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Why Do Companies Provide Workplace Education Programs?

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In recent years, increasing attention has been drawn to the plight of people with low levels of education. Since the 1970s, lower skilled workers have borne the brunt of economic changes that have left them worse off in both relative and absolute terms (Levy & Murnane, 1992). On this conclusion there is scant debate. There is, however, considerable debate over the proposed solutions. A perennial candidate is increased basic skills. For the adult population, this means continuing education provided outside of the K–12 school system. A key component of that education delivery system is workplace-based education and training programs.

It is the purpose of the chapter to sort through what is and is not known about company-provided training and to identify the implications for future practice and research. Specifically, I address the following:

- The extent to which companies provide basic skills training and their reasons for doing so.
- The distinction between basic skills training, broadly construed, and more narrowly defined workplace education programs.

- The ways companies finance workplace education programs.
- The impact of workplace education programs on companies and their workers.
- The ways in which policymakers and practitioners can support more basic skills training by companies.
- The ways in which research can build a foundation for effective basic skills training.

The overarching objective is to better understand the feasibility of engaging employers as part of a comprehensive system of lifelong learning for adults in need of skills beyond what they learned in primary and secondary school. My intent is not to focus on employers to the exclusion of traditional education providers. Indeed, companies often partner with education specialists, such as school or college teachers or independent consultants, to provide workplace-based instruction. Rather, the focus is on how workplace-based programs can expand the range of options available to adult learners, in terms of both location and funding.

DEFINITIONS FOR DISCUSSION

Many disciplines have perspectives that are relevant to this discussion, including but not limited to education, economics, management, and sociology. Unfortunately, each field has its own jargon that is not readily understood by outsiders. To try to minimize confusion, here are the terms I use in this chapter and their intended meaning:

- *Workplace basic skills:* The skills that are required for effective functioning in most jobs.
- *Workplace education:* The teaching of workplace basic skills.
- *Workplace education program:* Any program providing instruction in at least some basic skills that is located on-site at the workplace or is sponsored by the employer off-site.

One common definition of basic skills is provided by the National Adult Literacy Survey (NALS): "Using printed and written information to function in society, to achieve one's goals, and to develop one's knowledge and potential" (Kirsch, Jungeblut, Jenkins, & Kolstad, 1993, p. 2). The NALS definition in practice covers both basic literacy and numeracy skills as well as English-language comprehension; together these are often referred to as *workplace literacy.* Because the audience for this chapter is presumed to

be familiar with the NALS, I will use education, literacy, and basic skills interchangeably. For those unfamiliar with the NALS, its literacy levels are described briefly in Table 3.1.

Note, however, that the NALS does not include the soft skills (e.g., interpersonal and problem solving) and the computer skills needed for effective functioning in most jobs today. These are described in detail by Murnane and Levy (1996) in their book, *Teaching the New Basic Skills,* and I include them in the definition of basic skills used in this chapter. When needed, I draw a distinction, calling the former *foundation* basic skills (literacy, numeracy, and English-language comprehension) and the latter *advanced* basic skills (interpersonal, problem solving, and computer).

It is also important to make the distinction between training and education. *Education* traditionally refers to school-based learning that focuses on broad skill development. *Training* traditionally refers to nonschool-based learning that focuses on narrowly defined tasks.[1]

The lines between education and training are blurred in practice. This becomes clear as soon as one tries to classify vocational education (school-based, job-focused curricula) and workplace education programs into one or the other category. The distinction between these two terms is partly semantic; it also does not necessarily coincide with companies' behavior toward skill development. Most companies are averse to providing education, broadly construed, because it is perceived as having no immediate impact on job performance. Consequently, even activities that might be defined as educational are referred to as training. U.S. companies spend billions of dollars on training yearly (Frazis, Gittleman, Horrigan, & Joyce, 1998), yet only 2% of all firms provide basic skills training, compared with 71% that provide some type of training (Frazis, Hertz, & Horrigan, 1995). Definitions aside, there are many examples of training programs that cover a broad range of basic skills, only some of which are directly related to job tasks (Bassi, 1994; Levenson, 2001). In other cases, tuition reimbursement programs encourage employees to obtain skills that may have scant relevance to their jobs. Whether the company acknowledges it or not, such programs appear to be more like education than training.

[1]Corporate-based practitioners often make a further distinction between training and development, with the former referring to short-term, job-related skills and the latter referring to long-term, broadly applicable skills. For our purposes, I make no such distinction and refer to all such skills under the umbrella of training.

TABLE 3.1
Definitions of Literacy Levels in the NALS

Literacy Level	*Technical Requirements*	*Examples*
1	Extracting a single piece of information from a relatively short text or document Entering personal information on a document Performing specified single arithmetic operations	Signing your name Locating the expiration date on a driver's license Totaling a bank deposit entry
2	Matching, integrating, and contrasting information when minor distractors[a] are present Making low-level inferences Performing single arithmetic operations when the operation and numbers to be used are stated or easily determined	Interpreting instructions from an appliance warranty Locating an intersection on a street map Calculating the total costs of a purchase from an order form
3	Locating and/or integrating information from a lengthy text or from one or more documents when irrelevant information and distracters may be present Interpreting graphs and schedules Performing arithmetic operations that must be determined from the terms used in the directive and that require using numbers that must be found in the material	Using a bus schedule to determine the appropriate bus for a given set of conditions Using a calculator to find the difference between regular and sale price from an advertisement Using a calculator to determine the discount from an oil bill if paid within 10 days

4	Making multiple-feature matches and integrating or synthesizing information in complex or lengthy passages	Determining the correct change using information in a menu
	Making high-level inferences and considering conditional information	Using an eligibility pamphlet, calculating the yearly amount a couple would receive for basic supplemental security income
	Performing tasks that require numerous responses	
	Performing two or more sequential mathematical operations where the operations to be used must be inferred or drawn from prior knowledge	Explaining the difference between two different types of employee benefits
5	Searching for and/or contrasting complex information drawn from dense text	Determining shipping and totaling costs on an order form for items in a catalog
	Searching through complex displays that contain multiple distracters	Using a calculator to determine the total cost of carpet to cover a room
	Making high-level, text-based inferences	
	Using background or specialized knowledge to interpret information or determine the features of a multiple-operation mathematical problem	Interpreting a brief phrase from a lengthy news article

Note. From *Adult Literacy in America: A First Look at the Results of the National Adult Literacy Survey,* by I. S. Kirsch et al., 1993, a report prepared by the Educational Testing Service under contract with the National Center for Statistics, Office of Educational Research and Improvement, Washington, DC: U.S. Department of Education.

[a]A distracter is a plausible but incorrect piece of information.

WHY COMPANIES TRAIN OR THE THEORY OF HUMAN CAPITAL

To put the economics approach to company-provided training into perspective for those outside the field, it is useful to make a distinction between the theory behind it and the evidence on it. The discussion in this section is geared toward those readers who are interested in human capital theory and its predictions vis-à-vis basic skills training. Readers more interested in the practical issues surrounding workplace education (the evidence) may prefer to skip to the next section.

