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ABSTRACT

This document records the oral and written testimony of witnesses at a U.S. Senate hearing on education, small business, and the economy. During the hearing, representatives of the public schools, vocational and technical training, and community colleges, as well as representatives of large and small businesses and persons involved in linking schools and businesses in Connecticut, testified about the difficulty of producing/finding properly educated and trained workers for business today. Those testifying from the smaller businesses noted the high turnover in workers and their inability to find high quality employees, whereas those from larger businesses described the programs they have developed to train their work force. A veteran high school teacher recommended that the entire school system be reconfigured out of its traditional factory mold, and a community college official described the programs the college is developing with employers to train or retrain their workers. A program to promote science and mathematics careers to disadvantaged/minority students was also described. (KC)

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# EDUCATION, SMALL BUSINESS, AND THE U.S. ECONOMY

ED328712

## HEARING BEFORE THE COMMITTEE ON SMALL BUSINESS UNITED STATES SENATE ONE HUNDRED FIRST CONGRESS

SECOND SESSION

ON

EDUCATION, SMALL BUSINESS, AND THE U.S. ECONOMY

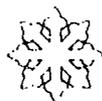
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# EDUCATION, SMALL BUSINESS, AND THE U.S. ECONOMY

THURSDAY, AUGUST 16, 1990

U.S. SENATE,  
COMMITTEE ON SMALL BUSINESS,  
*Washington, DC.*

The Committee met, pursuant to notice, at 9:43 a.m. in room 2B, Legislative Office Building, Hartford, CT, Hon. Joseph I. Lieberman presiding.

## STATEMENT OF HON. JOSEPH I. LIEBERMAN, A U.S. SENATOR FROM THE STATE OF CONNECTICUT

Senator LIEBERMAN. Good morning and welcome to this hearing of the Small Business Committee.

I am delighted to begin this hearing of the Small Business Committee of the U.S. Senate. And I particularly want to thank Senator Dale Bumpers, the Chairman of the Committee, the Senator from Arkansas who authorized me to conduct this field hearing in Hartford today as part of the Committee's continuing concern about the state of the American economy. It seems to me that the greatest challenge that we in this country face in the decades ahead is to sustain the health and the competitiveness of the American economy so that we can continue to provide good jobs and a decent standard of living for the American people.

Excellence in education and training is a critical component of any national plan for economic growth. And that is at the heart of what we want to pursue this morning. Excellence in education and training is really at the heart of our economic future, and therefore, in the literal sense, our way of life, and certainly our standard of living.

Today, unfortunately, we lack adequacy, let alone excellence, in education in this country. One million students drop out of school every year. Almost 50 percent in many inner city schools. Of the 2.4 million who do graduate from high school, 25 percent cannot read or write at the 8th grade level. And every year these numbers get worse.

In 1987 Chemical Bank of New York had only a 55 percent pass rate at the 8th grade level mathematics test that it traditionally has given to applicants for the position of bank teller. In 1983 more than 70 percent of the applicants had passed the test. So the trend is downward. As the skill level of American workers is slipping and technology is advancing, our workforce needs more and better education to stay competitive. So we are going in exactly the opposite

direction. Skill demands are increasing, and yet the skill levels are going down.

For instance, computer literacy is an example of a skill which has become a virtual necessity in the American workplace, although most Americans are still not computer literate when they enter the workforce. More than 10 years after computers became standard equipment in most automobiles produced in this country, many mechanics lack the technical skills to repair them properly.

Chrysler, for instance, had to provide 900,000 hours of in-service training to its 20,000 mechanics just to help them understand the cars that they have to repair.

More advanced mathematical capabilities are another skill that is very often lacking. An example of that is Motorola, which in 1986 spent more than 2.5 percent of its payroll to train its own workers to use a particular production method called Statistical Process Control. Which was simply beyond the capabilities of its workforce.

Now the problem is going to become more complicated as labor shortages loom before us, because there will be a smaller number of people in their teens and 20's in the next couple of decades. Not only will we have to look more and more to the poorly educated to find workers for entry-level jobs, but at the other end, the National Science Foundation also predicts a shortage of 400,000 people graduating with science and engineering degrees than we will need in the year 2000.

By comparison, and these comparisons are always made but they are powerful and relevant and important, our international economic competitors graduate a higher proportion of students who spend more time in the classroom on the sciences, and outperform our students consistently on scientific tests. In a recent evaluation of student scientific achievements at the 5th grade level, United States students placed 8th out of 15 nations surveyed, I repeat 8th of 15. And at the 9th grade level, American students placed second to last.

Japan's 5th-graders ranked first, and their 9th-graders ranked second. American students scored lower than those in Japan, Korea, Finland, Sweden, Hungary, Canada, and Italy. The simple fact is that we cannot allow this to continue. We are wasting human resources and we are dooming ourselves to an economic future that is much less than we want for our children and their children.

So I believe strongly that investment in human capital is the key to our future economic growth. We must engage those at all levels of education and business in the search for answers to these problems. The fact is that business involvement in education has become a matter in more and more cases of business survival. And it is heartening to note that there are now hundreds, literally hundreds and perhaps thousands, of existing partnerships between business and education, including adopting schools, sponsoring science fairs, contracting with community colleges, for instance, to design programs of training for employees.

Businesses are spending an estimated \$30 billion on training and remedial education every year in this country. But, relevant to the focus of this Committee, most of that money is being spent by big

businesses. And small businesses face real dilemmas in obtaining trained workers.

The crisis that we face is not just a national one. We feel it right here in the State of Connecticut. I can tell you that every time that I visit a business when I am back in the State, the first or second word that I hear from the management is about the difficulty of finding skilled workers.

Today we have assembled what I think is a really distinguished panel of educators and business people. We have representatives of the public schools, vocational and technical training, and the community colleges. We have representatives of large and small businesses. And we have those who are involved in some very interesting links between business and education and training.

We are going to hear today about the severity of the problem, but I am pleased to say that we are also going to learn about some of the solutions to the problem that people have come up with here in the State of Connecticut. I think if we are going to make progress, we probably will have to understand that we have to bring together this range of solutions in some consistent pattern that produces results. And we have got to act with a sense of urgency, because we are losing time and human resources right now, today.

So I hope that this hearing will create a record that I can take back to Washington to contribute to the debate that is ongoing there, and hopefully to stimulate some concrete action that will help support some of the creative ideas, programs, education, and training that we are attempting and trying here in the State of Connecticut. These actions will join together with some of the other programs that are so necessary, such as tax incentives that I believe in, and a wide range of governmental support of business initiative, particularly in the development of new ventures and new industry.

We will then be able to go forward with a sense of confidence that America can stay No. 1 in the world economy, not just because we want to be able to say that we won, we are No. 1, but really, more to the point, because competing effectively in the world economy is at the heart of maintaining the standard of living that we have enjoyed in this country in the past and that we want to continue to enjoy in the future.

I would like now to welcome the first panel of witnesses and urge you to come up to the places so designated, Michael Lyden, Barry Bloom, and Diane Orłowski.

Let me indicate for the record that these three witnesses and all of the others who will testify today have submitted statements for the record, which will be printed in full in the transcript of these proceedings. And we have asked each of you to try in about 5 minutes to summarize your statement, and then we will enter into a dialog. I look forward to hearing you.

Let us begin with Mr. Michael Lyden of the Aetna Institute for Corporate Education right here in Hartford, CT.

