21st Century Skills for 21st Century Jobs

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Executive Summary

Global competition, the Internet, and widespread use of technology all suggest that the economy of the 21st century will create new challenges for employers and workers. While it is possible to compete in this new global economy by creating low-wage, low-skilled jobs, America has chosen to take full advantage of its labor force and to create high-performance workplaces. If economic success is to ensure a high quality of life for all Americans, it will require adopting organizational work systems that allow worker teams to operate with greater autonomy and accountability. These new forms of organization and management cannot succeed without additional investments in the skills of U.S. workers. In the workplace of the 21st century, the Nation's workers will need to be better educated to fill new jobs and more flexible to respond to the changing knowledge and skill requirements of existing jobs. Meeting the challenge of employment and training will call not only for the best efforts of employers, educators and trainers, unions, and individual Americans, but also for new forms of cooperation and collaboration among these groups. Lifelong skills development must become one of the central pillars of the new economy.

With this responsibility comes enormous opportunity. Not only does a better educated and trained workforce create significant productivity gains and better bottom line results for American employers, but the more a worker learns, the more a worker earns. A multitude of data demonstrate that greater education and training pay. For example:

- Employers that provide formal training for their employees see a 15 to 20 percent average increase in productivity.

- Workers with more education earn higher wages. On average, college graduates earn 77 percent more than individuals with only a high school degree.

- Workers with more education enjoy greater benefits, experience less unemployment, and, when dislocated from their jobs, find their way back into the workforce with much more ease than those with less education. For example, dislocated workers with a high school diploma spend nearly twice as long to find a new job as a worker with an associate's degree.

The good news is that society is responding, and education and training is increasing:

- More than 57 percent of business establishments report that since 1990, the amount of formal education they provided has increased while only two percent report a decrease.

- Unions are increasing their commitment to workforce education and training, increasingly seeking joint union-management training initiatives; and more unions, district councils, and locals are creating training funds for their members.

- From 1980 to 1995, enrollments at community colleges, which play a special role in serving the needs of an older, employed student body, increased by 21 percent, due mostly to part-time students.

- The Federal government has made education and training a top priority, increasing investments in new programs and public resources, such as Hope Scholarships,

Lifetime Learning Tax Credits, expanded Pell Grants, the Workforce Investment Act, and One-Stop Career Centers. These innovative efforts are designed to make education and training accessible, affordable, and convenient for all Americans.

But, as a nation, there is still more work to be done to increase lifelong learning and skills development for all American workers, particularly for those who are starting with less education or employment experience.

- More than 90 million adult Americans have low levels of literacy. These individuals are not well-equipped to meet the challenges of the new economy and compete with workers of nations with higher literacy rates than the United States.

- Those in most need of skills upgrading often go without. Nearly 90 percent of those with at least a bachelor's degree receive formal employer-provided training compared with 60 percent of those who have a high school education or less.

- While the benefits from workforce skills development are clear, there are a variety of challenges that inhibit a greater investment in skills development. Often the fear of employee turnover and high training costs, particularly for small firms, serve as disincentives to employers seeking to invest in workforce education and training. Additionally, workers face a variety of constraints, such as a lack of time, money and information which impede their efforts to continue learning throughout their lives.

America is on the verge of a promising — but also challenging — set of new economic opportunities. In the 21st century, American competitiveness and worker prosperity will be tied tightly to the education and skill attainment of the workforce. Recognizing that no one can be left behind, it is incumbent on everyone — employers, educators and trainers, unions, workers, and the government — to build aggressively and purposefully upon the Nation's progress. Dynamic partnerships are essential to ensuring that all Americans have affordable and convenient access to acquiring skills for the 21st century economy. The economic health of the Nation and individual well-being rest on the success of this team effort.

> ***"In order to have a world class company and workforce, corporate America must create and foster an environment where there is continuous learning, training, alignment of strategic goals, and knowledge-sharing through the company. In doing so, it helps to create and prepare workers to assume more responsibilities and solve problems themselves. They need this to remain competitive in the industry."***
>
> **Michael A. Johnston**
> **Chairman, Merrill Lynch Credit Corporation**
> **1997 Malcolm Baldrige National Quality Award Winner**

The Changing Economy

Although it is often difficult to understand fully the breadth of changes that take place during one's lifetime, most Americans have some appreciation of the vast changes in technology, the workplace, and the economy over the last few decades and are continuing today. Global competition, the Internet, and widespread use of technology all suggest that the economy of the 21st century will create new challenges for employers and workers. For America to compete in this new global economy, it can either create low-wage, low-skilled jobs or take full advantage of the Nation's labor force and create high performance workplaces. If economic success is going to ensure a high quality of life for all Americans, it will require adopting organizational work systems that allow worker teams to operate with greater responsibility, authority, and accountability. And the United States has made its choice.

As recently as the 1950s, 20 percent of the workforce was professional, 20 percent was *skilled*, and 60 percent was *unskilled*. In dramatic contrast, by 1997, while professionals continued to be about 20 percent of the workforce, less than 20 percent are *unskilled* workers, while more than 60 percent are *skilled* workers.[1]

This great change in the composition of the labor market signals the dramatic shift the U.S. economy and workforce have been undergoing — a shift that is likely to continue in the coming years. In order to address these changes, U.S. workers must have the training, education, and skills necessary to navigate the next millennium.

The U.S. economy is projected to generate nearly 19 million new jobs over the period from 1996 to 2006. Services will contribute to more job growth than all other industry divisions combined.[2] Despite the popular perception of the services industry as a low-wage, in general, this industry requires above average educational attainment and the services industry trend alone will require a more highly educated and trained workforce. Due in part to global competition and communication, as well as rapid advances in technology, newer and more sophisticated systems of work, new ways to deliver

products, and innovative systems of management, the majority of jobs in the 21st century will require employees to have a broader range and depth of skills.

At the same time, "old" jobs are changing at a rapid pace. As computers and advanced technology become commonplace features across American workplaces — on factory floors, in small grocery stores, and in client-service operations — the basic and technical skill requirements of traditional jobs are changing. And, as American companies embed more knowledge in their product offerings and explore new, more team-oriented working models, the average worker will need greater skills.

Changing Skill Requirements for Existing Jobs

The demand for skilled workers is not some "future shock." American businesses know that the need for skilled workers increases every day. Fifty-six percent of establishments report that restructuring and the introduction of new technology has increased the skill requirements for non-managerial employees.[3] Indeed, American employers increasingly seek employees with a portfolio of basic, technical, organizational, and company-specific skills.[4] (See figure 1.)

1. Employers Seek a Variety of Skills

***Basic Skills*:** The academic basics of reading, writing, and computation are needed in jobs of all kinds. Reading skills are essential as most employees increasingly work with information — on computer terminals, forms, charts, instructions, manuals, and other information displays. Computation skills are needed to organize data for analysis and problem solving. Writing is an essential part of communications, conveying guidance to others, and in establishing a permanent base of information.

***Technical Skills*:** Computer skills are well on their way to becoming baseline requirements for many jobs. Workers use a growing array of advanced information, telecommunications, and manufacturing technologies, as employers turn to technology to boost productivity and efficiency, and to deliver services to customers in new ways. In 1986, business spending on information technology represented 25 percent of total business equipment investment. By 1996, information technology's share had risen to 45 percent. For some industries — such as communications, insurance, and investment brokerages — information technology constitutes over three-quarters of all equipment investment.[5] Forty-two percent of production and non-supervisory employees in manufacturing and service establishments now use computers.[6] Moreover, information technology changes rapidly, requiring workers to frequently upgrade their skills for competency in successive generations of technology.[7]

Organizational Skills: New systems of management and organization, as well as employee-customer interactions, require a portfolio of skills in addition to academic and technical skills. These include communication skills, analytical skills, problem-solving and creative thinking, interpersonal skills, the ability to negotiate and influence, and self-management. More than half of non-managerial employees participated in regularly scheduled meetings to discuss work-related problems, indicating the need for these skills.[8]

Company Specific Skills: New technology, market changes, and competition drive companies to innovate, constantly upgrade products and services, and focus on continuous improvement of work processes. As a result, employees must frequently acquire new knowledge and skills specifically relevant to the company's products and services, and their production processes or service delivery modes.

The sources for this demand are many. Certainly, enormous advances in technology are a significant reason. Many products today incorporate advanced technologies such as digital circuits and advanced materials. Their manufacture relies on an array of automated technologies that control production and check quality. Materials delivery and product distribution also require understanding and applying sophisticated computerized information systems. Technology and knowledge are used increasingly to raise the value of services. Wrapping services with extra knowledge-based features for the customer — such as delivery or financing options, and other forms of customization — can help a business differentiate its service from that of its competitor and provide an edge in the marketplace.

At the same time, new forms of workplace organization and management are beginning to replace hierarchical organizations, chain-of-command communications, as well as narrow, repetitive jobs with little or no worker discretion. Team-based workplaces, and decentralized, "flatter" organizations with cross-functional groups are replacing the old, rigid, "stovepipe" organizations. (See figure 2.) For example, in a world-class manufacturing plant, work teams may handle decision-making and other responsibilities such as daily job assignments, materials management, and production scheduling.[9]

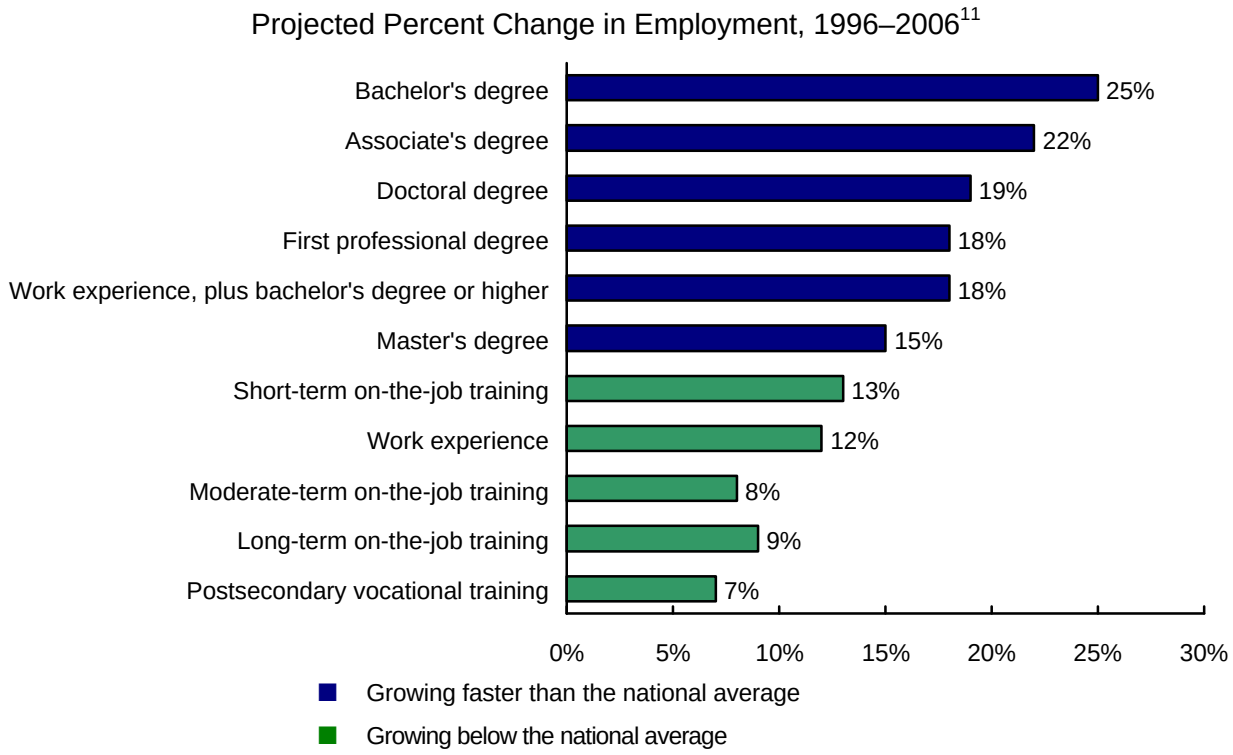
2. Jobs Are Changing Due to Shifts in Organization and Management[10]

Element	Old System	New System
Workplace organization	Hierarchical Function/specialized Rigid	Flat Networks of multi/cross-functional teams Flexible
Job design	Narrow Do one job Repetitive/simplified/standardized	Broad Do many jobs Multiple responsibilities
Employee skills	Specialized	Multi/cross-skilled
Workforce management	Command/control systems	Self-management
Communications	Top down Need to know	Widely diffused Big picture
Decision making responsibility	Chain of command	Decentralized
Direction	Standard/fixed operating procedures	Procedures under constant change
Worker autonomy	Low	High
Employee knowledge of organization	Narrow	Broad

Changing Skill Requirements for New Jobs

Given this fresh focus, it should come as no surprise that the fastest growing jobs require additional education and training, with the greatest increases in technology-related fields. Trends in business and technology are placing a competitive premium on education and training, creating opportunities for workers and workforce entrants who have postsecondary degrees and who continue to upgrade their skills and knowledge. In this workplace of today and tomorrow, those workers who have more education will be more desirable as employees. America's competitiveness will increasingly depend on what Americans learn over their lifetimes. As Figure 3 indicates, eight of the ten fastest growing jobs of the next decade require college education or moderate to long-term training.