Any such discussion of the theory of why companies train would be remiss if it did not address the statement, "Companies will not pay for basic skills training." Articulated often by academics and policy analysts and sometimes by practitioners and company representatives, this conventional wisdom is derived from economic reasoning that is rooted in Nobel Laureate Gary Becker's (1964) theory of human capital. The confusion surrounding this observation is twofold. First, it turns out that the theoretical conditions under which companies will not pay for basic skills training do not always exist. Thus, the statement itself cannot and should not be viewed as irrefutable. Second, even though companies might not pay for basic skills training, many provide it.

Becker's (1964) work on human capital is viewed as seminal, in part because it provides a systematic way of differentiating those skills for which companies provide training from those skills that employees are expected to acquire on their own. *Human capital* simply refers to the skills embodied in people that can be viewed as assets of the firm in the same way that machines (physical capital) and money (financial capital) are viewed. In addressing the issue of who is responsible for the provision of general versus specific skills, Becker provided a framework for identifying who receives the benefits of the skill acquisition. *General human capital* is any skill that raises productivity at more than one firm; *specific human capital* is any skill that raises productivity at only one firm.

However, the impact on productivity is only one part of the story. Becker's (1964) theory also assumes that all companies pay the same price for each type of skill. This assumption is based on the idea that everyone shares the same information and perspective about how much the skills are worth in the labor market. The theory further assumes that as soon as workers learn a new skill, they can credibly and accurately communicate that information to prospective employers. With these assumptions in

place, the implication is that companies will be willing to finance investments in specific human capital but not general human capital.

Specific Human Capital

A number of problems attend the attempt to use the human capital model to explain all aspects of skill acquisition and its impact on the labor market. One of the biggest problems concerns the definition of specific human capital. In reality, only a miniscule set of skills can be said to have a positive impact on one firm and only that firm. Understanding who wields ultimate budget authority for spending decisions in the organization is one example. Knowing how to get things done without going through formal channels is another skill that is organization specific.

At first blush, some skills necessary to an organization's production process might appear to be specific human capital. Examples include the details of how to create very specialized items, such as the software for the federal government's air traffic control system. Although it may be true that only a handful of companies have such expertise, there is always more than one. In this case, then, the technical definition of specific human capital is violated. More important, the more highly specialized the skills, the easier it is for the workers to know where their alternative job prospects lie, which facilitates wage comparisons. For skills to qualify as specific human capital in the strictest sense, they must be unique to the organization and not to a product or production process that is also used by other organizations.[2]

Dynamic Adjustments

Another problem with the theory of human capital lies in the dynamic adjustments that industries and labor markets make in response to emerging skill demands. When a new technology is introduced, at least some new skills are typically needed. Take the case of the Internet. When the Web made its debut, companies that wanted to build Web sites had to find people who already knew how to program in Hypertext Mark-Up Language (HTML), or they had to encourage employees to develop those

[2]Stevens (1996) defined *transferable skills* as those that are neither firm specific nor entirely general. She provided a theoretical argument as to why firms would share at least some of the costs of training in transferable skills that are valued by some, but not all, other employers.

skills. I know of no study documenting how much of that skill development was financed by employers. But in the early days it was not clear that the Web would amount to anything like the ubiquitous resource it is today. Thus, it is safe to assume that most workers would have insisted that companies share the cost of HTML training so that they would not have to bear all the financial risks of learning a skill that might have little positive impact on their careers.

Today, in contrast, a presence on the Web is necessary for doing business. The demand for HTML programmers is many orders of magnitude greater than it was when the Web was launched. This has created a large enough critical mass of job opportunities that community colleges and technical schools across the country offer courses in Web design. Companies can now require such expertise before hiring someone, and this represents a shift of the financial burden for acquiring the skills onto the employee. It is an example of a highly specialized skill, the acquisition of which once was financed by companies but is now financed by workers.[3] Becker's (1964) model may thus be a good predictor of general patterns of skill acquisition financing, but it is hardly universal enough to be considered a law.

Competitive Skill Pricing

Are skills priced competitively in the labor market? The answer would appear to be yes, at least on average and in the long run. Workers with skills that are difficult to acquire and are in relatively high demand, such as doctors and computer programmers, get paid more. The extent of their wage premiums fluctuates over time, depending on supply and demand factors, but in the long run those wage premiums persist.

Yet, countering this argument, people with the same level of a particular skill in a given local labor market may be paid widely different wages. Two likely reasons for this are differences in job design and skill bundling (see

[3]Economists explain this phenomenon in more general terms by noting that firms are risk neutral, whereas workers are risk averse. Thus, firms would be more willing to pay for the financing of general skills when there is some uncertainty surrounding the full extent of their marketability (or generality). A separate, although related, argument is that firms may have better information about the marketability of any given set of general skills. Such information asymmetries allow them to train workers in general skills and recoup at least some of the benefit because workers do not realize the full extent to which such training improves their outside job opportunities. Bishop (1997) discussed both of these points in detail.

the definitions that follow) across individuals, and time delays in wage adjustment. Factors such as these reduce the extent to which there is a uniform price for any given skill, thereby undermining the foundations of human capital theory.

Job Design and Skill Bundling

No two jobs have the same skill requirements. No two people have the same skill set. The fit between the person and the job is unique. Yet, there is only one wage that compensates for all the skills in a job. Thus, people performing similar tasks along some dimensions (skills) are often paid different wages because the wages reflect all of the dimensions of their job, including how it fits into the organizational framework. This is a perspective that comes from the management and personnel economics literatures.[4]

If a worker possesses many of the basic skills required for a job but needs improvement in one or a few literacy skills, the company may view the benefit gained from paying to help this worker gain those skills as exceeding its cost. The complementarities between basic skills and other required skills means that some basic skills might be worth more on one job than on another. For example, the ability to understand units of measurement is important for manufacturing jobs that involve machines that produce products of variable width; such a skill is less relevant for an office job that involves filing. Moreover, another job that required a comparably high level of the same basic skills might not pay as much. For example, sanitation jobs often require an ability to understand units of measurement (for mixing the cleaning solutions), yet they typically pay less than manufacturing jobs that use heavy equipment. Thus, even if the firm bears the cost for improving the worker's basic skills, the worker's alternative wage might not rise sufficiently to make leaving for a different job financially attractive.

Delayed Wage Adjustment

Even when wages adjust fully to reflect differential skill pricing, those adjustments typically do not happen instantaneously. Most workers are on

[4]For a more in-depth discussion of job design and other related topics, see Gibbs and Levenson (2002). Bishop (1997, p. 73) made a similar point about different jobs requiring different mixes of general skills.

review cycles that preclude wage adjustments or promotions more often than once per year, except in unusual circumstances. These types of dynamics are ignored in many models of the labor market, such as Becker's (1964). The implication of delayed wage adjustment is that firms can capture some of the benefit from employees' improved skills before having to increase the employees' compensation. For example, if reviews take place in December for raises that are implemented in January, and a worker takes courses to boost basic skills in the first quarter of the year, the firm will benefit from the employee's increased productivity for three quarters, until the time of this person's review.

The implication is that delayed wage adjustment generates transitory benefits for the firm. Such dynamics can justify financing small skill acquisition costs.