Welcome, Mr. Lyden.

**STATEMENT OF MICHAEL P. LYDEN, PROGRAM MANAGER,  
AETNA INSTITUTE FOR CORPORATE EDUCATION, HARTFORD, CT**

Mr. LYDEN. Thank you.

I would first of all like to thank the Senator for sponsoring these proceedings this morning, and for your interest in our views on this important topic. I am very pleased to be here and to join the distinguished panel today, Senator.

I have been asked to comment on some of the human resources challenges we may face in the coming years, and to briefly discuss the relationship between the skills that will likely be required by employers, and the skills that will likely be supplied by the future workforce. I would like to use the allotted time to highlight some of the points from my formal testimony. I will be prepared to discuss other points later on in the proceedings.

The question of the match skill supply and demand is one we will be hearing a lot about as we consider broader issues, as you pointed out, related to our competitiveness in the global economy, and our own economic and social well-being domestically. Current concerns about skill supply and demand are often linked to the question of whether we face a significant shortage of skilled labor in the years ahead.

I do not think the real question here is whether or not the labor market will be able to adjust in such a way as to ensure there is a rough equilibrium between the number of workers demanded by employers at a given wage rate and the number of job candidates prepared to work at that wage rate. In other words, I do not think the real issue is one of quantity; whether, for example, we are going to have enough sales people at the local retail establishment and enough data entry operators at the insurance claim offices, or enough machine tool operators at the local manufacturing plants.

I think the real question is one of quality; whether the sales people we are going to have will be willing or able to provide the level of customer service we expect from our better companies; whether the data entry operators will be able to change as their jobs are redefined by advances in computer technology; whether the machine tool operators will have the basic skills, both cognitive and interpersonal, that will be necessary to participate in the expanding efforts to increase the productivity in our manufacturing sector.

Concern about customers, the ability to learn and to adapt to change, and the ability to solve problems are, after all, the attributes of employees that help companies achieve success in the local, national, and international marketplaces.

Let me briefly cite three areas that should be of real concern as we consider the kinds of skill supply and demand issues we are likely to face in the future.

The first I wish to mention is that of adult literacy. We all know this has been a back-burner problem for some time, and is just now getting the attention that the problem really deserves. One reason for this is that the nature and scope of the problem is now being explained in ways that we can readily understand. Here I am referring for example to the findings of recent studies by the National

Assessment of Educational Process on functional literacy skills among the 19- to 25-year-old youth.

NEAP has been able to take the relatively abstract concept of functional and operationalize it in very meaningful ways. The scales used to measure an individual's level of function are drawn from everyday experiences. When you find for example that 40 percent of the high school graduates in the recent sample could not correctly identify and/or accurately express the main idea in a newspaper article, the gravity of the issue becomes very clear to all of us.

An article by Bill Wigginhorn that appears in this month's Harvard Business Review provides a very candid and insightful account of the literacy issue as it affects Motorola, that you had mentioned earlier in your remarks, Senator, as they attempted to introduce this statistical process control technique company-wide. I hope everyone will refer to that article. It is a very good account of what they experienced in the process.

I think the Motorolas and the Aetnas of the world are able and willing to invest, as you pointed out, in adult basic education efforts. But this is not the case, again, as you pointed out, with our smaller firms. And it is our small firms, particularly our small firms in the service sector, that will account for much of the job growth in the future, and will be faced with hiring many of the young people and other new entrants into the labor force as we look into the years ahead.

Now the second area of concern pertains to information technology. Again, this is a matter that already affects those of us who are in the information business, and will affect more and more companies in the goods producing sectors, as new technologies are more widely adopted. The general trend in our own industry is to move many data processing functions out of the home office computer centers and into the field offices and agencies, closer to where the business itself is sold and serviced.

This trend has a number of important implications for both the composition of the company's workforces, and the characteristics of individual jobs. But I think we have to be very careful in assessing these implications. In particular, we have to avoid oversimplifying the skill requirements attending these changes. For example, there is a very common tendency to overemphasize the technical skills associated with task performance.

For example, manipulating the computer keyboard, creating lines of code, or using a given piece of application software. Clearly these are much needed skills. These are skills that are relatively easy to develop through well designed company training programs, and through our vocational education system.

Far more important are the skills and abilities that are not purely technical in nature, and cannot be readily developed through these types of programs. These requirements are very capably described in an article by Paul Adler that appeared in the June 1986 edition of the California Management Review. Referring to the changing nature of clerical work in banks, Dr. Adler notes the following:

First, the traditional importance of responsibility for effort, or for inputs, is being replaced by responsibility for results. That is, for outcomes and outputs.

Second, the relationship between tasks, and between tasks and goals, is becoming increasingly abstract to the employee.

And third, components of complex systems are becoming more and more interdependent.

The message here is that our clerical and administrative employees, as well as the end users of our systems, are going to have to be able to think critically, discern relationships, solve abstract problems, and communicate effectively. We are talking about abilities that are quite different than the kinds of computer literacy skills that we often hear about.

The last point is that there is a real need to upgrade the knowledge and skills of our supervisors and first-line managers in the private sector. Let me suggest a couple of reasons for this.

First, as our workforce becomes more diverse not only in terms of ethnicity and gender, but also with respect to work-related values and dispositions, the ability of our supervisors to accommodate the needs and orientations of their subordinates will be increasingly tested. But they are going to have to go beyond mere accommodation to full enlistment of these employees' talents and the kinds of team-based work processes that will be much more common in the years ahead.

In addition, they will have to mediate the impact of technological change by managing the implications that I mentioned earlier. Truly competent supervisors and first-line managers have always been in short supply. And our concern is that without more systematic attention to the way we prepare supervisors and managers and the way we provide for their ongoing development in companies, they will become quite scarce, indeed.

In conclusion, I would say that we are likely to experience a growing mismatch in the labor market, but it will be one of quality and not so much of quantity. The impacts will be felt as manufacturing firms and service firms seek to improve their current levels of productivity. And as you mentioned, this will be critical to maintaining our overall standard of living in this country. And third, historical patterns suggest that small firms, and especially small firms in the services sector, will feel the greatest impact of this pending labor mismatch.

Thank you.

[The prepared statement of Mr. Lyden follows:]

TESTIMONY BEFORE THE  
HON. JOSEPH LIEBERMAN, MEMBER  
COMMITTEE ON SMALL BUSINESS  
UNITED STATES SENATE

August 16, 1990

By

Michael P. Lyden, Program Manager  
Aetna Institute for Corporate Education  
Aetna Life & Casualty Co.  
Hartford, Connecticut

I would like to thank Senator Lieberman for sponsoring these proceedings and for his interest in our views regarding this important topic. I'm pleased to join such a distinguished panel. I have been invited to comment on the human resources dimension of the economic competitiveness issue from the perspective of an educator working within a major corporation. While I welcome the opportunity to present a corporate viewpoint, I should say that the views I express are my own and do not necessarily reflect the official views of the Aetna Life and Casualty Company.

