded that "80% of the difference in test scores of academic and vocational students at the end of high school is due to the difference in aptitude of the students who enter the programs" (1994, 47). The key determinant of learning is the rigor of the courses taken, not the total number of academic courses or the total number of hours spent in a school building during a year. Thus, vocational students learn less mathematics and science than many academic students primarily because they take less demanding academic courses, not be-

cause they take fewer academic courses.

How many occupation-specific courses should non-college-bound high school students take? American vocational education has a modular structure. In high schools, the basic modular unit is typically a one-year course containing about 150 hours of classroom or shop time. Students need not complete a full program of four or more vocational courses to benefit from occupation-specific education. Among students who graduated in 1980 and did not attend college, those who took just two vocational courses in upper-secondary school earned 36 percent more in the year following graduation than those who took no such courses. Those who took four vocational courses earned 16 percent more than those who took two courses, and those who took six or more vocational courses earned 6 percent more than those who took four such courses (Kang and Bishop 1989). Mane's analysis (1997) of the early labor market success of 1992 high school graduates yields similar conclusions. These results suggest that (1) just about every student without definite plans to attend college full-time should take at least two—although four appears to be best—vocational courses before graduating, and that (2) vocational students should be counseled against taking an excessive number of vocational courses in high school. For occupations requiring more than 600 hours of classroom or shop time to attain proficiency, tech-prep programs integrating high school instruction into a postsecondary program will generally be necessary.

CONCLUSION

Knowledge is exploding, and new skills are emerging every day. Our economy has become completely dependent on the expertise of others. Because of this dependence, we are willing to pay good wages to people who have skills and expertise that we lack. Rewards for specific skills are determined by the law of supply and demand. Abundant skills tend to be poorly rewarded. Scarce skills tend to be well rewarded. New skills in growing demand receive the highest compensation.

Most of a student's educational career is spent learning generic skills such as reading, writing, and arithmetic that are in abundant supply. Success in developing these skills does not, however, make one a highly competent worker or ensure a well-paid job. As Ralph Waldo Emerson observed in 1831, "The things taught in colleges and schools are not an education, but a means of education" (Tripp 1970, 173). These generic skills are tools for developing the scarcer skills and expertise that determine productivity in particular jobs and that are, therefore, well rewarded by the labor market.

It is unwise to devote one's entire education to learning things that most everyone else already knows. One must select a vocation for which one has talent and for which there is market demand and then pursue expertise and excellence within this niche. Expertise and excellence

are impossible without specialization. Or, as Euripides put it, "The same man cannot well be skilled in everything; each has his special excellence."

Since individuals cannot achieve excellence without specialization, an education system that does not accommodate and indeed encourage specialization becomes a barrier to real excellence. People have diverse interests, diverse talents, and diverse learning styles. Employers are similarly diverse in the skills and talents they seek. A one-size-fits-all upper-secondary education is bound to fail the majority of students.

Occupational knowledge is cumulative and hierarchical in much the same way that mathematics and science are cumulative and hierarchical. Everyone must start at the bottom of the ladder of occupation knowledge and work his or her way up. The spread of information technology and of high-performance work systems is forcing workers to learn new skills, but the new skills are generally additions to, not replacement for, old skills. While learning a new skill is easier when the worker has good basic skills, a foundation of job knowledge and occupational skills is usually even more essential. At some point, every individual must start building his or her foundation of occupational skills. For the great majority of youths who do not have an uncle willing to take them on as an apprentice for a well-paid occupation, the foundation building should begin at least two years before the individual plans to leave school.

Students planning to work full-time when they graduate should not be forced or advised to focus solely on academic classes during their final years in high school. Such students should be advised to start building their foundation of occupational skills and knowledge while they are still in school. The option of returning to school or college in the future should be retained by certifying the skills attained and offering opportunities for further higher-level training at local community colleges.

Notes

1. The 500,000 members of NFIB were stratified by employment, and large firms were oversampled. Salaried managers in charge of subunits of large publicly owned corporations are not eligible for membership in NFIB, so the sample does not contain data on employment outcomes at large multiestablishment firms. A four-page questionnaire was mailed to approximately 11,000 firms, and, after three follow-up waves, 2599 responses were obtained. The survey focused on a single job—the job for which employers "hired the most people over the last two or three years."

2. After a series of general questions about the character of the job and the worker qualities that were sought when filling that job, the manager was asked to select two individuals who had been hired for this job and answer all subsequent questions specifically with reference to those two workers. The selection was made in response to the following question: "Please think of the last person hired for this job (job X) by your firm prior to August 1986 regardless of whether that person is still employed by your firm. Call this individual person A. The individual hired for job X immediately before person A is called person B. Do not include rehires of former employees." Information of varying degrees of completeness was obtained for 1624 person A's and 1403 person B's.

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