3. Jobs Requiring High Skills Will Experience Fastest Employment Growth



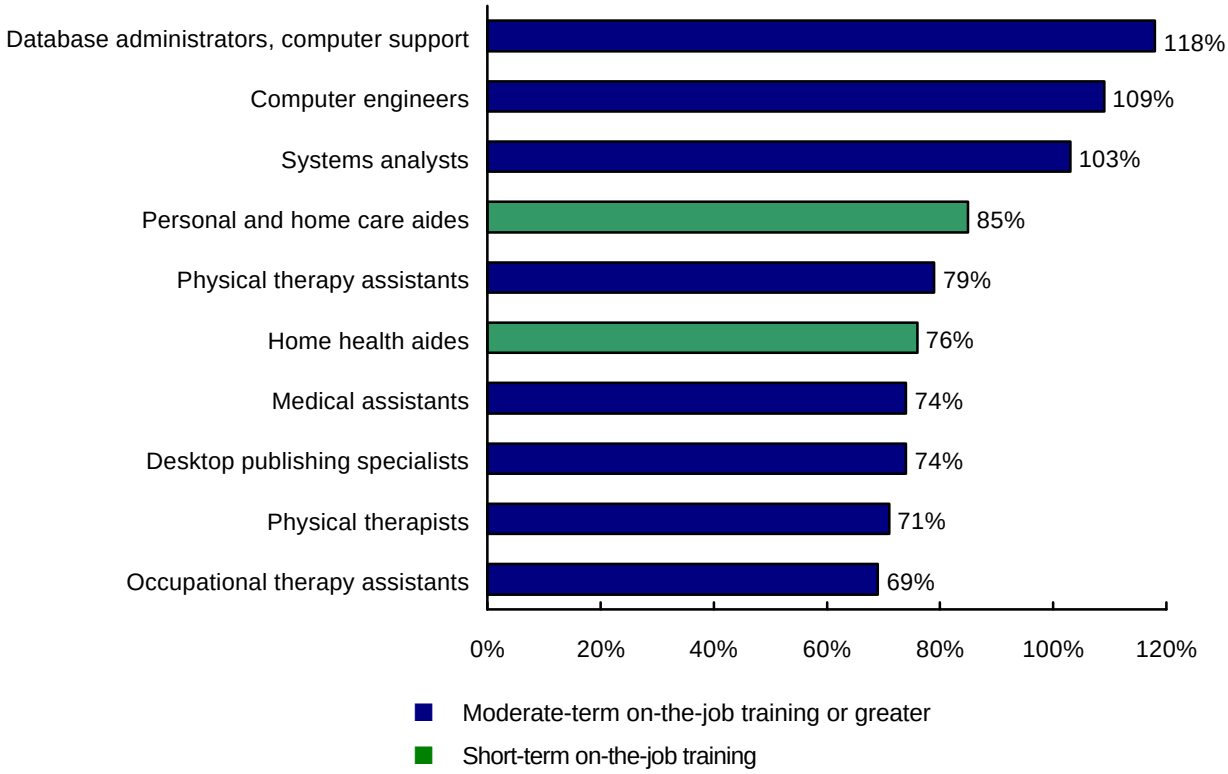
Note: The employment growth for all occupations is 14 percent.

Between 1996 and 2006, the U.S. economy is projected to increase employment by 14 percent on average. [12] Jobs requiring a bachelor's degree will increase 25 percent, nearly double the predicted national average. In contrast, jobs that do not require postsecondary degrees will increase at rates that trail the national average.[13]

Within occupational categories, the message is the same: three out of four workers currently are employed in occupations that generally require education and training below the associate degree level — categories that are expected to grow more slowly than average.[14] Employment growth is expected to be fastest for positions that require some type of formal postsecondary education.

4. Most of the Fastest Growing Jobs Require More Education and Training

Projected Percent Change in Employment from 1996–2006[15]



Of the 10 job categories that are projected to grow the fastest, only two — home health aides and personal and home care aides — require skills that can be acquired through short-term, on-the-job training. The three positions that will increase at the highest rates — database administrators, computer engineers, and systems analysts — all generally demand college degrees. (See figure 4.)

The facts are clear. As the nation approaches the 21st century, the need for educated and skilled workers is greater than ever. New jobs will increasingly require a more educated workforce. Even traditional jobs will require workers with a broader, deeper and more flexible portfolio of skills.

However, the amount of training American workers need to navigate the new economy is varied. Many adult Americans lack even basic skills. Ninety million adult Americans are at the lowest levels of literacy. More than 1 in 5 Americans demonstrate literacy and numeracy skills at or below the 5th- grade level while another 25–28 percent demonstrate skills between the 6th- and 8th-grade levels.[16] At the same time, other adults need only small amounts of additional training to meet the skill needs of the new economy. This begins to paint a picture of the diverse challenges we face in order to increase investment in the skills and education of the workforce.

> ***From its very beginning America has expressed a commitment to fulfilling the dreams and potential of its people through education. Since the time of Thomas Jefferson, the democratic system has been based on developing an informed citizenry.***
>
> **The Commission for a Nation of Lifelong Learners, November 1997**

Employers and Workers Benefit from Investing in Education and Training

Investing in the education and training of the American workforce yields significant advantages for individual workers and employers alike, especially given the drive to create high-performance workplaces that emphasize worker autonomy and flexibility. Workers with advanced or upgraded skills are one of several key investments for competitive business performance, which in turn, are essential to raising the standard of living for all Americns.

For employers, the gains resulting from providing increased education and training are significant. Company support of further skills development expands the pool of workers from which employers recruit, hire, and promote, consequently increasing their productivity, and ultimately, increasing competitiveness and employers' bottom lines.

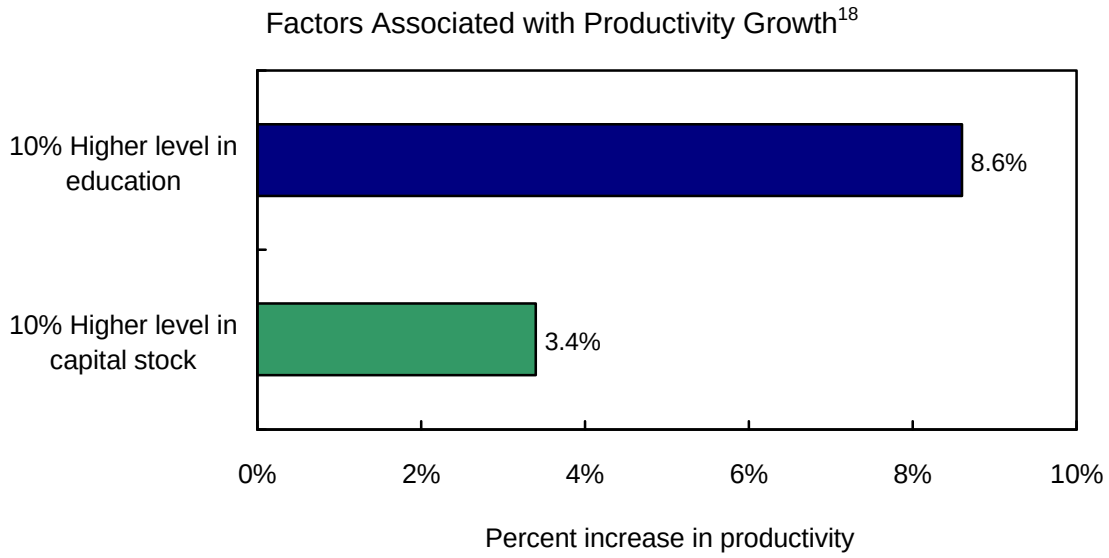
For individuals, higher levels of education and training can result in significant benefits, from higher wages to greater job security. Indeed, the higher the level of education and training workers have, the higher their average corresponding wages. Additionally, workers with more education average lower unemployment rates, find new jobs faster and are more likely to have employment-provided benefits. Education and training is part of a positive cycle of benefits for both employers and workers.

A note to readers: For purposes of this report, "education" generally refers to skill enhancements received through the elementary and secondary school systems, adult basic education providers and traditional academic post-secondary education programs. "Training" generally refers to skill development that occurs in vocational settings. A subset of training is "on-the-job training" (*i.e.* training that usually occurs in the course of employment). Training can be formal (*e.g.* classroom based with a set curriculum) or informal (*e.g.* "learning while doing" and assistance provided as needed).

Employers Benefit from a Skilled Workforce

To run a successful business, an employer needs qualified, creative, and highly-motivate workers. Unfortunately, employers today have concerns about the quality of their workforces and the pool of job applicants. On average, employers report that one out of every five of their workers is not fully proficient in his or her job.[17]

5. Education Increases Productivity



To remedy this situation, many employers have begun to invest in workforce skills, an investment which substantially benefits both employers and employees, particularly when the workplace is structured in a way that takes full advantage of worker skills.

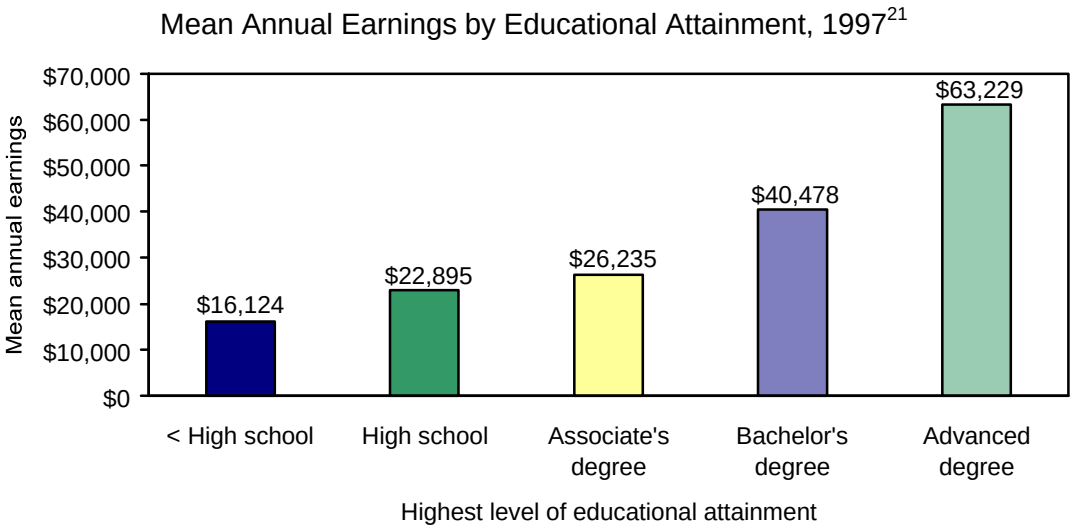
- One study found that establishments whose workforce had a 10 percent higher than average educational attainment level had an 8.6 percent higher than average productivity level. (See figures 5.) In comparison, establishments with a 10 percent higher than average level of capital investment had only a 3.4 percent higher than average payoff from the capital. The study found that these differences were even larger in the non-manufacturing sector than in the other sectors of the economy.[19] This is an especially important finding considering the very large role service-producing industries play in the American economy.

- In addition to educational attainment, research on the economic effects of employer-based training consistently shows significant benefit to firm productivity. Firms that provide formal, on the job training, raise their productivity by roughly 15 to 20 percent, on average.[20]

Employees Benefit from Education and Training

Although investing in workforce education and training produces tangible benefits to employers, those benefits are not limited to employers alone. It is a well established that workers also benefit from education and training. Employers recognize that a more skilled and educated workforce performs better, and they reward those skilled workers in a variety of ways. The most obvious benefit to an employee with skills and education is higher wages. For example, in 1997 more educated workers had substantially higher earnings than less educated workers. (See figure 6.)