At first glance it may seem odd that a representative of a Fortune 100 financial services company would participate on a panel examining human resources issues confronting small businesses. But several of the larger companies in the banking and insurance industries experience many of the same issues as smaller firms -- particularly small firms in the services sector. For example, Aetna has field offices in many locations around the country. Like other local businesses, these offices recruit employees from the local labor markets. In addition, we distribute many of our products through the independent agency system. These agencies are locally owned and operated small business enterprises. Finally, the occupational composition of our Hartford home office - as large as it is - is far more varied than one might suspect. Obviously, we are a major

employer of clerical and data processing personnel. But we also employ hundreds of professionals in the fields of actuarial science, law, medicine, and systems analysis and design. Similarly, we employ hundreds of food services workers, maintenance people, and mail and transportation workers. So we have much in common with our small business counterparts in the Hartford area when it comes to the selection, retention and development of employees.

I have had the good fortune to participate in the creation of the Aetna Institute for Corporate Education -- an institution, I am proud to say, that is now regarded as among the most successful organizations of its type in the private sector.

Briefly, the Institute offers over 150 courses and programs in executive, management, and supervisory education; general skills development; and information systems education. Each year, over 20,000 Aetna employees -- almost one-half of our total workforce -- take advantage of these offerings, either by participating in traditional classroom instruction in our Hartford home office facility, by pursuing self-paced education at their worksite, or by enrolling in a direct broadcast telecourse. In addition, the Institute administers the Company's employee tuition assistance and continuing professional education programs.

Each year, nearly 6,000 employees take advantage of these opportunities. Finally, through special arrangements with a number of area colleges and universities, our home office employees can pursue studies leading to the General Equivalency Diploma, Associate and Bachelor of Arts Degrees, and the Masters Degree in Business Administration during evening hours at our facility.

I should note that the Institute is a corporate function. Each of our major operating divisions maintain their own education and training functions. They are responsible for career-related education in such areas as underwriting, marketing, claim settlement and engineering. In total, the Aetna Life and Casualty invests about \$35 million each year in formal employee development activities. This figure does not include the compensation paid to employees while they are participating in these activities.

I would like to focus on two topics that are receiving considerable attention from policy makers, academic leaders, and the public at large. The first, as mentioned earlier, is the matter of this nation's economic competitiveness, and specifically, the human resources dimension of the issue. The second is the current debate about the nature and extent of projected mismatches between the future skill

requirements of U.S. firms - large and small - and the capabilities of our future workforce. I will conclude with a number of program and policy proposals that may help to address some of the challenges I will identify.

Let me begin my review of the competitiveness issue with a definition of the term "competitiveness." According to former President Reagan's Commission on Industrial Competitiveness, it refers to "the degree to which a nation, under free and fair market conditions, produces goods and services that meet the test of international markets while simultaneously maintaining and expanding the real incomes of its citizens."

Why has competitiveness become such an important public issue? Because, as tersely stated in the conclusion of the President's Commission, "America's ability to compete is eroding." The upshot of this conclusion was recently summarized by a Senior Fellow at the Hoover Institute in equally succinct and ominous terms: "Most Americans will realize personally the threat to, or erosion in, their standard of living."

For a capsule summary of what the economic competitiveness issue is all about, we might consult a 1987 report by the Council on Competitiveness, an organization composed of

prominent executives from industry, labor, and higher education. This report, titled America's Competitive Crisis: Confronting the New Reality, outlines what it terms the seven measures or dimensions of the issue.

The first six dimensions concern such matters as real income, productivity, the merchandise trade and current accounts balances, R & D expenditures, and capital formation.

Then, there is the seventh dimension: human resources. The Council offers numerous indicators that the U.S. is not doing an adequate job of educating students, training employees, or re-training dislocated workers. For example, one-fourth of the young people who enter our secondary schools do not graduate; and an alarming percentage that do have not mastered very basic literacy tasks. And although 75 percent of the current workforce will be working in the year 2000, industry's efforts to upgrade their skills through training have been inadequate in many respects. The number of dislocated workers also reached the two million mark in 1986.

While I fully acknowledge both the gravity and complexity of the issue as outlined by the Council, I find such a tidy compartmentalization of its seven dimensions to

be somewhat troublesome. In particular, I think that the characterization of the "human resources" dimension is far too narrow. Unless educators and advocates of human resources development work to re-cast the issue in a way that more fully acknowledges the critical role of knowledge and skills in the overall economy, the potential contribution of HRD strategies in addressing "America's Competitive Crisis" will be unrealized. More simply put, if inadequate human resources development is seen as a relatively insignificant dimension of the problem, we won't find significant HRD initiatives among its key solutions.

And indeed, a look at what is being offered in the way of policy and program responses seems to substantiate this claim. Whether they lie in the recommendations of the President's Commission, the Council on Competitiveness, or in several other recent studies of our competitive status, the proposed human resources solutions pale in comparison to the enormity and seriousness of the issue.

We might begin the process with a more complete portrait of the human resources dimension -- starting, perhaps, with a fuller consideration of the true role of this dimension in the overall scheme of things. I'm sure, for example, we would want to consider the unprecedented re-structuring of the labor force that was taking place during the same period

that real wages and incomes in the nation were declining. Tremendous numbers of youth, women, and minorities were integrated into the mainstream workforce. To the extent that we are able to tap the talents of these new entrants, we can expect the kinds of overall social and economic benefits that our society has always enjoyed in return for its ability to accommodate diversity.

Likewise, while we were falling behind in measures of trade in manufactured goods, we undoubtedly strengthened our position as the world's leader in the manufacture of new knowledge. We can observe, for example, that a number of individual universities in this nation have each produced more Nobel laureates than most industrially advanced nations. And our ability to bring new knowledge to bear on problems of fundamental social and economic importance is clearly evident in such areas of medicine and agriculture. In the case of the latter, productivity has increased exponentially during the last 25 years alone.

And finally, we must remember that the ultimate solution to the competitiveness problem will not be generated by the next generation of micro-processors. Rather, solutions will spring from the cumulative learning experiences of people -- experiences that have been influenced in no small way by our education and work institutions. And the fact that a trip

to the town library can enable any of us to not only acquire a deeper understanding of the competitiveness problem, but participate in its solution, is perhaps the most cogent example of our human resources capacity.

On the basis of observations such as these, I would submit that human resources development should be the cornerstone of any strategy that purports, in the words of the Council on Competitiveness, to "confront the new reality."

Before we consider policy responses to the competitiveness issue, however, I think we need to come to terms with the substance of an important debate that is currently taking place among several prominent factions of the policy shaping community. On its face, this debate seems to concern the question of whether we face a significant shortage of skilled labor in the years ahead. I don't think the real question is whether or not the labor market will adjust in such a way as to ensure there is a rough equilibrium between the number of workers demanded by employees at a given wage and the number of job candidates prepared to work at that wage.

so I don't think it is a debate about quantity -- whether, for example, we are going to have enough

salespeople at the local retail establishment, enough data entry operators at the insurance claim office, or enough machine tool operators at the local manufacturing plant. I think it is a debate about quality -- whether the salespeople we are going to have will be willing or able to provide the level of customer service we expect from good companies, whether the data entry operators will be able to change as their jobs are redefined by advances in computer technology, and whether the machine tool operators will have the basic skills - cognitive and interpersonal - to participate in expanding efforts to increase the productivity of our manufacturing sector. These are, after all, the attributes of employees that help companies achieve success in their local, national, or international markets.

Let me briefly cite three areas that should be of real concern as we consider the kinds of skill supply and demand issues we are likely to face in the future.