Imperfect Information About Skills

It is difficult for workers to credibly signal to other employers the full extent of any new general skills they have learned (Bishop, 1997). And the company that financed such skill acquisition certainly will not seek to advertise that fact to other employers who might want to poach those workers. This effectively makes some general human capital acquisition look like firm-specific human capital acquisition because wages do not have to grow as fast as productivity for the firm to prevent the employee from leaving for a new job.

Motivation and Loyalty: Money Is Not Everything

One problem with the standard economic view of the employment relationship is that it is too simplistic. Workers are offered a wage and a set of working conditions. They can either accept the wage and working conditions or they can express their dissatisfaction by leaving the job; there is no in-between. The amount of effort a worker puts into the job may vary with wages. But this concept is not well developed beyond the vague notion that productivity may vary with the wages paid. More sophisticated economic models recognize the dynamic nature of employment relationships, but here, too, much of what happens in real jobs is left unexplained because the emphasis is almost exclusively on monetary compensation.

The management literature offers a much broader perspective than the economic literature in assuming that monetary compensation is one way to

motivate good job performance, but it is not the only way. Other motivators are thought to include the intrinsic satisfaction workers get from performing job tasks. Intrinsic motivation can be related both to the job tasks and the way they are structured—scheduling, repetitiveness, and interpersonal contacts with coworkers and supervisors—as well as to the work environment (physical layout; Hackman & Lawler, 1971; Hackman & Oldham, 1980). These are other routes by which skills get rewarded differentially across jobs.

In contrast with the economics literature, the management literature has a rich set of measures of employee attitudes such as job satisfaction, loyalty, and organizational citizenship behaviors (volunteering to do more than is required). These have been linked to both productivity-related job outcomes and turnover.[5]

Most important to the discussion here is the management literature's view of training. Instead of predicting that training will increase turnover (Becker, 1964), the management literature predicts that training will decrease turnover. Benson (2001) suggested a way to integrate these apparently contradictory perspectives.

The management literature views training as a benefit and so expects employees to respond to it the way in which they respond to other benefits, with a positive attitude (called *commitment* to the current employer) and reduced turnover. But the management literature typically fails to acknowledge the general versus specific nature of skills and the impact of rewards on attitudes and turnover. Benson (2001) argued that the impact of training on commitment and turnover depends on the type of training (general vs. specific) and on whether the employee is rewarded for gaining the new skills. If the training is specific, then the employee's only hope for increased reward lies with his or her current employer, and turnover will decrease because of the positive effect of increased commitment. With general training, there exists the prospect of increased rewards at a different firm, which counteracts the positive commitment effect. Benson argued that the alternative employment rewards effect dominates; thus, if the training is general, turnover should increase.

Benson (2001) tested these predictions using evidence on participation in both on-the-job training and a company-funded tuition reimbursement program at one firm. Building on previous research (including, among

[5]The literature is replete with examples and evidence, including Whyte et al. (1955); Mobley (1982); Steers and Porter (1991); Hom, Caranikas-Walker, Prussia, and Giffeth (1992); and Rousseau (1995).

others, Birdi, Allan, & Warr, 1997, and Lynch, 1991), he called on-the-job training specific training and the tuition reimbursement program general training. The argument is that it is difficult for workers to signal the value of skills learned on the job to other firms; in contrast, it is easy to signal the value of courses taken at an educational institution. He found evidence in favor of this merged perspective on economics and management, notably:

- On-the-job training was positively related to organizational commitment and negatively related to intention to leave the company (i.e., turnover), which is consistent with the management literature.
- Participation in the tuition reimbursement program was positively related to intention to leave the company but negatively related to turnover while the employee was taking classes toward earning a degree.
- Upon earning a degree, a positive relationship with turnover developed, which is consistent with the economics literature. But receiving a promotion or merit award introduced a mitigating factor that negated the tendency to leave (relative to employees who did not participate in the program).

Training in general human capital is thus less likely to lead to turnover if the employee is rewarded for the increased skills.

Benson's (2001) results have interesting implications for the potential impact of workplace education programs on turnover. On the one hand, basic skills are general if they increase a worker's ability to function well in a wide range of jobs. On the other hand, if the basic skills are taught in a job-specific context with no degree attainment (e.g., a high school diploma) or other educational certification (e.g., the GED), it may be difficult for the worker to signal the value of the increased skills to other prospective employers. The problem with generalizing Benson's results to workplace education programs, however, is that he analyzed the experiences of highly educated engineers, not the high school dropouts who are typical candidates for basic skills. Further research is needed to investigate the implications of his results in the context of workplace education programs.

COMPANY PROVISION OF BASIC SKILLS TRAINING

The statement "Companies will not pay for basic skills training" notwithstanding, the preceding section shows that there are theoretical arguments in favor of the idea that they will pay for it. We now turn to the evidence.

A strong correlation exists between company-provided training and worker characteristics (Bishop, 1997). All else being equal, those workers who have higher levels of education (high school diploma or college degree); score well on aptitude tests; have received vocational training relevant to their job; or are men, White, or married are all more likely than other workers to receive company-provided training. In other words, it is precisely those employees who already have a relatively high level of skill and access to good labor market opportunities who receive a disproportionate amount of training.

There clearly is a distinction between general and basic skills. Companies readily provide training for supervisors and executives: A full two thirds of all establishments provide training that likely is general but almost certainly is not basic (Frazis et al., 1995; Lynch & Black, 1995). Simultaneously, many companies provide only rudimentary training (safety or orientation), if they offer any training at all, for their frontline employees. The origins of this tendency can be traced back to the first part of the 20th century.

In the early stages of the Industrial Revolution, companies were faced with an abundant supply of unskilled labor and new manufacturing technologies that promised to improve productivity dramatically if they could be applied successfully on a large scale. Frederick Taylor (1923/1998), the father of scientific management, supplied the intellectual foundation on which much of that success would be based. His solution was to subdivide the work into discrete units that were simple enough to be performed with minimal training by workers with low levels of education. Thus, the modern assembly line was born.[6]

In the first half of the 20th century, Taylor's (1923/1998) principles were applied almost universally in countries with a growing manufacturing sector. The large gains in productivity provided the foundation for the economic growth that transformed what had been agrarian societies into today's industrial economies. These gains also made the case that companies need not worry about basic skills training to achieve high levels of productivity and profits. Rather, having a steady supply of low-skilled workers ensured that companies would not have to raise wages, which could diminish profits.

This was the dominant paradigm, particularly within manufacturing, until sometime around the 1970s. By then, a number of countervailing

[6]For historical purposes, it is worth noting that the productivity gains from such task specialization were noted almost 2 centuries earlier by Adam Smith (1776/1994) in the context of a pin factory.

trends that undermined Taylorism had started to take hold. For example, most advanced industrialized nations have had large declines in the fraction of jobs in manufacturing in recent decades, to the point where it is no longer the leading source of employment; services have taken on that mantle. Although some service functions lend themselves well to Taylor's (1923/1998) industrial engineering principles (e.g., data processing), many others do not. Of course, saying that service sector firms might benefit from non-Tayloristic approaches to job design is not the same as saying that they will benefit from providing basic skills training for the people in those jobs.

One argument in favor of basic skills training is the greater degree of customer contact in service sector jobs and an increased focus on customer service as a source of competitive advantage. These points argue for greater aptitude with communication and interpersonal skills for frontline service employees.