6. Increased Education Means Higher Wages



- In 1997, the average high school graduate earned 42 percent more than the average person with less than a high school education — $22,895 compared to $16,124. The average college graduate made 77 percent more than the typical high school graduate — $40,478 compared to $22,895.[22] In addition, the economic payoff to education is strong both for continuing students as well as returning adult students.[23]

- Even the middle range of earnings for college graduates is barely achievable for the overwhelming majority of high school graduates. Among male workers, fewer than 20 percent of high school graduates are likely to achieve the median earnings of college graduates.[24]

- Non-degree postsecondary programs also increase earnings. For example, one year of non-degree education at a community college increases hourly wages above those for high school graduates by eight percent for males and five percent for females under 21 years old. *Adult* males gain an even larger return from non-degree college education. On average, their wages are 14 percent higher than those of their high school graduate counterparts.[25]

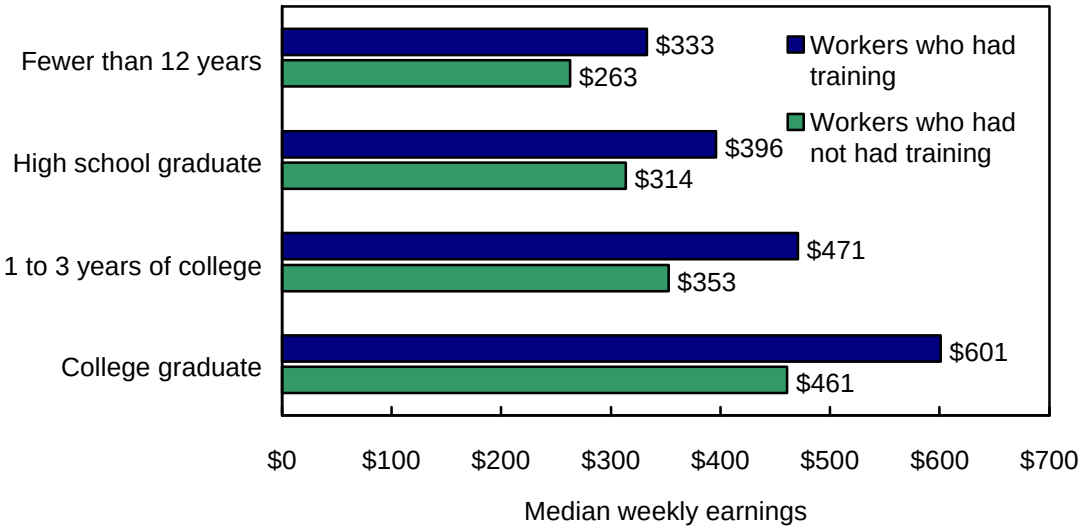
While education has always been valuable, the growing importance of knowledge and skills in the workplace have made it more valuable than ever.

- In 1975, a college graduate earned 58 percent more than a high school graduate, growing in 1997 to a 77 percent wage premium.[26]

- Americans increasingly recognize the value of education. Today, young people are nearly twice as likely to have a bachelor's degree as someone over the age of 65.[27] Given the payoffs to education and training, it is no surprise that, over time, more Americans have increased their investments in college education.

7. Higher Earnings for those with More Training

Median Weekly Earnings of Full-Time Workers by Educational Attainment and Receipt of Training, 1991[28]



Note: Data tracks workers who needed no training to qualify for their current jobs.

Formal schooling is not the only means of raising the incomes of American workers. Overall, workers who receive skill improvement training earn higher wages, regardless of their level of education.

- Even among workers with the same educational attainment, those who receive training have significantly higher earnings. (See figure 7.) The wage premium of those with training ranges from 26 percent for high school graduates to 33 percent for those with one to three years of college.[29]

- Moreover, some kinds of training are associated with higher wages than other kinds of training. Formal company-provided training produces the largest wage benefits for employees at all educational levels, with a 16 percent increase in the first year. [30] In contrast, one study showed that on average, informal, "learning-by-doing," training did not appear to lead to significant long-term wage increases.[31]

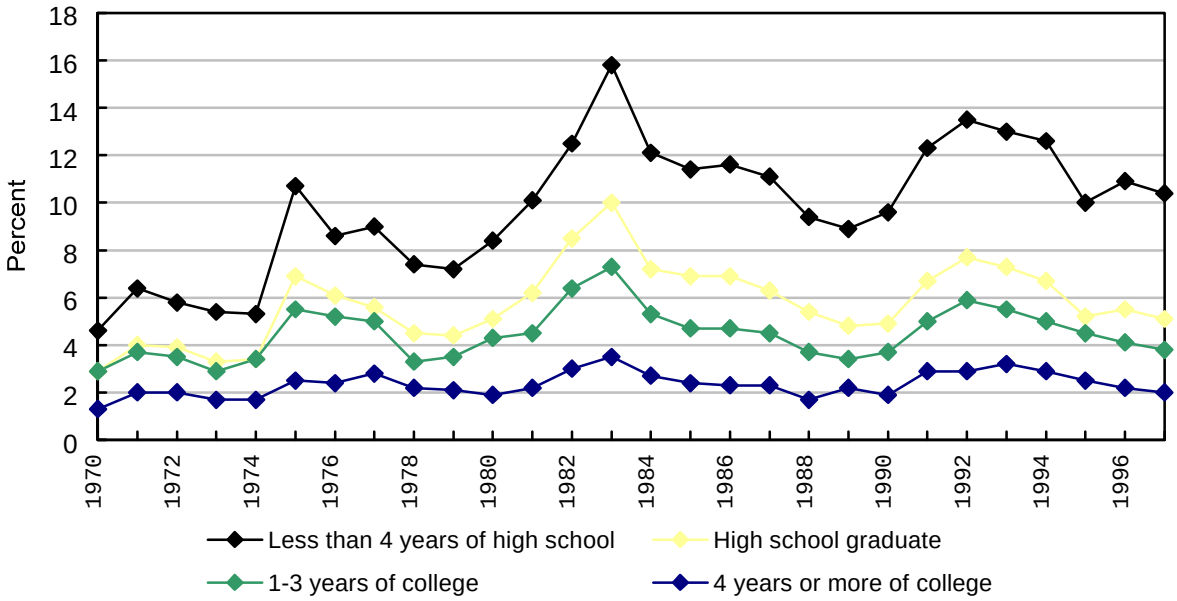
- Productivity increases in the manufacturing sector are greater for firms the more time employees spend in formal, *off*-the-job training. This may be because employers

who invest in off-the-job skill development may choose more advanced and time-intensive training.[32]

Payoffs to increased education go beyond increased earnings. For example, greater skills, education and training produce a greater likelihood that an employee will receive a pension and health insurance[33] and have greater employment security. For example, unemployment rates are significantly lower for those with more education.[34]

8. Lower Unemployment Rates for Those with More Education

Unemployment Rates for 25–64 Year-Olds by Educational Attainment,



1970-1997[35]

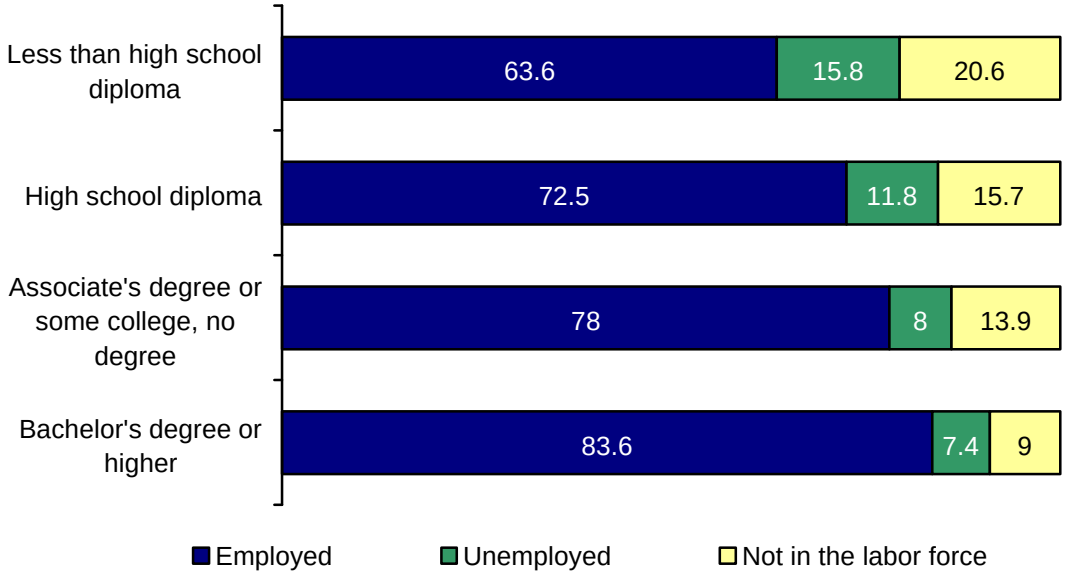
- High school dropouts experienced the most unemployment over the last two decades, with average unemployment rates of nearly 11 percent from 1977 to 1997, compared to average unemployment rates of 2.5 percent for those with four years or more of college education.[36] (See figure 8.)

- In terms of basic skills, among adults who have difficulty interpreting data from sources such as uncomplicated tables, graphs and maps (*i.e,*. those who are at the two lowest levels of literacy), 65 percent are not in the labor force. In comparison, only 10 percent of adults who can easily interpret complex documents (*i.e.*, those who are at the two highest levels of literacy) are not in the labor force. Similarly, 70 percent of those who are unemployed are at the lowest literacy levels, while only 5 percent of the unemployed are at the highest levels.[37]

Similarly, workers with the lowest educational attainment are more likely to lose their jobs than workers with more education. And, workers are more likely to secure new jobs as their level of educational attainment increases. Higher educational attainment offers greater employment security, even for those who are fired, laid off or downsized.

9. Displaced Workers with More Education are More Likely to Find Reemployment

1998 Status of Workers Who Lost Jobs in 1995, 1996, or 1997[38]



- Among displaced workers, those who had the most success in finding new jobs had higher educational attainments. For example, only 7.4 percent of displaced workers with a bachelor's degree or higher remained unemployed in 1998 after losing their jobs in either 1995, 1996 or 1997; 15.8 percent of displaced workers with less than a high school diploma were still looking for work in 1998.[39] (See figure 9.)

- Displaced workers with more education re-enter the workforce at much faster rates than those with less education. Dislocated workers with a high school diploma spent a median 8.5 weeks before finding a new job — nearly twice as long as a worker with an associate's degree.[40]

- On average, of those displaced workers who found a replacement job, the wages for the new job were higher than wages for their previous job for those with an associate's degree or more and lower for those with less than an associate's degree.[41]

Foreshadowing the Challenges

In the new economy, investing in education and training increases competitiveness and productivity for businesses. This translates into prosperity and security for workers. While the benefits to workforce development are fairly clear for both employers and workers, there are legitimate reasons that more employers and workers have not increased their investments in these activities.

Firms may fear that an investment in workers would lead to a higher turnover in their workforce. While this fear may be lessened for those providing skills that are unique to the particular firm, the loss of employees with transferable skills could make such training a poor investment. In addition, firms, particularly small businesses, may not invest in workforce development because of prohibitive costs associated with providing training as well as a lack of full information about the potential benefits.

Similarly, some workers are not able to pursue additional skills development. A general lack of the information or a lack of a single source of information may mask the range of opportunities that are available. In addition, high tuition can also discourages workers from pursuing additional training and education. Similarly, a lack of adequate transportation, family obligations, and a lack of child or elder care often limits when and where workers can engage in workforce education and training. And, some employees may not receive training or education because of unique barriers particular to members of certain racial, ethnic and age groups, to women, and to those with disabilities.

Finally, this inability to address adults' needs can limit participation in education and training, as well as limiting the benefits for those who do appreciate it. Overcoming these very tangible barriers to participation in work-related education and training requires many education and training programs are not adequately designed to meet the needs of the adult learner.

As overcoming barriers to investing in education and training are fundamental to the success of workforce skills development, these and other barriers are addressed in more detail in a later chapter.

"100 years ago they struck gold in California. 10 years ago I struck gold with Project Read "

Enrique Ramirez,
United Airlines computer trainer
and former baggage handler

Education and Training of the Workforce

It is apparent that there are many providers of workforce education and training. Not surprisingly, the most common providers are employers. Employers know what skills they need their workforce to possess, and many businesses are increasingly taking the initiative to ensure that their employees are equipped with these skills.

Educational institutions also have an important role in educating and training the workforce, not only independently, but also as vendors to employers who seek outside providers of training. Community colleges play a particularly important role in adult education as they are often geared toward educating an older, working population.

Also, labor unions have committed to working with management to create far-reaching training initiatives. Unions' negotiations with employers have created productive joint union-management initiatives. These initiatives often focus on broader skills development when compared with the firm-specific training usually offered by employers.

Finally, the government also has a stake in educating the workforce. While many of the government's training efforts focus on low-income and unemployed individuals, this focus is being expanded through a variety of programs and initiatives that address the broader labor force.

With so much activity by so many providers, it is important to note that workforce training and education is not evenly spread throughout the labor force. The young, the elderly, and the less-educated are less likely to receive education and training. Such disparities mean that there are substantial voids in today's training efforts, creating challenges with significant economic and social consequences.

Providers of Workforce Education and Training

Educational Institutions

Among educational institutions, community colleges are well-suited to serve adult workers. They are economical, often conveniently located, offer flexible schedules and broad accessibility, and provide a wide array of vocational course offerings. Indeed, community colleges (or public two-year institutions) enroll older students who are more likely to be working and are more likely to be enrolled part-time than are students who attend four-year educational institutions.

- The average age of students at all public two-year institutions was 29, compared to an average age of 24 for students at four-year colleges.[42]

- Eighty-four percent of students at public, two-year institutions work while in school, compared to 76 percent at public and private four-year institutions.[43]

- From 1980 to 1995, public and private four-year college enrollments increased 16 percent, while enrollments at two-year public colleges (primarily community colleges) increased 21 percent.[44] Much of this increased enrollment can be attributed to increased part-time enrollments.