The first is adult literacy. We all know that this has been a "back burner" problem for some time. But it is just now getting the attention it deserves. One reason for this is that the nature and scope of the problem is now being explained in ways that can be readily understood. Here I am referring, for example, to the findings of recent studies by the National Assessment of Educational Progress on

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functional literacy skills among 19-25 year olds. I strongly urge those of you who have not yet reviewed these reports to do so. NAEP has been able to take the relatively abstract concept "functional literacy" and operationalize it in meaningful ways. The scales used to measure an individual's level of functioning are drawn from everyday experiences. When you find, for example, that 40 percent of the high school graduates in a recent sample could not correctly identify and/or accurately express the main idea in a newspaper article, the message becomes very clear.

This problem already affects companies like Aetna where basic literacy is a requirement of competent performance in the vast majority of our jobs. It adversely affects our overall productivity and the employees who lack these basic skills have few real opportunities for advancement within the Company. We have been able to absorb the costs of remedial training, but most smaller companies simply cannot afford to do so.

An article by William Wiggernhorn that appears in this month's Harvard Business Review provides a candid and insightful account of the literacy issue as it affects one of the nation's premier manufacturing companies -- Motorola. Again, I urge you all to read it.

The second area of concern pertains to information technology. Again, this is a matter that already affects those of us who are in the information business and will affect more and more companies in the goods producing sectors as new technologies are more widely adopted.

Let me give a specific example. Two of the key ingredients of customer service in our business are timeliness and accuracy: how quickly and accurately we can do such things as provide a price quotation, add an endorsement, respond to a claim, or answer a coverage or billing inquiry. This translates into a question of how well we can build, run, and maintain our information processing systems.

The general trend in our industry is to move many data processing functions out of the home office computer centers and into the field offices and agencies -- closer to where the business itself is sold and serviced. This trend has a number of important implications for both the composition of the firm's workforce and the characteristics of individual jobs. But I think that we must be very careful in assessing these implications. In particular, we must avoid oversimplifying the skill requirements attending these changes. For example, there is a very common tendency to overemphasize the technical skills associated with task

performance, e.g. manipulating a computer keyboard, creating lines of code, using a given piece of applications software, etc. Clearly, these are much needed skills. But these are also skills that are relatively easy to develop through well designed company training programs.

Far more important are the skills and abilities that are not purely technical in nature and cannot be readily developed through company training programs. These requirements were very capably described in an article by Paul Adler that appeared in a recent edition of California Management Review. Referring to the changing nature of clerical work in banks, Dr. Adler notes the following: (1.) the traditional importance of "responsibility for effort" is being replaced by "responsibility for results" -- for the integrity of the process; (2.) the relationship between tasks, and between tasks and goals is becoming increasingly abstract; and (3.) components of complex systems are becoming more and more interdependent. The message here is that our clerical and administrative employees, as well as the "end-user", are going to have to be able to think critically, discern relationships, solve abstract problems, and communicate effectively. We are talking about abilities that are quite different than the kind of "computer literacy" skills that we often hear about.

While on the subject of the so-called "high-tech" skills, I think it is interesting to note that the central message of one of today's leading automation experts, James Martin, has more to do with people skills than technical skills. And the latest approaches to systems analysis and design focus on the human rather than the technical side of the user/systems interface. The lesson here is that technical expertise is becoming a necessary, but not sufficient requisite to our ability to design, build, and maintain quality systems.

This notion of "people skills" leads to the third and final area I want to address here today.

There is a real need to upgrade the knowledge and skills of our supervisors and first-line managers. Let me suggest three reasons for this.

First, as our workforce becomes more diverse -- not only in terms of ethnicity and gender, but also with respect to work related values and dispositions -- the ability of our supervisors to accommodate the needs and orientations of their subordinates will be increasingly tested. But they will have to go beyond mere accommodation to full enlistment of employees' talents in the kinds of team-based work processes that will be much more common in the future. In

addition, they will have to mediate the impact of technological change by managing the implications that I mentioned earlier. Truly competent supervisors have always been in short supply. My concern is that without more systematic attention to the way we prepare supervisors/managers and provide for their on-going development, they will become quite scarce.

I was asked to suggest ways in which the federal government might provide leadership and support in addressing these issues. While I believe there are several opportunities for federal initiatives, I must say that there are also many opportunities for our local schools, secondary and post-secondary institutions, state government agencies, labor organization and companies to contribute to their resolution. Similarly, while the problems are of significant proportion, the solution does not necessarily lie in the infusion of large sums of additional monies on anyone's part. We need to focus on ways to increase the return on the several billions that this nation already

invests in human resources development. With this caveat, I would offer the following ideas in the hope that they will prompt further discussion.

- (1) We need a new Morrill Act for the industrial sector. You'll recall that the Morrill Act led to the creation of our land grant college system. And we're familiar with the impact that this system has had on the productivity growth of the agricultural sector.

This time around, however, we should think in terms of a network of knowl\_ age rather than a network of facilities. We could pattern this network after the highly successful National Technical University -- an institution that makes high quality education and training available to business via telecourses.

The curriculum of this new university system would emphasize the applied sciences, both physical and social. And subject matter would be tailored to regional labor and industrial markets, much as the land-grant institutions tailored their programs and services to regional geography and climate.

- (2) The U.S. Department of Education should establish a National Clearinghouse on Work and Learning. We now have nine national clearinghouses, 14 national centers for excellence in education, and six regional education laboratories. But even though this economy invests at least as much in the education and training of adults in the workplace as it does in the education and training of children and young adults in our schools and universities, we find these centers, clearinghouses, and laboratories largely unprepared to relate to the needs of the corporate sector.

The mission of the proposed clearinghouse would be to synthesize and disseminate educational research findings that would have immediate relevance in the business world. Examples would include: how to select delivery media that are best suited to a given set of instructional objectives, how to best integrate the liberal arts into our management education curriculum, and how to most efficiently equip our employees with the basic literacy and interpersonal skills they'll need to qualify for advancement.

If we ever expect to tap the creative contributions of that diverse workforce I mentioned earlier, we must get better at educating, training, and managing our employees. This clearinghouse could help us meet this challenge.

- (3) I think it would be appropriate for the federal government to increase its support to those large urban school districts that are prepared to commit themselves to improving the basic literacy skills of their students. Such support should be contingent on the district's ability to identify target outcomes related to the kinds of functional skills that are found in the National Assessment of Education Progress study I mentioned earlier. The National Institute of Education's "Excellence in Education" activity could be expanded to accommodate this program.
- (4) The U.S. Department of Education could also do more to encourage innovation in curriculum design at the post-secondary level. In particular, they could provide special incentive grants - perhaps through The Fund for the Improvement of Post-Secondary Education - for institutions willing to integrate liberal arts subject matter into their technology

curriculum, and technology and human relations subject matter into their business management curriculum.

- (5) Congress should seriously consider revisions to the tax code which would create greater incentives for companies to invest in employee education and training. One approach that is frequently mentioned in this regard would be the granting of tax credits to firms willing to increase their education and training expenditures over some base year. I realize that there is an issue as to whether this credit ought to apply to federal or state tax liability. My personal concern with implementing this approach entirely at the state level is that many firms that would stand to benefit most from the credit are located in states that, almost by definition, may be least able to forgo the revenue. This matter certainly deserves further study.