Another argument favoring basic skills training is the large numbers of firms in manufacturing and other industries that have moved away from narrowly defined jobs toward jobs that involve more complex tasks, greater problem-solving and communication skills, and teamwork. For details on the diffusion of these high-performance or high-involvement work practices, see Lawler (1986), Osterman (1994, 2000); Frazis, Gittleman, and Joyce (2000); and Lawler, Mohrman, and Benson (2001). This move has been fueled by evidence that under the right circumstances such changes can lead to better outcomes for the firm in terms of productivity and competitive advantage. Such work redesign typically requires a much greater emphasis on training of frontline employees, especially new hires and incumbent workers when the shift is made to the new organizational form.

The total quality management (TQM) movement is one notable example. More recent variants of TQM include *continuous improvement* and Six Sigma; the latter term was coined by Motorola and popularized by General Electric. The basic thrust is the same: The firm looks for ways to increase quality and decrease errors and waste in production processes, thereby reducing costs and increasing productivity. Because frontline workers are often the workers best suited to providing management with accurate and up-to-the-minute information, quality initiatives have provided the impetus for workplace education efforts that boost communication, comprehension, and problem-solving skills.

As part of these efforts to improve attention to detail and quality, and to align workers' focus with companies' overall objectives and financial health, many firms have set up channels for direct communication with

frontline employees. Such communication includes financial and other numerical information that formerly was shared only by top and middle management. This shift increases the demand for mathematical aptitude. In addition, International Organization for Standardization (ISO) and other certifications of quality processes call for workers to document what they do in written form, increasing the need for writing skills. The move toward statistical process control has also increased the demand for basic mathematical skills (Abelmann, 1996; Bassi, 1994). Finally, the trend among large organizations in the 1980s and 1990s to remove layers of middle management placed more responsibility for planning and quality control on lower level employees (Lawler et al., 2001).

All of these points suggest that there is reason to believe that companies today may demand higher levels of basic skills from their frontline employees than ever before. The extent to which they do and to which that demand translates into company-provided education programs are the questions to which we now turn.

Evidence on Changes in Skill Demands

Little systematic evidence is available to evaluate whether skill upgrading is occurring in jobs throughout the economy. Howell and Wolff (1991) looked at how shifts of employment between industries and between occupations within an industry have affected the overall demand for skills. They found an increase in the demand for cognitive and interactive skills with a concurrent decrease in demand for motor skills.

Although Howell and Wolff's (1991) evidence supports skill upgrading at a national level, their analysis is based on linking U.S. Census data, which is a survey of households, to occupational skill requirements from the *Dictionary of Occupational Titles.* Thus, they were not able to say whether the skill upgrading took place within individual firms. This is a real limitation because some of the arguments just mentioned in favor of companies providing basic skills training assume that it is easier to train an incumbent worker deficient in certain basic skills than to replace that worker with a new hire. If all skill upgrading at the national level has taken place entirely because establishments with low-skill requirements are going out of business and are being replaced by establishments with high-skill requirements, businesses may be less inclined—and rightly so—to provide basic skills training.

Cappelli (1993) provided the only systematic evidence on skill upgrading within individual companies. He examined changes in skill require-

ments for production jobs in 93 manufacturing establishments between 1978 and 1986 and for clerical jobs in 211 firms between 1978 and 1988. He found significant skill upgrading in most production jobs, which is consistent with the voluminous stories about the shift toward high-performance work practices in manufacturing. However, the evidence on skill upgrading in clerical jobs was much more mixed, with an even split between jobs that were skilled upwards and jobs that were de-skilled (i.e., jobs in which it became easier for a worker with a lower level of basic skills to carry out performance requirements). Cappelli suggested that the development of new office equipment appears to be associated with the de-skilling of certain clerical jobs.

Incidence and Characteristics of Company-Provided Workplace Education

The data available on the incidence of company-provided workplace education are limited to a handful of studies, including the following:

- Frazis et al.'s (1995) survey of a national random sample of all establishments found that only 2.2% of establishments provided basic skills training. There were big differences by establishment size: Only 1.7% of establishments with fewer than 50 employees did so, in contrast to 7.2% of establishments with 50 to 249 employees and 19.3% of establishments with 250 or more employees. The rates by industry varied: less than 1% in construction, 2% in wholesale and retail trade, more than 3% in transportation/communication/public utilities and finance/insurance/real estate, and more than 5% in manufacturing.
- Bassi's (1995) national survey found that 6% to 7% of firms had a workplace education program. There were significant differences by size: Only 3% of firms with fewer than 20 employees had a program, in contrast to 15.3% of manufacturing firms and 23.6% of nonmanufacturing firms with 200 to 499 employees.
- According to Lynch and Black's (1995) national survey, 27% of establishments with 20 or more employees provided some type of basic education training. The rates varied significantly between industries, with less than 20% of companies in the business service, retail, and construction sectors offering it and more than 50% of companies in the utilities, finance, insurance, and primary metals sectors offering it. Lynch and Black did not indicate how basic education training differed by firm size.

The largest conflict between the numbers reported by Bassi (1995) and by Frazis et al. (1995) lies in the overall incidence rates: 2.2% for the former versus three times that level for the latter. But the sample sizes used for the two studies differ dramatically: Bassi surveyed 714 firms, in contrast to 8,467 establishments in the much larger study. Thus, the overall incidence numbers provided by Frazis et al. (1995) most certainly are more representative. The fact that both studies' incidence numbers by firm size are consistent with each other suggests that they measured similar phenomena.

The biggest apparent conflict appears to be between these two studies and the Lynch and Black (1995) study. Unlike the Bassi (1995) study, Lynch and Black's was similar to Frazis et al.'s (1995) in terms of scale: They surveyed 2,945 establishments. Once again, however, the likely source of the discrepancy is differences in how the samples were drawn. Lynch and Black intentionally oversampled manufacturing firms (55% of their sample) and large firms (47% had 250 or more employees), both of which are more likely to offer basic skills training. Although it is difficult to determine whether this is the full source of their much larger incidence results, it likely accounts for a significant portion.

Another potential conflict lies in the definition of basic skills used in each study. All three appear to focus on foundation basic skills (literacy and numeracy), but it is difficult to discern how they treat advanced basic skills (problem solving and interpersonal). Only Bassi's (1995) study makes that distinction explicit (further details follow).

According to the NALS, about 40% of all U.S. employees operate at the two lowest levels of literacy.[7] It is these workers who are the leading candidates for basic skills training. An important question to ask, then, is whether all of these workers have access to workplace education programs. Unfortunately, we do not know how these workers are distributed across companies because the NALS sampled people, not organizations. Yet, given the prevalence of some type of low-skill job at virtually all companies (janitor or maid, mail room clerk, laborer, etc.) and given the low overall rate of provision of workplace education programs, it is safe to assume that not all low-skill workers have access to a company-sponsored workplace education program. It is even harder to determine the percentage of workers in need who do not have access.

In addition to variations in access based on where a person works, another consideration is the type of job the person has. Temporary workers

[7]This informatin is based on Table 1.1 (p. 7), Figure 1.1 (p. 17), and Figure 2.7 (p. 63) from Kirsch et al. (1993).

hired through an agency are often excluded from formal training opportunities because of legal concerns regarding coemployment. Other types of contingent workers (day laborers, direct-hire temps, and independent contractors) and regular part-time workers face no such legal barriers to participating in company-provided training. However, companies often restrict training access to their core full-time employees (not contingent and not part-time), thus excluding low-skill workers in noncore jobs.