- Sixty-five percent of students at public two-year colleges enroll part-time compared to 23 percent at four-year colleges.[45] While full-time enrollments increased at the same rate for four-year and two-year colleges from 1980–1995, part-time enrollment increased by 26 percent for public, two-year colleges compared with 18 percent in four-year colleges.[46]

In order to accommodate these nontraditional students, educational institutions have adopted new and innovative methods for delivering instruction. One such method is distance learning, the most common form of which is video technology. In addition, courses on the Internet are also expanding.[47] Distance education offers great potential for providing education and training to disabled individuals, those in rural or isolated areas, those on nontraditional time schedules, and other individuals who find it difficult to attend traditional classroom training.

- One third of all higher education institutions offered distance education courses in the fall of 1995 and another quarter planned to offer such courses by 1998.[48]

- Public institutions offered distance education courses much more frequently than did private institutions. Fifty-eight percent of public two-year and 62 percent of public four-year institutions offered distance education courses in the fall of 1995, compared with 20 percent of private two-year and 12 percent of private four-year institutions.[49]

- Workers are the most commonly targeted group of students for distance education courses. Thirty-nine percent of all institutions offering distance education target professionals seeking re-certification, and 49 percent target other workers who are seeking skills training.[50]

Employers

While formal schooling provides an essential foundation for the education and skills needed by the average American worker, the provision of new skills and training is no longer limited to school.

- Business and industry provide almost one-half of the work-related training and education courses taken by adults.[51]

- Employer-provided training has been on the rise. In 1994, 57 percent of establishments reported that the level of formal training they provided had increased since 1990, while only two percent reported a decrease in formal training.[52]

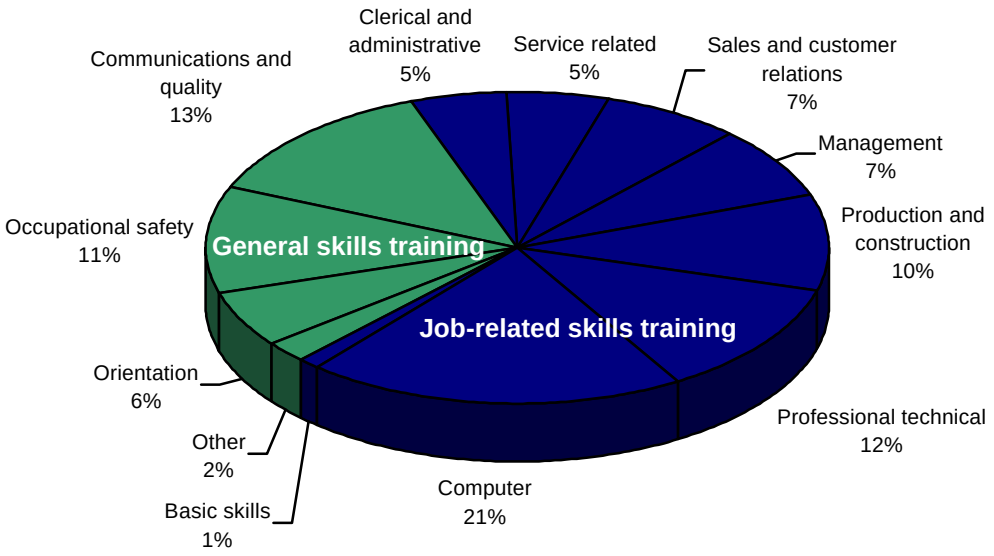
Employers, on average, spend about $30 to $40 billion annually on formal worker training. This amounts to about one percent of payroll costs. However, not all firms are equally likely to provide education and training to their workforce. [53]

- On one hand, a few companies make relatively large commitments to training. Companies like IBM, Motorola, and Federal Express spend between three and five percent of payroll on training their employees.[54]

- On the other hand, in the manufacturing sector, over half (53 percent) of American manufacturers spend less than 1 percent of their payroll on training and four percent of manufacturing companies spend nothing. Nearly one-half do not have retraining programs to provide incumbent workers with new or updated skills.[55]

10. Most Formal Training Focuses on Job-Related Skills

Formal Training by Purpose[56]



Just over one-half of training participants learn general skills which accounts for one-third of total training hours.[57] Conversely, nearly one-half of training participants learn job-related skills, which accounts for two-thirds of total hours of training.[58]

- While computer training comprises a relatively high proportion (20 percent) of total training hours,[59] basic skills training makes up only one percent of total employer-provided training. [60]

- There are key distinctions between where, when, and how employers provide training. Most employer-provided training takes place on-site in the workplace and during normal business hours. Overall, 71 percent of the formal training reported takes place during work hours with three-quarters of that training taking place in the workplace.[61]

Labor Unions

Labor unions have a long history of making workforce education and training a priority, both at the bargaining table and by advocating for comprehensive public systems. In a wide range of industries, labor organizations have operated training programs as well as created mechanisms for privately financing worker education and training. The Joint Apprenticeship Training Committees spend $500 million a year to train apprentices and journeymen at more than 1000 locations in the U.S. and Canada.[62]

Through collective bargaining unions and employers often agree to fund a broad range of work-related education and training. Particularly, among small firms, where training is less prevalent, firms that are unionized are more likely to offer training than those that are not unionized.[63]

- Typically, labor-management negotiations include a formula for providing guaranteed, predictable financing, and co-administration of the training fund.

- Joint training partnerships also secure for workers some of the general skills training that employers may not otherwise provide, making the workers more adaptable to changing job requirements.[64]

- In comparison to many traditional employer-provided training programs, joint training initiatives tend to focus more on career development and the special needs and considerations of adult learners. As a result, participation in these programs is often high.

- The United Steelworkers of America—Institute for Career Development boasts a participation rate of 23 percent,[65] and nearly 40 percent of the employees at AT&T participate in programs sponsored by the Alliance for Employee Growth and Development.[66]

As unions help fill the gap for broader skills development, they are accompanied by the efforts of the government in fostering general skills development for a wide range of workers.

The Public Sector

The local, state, and federal governments invest substantially in training and postsecondary education. In fiscal year 1998, the Federal government's expenditure for postsecondary education was $48 billion. Federal programs finance two-thirds of all direct student aid (excluding state and local support for higher education).[67] For example, in 1994–95, funding through the Pell grant program helped just under 1.5 million adults over the age of 24 further their education and training.[68]

In addition to Pell grants, student loans and tax credits, the Federal government invests nearly $7 billion a year through Department of Labor programs to help low-skilled and jobless individuals train for and find jobs. Through the Workforce Investment Act, One-Stop Career Centers are being expanded to provide incumbent, disabled, low-income ,and dislocated workers with job search assistance, employment counseling, and training services. [69]

Reflected by its many new and innovative programs, the Federal government has placed a high priority on making education and training accessible, affordable, and convenient for all Americans. (See figure 11.) Many of these programs are carried out at the state and local levels.

11. Federal Initiatives that Support Workforce Education and Training

Postsecondary Education and Other Training

Hope Scholarships: With Hope Scholarships, students in the first two years of college or other eligible post-secondary training program can get a tax credit of up to $1,500 for tuition and fees.

Lifetime Learning Credit: Students beyond the first two years of college, or those taking classes part-time to upgrade their job skills, can receive a 20 percent credit for the first $5,000 of tuition and fees each year through 2002. After the year 2002, the credit is available on the first $10,000 in tuition and fees.

Pell Grants: This program provides grants to low and middle-income undergraduate students.

Student Loans: Federal Family Education Loan program guarantees commercial loans, and the Direct Loan Program provides loans directly to schools and students.

Learning Anytime, Anywhere Partnerships: Provides grants to partnerships of two or more independent organizations to ensure that high-quality learning opportunities are available to distance education students.

Montgomery G.I. Bill — Active Duty and Selected Reserve: Veterans and reservists receive education benefits for degree and certificate programs, flight training, apprenticeship/on the job training, correspondence courses, and other training.

Veterans Educational Assistance Program: Benefits may be used for degree and certificate programs, and other training.

Workforce Development

Exclusion for Employer-Provided Educational Assistance: A tax-exemption for employer-provided educational assistance for undergraduate courses that begin before June 1, 2000. Employers may continue to provide up to $5,250 per year in educational assistance to each employee on a tax-exempt basis for courses beginning before that date, regardless of whether the education is job-related.

Workforce Investment Act of 1998: Provides job search, employment counseling, and training services to adults, dislocated workers, and youth.

One-Stop Delivery Systems: In a single neighborhood resource center, One Stops provide information about and access to a wide array of job training, education, and employment services.

Adult Education and Literacy: Funds state and local programs to help educationally disadvantaged adults—including welfare recipients and immigrants—develop basic skills (including literacy), complete secondary education, and learn English.

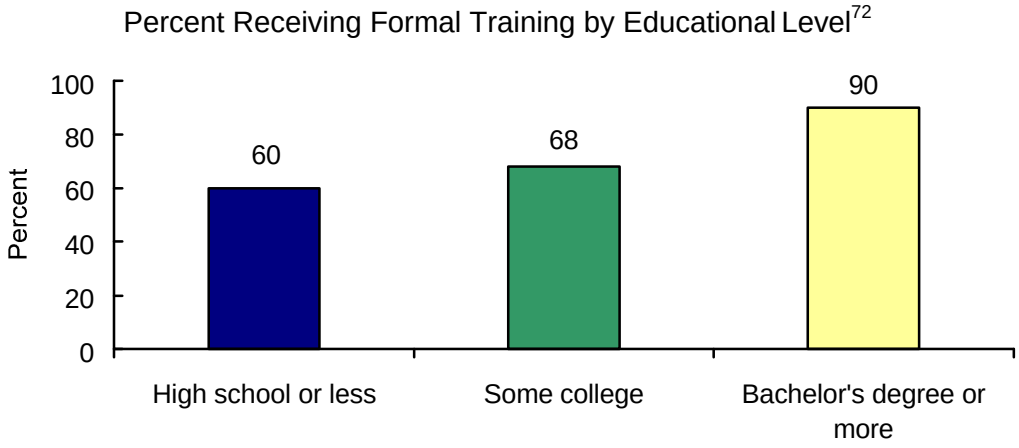
America's Learning Exchange (ALX): Part of America's Career Kit, ALX is an Internet program makes it easier for employers and individuals to find the training they need.

Manufacturing Extension Partnership: Helps smaller manufacturers address work with education and training providers to match their capabilities with manufacturers' requirements. Companies are assisted through more than 400 non-profit linked centers and offices around the country.

Participants in Education and Training

To fully understand the state of workforce education and training in the U.S., it is important to understand not only what kind of education and training is being provided and by whom, but also, who is receiving that education and training. In 1995, 40 percent of people 16 years of age or older and not enrolled full-time in school participated in some form of adult education; one-half of them were enrolled in work-related courses.[70] Roughly four million adults were enrolled in basic education and English as a Second Language courses.[71]

12. Most Educated Employees Receive the Most Formal Training



Among workers who receive formal, employer-provided training, the most educated reap the greatest benefits. Nearly 90 percent of those with at least a bachelor's degree receive formal employer-provided training, compared to 68 percent of those who have some college and 60 percent of those who have a high school education or less.[73] (See figure 12.)

Additionally, workers in positions associated with professional and managerial work are the most likely to participate in education and training courses.

- College teachers, managers and executives, and other professionals have an adult education participation rate of 41 to 47 percent; those in service, sales, and administrative support positions have a participation rate of 21 to 29 percent, while those in the trades participate at rates of 11 to 22 percent.[74]

- These differences in participation rates are influenced by the fact that some professions require higher levels of education. And, the more technical the job, the more likely the worker is to participate in work-related education.[75]

Thus, while many workers are participating in education and training, this participation is not even across all segments of the workforce. In order to improve access opportunities for all Americans, it is imperative to understand the barriers that limit many workers and employers' investments in education and training.

"Our mission is to provide the women in our program with the tools and resources they need to make informed decisions and determine their own path in life. The role of our training program is to provide information, training, access to resources, both financial and technical, self-development and support. We try to demystify the process and provide practical information as well as technical training. We seek to empower women by providing them with the knowledge to be self-sufficient."

Lynn Cutler, President
Women's Opportunities Resource Center

Next Steps: Challenges and Opportunities

Given the demand for skills and the clear benefits of greater education and training for both employers and workers, the challenge to the Nation is to develop and maintain the best-skilled workforce in the world. Effective partnerships among employers, workers, educational institutions and the government can help businesses and workers overcome the challenges that so often limit their training investments, so that they many reap the benefits associated with increased skill development.

Workers

The incentives to acquiring additional education and training are powerful. Higher skilled workers are paid more and are less likely to lose their jobs or to remain unemployed than are less skilled workers. And yet, only 10 percent of those expressing an interest in additional education or training actually enroll in a training program.[76] The reason for this lack of action is, that while the benefits of further skill development are high, many of the costs are also high, particularly for adults.