In any event, larger firms could use the retained funds to establish, among other things, adult literacy programs for their employees. I think this would be a very desirable outcome, since this type of education could probably be carried out much more efficiently by private companies than by public

adult education organizations. After all, one of the key tenets of adult learning theory is that the learner must perceive the personal relevance of instruction. Requirements associated with job performance and advancement would obviously provide this ingredient.

Smaller firms could either purchase education and training services from public providers, or where appropriate, from other companies. The services of the "electronic training network" I proposed would also be quite attractive here, since the unit cost of training would likely be low.

One very worthwhile by-product of increasing the amount of employee education and training funds "in circulation" is that it would probably bring about some needed reform in the system. As pointed out in a recent study by the Carnegie Forum, colleges and universities would be eligible to provide services to companies taking advantage of the tax credit, but they would have to compete for the privilege with a longer roster of potential providers. Consequently, they would have to become both more efficient and more responsive to the needs of business.

In conclusion, let me say that I am optimistic about our collective ability to address the challenge of upgrading the skills of our workforce. And I find efforts - such as this important hearing - to more fully understand the issues, and more carefully explore the options, to be especially encouraging. Thank you for the opportunity to contribute to your important work.

Senator LIEBERMAN. Thank you, Mr. Lyden.

I would like to welcome Barry Bloom. Thank you for coming over to testify for us today. Barry is the senior vice president of Research and Development at Pfizer in Groton. Good morning. We look forward to your testimony.

**STATEMENT OF BARRY M. BLOOM, SENIOR VICE PRESIDENT, RESEARCH AND DEVELOPMENT, PFIZER, INC., ACCOMPANIED BY DR. DAVID BURNETT, PFIZER, INC.**

Mr. BLOOM. Good morning. Thank you, Senator. I have with me this morning Dr. David Burnett, formerly Dean of Continuing Education at the University of Pennsylvania, and now responsible for recruiting and training programs at our Central Research Laboratories in Groton.

We appreciate very much this opportunity to share our views on the education and training crisis that threatens to restrict the competitiveness of American business. Pfizer, as you know, is a research-based health care company. We discover, develop, manufacture, and market innovative pharmaceuticals and medical devices, as well as a variety of other products worldwide.

We employ about 18,000 people in the United States, and over 3,500 work in Connecticut, more than in any other State.

The availability of highly qualified people, educated in science, mathematics, engineering, and medicine is critical to the productive capacity and competitiveness of our company. The growth of our company exemplifies the importance of having a highly skilled workforce available.

When we established our research and development headquarters in Connecticut in 1960, our corporate research investment that year totaled \$13 million. This year it is projected to reach \$600 million. And the resulting research engine for growth has, over that period, helped to power a ten-fold expansion of our company, and created many new jobs.

There is now a widespread recognition, as we have already heard, of the growing gap between the technical literacy of our population and the level of skills our workforce has to acquire if we are to sustain our economy in a highly competitive world, driven by technology innovation. We would like to offer here a few thoughts on what we believe the Federal Government and industry can do working together with educators to help close that gap.

We believe, as many do, that the quality of mathematics and science education in the early years of schooling is critical in shaping a student's interest in and aptitudes for science. Accordingly, our company is working directly with middle school teachers and administrators in southeastern Connecticut, providing enrichment programs for students and teachers, relevant summer employment for science and mathematics teachers, mentoring and career guidance, and direct funding for innovative teacher-initiated programs.

We have developed these programs in collaboration with the educators who must implement them, and we expect them to serve as a model for other Pfizer facilities to adopt throughout the country, and others if they so wish.

We believe that these partnership programs and others like them are appropriate undertakings for business that serve both its self-interest and the public interest. As for the role of the Federal Government, we recommend strongly supportive programs that enable each of the sectors to contribute appropriately.

For example, we strongly favor the National Science Foundation's statewide initiative in science, mathematics, and engineering education, in which four to eight States will be challenged to review and revamp their mathematics and science education systems in partnership with the private sector. We recommend that this program, which has a very modest cost, be expanded to include as many states as submit high-quality proposals.

At the regional level we urge funding support by both industry and Government of such well-conceived and well-executed programs as the Connecticut College Minority Summer Institute, and the Program for the Improvement of Mastery in Mathematics and Science, directed by Wesleyan University.

Changes both in the technical requirements of the workplace and in the composition of our workforce also mandate increased and improved efforts to educate and retrain adults. As we modernize our manufacturing operations, we need employees with more advanced technical skills. And as we expand our research operations, it has become increasingly difficult for us to find the number of bachelor of science level new graduates that we need.

In response to those problems, we conduct a comprehensive program for our plant employees. The program includes instruction in basic math, chemistry, automated processes, instrumentation, and other related areas. We are currently instituting a 1-year work-study program to retrain employees from our manufacturing operations for employment in research. The study portion of this retraining effort will be conducted at a nearby State technical college, using a curriculum specifically tailored to these employees' educational needs.

While we recognize the budgetary constraints facing the Federal Government, we recommend Federal action in two areas to support retraining efforts. As you have already proposed, Senator, section 127 of the Internal Revenue Service Code, which exempts employees from paying income tax on assistance provided by their employer should be extended to include education at the graduate level, and should be made permanent. We strongly endorse your efforts in that regard.

Programs for workers who seek retraining by means other than college courses also need to be encouraged. Tax credits for worker training programs should be enacted to facilitate company investment in this costly process.

Both the changing world scene and the current economic climate have signaled very clearly that Connecticut, and indeed the entire New England region, faces a challenging employment situation during the period immediately ahead. As we seek new ways to enhance the capabilities of our workforce and teach new skills where that is needed, we had better not overlook the even more fundamental need to retain and create quality jobs.

Heaven help us if we only attain an adequate supply of qualified workers by decreasing demand!

In Connecticut, remaining competitive is a particularly stiff challenge for business. Energy is expensive, housing is expensive, business taxes are high, and the cost of meeting regulatory requirements, notably those relating to the environment, are substantial and escalating. It is critical, I do not have to tell you, that both the Federal and the State governments continue to be sensitive to the fragility of our situation as policy is set that impacts our economic competitiveness.

Under the circumstances that now face us in this State, both Government and business must strive together to create and maintain as many quality jobs as we can. Our small businesses need the kind of nurturing that the Federal Government's Small Business Grant Program offers. And at the same time, because of the larger number of jobs they provide, we must care for the health of what the New York Times recently called the industrial "pillars" of New England, its high technology businesses, its military contractors, and its financial service companies.

To the extent that changing conditions, and particularly changing national policy, require such companies to shift their mission or to restructure, Federal assistance could prove vital. And the legislation you have introduced with Senator Dodd should serve well to open a substantive discussion of this whole matter.

That concludes my statement, Senator.

Thank you.

Senator LIEBERMAN. Thank you very much.

Before going on to the next witness, Ms. Orlowski, I do want to introduce two colleagues of lawmaking from the state level. I see here Senator Frank Barrows of Hartford, and Senator Tom Sullivan of Gilford, both of whom have been quite active in the whole area of economic growth and development here in Connecticut. And I thank you for being here.

Ms. Orlowski, it is nice to have you. Diane Orlowski is with JFD Tube and Coil Products, Inc., in Hamden, CT, a certifiably small business. And we are particularly happy to have you here to offer your perspective on this problem.

Thank you.

**STATEMENT OF DIANE M. ORLOWSKI, J.F.D. TUBE & COIL  
PRODUCTS, INC., HAMDEN, CT**

Ms. ORLOWSKI. Thank you, Senator Lieberman.