As for the characteristics of firms with workplace education programs, the results of Bassi's (1995) survey provide some insights:

- Manufacturing firms with programs pay higher wages on average than manufacturing firms without programs. She found no statistically significant difference in the wages between nonmanufacturing firms with and without programs, although this finding may result from the imprecision that can follow from a small sample size.
- Firms with programs are larger and employ greater fractions of hourly employees (vis-à-vis salaried employees). They are slightly less likely to have their employees covered by collective bargaining agreements.
- Firms with programs are more likely to promote from within than hire from outside the firm to fill job openings. They also are slightly less likely to report problems with turnover.
- Firms with programs also report profit growth that, on average, is as great as or greater than that for firms without workplace education programs.

As for the nature of the programs, Bassi (1995) found that:

- The vast majority provide release time, including 78% of manufacturing firms and 94% of nonmanufacturing firms.
- A full three quarters of all programs were located on site at the workplace, with the remainder at community colleges, other companies, local high schools, and technical or proprietary schools.
- About one quarter (manufacturing) to one half (nonmanufacturing) of classes were not regularly scheduled. When regularly scheduled, the most likely frequency was once per week or less.
- Companies were much more likely to hire a teacher for the program from within or on a contract basis than they were to rely on community college teachers or in-house volunteers.
- The skills most frequently taught by a majority of programs involve (a) the ability to identify and solve problems, (b) interpersonal (team-building) skills, and (c) mathematics. The skills taught less fre-

quently are (a) reading and writing, (b) English for speakers of other languages, and (c) standard high school equivalency curriculum.

Reasons for Providing Workplace Education Programs

In addition to Frazis et al.'s (1995) large national sample, a handful of researchers have conducted small-scale surveys of companies' motivations for providing workplace education programs, including Bassi (1994); Moore, Myers, and Silva (1997); and Abelmann (1996). Although the samples are drawn from different populations and the range of allowable responses varies significantly across the studies, a number of consistencies can be found.

The responses from each study are summarized in Table 3.2. Even among the National Workplace Literacy Program (NWLP) initiatives analyzed by Moore et al. (1997), all of which were federally funded, the top three objectives focused on achieving outcomes beneficial to the business. The nonmanufacturing firms in Bassi's (1994) sample listed providing a benefit to employees as their top reason (75%), which might be viewed as a type of altruism. Yet, a long line of reasoning within the management community also views the provision of employee benefits as a means of increasing employee commitment, loyalty, and productivity and reducing turnover, all of which can have a beneficial impact on the bottom line.

One interesting note is the role—or lack thereof—that organized labor appears to play in driving the adoption of workplace education programs. Among the reasons provided in Table 3.2, an agreement with labor is one of the least frequently cited. I believe there are two reasons for this. First, union representation in the private sector stands at less than 10% (Bureau of Labor Statistics, 2003), which is the lowest it has been in a generation. So most employees do not have a union behind them to bargain directly for workplace education programs. Moreover, although support for workplace education programs is undoubtedly much higher among union leaders than among management, workplace education programs traditionally have not been at the top of unions' priority lists.[8] These issues notwithstanding,

[8]This is not to say that unions deemphasize basic skills. On the contrary, unions have been instrumental over the years in providing lower skilled workers with skill development opportunities in the form of apprenticeship and preapprenticeship training programs; the latter in particular often require basic skills remediation. But the net effect is that basic skills instruction, when it takes place, tends to occur before the person becomes an employee or union member. Thus, such efforts are not included in researchers' tallies of workplace education programs, which are typically focused on incumbent workers.

Table 3.2
Surveys of Reasons for Providing Workplace Education Programs

	Study and Sample				
	Frazis et al. (1995)	*Bassi (1994)*		*Moore et al. (1997)*	*Abelmann (1996)*
Reasons	*National Random Sample*	*Manufacturing, National Sample*	*Nonmanufacturing, National Sample*	*National Sample of Federally Funded Programs*	*Manufacturing, Mississippi State-Funded Programs*
To reduce errors and waste and low productivity	56%	54%	33%	61%	40%
To meet an increased emphasis on quality					98%
Because of organizational innovations				54%	
As a benefit to workers		46%	75%		
Because a subsidy became available		46%	50%		
Because of pressure from customers		43%	25%		
Because it was needed as a result of changes in production		40%	25%	48%	
As a part of a transformation of corporate culture		29%	17%		
To deal with increased competition					91%
Because it was required by customers		29%	17%		61%
Because of low revenues					26%
Because training became available		26%	33%		

Basic skills are critical to technology and/or production methods	52%				
Because it was needed as a result of new technology		29%	33%	41%	89%
Because of employee job dissatisfaction					29%
Unable to hire employees with adequate skills	15%				
To attract new workers		23%	42%	8%	
To attract new customers		23%	17%		
To meet new certifications		20%	33%		
To meet new health and safety requirements	24%	23%	33%	11%	
To improve the skills of limited English proficiency speakers				45%	
Because of changes in the available work force		26%	17%	25%	
To meet increased competition		20%	17%		
Because workers identified the need and to meet worker requests		17%	17%	25%	
Because of an agreement with labor and a collective bargaining agreement	5%	20%	8%	5%	
n	99	72		318	47

unions have been at the forefront of advocating for some of the more comprehensive approaches to workplace education (see, e.g., AFL–CIO, 1999; and Service Employees International Union [SEIU], 1992). Moreover, it likely is the case that management started some programs at nonunionized sites as part of a larger strategy to keep workers happy and avoid union-organizing drives.

Along a similar vein, there are a number of examples of industry sector-based workplace education initiatives. These efforts bring together employers in a region from the same or similar industry groups to focus on workforce development issues. Examples include the setting of skill standards for jobs in the California banking industry; the New York Local 1199 union-led multiemployer training fund for healthcare workers; and the manufacturing-focused Wisconsin Regional Training Partnership, a joint employer–union effort (Parker & Rogers, 1998). In each case, basic skills were an important part of the foundational knowledge the program emphasized.

As for reasons why companies do not provide workplace education programs, evidence from Bassi's (1994) case studies provides some insights:

- 52% said they did not feel there was a need for the program.
- 41% said the program would cost too much.
- 33% said they did not have the personnel infrastructure to deal with it.
- 22% said they were too busy to deal with training.
- 22% said they did not know what skills their employees needed or how to arrange for those skills to be taught.
- 19% were philosophically opposed to providing a program, believing this is not the employer's responsibility.
- 11% believed that turnover was too high to enable the firm to recoup its investment in such a program.

Note that of the top five reasons, three are related to the cost and resources needed to establish a program or keep it running, the issue to which we now turn.