- Focus groups of incumbent workers interested in lifelong learning indicate that there are three primary barriers to pursuing additional education or training: the difficulty of scheduling courses, the time commitment required, and the cost.[77] The most common barriers to participation reported by non-participants who knew of offerings were a lack of time (47 percent) and high cost (30 percent).[78]

- Also at issue may be a lack of good information about opportunities for workers to participate in additional education and training. Of adults who expressed an interest in work-related courses, 40 percent were unaware of relevant offerings.[79] The lack of

a single source of information about all available programs makes it difficult and time-consuming to obtain needed information on educational opportunities.[80]

Any effective strategy to increase the skills of the workforce must reduce the substantial barriers that workers face in getting additional education and training. Innovations in distance learning, financial aid, workplace-based education programs, and centralized career centers are promising approaches to easing such constraints.

Employers

Among the gains associated with workforce skill development are increased productivity. If the costs of providing this development were minimal, many employers would expand investments in their workforce. However, the costs are not necessarily minimal. Many employers hesitate to train their workers to have general, portable skills, in part, because they fear losing their workers after they have trained them. As a result, firms are more likely to train workers to have company-specific, non-transferable skills.[81] Similarly, employers are less likely to invest in workers they anticipate will leave the firm.[82] That said, at least one recent study shows that workers who participated in training were neither more nor less likely to leave their firm after training. This result suggests that a better understanding of the effects of training on worker mobility may ease employers' fears.[83]

While these challenges can affect any firm, they are likely to be most acute among smaller firms--and the majority of American workers are employed by small- and medium-sized companies.[84]

- Firms may have prohibitively high training costs per employee. Smaller firms, in particular, usually have a smaller group of workers at any given time who need training, limiting their ability to spread the costs of training over a large employee base.

- A smaller workforce limits the ability of small firms to retrain and promote workers from within the firm[85] which also acts to discourage smaller firms from investing in and providing as much formal training as their larger counterparts.

- An even more formidable barrier in firms may be the lack of expertise and technical resources necessary to design and implement effective workforce development programs.

Education and training efforts are heavily concentrated among large firms and those businesses with lower turnover. However, as employers adopt new and changing technologies, an increasing number will need to explore ways to expand and update the skills of their workforce. Regional consortia and labor management partnerships are two promising approaches to decreasing training costs by spreading them among several entities, thereby making training more affordable and reducing employer concerns about employee turnover.

Educational Institutions

Educational institutions, including two-year, four-year, technical and vocational colleges, are important providers of workforce education and training. Regular degree programs, non-credit offerings, and customized training programs all play a role in workforce skill development. To best serve the needs of workers and employers, educational institutions must address employers' needs for both general and industry-specific training, as well as employees' needs to minimize time, cost, and scheduling burdens.

Understanding the obstacles the adult working population faces in acquiring additional education is essential to increasing enrollments among this population. In response to the challenges of educating a working population, educational institutions have a number of factors to consider when designing course offerings:

- Adults often have special learning needs. For example, curricula and teaching styles that serve young people well may not be effective for the returning student.

- Among adults potentially interested in acquiring additional education or training, 54 percent report lack of time as a barrier, forty percent report that courses are not available at convenient times, and 25 percent consider distance between their home and educational institutions to be a barrier.[86]

- Forty-one percent of participants in adult education said their "work schedule" made it difficult to participate in adult education, 37 percent said that "meeting times" constituted an obstacle, 30 percent said that family responsibilities interfered with their participation, and 22 percent cited the location of classes as a barrier.[87]

- A majority of participants look for programs and focused on particular careers that can be completed in a relatively short period of time, even if undertaken part-time while working. Participants report a need for flexibility in education programs, including scheduling of classes, access to professors, and counseling outside of working hours.[88]

- Lack of financial resources is an issue for a majority of adults (56 percent) who are interested in acquiring additional education and training.[89] Some participants believe they are unable to afford further education and training without financial aid because of other financial obligations, but are ineligible for aid because of their income level. Many participants believe they have little choice but to borrow money, even though some express reluctance to take on more debt.[90]

Educational institutions can be the medium through which employers' needs for a skilled workforce and workers' needs for convenient and affordable work-related education and training are met. By understanding the skill needs of employers and the scheduling, financial, and family needs of employees, educational institutions can play a substantial and powerful role in the development of workforce education.

Education and training are pillars in constructing a competitive nation. The benefits to additional education and training are clear but the barriers and obstacles are not inconsequential. Employers, labor unions, workers, educational institutions, and government must work together to take full advantage of our workforce to thrive in the economy of the new millennium.

> ***"Investment in continuous learning has been critical to achieving our vision. Most importantly, it has reinforced that people are our most important asset, produced a highly-motivated team, and increased the level of service to our customers."***
>
> **—Ed Shultz, Chairman**
> **Dana Commercial Credit Corporation**

Promising Partnerships and Programs: Examples from Across the United States

This document profiles a representative sample of programs and partnerships around worker training and lifelong learning. Helping workers continually improve their skills throughout their careers will go a long way towards increasing the economic competitiveness of our nation, the productivity of our businesses, and the job security and satisfaction of our workforce. These partnerships and programs generally:

1. Help incumbent workers get the skills they need to get new jobs in emerging high-growth fields (such as technology and healthcare).

2. Help incumbent workers get the skills they need to continue to grow in their current jobs.

3. Help individuals get the basic skills they need to enter or move up in the workforce.

4. Help dislocated workers get the skills they may need to re-enter the workforce.

Alliance for Employee Growth and Development
8201 Corporate Drive, Suite 20
Landover, MD 20785

The Alliance is a joint training trust, which involves AT&T, Lucent Technologies, the Communications Workers of America and the International Brotherhood of Electrical Workers (IBEW). Most programs are delivered through a network of training providers, private vendors as well as colleges and universities. Using technology, the Alliance supports individual efforts to develop career and personal growth, and to enhance employability through continuous learning experiences.

More than 200 joint labor management Alliance Local Committees help identify educational needs, coordinate training, and build enrollment. Among the many innovative programs, the Alliance provides "Life/Work Planning" to assess an employee's aptitude and professional objectives. A recent initiative, the "technical skill aptitude" assessment, supports Alliance participants preparing to enter "high-tech"

certification programs. Following the assessment, an ongoing plan for self-development is created and implemented. Using distance learning, participants can receive instruction via electronic means, including the Internet. In addition, the program provides accredited training programs through collaboration with local education institutions. Also, the program provides customized technical training that allows employees to update their technical skills for evolving positions. Many Alliance courses help employees improve basic business skills for their current jobs. Some courses prepare them for new assignments within a company, while others prepare them for work in a variety of other fields.

Association of Rehabilitation Programs in Computer Technology

Tate Center for Technology and Educational Reform
Western Michigan University
3210 Sangren
Kalamazoo, MI 49008

The Association of Rehabilitation Programs in Computer Technology (ARPCT) is the nation's largest source of programmers, system analysts, and other computer related professionals with disabilities. It is estimated that over 10,000 of Americas current programmers and system analysts are persons with disabilities who are former graduates of the ARPCT training programs. Many of these individuals are persons with significant disabilities. The Association of Rehabilitation Programs in Computer Technology has forty-eight members that include 15 education programs at the university and college level as well as seventeen programs at rehabilitation training facilities. Almost all were originally started as IBM sponsored projects.

The programs all have a Business Advisory Committee that consists mostly of management information systems and other computer managers from major corporations across the nation. All ARPCT programs have a commitment to train and place people in successful computer careers. Participants, by addressing challenges in a direct and positive manner, know how to succeed in the workplace.

Chicago Commons Employment and Training Center (ETC)

1633 North Hamlin
Chicago, IL 60647

Chicago Commons Employment and Training Center (ETC) is an adult literacy and job training program serving long-term welfare recipients who face numerous obstacles to self-sufficiency, including learning disabilities. Women receiving public aid come to ETC for the opportunity to improve their skills and simultaneously resolve the various issues affecting their lives. Most participants struggle with many barriers that have kept them from success in the past. A majority of participants are long-term welfare recipients who are considered to be "hardest to serve."

ETC works with participants to provide a bridge to jobs or high-quality vocational programs. The program's strengths include innovative community partnerships and a strong customer focus. They also work closely with local businesses to find out what skills are needed for real jobs. The program tailors education and training activities according to employers' needs. They also work with businesses to arrange apprenticeships and internships for their clients. (Many clients are offered a full-time job after their apprenticeship/internship.) While most entrants into the program read below

the sixth grade level, within two years, 32 percent have become employed and another 17 percent have earned their GED. The participant success rate is due largely to a rich array of support services — many provided by partnering agencies — including child care, a health clinic, career counseling, transportation stipends, and a toy and book lending library. ETC has established a multi-agency program that provides a seamless web of services to participants. Although as many as five agencies have worked at the ETC site, participants perceive ETC as one comprehensive program.

Distributive Training Technology Project

Army National Guard
111 South George Mason Drive
Arlington, VA 22204-1382

The National Guard Bureau (NGB) has been designated by Congress as the Executive Agent to conduct the NGB Distributive Training Technology Project (DTTP). This effort is a distributive learning (DL) project designed to meet the increasing educational and training needs required to ensure National Guard troop readiness. In addition, the learning and information delivery system devised for readiness purposes will be used to provide Guardsmen and members of their communities broad access to education, training, and information for development of new skills, life-long learning, and enhanced quality of life.

Distributive learning is the delivery of education or training through electronically mediated instruction including video, audio graphic, computer, multimedia technology, and other forms of learning to students who are separated geographically from the instructor. The NGB DTTP includes the development, operation and maintenance of linked distance learning centers in state designated facilities. The NGB is responsible for overall design and implementation of the network, software, equipment, installation, integration, and courseware availability. The program has the additional responsibility of establishing and promoting civil and governmental shared usage of the DL sites on a space available, reimbursable basis.

The core business concept of the DTTP is the idea of public-private partnerships through shared usage. By sharing the costs of operating these technology-supported learning centers, each site can become financially self-sustaining. Revenue generated through shared use of equipment and services can offset operational and maintenance costs while providing the sites with state-of-the-art technology.

Family and Child Education (FACE) Native Americans Family Literacy Program

1849 C Street, N.W., MS 3512
Washington, DC 20240

Among Native American populations, the drop out rate is as high as 70 percent and the unemployment and poverty rates are the highest in the nation. To address this problem, the Family And Child Education (FACE) program serves ten Indian reservations assisting approximately 3,000 adults and children. It combines three national models and has been replicated at 22 sites. FACE empowers parents with a unique program design that is both home based and center based. Through the home based curriculum, an educator comes to the home and provides information to the parent about health, nutrition, and child development. The center based setting allows for the parent to learn about adult

education, early childhood education, parent and child interactive time, and parent time. For one parent, a particularly motivating experience was when she learned that the education level of the mother is the most significant indicator as to whether a child will graduate from high school. This parent graduated with her GED within that year.

The program measures improvements in the areas of parental involvement in their children's education, GED certificates, employment placements, improved computer skills, and increased knowledge about child development. Through classes and meetings, participants gain vital knowledge about parenting and skills to prepare them for jobs.

General Motors Work-to-Work Program
General Motors University, Warren Campus
Building 2-6, Mail Code 480-206-210
30009 Van Dyke Ave.
Warren, MI

General Motors has developed a promising collaboration with Macomb Community College through which employees in positions that are being eliminated, downsized, or have a skill shortage have the opportunity to attend 2-year technical education or 2-year associate's degree programs, with GM providing full salary and benefits, tuition, and books. Another innovative aspect of this program is that GM establishes an advisory council for each college or university in order to ensure that the employees are being taught the skills required for their new GM job. Of the 171 employees who have been through the program, 100 percent were placed in jobs.

Global 2000-Continuing Education Institute
108 Water Street
Watertown, MA 02472

The Continuing Education Institute (CEI) partners with 10 companies to improve the basic literacy and technical skills of workers in a rapidly changing manufacturing environment. Global 2000 offers classes in English communication, reading comprehension, business writing, word processing, and math. Students are able to gain the basic skills that they need to go onto productive careers.

A unique component of the program is the many Employee Involvement Teams that design, manage and evaluate each educational program. The teams are formed from representatives from each of the partnering companies. In addition, a company liaison, typically either a human resource manager or a training manager may be a member of the team. The teams work to provide feedback so that the program is customized to fit the particular conditions of each partner company. There is also an oversight committee that focuses on program evaluation and program dissemination. Among the many services offered by the program are English as a Second Language classes, reading and writing classes, and the CEI Adult Diploma Program for high school completion. By tailoring the program to meet the needs of employees as well as employers, Global 2000 creates a mutually beneficial program.