Good morning. And I want to thank you for inviting me here today to speak. Again, my name is Diane Orlowski, and I am co-owner of JFD Tube and Coil Products. We are a manufacturer of fabricated metal products, and we are a relatively young company, incorporating in 1983 with just four employees. Today we have 18 people, 7 office and 11 production.

As we have become bigger and more profitable, we have been able to pass along some of these benefits to our employees. Our current benefit package includes 2 weeks paid vacation, 8 paid holidays per year, company paid medical benefits for both the employee and the employee's dependents, 401(k) pension and profit sharing plan, and in the last 2 years we have been able to offer year-end bonuses based on our company's profitability.

Senator LIEBERMAN. Some of my employees would like to sign up. [Laughter.]

It is a better package than we offer.

Ms. ORLOWSKI. Well, we are trying our best to get workers in. And other things we like to offer, we have a Christmas party and a turkey each year. We offer assistance in finding quality child care and other things like that.

One of my roles at JFD has been to find qualified personnel, from low-skilled blue and white collar to experienced machinists, welders, engineering, and office staff. I have tried many different sources for finding help. These include the Connecticut Job Service, the Private Industrial Council, newspaper ads, high schools, trade schools, colleges, armed service referral centers, and other civic organizations. To say that I have difficulty in finding and retaining qualified help is an understatement.

As I stated above, we now employ 18 people, but we are on employee number 66. In 1989 when Connecticut's unemployment rate was less than 3 percent, we could not even get responses to our ads. This year, although the response has been better in terms of number of applicants, the quality of the applicants has not improved.

Many applicants do not even come prepared to fill out an application. They do not have pens. They do not have a list of references. They do not even have a role in mind for what kind of position they are looking for. And they cannot even properly complete a standard job application.

And I found when interviewing them, that many people cannot even read a tape measure. We work to a sixteenth of an inch tolerance, and I give the individual a piece of pipe which he or she has to measure. I recently had one gentleman who could not even give me the inches. It was 9 and 15/16's inches long, this piece of pipe, he could not even tell me it was between 9 and 10 inches long.

Senator LIEBERMAN. Was it because he could not read the ruler?

Ms. ORLOWSKI. He could not read the numbers.

Senator LIEBERMAN. He could not read the numbers on the ruler?

Ms. ORLOWSKI. The ruler was clear. The tape measure was clear, because it is the same tape measure I use myself when measuring units out in the shop. The numbers were clear on the tape measure. He could not read them.

Some people get close. I have not had anybody who has been able to give me the exact measurement. [Laughter.]

Some of my company's experiences with employees present and past highlight the prevailing thought concerning the decaying work ethic within the United States. Several years ago I hired a person through the Private Industrial Council who was recently released from 9 years in jail. This was his first job out of prison. The gentleman had no I.D. so I personally took him to the bank to verify his employment with us and to help him set up an account.

After working at our company for 6 weeks he voluntarily quit. All too often new hires do not show up at all. Many do not even call to let us know. My office manager will no longer make out time cards or employee folders until she actually, and I quote her, "sees the whites of the people's eyes."

And the problems continue with our current workforce. Of the last four Saturdays that we offered overtime, twice it happened that the lead person who was supposed to open up either did not show or showed up late. We have had to pay overtime for time that was never worked for those workers who did show up on time.

Every once in a while we try letting somebody else open up on a Saturday, and over the past 7 years it has not worked. Usually one of us has to go down, myself or one of my partners has to go down there.

Poor work habits, tardiness, absenteeism, carelessness, breakage and losing of tools, and the like continue to be problems. We have estimated that for 1990 alone JFD will lose approximately \$60,000 for reworking jobs. This figure includes labor time, extra material costs, freight costs, tooling costs, and other hard quantifiable costs. It does not include the cost associated with dissatisfied customers and possible lost future business.

One example of where this figure comes from is a job that we currently ship. It was improperly crated. The crate broke during shipment, and as a result the unit was damaged and we were back charged \$7,000 for the repair of just that one unit.

One thing we have found about our workers is our most productive workers and most reliable workers are naturalized U.S. citizens. They seem to have a more responsible attitude toward work. Their attendance is more consistent. And even considering the language barrier, they seem to be able to learn the requirements of the job faster and to produce a higher quality product.

For instance, one gentleman who does not speak English very well at all will be able to do the job if we just show him the process once.

I do not believe that my experiences at JFD are unique. Business colleagues and friends in personnel report similar experiences. Bryan Bodin of CBIA asserts that the problem lies not only in finding help, but more importantly, in finding qualified help.

A report from the National Federation of Independent Business, "The Coming Labor Shortage," states, and I quote, "The disparity between the quality of entries and the requirements of the new job is striking." And I do have a copy of that report if you would like to see it.

One of the things I was asked for was some of my suggestions to help solve this problem. I could have written a book on this, but I have only touched on a few things that I think will be important. The first thing is a nationwide educational standard. This is necessary I believe to ensure that all children receive a uniform education. Within this standard, we need to teach to a higher level. The current minimums, at least within the State of Connecticut, are not enough.

My own 1st-grade son was bored last year in math. When I requested more advanced work for him, I was told that this could not be done as he would be getting into 2d-grade work.

No. 1, lengthening the school day and the school year. This would serve several purposes. First, the mandating of additional subjects, such as drug education, AIDS, fire safety, and the like, has taken away time from teaching the basics. We need to make up for that lost time.

No. 2, I think more time in school would provide continuity for our children and the time necessary to teach the skills required by our increasingly technological society.

No. 3, I also believe the current school year structure inadvertently lends itself to the decaying American work ethic. After 12 years of 6-hour days, 180 days a year, how can we expect our youngsters to appreciate an 8-hour workday over 200 days per year?

And for helping businesses solve the problem of finding help, I believe creating a central clearinghouse of information or a consortium between business, Government, and schools, where employers can call to find qualified help. This consortium could also serve to provide remedial education and retraining.

As I stated above, I go to a myriad of referral sources, often unsuccessfully. Being able to go to one main source will benefit both employers and employees.

To conclude, I believe the magnitude of the problem is not insurmountable. However, I do believe we need to change our attitudes about education and work. Both are good not only for the society, but for the individual. As my grandfather was always quick to point out, work keeps you young. He worked building houses to the age of 79, and lived for another 14 years.

Thank you for taking the time to hear my views. And if you have any questions, I would be glad to answer them.

Senator LIEBERMAN. Thank you very much. You have carried on well from your grandfather. That was a very good statement.

Let me start the questioning with you, Ms. Orlowski. I appreciate the detail with which you spoke. It was very real, and that is important for us to understand. Describe what level these jobs are that you are talking about. I take it they are not at an extremely high level of technical or educational proficiency.

Ms. ORLOWSKI. Well, we run the gamut. We have low-skilled, where the basic requirement is just to be able to read a tape measure, up to engineers. We have an engineer. Our welders have to be certified in welding, because we are an ASME code shop. So our machinists and our welders and coilers and benders are very skilled. They have to be able to read blueprints. Which is interesting, because one of our welders does not speak very much English. Yet he can follow the blueprint and he can do the work. Whereas our English-speaking welders have more difficulty in reading blueprints.

But we do have problems at all levels.

Senator LIEBERMAN. Including the engineering level?

Ms. ORLOWSKI. Yes.