Financing of Workplace Education Programs

In her survey, Bassi (1995) reported that more than 90% of firms with workplace education programs provide some type of financial support. The vast majority (78% of manufacturing and 94% of nonmanufacturing

firms) do so indirectly by giving workers release time to attend the program. About one half also provide direct financial support by paying for the program's teacher. In a separate analysis of about 50 case studies, Bassi (1994) found that two thirds received some type of outside financial assistance in terms of curriculum design or direct provision of instruction. The average direct cost per worker was about $600, but that did not include the implicit costs of participant release time or the implicit costs of time spent by other employees in designing and implementing the program. She also concluded, based on limited evidence, that the programs do not appear to be financed through wage or benefit reductions for participants (contrary to the predictions of human capital theory).

Abelmann (1996), in his survey of a matched sample of manufacturing firms in Mississippi, compared sites that used state funding with others that did not. Among plants taking advantage of government funding, 40% had provided some workplace education on their own before receiving state assistance. Among plants not using government funding, 20% provided workplace education on their own. It can be concluded, therefore, that although public subsidies are not required for program implementation, they may play an important role.

Moore, Myers, and Silva's (1997) study of NWLP-funded programs provides more insight into this point. They found a positive correlation between institutionalization (going from public subsidy to full company financing) and employers seeking to gain international certifications of quality (e.g., ISO, as mentioned earlier). But they also found that it was difficult to sustain employer support for many NWLP-funded programs. Moreover, institutionalized programs were likely to change after the grant expired, and the programs no longer had to adhere to strict federal requirements on program design. The implication is that the origin and evolution of programs funded by public subsidies are often different from the origin and evolution of programs initiated solely by the company.

My research (Levenson, 2001) provides further insight. I focused on programs that were exclusively privately funded to determine the conditions under which companies would pay for workplace education. The sample included programs that had never received public subsidies as well as programs that had. Similar to Bassi (1994), I saw no evidence that programs were funded by wage or benefit reductions; typical workplace norms precluded this because employees deficient in basic skills worked side by side in the same jobs with employees not in need of the program services. Because wages and benefits are typically based on job requirements and performance, a lack of basic skills can keep an employee from

performing well, thereby limiting any performance-based bonus pay or, in extreme cases, leading to termination. But the institution of a program does not seem to be accompanied by reductions in base pay or benefits.

Moreover, there is an argument that by paying for workplace education programs, companies might actually save money. By hiring workers with low basic skills, a firm can realize large savings in wages. Targeted workplace education programs can then be used to fill the most critical skill gaps that endanger job performance. If Bassi's (1994) figure of $600 in direct program costs per worker is at all representative,[9] this translates into higher costs of only 29¢ per hour for a full-time employee over the course of 1 year. This likely is much less than the costs the firm would incur by hiring workers with advanced levels of basic skills. Thus, at least for some companies, paying the out-of-pocket costs for a workplace education program might be a profit-maximizing strategy.

This conclusion is consistent with the evidence from my (Levenson, 2001) case studies, although an important caveat is in order. Although companies might benefit from paying for workplace education programs, as with any investment in training, the payoff is uncertain. Because many companies traditionally have not paid to train their frontline workers in basic skills, they often have to be convinced of the bottom-line benefits before agreeing to do so. Examples that document such an impact do exist (see the discussion that follows), and they can be used to help win top management over to the idea of paying for workplace education.

Yet, deciding to set up a program and doing so successfully are two very different things. For one, each company's context and employee pool is different, so the program has to be tailored to individual needs. For another, certain internal processes, such as the policy concerning release time and supervisor approval, must be overcome. Moreover, it is important to show early successes to get management to continue or expand the program. Public subsidies can play a role in helping to establish workplace education programs that are eventually funded entirely by the company (Levenson, 2001). This is discussed in greater detail in the following section.

Impact of Workplace Education Programs

The impact of workplace education programs can be measured in a number of ways, as the different stakeholders involved have different outcomes of interest, including:

[9]Of course, it is likely that Bassi's (1994) figure is not representative. So the conjectures about costs per worker and per hour should be viewed with a healthy degree of skepticism.

- From the individual's perspective: continued employment, skill building, wage growth, and promotion.
- From the company's perspective: individual productivity/job performance, teamwork, retention/reduced turnover, attitudes/commitment/loyalty, and reduced recruitment costs via internal promotions.
- From society's perspective: reduced welfare and unemployment costs if the program keeps people employed who otherwise might lose their jobs and possibly greater tax payments and lower health care costs that may occur because of increased skills.

This list covers many of the impacts, but it is far from exhaustive.

As already discussed, companies typically do not provide workplace education programs for altruistic reasons. Thus, programs need to show some positive impact on companies to elicit their support. Many of the individual impacts are directly related to company impact; the one major exception is when skill building leads the employee to find a job at a different company. In contrast, there is often little overlap between the societal and company-specific impacts because most of the societal impacts are true externalities—benefits that accrue to the community at large, not to the company providing the training. If it can be shown that the societal and/or individual impacts significantly outweigh the company impacts, then there is an argument for subsidies to support workplace education on an ongoing basis.

There are, however, notable exceptions to the lack of overlap between societal and company-specific outcomes.[10] For example, English-language skills that enable immigrant employees to get preventive health care services may reduce both sick time (a company-specific benefit) and emergency room and other health care costs that are publicly subsidized (a societal benefit). As another example, employees who have positive experiences in workplace education programs may subsequently continue their education in community- or college-based classes; in this way the program may encourage additional educational attainment that would not otherwise have occurred. Such greater educational attainment often benefits all three: the individual, the company, and society.

Before reviewing the evidence, it is crucial to first acknowledge the limitations of most studies that evaluate program impacts. Without random assignment and other carefully designed elements (which are rarely used), it is very difficult to conclude that the apparent positive impacts that

[10]I thank David Rosen for suggesting these examples.

coincide with introducing a program are entirely a result of that program. Other changes in the workplace may influence any of the impacts of interest, and self-selection of higher or lower ability individuals into the program may also influence measured outcomes. Moreover, a program might be successful at building skills but fail to deliver in terms of economic impacts because of limitations on advancement for lower skilled workers imposed by the organization design. Finally, given individual differences in needs and ability, it is undoubtedly the case that one type of program is not ideal for all workers; thus, it may be difficult to generalize about program impacts outside a given setting.

The limitations of program evaluation are discussed in depth by Beder (1999), who reviewed more than 100 case studies of adult literacy education programs (both in the workplace and off site) and provided detailed analyses of the 23 most credible studies. His basic conclusion was that the studies provide evidence that adult literacy programs can lead to positive impacts for individuals, although the evidence falls short of proving there is an impact. (He focused only on individual, not company or societal, impacts.)

The following list contains examples of the available information on program impact:

- Krueger and Rouse (1998) conducted one of the most comprehensive evaluations, looking at the economic impacts of a workplace education program at a manufacturing company and a service company. They found positive though small program impacts, including wage growth, job upgrades, and performance awards. Krueger and Rouse did not conduct a controlled experiment, but they used advanced statistical techniques to minimize the biases created by nonrandom self-selection into the program.
- Moore et al. (1999) also conducted a comprehensive evaluation of five NWLP programs. Perhaps the strongest element of their evaluation was an experimental design that randomly assigned course applicants to a treatment or control group at three of the sites. They found positive impacts on both skill building (enhanced basic skills) and employment-related outcomes such as teamwork, absenteeism, and supervisor performance ratings.
- Sperazi, Jurmo, and Rosen (1991) analyzed eight state-promoted programs in a variety of workplace settings in Massachusetts. They found positive impacts on the ability to read production tickets, safety-related behavior, interaction between nursing home residents and staff, identification of quality defects, and the ability to comprehend and follow directions.