The Hospital League/1199C Training and Upgrading Fund
330 West 42nd St., 8th Floor
New York, NY 10036

As the demand for health care jobs has shifted over the years, the Hospital League/1199C Training and Upgrading Fund has been there — providing opportunities for members to improve their skills. In so doing, they are able to take advantage of new jobs or to move from job to job, when necessary, as the needs of the health care industry change. Members to learn what they need for jobs as certified nurse's aides and other specialties that require expertise in CPR, EKG, and Phlebotomy, and computers. The Consortium/Adult Education and Preparatory Programs offer part-time classes for members and their families to attend General Educational Development (GED), English as a Second Language (ESL), and Spanish and Russian courses for those who need to be able to communicate effectively in these languages in a health care setting. In addition, the Tuition Assistance Program provides both scholarships and reimbursements for up to 24 credits per year for members who are working towards a degree.

Intellectual Capital Partnership Program
Board of Regents of the University System of Georgia
244 Washington Street, SW
Atlanta, GA 30334

The Intellectual Capital Partnership Program (ICAPP) is an economic development initiative that helps businesses meet immediate human resource needs. Through ICAPP, Georgia's public colleges and universities leverage existing University resources to expedite the education and training of highly skilled workers in order to meet specific workforce needs. The result is a unique economic development tool. Companies specify the knowledge areas to be taught, then recruit and select the participants they will sponsor. Participants are assured of a well-paying job with growth potential after completing the ICAPP program. ICAPP attracts and grows knowledge-based companies and as a result, the local workforce can attract and maintain top positions.

The University System of Georgia stays in close communication with its businesses through surveys. In one example, the ICAPP program's employment and training incentives enabled the state to retain one company that employed 2,200 technology workers. As a result of this investment, the company decided to expand its operations by creating 2,500 additional jobs. This was a boost in not only the technology sector but to the state's economy. Graduates of the program are highly ranked in computer skills, oral communication skills, and the ability to work in teams.

Maricopa Community College—Rio Salado Campus
2323 West 14th Street
Tempe, AZ 85281

The Rio Salado Community College Educational Partnership program works with businesses to design programs that meet their immediate training needs. As part of the partnership, the School of Dental Hygiene at Rio Salado Community College has created a specialized training program with the Arizona Dental Association.

The Arizona Dental Association needed to address the shortage of dental hygienists in Arizona. In response to this critical problem, the Arizona Dental Association and Rio Salado College's School of Dental Hygiene joined forces to build an educational facility and program that provides students with a state-of-the-art training. Students can obtain an Associate of Applied Science degree and all graduates can become registered as dental hygienists. Eventually the program will incorporate distance learning to educate hygienists in rural areas.

The program exemplifies Rio Salado's commitment to meet the needs of the community by collaborating with employers and is an innovative approach to health care training.

Miami-Dade Community College—Medical Center Campus
950 NW 20th Street
Miami, FL 33127

The Medical Center Campus of Miami-Dade Community College is located in the heart of Dade County's Medical Center near numerous private and public health facilities. The Medical Center Campus provides Associate of Science Degrees, Continuing Education opportunities and Certificate and Adult Vocational Training in 11 fields including: Cardiorespiratory Care, Dental Health, Emergency Medical Services, and Health Information Management. The Medical Center Campus faculty and staff are uniquely qualified and committed to providing the best possible educational experiences. The state-of-the-art technology found in Campus laboratories and clinics simulates the environment found at the health care facilities in the community. In the caring educational environment, students find individualized help from faculty and staff.

The Division of Continuing and Community Education provides continuing education offerings for health professionals seeking to update and increase their knowledge and skills. In addition to the schedule available to the public, the division can custom-design offerings to meet any agency's specific educational and training needs. Individual courses or a series of offerings can be developed on a contract for services basis with the agency, or for individual billing to the employees/participants. Classes can be held on-site or at the Medical Center Campus. Students benefit from the program because they become comfortable in their future work environment. As a result, they are accustomed to learning in the workplace as well as the traditional classroom.

Military to Work Pilot Program
Communications Workers of America
501 3rd Street, N.W.
Washington, DC 20001-1279

The Military to Work Pilot Program was designed to assist former military personnel, their spouses, veterans and retirees with skills in the Telecom and Information Technology (IT) industries. The program links persons from the military community, who are looking for employment opportunities, with employers in the Telecommunications and IT industries. IT industry representatives have indicated that there is a tremendous need for entry level personnel. During 1998, Lucent Technologies hired 1800 new entry-level technicians. Projections indicate demand will continue to grow for entry level and experienced personnel as the existing work force nears retirement and technology needs increase. The Military to Work Pilot Program provides

an efficient link between individuals associated with the military who possess fundamental knowledge of the IT industry and jobs.

Communications Workers of America provides a link to more than 1,000 employers in the Telecommunications and the IT industries. Communications Workers of America developed software which is now available over the Internet to facilitate skills assessment, referral and placement of experienced Telecom and IT veterans, military personnel and their spouses. It provides an efficient interface that is user friendly, time and cost sensitive, and allows easy access to employment opportunities, and training guidelines. This type of program makes it easier for former military personnel to obtain a lucrative career in the Communications and IT industries.

Motorola University
1301 E. Algonquin Rd.
Schaumberg, IL 60196

Motorola Corporation considers training and education critical business tools. In order to better confront business issues, in 1989, Motorola created Motorola University, a strategic learning organization that makes available training and education to all Motorola employees through 7 learning facilities around the world, with 20 offices in 13 countries on 5 continents. Objectives of the University include serving as a catalyst for change and continuous improvement in order to position the corporation for the future; and to provide added value to Motorola in marketing and distributing products throughout the world. The corporation has found that Associates who receive training and education are better able to satisfy customers and improve quality, and are more motivated employees.

Northwest Center for Emerging Technologies
Bellevue Community College
3000 Landerholm Circle, SE, Bldg. N
Bellevue, WA 98007-6484

In April of 1998, Bellevue Community College opened the Northwest Center for Emerging Technologies (NWCET), a cutting-edge facility dedicated to Information Technology (IT) education. The mission of NWCET is to advance IT education in order to improve the supply, quality, and diversity of the IT workforce. To fulfill this mission, the NWCET aims to advance model partnerships linking business, education, and government to promote IT education. The program also provides students with pathways to new IT programs and new advanced technology degrees.

NWCET, through partnerships with a number of IT leaders (representing corporations, professional organizations, and educational institutions) has taken a leadership role in determining the needs of IT employers and prospective IT students. In this role, the NWCET has identified Information Technology skill standards and is applying this data to the development of a competency-based curriculum for IT students.

To support new and innovative IT programs and degrees, NWCET is providing professional development opportunities for high school teachers and community college and four-year university faculty. NWCET is developing a portfolio of electronic courseware, curriculum development kits, teaching and learning kits, online resources

and other products specifically designed to enhance IT education methodologies. NWCET strives to transfer their experiences by serving as national leader through the dissemination of "Best Practices" in IT education. NWCET continuously improves and evaluates its teaching and curriculum thus redefining the meaning of a learning organization.

Project Quest
301 South Frio Street, Suite 400
San Antonio, TX 78207

Project Quest grew out of the sudden shutdown of a local factory in 1990 that employed many workers with weak educational and job-skill backgrounds. The shutdown was a blow to the San Antonio community especially since the area had recently endured other plant closings and defense cutbacks at local military bases. Two community-based organizations began to work through religious organizations, businesses, government entities and schools. They found that local businesses were recruiting people from other parts of the country because the local workforce lacked the skills that they needed to compete in the 21st century. The San Antonio community reacted to the crisis quickly and realized an opportunity to become part of the global economy by creating Project Quest.

Project QUEST operates as a workforce development project, not as a traditional social service agency. It works closely with the business community to identify recurring job openings that pay living wages and designs training programs to fit these criteria. It also works to overcome the barriers that adults face in returning to school for long-term training by paying tuition costs, books, child care, transportation, and offering motivational and life skills training. It makes a long-term investment in its clients. On average, enrollees participate for 16 months. Annual earnings for participants increased between $4,923 and $7,457 per year, and 85 percent of the adults served have been placed in jobs at $9 per hour or more.

Project Read
South San Francisco Public Library
840 West Orange Ave.
South San Francisco, CA 94080

The program serves 450 learners each year. The project enables and trains community members to become volunteer tutors. The curriculum is "learner driven" allowing learners to determine the context in which they would like to learn. For example, learners are given the choice as to whether they would like to focus on improving their roles as a parents, community members, and/or workers. Once this decision is made, all tutoring is conducted in the chosen context. Through the program, learners can choose to meet goals such as passing a civil service test, writing memos for work, reading repair manuals, or receiving their GED. Meanwhile, participants' self-esteem improves dramatically and they are empowered to learn more than just reading. Project Read is nationally recognized for its innovative approach to developing effective learning strategies.

Rhode Island Human Resource Investment Council
601 Manton Ave.
Providence, RI 02909

Established by state law in 1992, this council establishes statewide policies, goals, and guidelines to coordinate employment and training programs in Rhode Island, and supports efforts to link those activities with economic development strategies. Members include representatives of employer and labor communities, the state's three Private Industry Councils, Rhode Island Economic Development Corporation, Department of Human Services, Department of Labor and Training, community organizations, and public officials. HRIC's "Project Upgrade" provides businesses with funds to upgrade the skills of currently employed full-time workers impacted by technological or organizational changes in their workplaces. The "Competitiveness Improvement Initiative" provides grants of up to $25,000 to companies for activities in workforce development, TQM, technology application, managing a diverse workforce, and marketing development. The HRIC's "Continuous Learning" initiative provides grants to promote adult literacy programs that assist both employees who need to upgrade their skills and unemployed adults who are actively seeking employment but face barriers because of their literacy needs.

United Auto Workers (UAW) and Big Three Joint Initiative
Education Department
8000 East Jefferson Avenue
Detroit, MI 48214

The UAW joint initiative with the Big Three car companies — Ford, General Motors, and Daimler Chrysler — are national and local. At both levels, they address matters of common concern in areas such as product quality, education and development, employee involvement, team structures, work technical skills redesign, health and safety, ergonomics, employee assistance, apprenticeship, and labor-management studies. A negotiated central fund and local training funds support these joint endeavors. Each workplace program has a purpose, structure, and focus of its own. Some have large programs within programs. For example, there are more than 21 individual programs in education and development and technical skills training.

These car companies provide tuition for approved courses at universities, community colleges, and vocational institutions. In addition, dependent children of union members are eligible for training through a new scholarship program. Through this provision, the not only to current employees but potential future employees receive training. In addition, the Big Three provide unpaid leave for eligible workers to pursue educational instruction related to employment opportunities with their company.

United Steelworkers of America—Institute for Career Development
100 E. 80th Place, Suite 301 S
Merrillville, IN 46410

The Institute for Career Development (ICD) came into being as a result of contract negotiations between the United Steelworkers of America and major companies in the steel industry. The ICD provides educational, training and personal development for the steelworkers in association with the United Steelworkers of America. The services

provided through the program include upgrading steelworker's basic skills in order to enhance their ability to benefit from craft and noncraft training. In addition, the program serves to generally upgrade workers' ability to succeed in the workplace. One of the primary objectives of the program is to provide alternate career opportunities in the event employees become dislocated. The program gives participants the assurance that they will always be employable.

Today there are 13 steel companies participating at 53 sites throughout the United States. These sites have apprenticeship pre-qualification programs that provide workers who want to transition into new jobs.

Tuition Assistance Program was initiated in January 1992. This program provides each worker up to $1,800 annually that can be used for tuition, books and fees. Money is paid directly to the institution upon registration. All classes have a hands-on approach. Teachers and students actually have practical application for what is learned. As one student stated as he was framing in a window in his carpentry class, "It took me 35 years to finally see what the Pythagorean Theorem is used for."

US West-Pathways to the Future
5660 Greenwood Plaza Blvd., Suite 406
Englewood, CO 80111

PATHWAYS To the Future is a joint education and training benefit program negotiated by the Communications Workers of America (CWA) and U S WEST. It is open to both union-represented and management employees. PATHWAYS is governed by a non-profit corporation, Training Partnerships, Inc. (TPI), composed of representatives from CWA and U S WEST.

The purpose of PATHWAYS is to promote lifelong learning through educational opportunities which meet individual needs, provide personal and career choices, and create a flexible and skilled workforce so that the employees, the company and the union are prepared to fully participate in a changing and diverse marketplace. Participation is voluntary and is for education and training outside of the employee's current job.

PATHWAYS offers three pre-paid options: No-cap undergraduate degree option; $2,100 continuing education option; and a no-cap Essential Skills option. In addition to the pre-paid tuition and fees, PATHWAYS provides career and education counseling assessment, and book reimbursement. PATHWAYS allows for a broad range of choice in courses, classes, workshops, and seminars.

Through PATHWAYS To the Future, several major research studies show that participants increased their learning ability, communications skills, ability to participate as a team member, self-confidence, initiative, and risk-taking. This clearly demonstrates the dramatic effect education and training have on adult workers, with impacts extending to the company and the union.