We are now on our fifth engineer. Other than one of my co-owners, one of my partners, we have one other engineer. And we have gone through that position five times.

Senator LIEBERMAN. Are you able to be competitive in terms of salary and benefits at the engineering level?

Ms. ORLOWSKI. No.

Senator LIEBERMAN. Is it harder for you as a small business to do that?

Ms. ORLOWSKI. Yes.

One thing we can offer is more flexibility. You spend most of your working hours at work, and so we like to stress the family atmosphere of our business. Which is why I went over some of assistance that we offer to our employees. Our current engineer is from China. And I have referred him to family doctors and day care, and stuff like that.

Senator LIEBERMAN. Why have the people left who have left? For instance, the engineers.

Ms. ORLOWSKI. One guy went into his own business. Two gentlemen just did not work out.

Senator LIEBERMAN. So you let them go?

Ms. ORLOWSKI. Yes. Well, I guess we are on our fourth engineer. So this is now our fourth.

Senator LIEBERMAN. What is the Private Industry Council that you referred to?

Ms. ORLOWSKI. I believe they work in conjunction with the Labor Department or something. But they get people who are hardcore unemployable people, I guess, or people who need work and they go to the Private Industrial Council, and then through the Private Industrial Council we get wage credits and stuff like that for hiring and training these people. Not one has stayed with us.

Currently we have another low-skilled—it is usually low-skilled workers—working for us that we hired in June. And he has been with us 2½ months now. And he seems like he is going to work out. I hope he does. But we have not had any luck with them.

Senator LIEBERMAN. I was interested in one of your suggestions. You had made the rounds looking for personnel, and you think there would be a tremendous benefit if there was some kind of clearinghouse of all the educational, private, and public sources of job seekers that small businesses, in particular, could tap into to see what was available?

Ms. ORLOWSKI. Yes, I think that would really be beneficial. Finding these sources has taken me years.

Senator LIEBERMAN. It has been hard.

Are you able to provide any training yourself to your employees?

Ms. ORLOWSKI. We try to provide some. Well, most of it is on-the-job training. Like our welders out of trade school, they know the fundamentals of welding, but really they have to work with the material and do it on a day-to-day basis to really get any kind of productivity and quality. And it usually takes at least 6 months minimum, to a year, for that kind of training.

We do have meetings every 3 or 4 months where we take everybody in and talk about different things and different problems. We had a training meeting a couple of months ago on testing. We have to test the units before we send them out. So we had a training meeting on the proper way of testing the units. Which, I might add, the workers were not able to implement it. We have had to redo that meeting a couple of times. And one of my partners has had to go out there and show them in the factory how to do that.

Senator LIEBERMAN. And this is just because of the lack of basic math, science, and reading skills, in a sense?

Ms. ORLOWSKI. Almost understanding.

Senator LIEBERMAN. Understanding, to go back to what Mr. Lyden said earlier, yes. The ability to think, really.

Ms. ORLOWSKI. To think and to solve problems, yes.

Senator LIEBERMAN. Do you ever send any of your workers out to training programs?

Ms. ORLOWSKI. No.

Senator LIEBERMAN. And I think that is probably typical of the average small business. It has difficulty affording that kind of outside training.

Ms. ORLOWSKI. Probably the only thing that would help that I know of is like a drafting course, a blueprint reading course. But as far as I know, I do not believe, for production workers in particular, there are any specific programs or training centers that can help them. You know like Pfizer is able to create their own program. We cannot do that.

Senator LIEBERMAN. You gave some interesting suggestions about how to deal with the educational deficit, the cognitive deficit that you are seeing in the workforce. But you also focused in—and you are not alone, I hear this a lot when I go around visiting businesses in this State—on what you might call the old-fashioned work ethic. The story you told about the inability to get people to come in on a Saturday, to open on time, and so forth.

In about 60 seconds or less, what can we do to try to deal with that problem? I said 60 seconds, you can go longer, because you could probably talk for 3 days about it. But do you have any thoughts about that? That is very fundamental. And I must say also, and I hate to say it, but what you said about the comparative effort levels of naturalized U.S. citizens working, I also hear when I talk to employers throughout the State. And I suppose one could attribute that to just the particular drive that the first generation in America typically has to survive and flourish.

Any thoughts about how we might train people in work ethics?

Ms. ORLOWSKI. I believe we have to tell children from an early age that work is good. I hear youngsters, when they get their first job, they say, oh, my job is great, I do not do anything for 8 hours a day and I get paid \$7 or \$8 an hour. And I do not know where that comes from. But growing up all my life, I have always heard that work was good.

We need to reinforce that at home and in school. That is a tough one.

Senator LIEBERMAN. I agree.

Mr. Bloom, are you having actual problems now finding qualified workers to fill the jobs that you have?

Mr. BLOOM. I would say we are sensing the leading edge of the shortfall that has been predicted in certain professions. Chemistry is probably the one that I would single out as being most evident. We really do have to scramble now to find undergraduate level people for our laboratories. And it is becoming more and more a test of our ingenuity to develop laboratory technicians by other means.

Senator LIEBERMAN. Those are people without college training, or with college training?

Mr. BLOOM. We have in recent years hired mainly bachelors and masters level scientists to work in our laboratories as assistants to doctoral level scientists. That is becoming very difficult now in the chemical sciences.

Senator LIEBERMAN. How about problems finding people who do not need a college education to work with you?

Mr. BLOOM. Well, it is my personal feeling that we have always been blessed with a very good workforce in southeastern Connecticut. We are very proud of our people and pleased with them. Our challenge is the one that in a sense this discussion is all about. And that is, finding among the labor pool these days people with sufficient technical skills so that they can easily get to the point where they master their job requirements in our increasingly computer-monitored, highly complex manufacturing operations.

Senator LIEBERMAN. So those would tend to be people who are not college graduates?

Mr. BLOOM. For the most part.

Senator LIEBERMAN. Do you have an in-house program of training for them?

Mr. BLOOM. Yes, we do.

Senator LIEBERMAN. Is that a training program that occurs before they go on the job, or simultaneous with going on the job?

Mr. BLOOM. It is I believe best described as simultaneous with going on the job.

Senator LIEBERMAN. I was interested in what you said about the retraining programs that you have for workers. And I take it those are put into action when you are actually moving to a level of a new activity which your workers have not really been prepared for. They have been doing something else, the focus switches, and now you have got to try to retrain them?

Mr. BLOOM. David Burnett has just created a new program which will start this fall, that I mentioned briefly, for retraining personnel who have been chemical operators in the plant to become technicians in our research laboratories.

Senator LIEBERMAN. Now are you doing that because you have decided that you no longer need them as chemical operators, or that is the best way for you to get good technicians?

Mr. BLOOM. It is both to supplement our supply of laboratory people, and because changing market situations have changed our manufacturing needs.

Senator LIEBERMAN. Let me understand this. Are you doing that in-house?

Mr. BLOOM. It is being done in collaboration with the Thames Valley Technical College.

Senator LIEBERMAN. That is what I thought I heard you say. And do the workers do that outside of working hours?

Dr. BERNETT. It is a combination, Senator. They will be full-time students for the first semester of the program. And then they will be half-time students and half-time for the remainder of the full calendar year. And then they will join as laboratory technicians.

Senator LIEBERMAN. How many people will be involved in that program?