• Mikulecky and Lloyd (1993) found positive impacts on skill building and supervisor ratings at two sites.

• Hart-Landsberg and Reder (1993) found no positive program impacts at an automotive parts manufacturing company.

• Lazar, Bean, and Van Horn (1998) found positive impacts in terms of both skill building and job performance at a hospital.

• Analyzing data from two national surveys, Hollenbeck (1993) found fairly large payoffs in terms of increased earnings to individuals participating in workplace education efforts. Although he presumed that the increased earnings are due to increased productivity, he had no direct evidence because the data did not include program- and company-specific information. He found that the impacts varied significantly across the two data sets in ways that could not be explained by individual characteristics. This strongly suggests that the impacts depend heavily on program and employer characteristics—that is, on the specific context.

• Ford (1992) found that a Magnavox program at one of its manufacturing sites led to significant gains in reading and math skills and in job performance. For the duration of the program, the site realized $336,000 in savings from reduced scrap and rework; of this total savings, about 10%, or $3,300 per month, was viewed as most likely arising from the basic skills training. Ford was quick to point out that the latter is an imprecise number. Yet, it suggests a fairly high return on investment (ROI) for this particular program, which involved only 30 to 60 employees, because the company paid nothing for the training.[11] Had the company paid for the training, the ROI would have been lower but likely still positive.

The positive findings by Moore et al. (1999) should not be underemphasized. A perennial problem in social science research is showing causation of program impacts. With the exception of Moore et al. (1999), all of these studies suffer from that problem. The fact that Moore et al. were able to demonstrate positive impacts using an experimental design and random assignment lends credence to the positive findings of all the other

[11]Magnavox did, however, have to finance a literacy audit to ensure that the program addressed workplace literacy issues, although no details were given on the cost of that audit. In exchange, the firm received up to $13,000 in literacy-training funds from a federal grant. Not included are the implicit costs of 2 hours per week of worker release time. Countering that, the employees volunteered 2 hours per week to attend the classes, a significant contribution to their own skill development that benefited the firm. Although it is impossible to say for sure, it is reasonable to consider these offsetting time costs as a wash, offering zero net cost to the firm.

studies, and it calls into question the lack of positive findings in cases such as Hart-Landsberg and Reder (1993). This is not to say that the results of the study by Moore et al. should be taken entirely at face value; it is necessary to analyze them in context. But the strong implication is that workplace education programs can indeed have positive impacts.

Ford's (1992) description of the Magnavox program highlights an important distinction between what society sees versus what a company sees as the important impacts of workplace education programs. Companies typically care less about the average impact on a worker (which, from their perspective, is an intermediate outcome) and more about the program's net impact on the bottom line. Most notably, a consideration that is totally missing from the individual worker-focused analyses just discussed (with the exception of the Magnavox case) is a recognition that the company could realize a very high ROI even if the average impact per worker in terms of productivity is very small.

A case from my research on privately funded programs (Levenson, 2001) reflects this outcome. A senior manager in a large manufacturing company succeeded in instituting a workplace education program without any public subsidy by appealing to the operations and plant managers' concerns about manufacturing problems on their highly capital-intensive line. The plant had a large, mostly low-skilled workforce responsible for working with multimillion dollar machines that had to operate 24 hours a day, 7 days a week to achieve optimal profitability. A simple mistake by just one worker unable to comprehend the complexities of the machinery and the production process could easily create problems that would shut down the line for extended periods; such mistakes included getting measurements wrong and using the wrong chemicals. According to the senior manager, this concern was sufficient to get the company to pay for the program to boost the workers' basic skills. The low cost of the program relative to the potential savings from greater production time more than justified its existence.

This example shows that program impacts do not have to and should not always be measured in terms of average impact per worker. Whenever there is a low-probability, high-value outcome of relevance to the firm's bottom line that may be influenced by improving workers' basic skills, that outcome should be considered in any impact analysis. All of the studies that ignored such potential benefits may have understated the full economic impact of those workplace education programs.

In addition to the evaluations just described, surveys of companies' self-reported impacts of workplace education programs have been conducted.

TABLE 3.3
Surveys of Self-Reported Impacts of Workplace Education Programs

Impacts	*Bassi (1994)*	*Bloom and Lafleur (1999)*
Worker morale	65%	87%
Communication ability	59%	
Company loyalty	57%	
Reading ability	56%	
Quality of output	51%	82%
Ability to use new technology	51%	75%
Problem-solving ability	48%	82%
Potential for advancement	48%	71%
Higher success rate in transferring employees within the organization		60%
Ability to work on a team	43%	82%
Ability to cope with change in the workplace		75%
More employees participating in job-specific training		73%
Improved effectiveness of supervisors		69%
Increased capacity to handle on-the-job training		67%
Increased output of products and services		65%
Improved results in job-specific training		56%
Increased profitability		56%
Reduced time per task		56%
Error rate	41%	53%
Reduced waste in production of products and services		49%
Work effort	41%	
Customer satisfaction and increased customer retention	35%	42%
Quicker results in job-specific training		55%
Time savings	33%	
Better health and safety record	33%	51%
Ability to compute	33%	
Improved labor–management relations		65%
Retention of workers	28%	40%
Ability to work independently	26%	
Absenteeism and lateness	15%	33%
Recruiting of workers	4%	
n	72	55

These include Bassi (1994) and the Conference Board report (Bloom & Lafleur, 1999), the results of which are reported in Table 3.3. These studies show that workplace education programs can and do have positive impacts on both workers and companies, although the impacts may be context-specific. How policymakers, practitioners, and researchers can

help promote more numerous and effective workplace education interventions is the final subject of the chapter.

HOW POLICY CAN SUPPORT MORE WORKPLACE EDUCATION

Even if public subsidies of workplace education were extremely effective, the limited public dollars available relative to the size of the need (upward of 40% of all employees, according to the NALS) ensures that not all workers in need can be reached by publicly subsidized programs. Still, policymakers have much leeway when it comes to deciding how to spend the public dollars that are available.

One of the largest debates concerns the question of whether public dollars have the effect of initiating programs that would not have otherwise taken place. The issue is whether there is a need to spend public money on workplace education programs, especially to "seed" the programs. Very little evidence is available on this matter. On the one hand, authors such as Osterman and Batt (1993) and Abelmann (1996) reported anecdotal evidence of programs that apparently used public dollars to support training activities that would have happened anyway. On the other hand, Holzer, Block, Cheatham, and Knott (1993) found evidence of a one-time grant in Michigan that appeared to stimulate training activity that would not have taken place otherwise.