Wisconsin Regional Training Partnership
208 East Capitol Drive
Milwaukee, WI 53212

The Wisconsin Regional Training Partnership is an organization in which labor and management cooperate, both within and across firms, to build "high performance" workplaces where ongoing workplace education and continuous innovation are the norm. Labor and management representatives from member firms are grouped into three committees that develop industry-wide solutions to the barriers typically encountered in the transition to high-performance workplaces. Joint labor-management committees within individual member firms then implement these plans in ways that are specific to each firm's needs. The Partnership provides assistance in the areas of workplace education, workforce development, and plant modernization.

The workplace education programs improve the skills of the current workforce and train future workers. The technical and other skills gained through this training translate into superior products and "exceptionally high productivity." Workers benefit by being able to secure their future through continuous learning and increased motivation. In addition, employers reap the rewards of investing in their employees' professional development. The results are professional satisfaction and improved efficiency.

Women's Opportunities Resource Center
1930 Chestnut Street, Suite 1600
Philadelphia, PA 19038

The Women's Opportunities Resource Center (WORC) was founded in 1984 and is one of the earliest programs for microenterprise in the nation. Fundamental to WORC's success has been its ability to establish partnerships among private and public sector leaders to leverage resources and strengthen the provision of services. Throughout this process, WORC remains sensitive to the issues that low-income women and underemployed women face. WORC strives to incorporate relevant and ongoing technical and social support structures for all participants.

WORC's activities are based on three principles. First, empowerment depends on the development of the individual and her ability to envision increased self-sufficiency. Second, low-income participants have special needs that must be addressed. Finally, to succeed, change for individuals must occur in an incremental manner so that personal growth becomes part of the ongoing learning process. Specific programs to assist WORC participants include helping graduates with access to microloans through partnerships with area financial institutions. WORC also offers continuing counseling and support services after graduation. The program serves over 400 clients a year. Since inception, approximately 40 percent of its training clients have started their own businesses. It is the second national affiliate of Women's World Banking, a network of global organizations that provide entrepreneurial training and access to credit.

Xerox Business Services
70b Linden Oaks Parkway
Rochester, NY 14625

Empowered employees are at the heart of Xerox Business Services' (XBS) customer-focused culture. The vision of XBS is that "XBS people proactively continue their learning and development while making productive contributions to the continued growth and success of our organization." The division invests more than $10 million annually for training and is continually is searching for innovative learning approaches. Examples are mini-camps — designed to help employees contemplate and prepare for future changes in the way they work and in how XBS addresses evolving customer requirements — and each employee's personal learning plan that is regularly reviewed by assigned coaches. Each employee's learning style is assessed and taken into account in their learning experiences.

Endnotes

[1] Frank Levy and Richard J. Murane, Teaching the New Basic Skills Principles for Educating Children to Thrive in a Changing Economy, New York: 1997 Free Press, p. vii.

[2] U.S. Department of Labor, Bureau of Labor Statistics. Employment Outlook, 1996-2006: A Summary of BLS Projections, (February 1998), Chart 14 p 33.

[3] The National Center on the Educational Quality of the Workforce, "First Findings from the EQW National Employer Survey," RE01,1995, p. 3.

[4]The American Society for Training and Development and the US Department of Labor, America and the New Economy. 1991, p. 48.

[5] "The Emerging Digital Economy", US Department of Commerce, 1998.

[6] The National Center on the Educational Quality of the Workforce "First Findings from the EQW National Employer Survey," 1995, RE01, p. 8.

[7] The National Center on the Educational Quality of the Workforce "First Findings from the EQW National Employer Survey," 1995, RE01, p. 8. For example, half of employers use equipment that is at most four years old.

[8] The National Center on the Educational Quality of the Workforce "First Findings from the EQW National Employer Survey," 1995, RE01, p. 3.

[9] "Culture Change Lessons: The 1996 Best Plants Finalists Share Experiences in Creating and Sustaining Cultures for World-Class Manufacturing," Industry Week, February 17, 1997, http://www.industryweek.com.

[10] Briefing for Secretary Ronald H. Brown, for the Conference on the American Workplace, US Department of Commerce, Office of Technology Policy, 1993.

[11] U.S. Department of Labor, Bureau of Labor Statistics. Employment Outlook, 1996-2006: A Summary of BLS Projections, (February 1998),Table 9, p. 80.

[12] U.S. Department of Labor, Bureau of Labor Statistics. Employment Outlook, 1996-2006: A Summary of BLS Projections, (February 1998), Table 9, p. 80.

[13] U.S. Department of Labor, Bureau of Labor Statistics. Employment Outlook, 1996-2006: A Summary of BLS Projections, (February 1998), Table 9, p. 80.

[14] U.S. Department of Labor, Bureau of Labor Statistics. Employment Outlook, 1996-2006: A Summary of BLS Projections, (February 1998) Table 9, page 80.

[15] George T. Silvestis, "Occupational Employment Projections to 2006," Monthly Labor Review, November 1997, Table 3, p. 77.

[16] U.S. Department of Education, National Center for Educational Statistics, Adult Literacy in America, National Adult Literacy Survey, 1992, Table 1.1b, p. 114. In addition, the United States has a greater proportion of adults with low skills than most of our economic competitors in the Organization for Economic Co-operation and Development (OECD).

[17] The National Center on the Educational Quality of the Workforce, "A Reality Check: First Findings from the EQW National Employer Survey," EQW, 1995, p. 2.

[18] The National Center for the Educational Quality of the Workforce, "The Other Shoe: Education's Contribution to the Productivity of Establishments," 1995, EQW, RE02, p. 2. Note: Productivity is measured by output.

[19] The National Center on the Educational Quality of the Workforce, "The Other Shoe: Education's Contribution to the Productivity of Establishments," EQW, RE02, 1995, p. 2, and, Black and Lynch. "How to Compete: the Impact of Workplace Practices and Information Technology on Productivity," NBER WP, no. 6210, August 1997. Note: a 10 percent higher educational level is equivalent to slightly more than one year of schooling.

[20] Committee for Economic Development, "American Workers and Economic Change," p. 36.

[21]U.S. Department of Commerce, Bureau of the Census, Educational Attainment in the U.S., P20-513.

[22]U.S. Department of Commerce, Bureau of the Census, Educational Attainment in the U.S., P20-513. and Mean Earnings of Workers 18 Years and Older by Educational Attainment, Race, Hispanic Origin, and Sex, 1975-1997, Internet release date, December 10, 1998.

[23] Duane E. Leigh and Andrew M. Gill, "Labor Market Returns to Community Colleges: Evidence for Returning Adults," Journal of Human Resources, vol. 32, no. 2, 1997, p 350. Data is only for community colleges.

[24] U.S. Department of Labor, Report on the American Workforce, 1997, p. 8.

[25] Dianne E. Leigh and Andrew M. Gill, **"**Labor Market Returns to Community Colleges: Evidence for Returning Adults," Journal of Human Resources, vol. 32, no. 2, 1997, pp. 334-352.

[26] U.S. Department of Commerce, Bureau of the Census, Educational Attainment in the U.S., P20-513. and Mean Earnings of Workers 18 Years and Older by Educational Attainment, Race, Hispanic Origin, and Sex, 1975-1997, Internet release date, December 10, 1998.

[27] T.D. Synder, C.M. Hoffman, and C.M. Geddes Digest of Education Statistics, 1997, U.S. Department of Education, Office of Educational Research and Improvement, Table 9, p.18. Note: In 1995, 16% of adults aged 25-29 had a BA compared to 9% of those 65 or older.

[28] Alan Eck, "Job Related Education and Training: Their Impact on Earnings," Table 9: Median weekly earnings of full-time workers who needed training to qualify for their current jobs and who took training to improve their skills, Monthly Labor Review (October 1993): 21-38; U.S. Department of Commerce, Bureau of the Census, Current Population Survey, January 1991.

[29] Note: Data tracks workers who needed no training to qualify to their current job.

[30]Alan Eck, "Job-Related Education and Training: Their Impact on Earnings," Monthly Labor Review, (October 1993): 21-38 and Lillard, Lee A., and Hog W. Tan. "Private Sector Training: Who Gets It and What Are Its Effects?" in Research in Labor Economics 13. Ed. Ronald Ehrenberg. Greenwich, CT; JAI Press, Inc. 1992.

[31] Committee for Economic Development, "American Workers and Economic Change," p. 36.

[32] Lisa M. Lynch and Sandra E. Black, "Beyond the Incidence of Training: Evidence from a National Employer Survey," 1996, EQW Working Papers, Catalog Number WP35, p.25. Final in Industrial and Labor Relations, 52 (October 1998).

[33] U.S. Department of Commerce, Bureau of the Census, Current Population Survey, April 1993.

[34] U.S. Department of Labor, Bureau of Labor Statistics, National Longitudinal Survey of Youth,, June 24, 1998, see table 3.

[35] U.S. Department of Labor, Bureau of Labor Statistics, Current Population Survey, March 1970-1997. NOTE: Since 1992, data on educational attainment have been based on the "highest diploma or degree received." Rather than the "number of years of school completed." Data from 1994 forward are not directly comparable with data for 1993 and earlier years due to the Current Population Survey redesign.

[36] U.S. Department of Labor, Bureau of Labor Statistics, Current Population Survey, March 1970-1997.

[37] U.S. Department of Education, National Center for Education Statistics, Adult Literacy in America, A First Look at the Result of the National Adult Literacy Survey, 1993, Figure 2.8, p. 65. Note: This measures prose literacy.

[38] U.S. Department of Commerce, Bureau of Census, Current Population Survey, February 1998.

[39] U.S. Department of Labor, Bureau of Labor Statistics, Displaced Worker Survey, "Long-Tenured Displaced Workers and Displacement Rates by Educational Attainment and Employment Status in February 1998," 1998, unpublished tabulation.

[40] U.S. Department of Labor, Bureau of Labor Statistics, Displaced Worker Survey, "Long-Tenured Displaced Workers Who Found New Jobs by Weeks Without Work and Educational Attainment," 1998, unpublished data.

[41] U.S. Department of Labor, Bureau of Labor Statistics, Displaced Worker Survey, "Median Weekly Earnings of Long-Tenured Displaced Full-Time Wage and Salary Workers on Their Lost Jobs Held in February 1998 by Educational Attainment," 1998, unpublished tabulation.

[42] 1997 Digest of Education Statistics, U.S. Department of Education, Office of Educational Research and Improvement, National Center for Education Statistics 98-015, December 1997, Table 8, p. 18. 54.6 percent of college students in 1993 were 18-24; 27.7 percent were over 30 years old; 34.9 percent of students at two- year institutions were over 30 years old in 1993.

[43] Profile of Undergraduates in U.S. Postsecondary Education Institutions: 1995-1996, U.S. Department of Education, National Center for Education Statistics, 98-084, May 1998, Table 1.1, p. 45.

[44]1997 Digest of Education Statistics, U.S. Department for Education, Office of Educational Research and Improvement, National Center for Education Statistics 98-015, December 1997, Table 173, p. 183.

[45] 1997 Digest of Education Statistics, U.S. Department of Education, Office of Educational Research and Improvement, National Center for Education Statistics 98-015, December 1997, Table 176, p. 186.

[46] 1997 Digest of Education Statistics, U.S. Department of Education, Office of Educational Research and Improvement, National Center for Education Statistics 98-015, December 1997, Table 178, p. 188.

[47] Distance Education in Higher Education Institutions, U.S. Department of Education, National Center for Education Statistics, 98-062, October 1997, Table 22 p. 38.

[48] Distance Education in Higher Education Institutions, U.S. Department for Education, National Center of Education Statistics, 98-062, October 1997, Table 1, p. 6.

[49] Distance Education in Higher Education Institutions, U.S. Department of Education, National Center of Education Statistics, 98-062, October 1997, Table 1, p. 6.

[50] Distance Education in Higher Education Institutions, U.S. Department of Education, National Center of Education Statistics, 98-062, October 1997,Table 8, p.17

[51] Kwang, Kim, Mary Collins, Peter Stowe, Kathryn Chandler, "Forty Percent of Adults Participate in Adult Education Activities: 1994-1995," National Center of Education Statistics 95-823, November 1995, Table 1 p. 11.

[52]Lisa M. Lynch and Sandra E. Black, 1996 "Beyond the Incidence of Training: Evidence from a National Employer Survey," EQW Working Papers, Catalog Number WP35, p.5. The question posed to the surveyed employers asked if any of them paid for or provided any kind of formal training either through their firm, by hiring a contractor, or through an educational institution.

[53]Committee for Economic Development, "American Workers and Economic Change," 1996, p. 36.

[54]Committee for Economic Development, "American Workers and Economic Change," 1996, p. 36.

[55] National Association of Manufacturers (NAM), Center for Workforce Success and Grant Thornton, LLP, A Survey of American Manufacturers: The Skills Gap, 1998.

[56] U.S. Department of Labor, Bureau of Labor Statistics, Survey of Employer-Provided Training-Employer Results, USDOL 96-268, July 10, 1996, http://stats.bls.gov/news.release/sept1/nws.htm. Note: Data from May-October 1995.