Although additional research on this topic is clearly needed (see the section that follows), enough is known today to make some recommendations on how to structure policy to promote workplace education:

- The cost of getting a program off the ground may be a more significant barrier to company funding than the ongoing costs of program maintenance (Bassi, 1994; Levenson, 2001). My research revealed that, in many cases, demonstrating initial successes was key to winning over middle and upper management, thereby ensuring ongoing financial support from the company. Subsidies that focus on defraying the costs of program design and setup and on providing technical assistance may be the best means of leveraging limited public dollars for maximum impact. Programs in some states, including Massachusetts and Wisconsin, are now structured in this way.
- Because large firms are much more likely to provide training anyway, public dollars are best targeted toward small- and medium-sized firms.
- The research that supports the potential effectiveness of job-related pedagogical approaches also demonstrates that the same basic skills cur-

riculum cannot be taught to workers in very different kinds of jobs; that is, there is no "one size fits all" (Murnane & Levy, 1994). Thus "a system-oriented approach that encourages consortia of smaller firms to contract cooperatively with training providers to develop tailored curricula can dramatically reduce the average cost" (p. 77). Public support may be useful in helping to jump-start such efforts.

• The steepness of the learning curve for practitioners who are new to workplace education should not be underestimated. Focusing public dollars on a workplace education infrastructure designed to maximize knowledge sharing among and professional development of practitioners would be money well spent. A number of state programs in recent years include the Commonwealth Corporation efforts in Massachusetts and the Workforce Improvement Networks in Virginia and Pennsylvania. Start-up grants to companies that offset program out-of-pocket expenses could still be targeted toward smaller firms, but the dollars spent on improving practitioners' technical competency would not have to be restricted based on company size.

• No matter how successful or pervasive workplace-based programs may become, there will always be a need for other outlets of adult learning. Invariably, some companies will be unwilling to participate. In other cases, it may not be feasible to locate the program on-site for logistical reasons. Moreover, of necessity there will always be a limit to the depth and variety of curricula provided by workplace-based programs, which need to respond first and foremost to the needs of the business and most of the workers in need. Workers not fully served by on-site programs require additional learning options in the community. Public funding has a large role to play here, ensuring a seamless system of lifelong learning that bridges workplace and community.

HOW PRACTITIONERS CAN SUPPORT MORE WORKPLACE EDUCATION

A rich body of writings exists on effective design and evaluation of workplace education programs. Good examples include the AFL–CIO (1999), Askov (1993), Beder (1999), Folinsbee and Jurmo (1994), Hart-Landsberg and Reder (1993), Jurmo (1998), Jurmo and Folinsbee (1994a, 1994b), Lazar et al. (1998), Mikulecky and Lloyd (1993, 1996), Moore et al. (1997, 1999), SEIU (1992), Sperazi and Jurmo (1994), and Sperazi et al. (1991).

My (Levenson, 2001) own case study research on companies' reasons for funding workplace education programs was not focused primarily on

program design. Despite this, a number of aspects of program design that appear to be correlated with successful efforts emerged, many of which build on the findings from the studies just listed. These include:

- In each case, the workplace education program was viewed as either complementing or part of the company's broader training initiatives.
- Administering the program on-site (at the workplace) can lead to more effective skill development because of the ease of access that proximity affords.
- Starting small and showing early successes with a pilot group of participants was often key to building support for release time and ongoing financial outlays for the program.
- Similarly, having the support of upper management to provide release time was not sufficient to guarantee it: The middle managers who ultimately are held accountable for their employees' efforts and productivity have to be won over to the benefits of the program. When the benefits accrue more to the organization at large and less to the manager's department (a type of externality), adjustments to the criteria by which the managers are evaluated might be needed (e.g., not charging their budgets for the release time).
- Scheduling classes to take place at the end of one shift and the beginning of the next can maximize participation while minimizing work disruption.
- The learning center model seemed a particularly effective vehicle for delivering basic skills instruction. In this model, basic skills are typically just one part of the curriculum. Other parts include computer-keyboarding skills, supervisor training, communication, stress management, mandated safety training, and so forth.

Because the learning center's diverse array of offerings is used by many more employees throughout the company than just those in need of basic skills remediation, the result is a broader and more committed set of stakeholders among both management and employees. In spreading the costs of the program over more activities than just workplace basic skills, it is much easier to justify the dollars spent on basic skills. The learning center also builds the capacity to address basic skills issues on an ongoing basis as needed. This capacity is critical for serving those incumbent workers whose skills deficits are not addressed immediately when the program is established and for serving the new hires who come on board at later dates. Moreover, it is easier to preserve confidentiality if the basic skills curricu-

lum is delivered one-on-one or via computer in the same facility where modules on higher level skills are offered.

Most of what other authors and I have documented appears simply to validate practitioners' personal experiences. The rich body of knowledge that exists in the minds of successful practitioners is much more extensive than what has been put down in writing. As with any pedagogical discipline, much of the knowledge is tacit, experiential, and context specific, lending itself to learning most effectively through personal contact. Thus, classroom learning, structured training sessions, and mentoring may be among the best practices through which information about effective implementation of workplace education programs can be shared by practitioners.

Such professional development activities are already in place in many states and appear to be gaining popularity and support. The proliferation of the Internet has facilitated knowledge sharing among practitioners who might otherwise be isolated in their local communities. Yet, these activities are far from universal, reflecting the need for continued support and increased funding.

One significant challenge for practitioners is often not companies' unwillingness to create a program but the determination of just what sort of program is best for a given company. The key is to be flexible and not try to put in place a one-size-fits-all type of program at all companies. I have had numerous conversations with experienced practitioners who recount the steep learning curve they faced in understanding the limits of what companies are willing to support. Each engagement with a company is context specific and requires mutual exploration of the company's needs and capacity to support on-site learning, along with the practitioner's ability to design and deliver the right curriculum. This engagement-specific learning curve is much less steep for the experienced practitioner, but it exists nonetheless.

HOW RESEARCH CAN PROMOTE MORE EFFECTIVE WORKPLACE EDUCATION

Research should investigate the following questions:

- What is the true cost–benefit tradeoff of workplace literacy programs? What are the full costs, both out-of-pocket and implicit (release time and time volunteered by the employee)? What is the complete range of impacts on both the workers and the company?

- What spillover societal effects (called *externalities* in the economics lingo) are realized that are not accounted for by the cost–benefit analysis for individuals and companies?
- How effective are grant and subsidy programs at promoting workplace education? Are some forms better than others for promoting training that would not otherwise take place?
- What are the limitations of viable on-site programs? For example, is there a minimum establishment size or a minimum number of participants? Can a curriculum be too narrow or too broad? How are on-site programs best integrated with other methods of delivering literacy services? How can they be best integrated with other on-site training efforts, such as learning centers?
- What is the role played by individual decision makers within companies (and unions) in starting and maintaining workplace education programs? Is there a pattern in the kinds of individuals involved in decision making that might account for why some companies have programs and others do not?

Not all of these questions can be answered in any one study. But through persistent, well-funded efforts, it should be possible to obtain most of the relevant answers over time.

CONCLUSION

What are the prospects for continuing and expanding workplace education programs? It all depends on the evolution of both the supply of and the demand for such programs. It would be premature to assume that the forces leading to the current state of skill demands for jobs filled by lower skilled workers will continue unchanged. Employers will learn from their current efforts, and this learning will affect their future choices of where to locate jobs and how to design jobs within a given geography. This in turn will influence individuals' educational acquisition choices, thereby altering the need for workplace education programs.[12] These dynamics notwithstanding, there are good reasons to believe that workplace education will continue to be a viable option for skills and workforce development. The issue, both empirical and theoretical, is the limits of that potential.

[12] See Cappelli (1993) for a related discussion.

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