[57] U.S. Department of Labor, Bureau of Labor Statistics, Survey of Employer-Provided Training-Employer Results, USDOL 96-268, July 10, 1996, http://stats.bls.gov/news.release/sept1/nws.htm. Note: Data from May-October 1995.

[58] U.S. Department of Labor, Bureau of Labor Statistics, Survey of Employer-Provided Training-Employer Results, USDOL 96-268, July 10, 1996, http://stats.bls.gov/news.release/sept1/nws.htm. Note: Data from May-October 1995.

[59] Lisa M. Lynch and Sandra E. Black, 1996 "Beyond the Incidence of Training: Evidence from a National Employer Survey," EQW Working Papers, Catalog Number WP35p 19.

[60] U.S. Department of Labor, Bureau of Labor Statistics, Survey of Employer-Provided Training-Employer Results, USDOL 96-268, July 10, 1996, http://stats.bls.gov/news.release/sept1/nws.htm. Note: Data from May-October 1995.

[61] Lisa M. Lynch and Sandra E. Black, 1996 "Beyond the Incidence of Training: Evidence from a National Employer Survey," EQW Working Papers, Catalog Number WP35, p. 6 and 19.

[62] "Labor's Key Role in Workplace Training: an AFL-CIO Report on Training," The American Federation of Labor and Congress of Industrial Organizations, September 1994, p. 5.

[63] Harley Frazis, Diane E. Herz, and Michael Horrigan, "Employer-Provided Training: Results From a New Survey," Monthly Labor Review, May 1995, (Volume 118 Number 5) Table 9, p. 12.

[64] "Labor's Key Role in Workplace Training: an AFL-CIO Report on Training," The American Federation of Labor and Congress of Industrial Organizations, September 1994, p. 4-5.

[65] "History and Statistics," Mimeo of the Institute for Career Development, 1998.

[66] "Labor's Key Role in Workplace Training: an AFL-CIO Report on Training," The American Federation of Labor and Congress of Industrial Organizations, September 1994, p. 8.

[67]Charlene M. Hoffman, Federal $upport for Education: Fiscal Years 1980 to 1998, National Center for Education Statistics, U.S. Department of Education, Office of Educational Research and Improvement, National Center for Education Statistics 98-115, October 1998, p. iii.

[68] U.S. Department of Education, Title IV, Federal Pell Grant Program/ 1994-1995, End of Year Report, Table 11.

[69]Budget of the United States Government, Fiscal Year 1999, p 53.

[70] Kwang, Kim, Mary Collins, Peter Stowe, Kathryn Chandler, "Forty Percent of Adults Participate in Adult Education Activities: 1994-1995," National Center for Education Statistics 95-823, November 1995, Table 1, p. 7.

[71] Kwang, Kim, Mary Collins, Peter Stowe, Kathryn Chandler, "Forty Percent of Adults Participate in Adult Education Activities: 1994-1995," National Center for Education Statistics 95-823, November 1995.

[72]Harley Frazis, Maury Gittleman, Michael Horrigan, and Mary Joyce, "Results from the 1995 Survey of Employer-Provided Training," Monthly Labor Review, June 1998, (Volume 121 Number 6, pp. 3-13) Table 7, p. 10.

[73]Harley Frazis, Maury Gittleman, Michael Horrigan, and Mary Joyce "Results from the 1995 Survey of Employer-Provided Training," Monthly Labor Review, June 1998, (Volume 121 Number 6, pp. 3-13), Table 7, p.10.

[74] Gordon Darenwald, Kwang Kim, and Peter Stowe, "Adults' Participation in Work-Related Courses: 1994-95", US Department. of Education, Office of Educational Research and Improvement, July 1998, in press, Table 2, p.12.

[75] Gordon Darenwald, Kwang Kim, and Peter Stowe, "Adults' Participation in Work-Related Courses: 1994-95", US Department of Education, Office of Educational Research and Improvement, July 1998, in press, p. 3.

[76] Orr, Larry and Larry Buron, "Emerging Lessons from the Lifelong Learning Demonstration," Abt Associates, Draft, November 6, 199, p.2.

[77] Orr, Larry and Larry Buron, "Emerging Lessons from the Lifelong Learning Demonstration," Abt Associates, Draft, November 6, 1998, p.2.

[78] Gordon Darenwald, Kwang Kim, and Peter Stowe, "Adults' Participation in Work-Related Courses: 1994-95," U.S. Department of Education, Office of Educational Research and Improvement, July 1998, in press, Table 1, p. 11.

[79] Gordon Darenwald, Kwang Kim, and Peter Stowe, "Adults' Participation in Work-Related Courses: 1994-95," U.S. Department of Education, Office of Educational Research and Improvement, July 1998, in press, Table 1, p. 11.

[80] Terri Thompson, "The Lifelong Learning Demonstration: Report of Focus Groups with Targeted Marketing Campaign Recipients," Report prepared for the U.S. Department of Labor, Abt Associates, Inc: Bethesda, Md. June 26, 1997, p. 8.

[81] Lisa M. Lynch, "Do Investments in Education and Training Matter?," Keynote Speech prepared for the 9th annual European Association of Labour Economists, Aarhus, Denmark, September 25-28, 1997.

[82] Lisa M. Lynch, "Do Investments in Education and Training Matter?," Keynote Speech prepared for the 9th annual European Association of Labour Economists, Aarhus, Denmark, September 25-28, 1997.

[83] Alan Krueger and Cecilia Rouse, "The Effect of Wrokplace Education on Earnings, Turnover, and Job Performance, Journal of Labor Economics, 1998 (vol. 16, no 1) p. 62.

[84] U.S. Department of Labor, Bureau of Labor Statistics, Universe Database of Employment and Wages (ES-202) Program, Table 1: Distribution of Establishment and Employment by Size Class, Private Industry, December 1996. Note: For all establishments with less than 100 employees.

[85] Lisa M. Lynch, "Do Investments in Education and Training Matter?," Keynote Speech prepared for the 9th annual European Association of Labour Economists, Aarhus, Denmark, September 25-28, 1997.

[86] Don A. Dillamn et al., "What the Public Wants from Higher Education: Workforce Implications from a 1995 National Survey," Pullman, Washington, The Social & Economic Sciences Research Center, 1995, p. 21.

[87] T. Kopka, N. Schantz, and R. Korb, "Adult Education in the 1990's: A Report on the 1991 National Household Education Survey," U.S. Department of Education, Office of Educational Research and Improvement, National Center for Education Statistics, February 1998.

[88] Terri Thompson, "The Lifelong Learning Demonstration: Report of Focus Groups with Targeted Marketing Campaign Recipients," Report prepared for the U.S. Department of Labor, Abt Associates, Inc: Bethesda, Md. June 26, 1997, p. 4-5.

[89] Don A. Dillman et al. "What the Public Wants from Higher Education: Workforce Implications from a 1995 National Survey," Pullman, Washington, The Social & Economic Sciences Research Center 1995, p. 21.

[90] Terri Thompson, "The Lifelong Learning Demonstration: Report of Focus Groups with Targeted Marketing Campaign Recipients," Report prepared for the U.S. Department of Labor, Abt Associates, Inc: Bethesda, Md. June 26, 1997, p. 6.

Bibliography

American Federation of Labor and Congress of Industrial Organizations, "Labor's Key Role in Workplace Training: *Report on Training*," September 1994, Publication No. P263-0295-5.

Aron, Laudan Y., and Nightengale, Demetra S. "Incumbent Workers' Views About Lifelong Learning: Findings from Baltimore-Area Focus Groups." Urban Institute, October 1995.

Budget of the United States Government, Fiscal Year 1999, Government Printing Office, Washington, D.C.: 1998.

Commission for a Nation of Lifelong Learners. "A Nation Learning: Vision for the 21st Century." November 1997.

Dillman, Don A. et al. *What the Public Wants from Higher Education: Workforce Implications from a 1995 National Survey*. Pullman, Washington: The Social & Economic Sciences Research Center. 1995.

Franklin, James C. "Industry Growth and Employment Projections to 2006," *Monthly Labor Review*, (December 1997):39-57.

Frazis, Harley; Gittleman, Maury; Horrigan, Michael W.; and Joyce, Mary. "Results from the 1995 Survey of Employer - Provided Training," *Monthly Labor Review*, 121 (June 1998): 3-13.

Frazis, Harley; Herz, Diane E.; and Horrigan Michael W. "Employer Provided Training: Results from a New Survey," *Monthly Labor Review*, 118 (May 1995): 3-17.

Hu, Michael. "Determining the Needs and Attitudes of Nontraditional Students." *College and University*, 60(3):201-209, 1985.

Institute for Career Development, "History and Statistics," mimeo, 1998.

Krueger, Alan and Rouse, Celicia. "The Effect of Workplace Education on Earnings, Turnover, and Job Performance, *Journal of Labor Economics*, 1998, 16(1):61-94.

Leigh, Duane E. and Gill, Andrew M. "Labor Market Returns to Community Colleges: Evidence for Returning Adults," *Journal of Human Resources*, 1997, 32(2), pp. 334-352.

Lynch, Lisa M. "Too Old to Learn? Investments in Human Capital in the Context of an Aging Population," unpublished first draft, December 1997.

Lynch, Lisa M. and Black, Sandra E. "Beyond The Incidence of Training: Evidence from a National Employer Survey," *EQW Working Papers*, 1996 Catalog Number WP35. Final in *Industrial and Labor Relations*, 52 (October 1998): 64-81.

National Association of Manufacturers (NAM), Center for Workforce Success and Grant Thornton, LLP. *A Survey of American Manufacturers: The Skills Gap.* 1998.

National Center for the Educational Quality of the Workforce (NCE-EQW), "A Reality Check: First Findings from the EQW National Employer Survey," *EQW Working Papers*, 1995.

Organization for Economic Co-operation and Development, and Human Resources Development Canada. *Literacy Skills for the Knowledge Society: Further Results from the International Adult Literacy Survey*, Paris, 1997.

Organization for Economic Co-operation and Development and Statistics Canada, *Literacy, Economy and Society: Results of the First International Adult Literacy Survey*, Paris, 1995.

Orr, Larry and Buron, Larry. "Emerging Lessons from the Lifelong Learning Demonstration." Abt Associates. Draft: November 6, 1998.

Thompson, Terri. "The Lifelong Learning Demonstration: Report of Focus Groups with Targeted Marketing Campaign Recipients." Report prepared for the U.S. Department of Labor, Abt Associates, Inc: Bethesda, June 26, 1997.

U.S. Department of Commerce. Bureau of the Census. Current Population Survey, January 1991 and March 1997.

U.S. Department of Commerce. Bureau of the Census. "Educational Attainment in the United States: March 1997," by Jennifer Day and Andrea Curry. *Current Population Reports*, P20-505, May 1998.

U.S. Department of Education. National Center for Education Statistics. *Adult Education in the 1990s: A Report on the 1991 National Household Education Survey*, Working Paper Number. 98-03, by Teresita L. Chan Kopka, Nancy Borkow Schantz, and Roslyn Abrevaya Korb. Project Officer, Peter Stowe. Washington, DC.: February 1998.

U.S. Department of Education. National Center of Education Statistics. "Forty Percent of Adults Participate in Adult Education Activities: 1994-1995," *Statistics in Brief*, by Kwang Kim, Mary Collins, Peter Stowe, and Kathryn Chandler, NCES 95-823, November 1995.

U.S. Department of Education. Office of Educational Research and Improvement. "Adults' Participation in Work-Related Courses: 1994-95," *Statistics in Brief*, by Gordon Darenwald, Kwang Kim, and Peter Stowe, NCES 98-309, December 1998.

U.S. Department of Education. Office of Educational Research and Improvement. *Federal $upport for Education*: *Fiscal Years 1980 to 1998*; by Charlene M. Hoffman, NCES 98-115, October 1998.

U.S. Department of Education. Office of Educational Research and Improvement. *1997 Digest of Education Statistics*, NCES 98-015, December 1997.

U.S. Department of Education. National Center of Education Statistics. *Distance Education in Higher Education Institutions*, NCES 98-062, October 1997.

U.S. Department of Education. National Center of Education Statistics. *Profile of Undergraduates in U.S. Postsecondary Education Institutions: 1995-1996*, NCES 98-084, May 1998.

U.S. Department of Labor. Bureau of Labor Statistics. "The 1995 Survey of Employer Provided Training: Final Report." October 7, 1998.

U.S. Department of Education. Office of Educational Research and Improvement. *Adult Literacy in America: A First Look at the Results of the National Adult Literacy Survey*, by Irwin S. Kirsch, Ann Jungeblut, Lynn Jenkins, and Andrew Kolstad, NCES, September 1993.

U.S. Department of Labor. Bureau of Labor Statistics. Occupational Outlook, 1996 – 2006. 1997.

Wheaton, J.B. and Robinson, D.C. "Responding to the Needs of Re-Entry Women: A Comprehensive Campus Model." *NASPA Journal*, 21, 1983 pp. 44-51.