Dr. BERNETT. In the initial pilot phase we will have around 15 to 20.

Senator LIEBERMAN. That is a substantial amount of worker hours removed from full activities. So that is quite an investment by the company. Do you have any sense of what percentage of your

operating budget you are spending now on training or retraining? If you do not, you can submit it later.

Mr. BLOOM. I do not.

Senator LIEBERMAN. Let me go to the cosmic level for a moment, and away from what we have been talking about. The pharmaceutical industry is a very important industry to the United States. It provides a lot of jobs and income. Obviously the projects are appreciated and we all depend on them. And it is also an international business.

Is the American pharmaceutical industry feeling the effects of what I have described and what we sense is the American educational deficit? Are we beginning to have trouble competing with foreign pharmaceutical companies because of the higher level of educational achievement in those other countries?

Mr. BLOOM. Human health research has always been a very attractive career option for people trained in the biological and chemical sciences. Which I guess is a way of saying we have always been favored employers in the competition for professionals. Having said that, however, I think that we are entering a period where we are going to have a pretty tough time filling all of our needs unless there is a substantial improvement in the flow of well-trained professionals out of our colleges and universities.

I would say that by the year 2000 we could be in real trouble. I do not think it would be accurate to characterize our situation at the moment as one in which we are losing an important competitive advantage. But it could well happen quite soon.

Senator LIEBERMAN. I appreciate the suggestions that you made, and particularly your noting of the legislation that I have cosponsored that would create some tax benefits, or at least incentives, to encourage employer-assisted educational programs. More generally, do you think there is anything—well, let me step back and ask it this way. In your own experience in this part of what you are doing, which is trying to obtain an adequately skilled, trained, and educated work force, is there a need for more coordination than exists now of both public and private programs in this area?

Mr. BLOOM. I am not sure that I am in a position to be critical of the present effort. But I do believe, as we said in our statement, that remarkable things can happen if we can engineer appropriate partnerships between the public and private sector. Certainly some of the things that the private sector is able to contribute, if the Government encourages those activities, are unique.

Dr. Bernett was telling me yesterday of the impact that he sees on local science teachers who have had the opportunity to work in our laboratories this summer. If he will allow me to quote him, and I guess he will, he rather unabashedly says, "they have been transformed. They will never teach science the same way again."

So things of that sort I think have great potential to contribute.

Senator LIEBERMAN. Is that a program that you created, or is that part of the CBIA Program?

Mr. BLOOM. He is referring of course to some of our own initiatives, but they are consistent in their strategy and design with the things that CBIA is doing.

Senator LIEBERMAN. In the training program that you described with the community college, I take it that you went to them and initiated the contact, and they were very cooperative with you?

Dr. BERNETT. Very responsive.

Senator LIEBERMAN. Mr. Lyden, I go to you for a few minutes. What do you see as the role for the Federal Government here? I think you have analyzed some of the problem areas quite correctly. What more can the Federal Government do to be constructive here?

Mr. LYDEN. I think in several areas, and let me just cite a couple. One, and perhaps the most costly, but at the same time maybe the most beneficial, would be increased support in the way of both funds and technical assistance to our major urban school districts, and especially elementary education.

I think, as you well recognize, the top even 10 or 12 urban districts in this Nation serve a very large proportion of the disadvantaged population of the entire country. Increased support targeted especially to those districts that are willing to begin a discussion about expected outcomes of public education would make a difference.

Senator LIEBERMAN. Standards?

Mr. LYDEN. Yes, if you will.

And to set forth specific steps for proceeding over time to the achievement of those standards. I think focused Federal investments would bring very good returns both to the economies of those areas and certainly to the students and their families. So I would suggest your continued interest in that area would be well advised.

At the other end, I think we might consider more innovative efforts to increase the transfer of knowledge that is resident in our post-secondary institutions and in the many clearinghouses, the national centers around the country, that would help the private sector get better at training their own employees.

I point out in my remarks, Senator, that we have several education research clearinghouses, and several National Centers of Excellence in Education. We have the regional labs. And while we are spending almost as much in this Nation on the education and training of our employees as we are on youth and young adults, we really do not have a good mechanism, a center or clearinghouse—

Senator LIEBERMAN. For sharing that information.

Mr. LYDEN [continuing]. For sharing information on how we can provide more effective and efficient training.

Senator LIEBERMAN. I know that Aetna has extensive training programs for the workforce. Did you feel that you were inventing your own wheel?

Mr. LYDEN. Sometimes we do.

And it is discouraging because we are aware of much of the progress that has been made very recently in such areas as education technology, both in post-secondary institutions and, as you know, in the military. But it is hard to get access to that kind of information in a form that we could readily use inside companies.

Senator LIEBERMAN. So your thought is that that is an appropriate and perhaps unique role for the Federal Government to play?

Mr. LYDEN. I think it is, to help pull these things together. And it is a low-cost initiative, to pull things together and really bring them to bear on these ongoing education and training challenges that we face as companies.

Senator LIEBERMAN. Of course there is an awful lot going on.

Mr. LYDEN. There is a lot.

Senator LIEBERMAN. I must say that it is hard not to have very mixed feelings as you get into this field. One is that there are some terrible problems. The other is that there is an enormous amount of energy being spent trying to make them better in a lot of different ways.

Mr. LYDEN. And I am sure, there is, speaking just for the trainers and educators at Aetna, we would be most grateful for access to this kind of information. Because it would help us to get better at helping our employees improve their skills.

Senator LIEBERMAN. One of the very interesting points that you made is the problem, if I can call it that, or the need to train people in supervisory and management skills. How do you do that? It is clear enough that we have some people that come out of the education system without a basic math and science understanding, or even work ethic. But what you are saying is clearly a need. How do you begin to train people to be managers? Do you do it in-house?

Mr. LYDEN. Well, we are able, to some extent at least, to do it in-house. We have recently made significant investments in the continuing education of our supervisors and managers at Aetna. And we will likely continue to do so as their jobs, frankly, get more difficult.

I think the smaller companies will continue to look to our community college systems, for example, to their continuing and professional education programs in the areas of management and supervision for help in this regard. And I think it is through ongoing curriculum improvement on the part of those institutions, aided by the dialogue made possible through the partnerships that we have heard about, that will enable them to meet these needs. This is very important.

The supervisors are going to be facing many challenges in the future that they have not had to face in the past.

Senator LIEBERMAN. Let me ask the three of you for a quick response. One of the elements of the system that we have developed in this country, or that has developed, maybe nobody has developed, to provide trained workers, is the whole network of private proprietary trade and technical schools. And we hear a fair amount from those groups in Congress.

I am curious as to what role you feel they play in providing you with workers. Ms. Orłowski, have you had any experience with the TCI's and groups of that sort?

Ms. ORŁOWSKI. We have gotten two of our welders from Eli Whitney. One of the drafters that did not work out was from TCI. We found that they come into work with, like I said, a rudimentary understanding, just the basics. But we are such a specific industry, one of the reasons our company has been so successful is because it is uncommon what we do.

So we have really had to train them in-house, sort of trial and error, learn as you are going type training to bring them up to a

level where we could get them certified—the welders certified to do code work, and the drafter and engineer. Even our engineer now, he is a Yale graduate, he did not know the difference between a pipe and a tube. Pipe and tube sizes are two different things.

You know, we have to do a lot of stuff in-house. One thing we have found is that teachers like to tell the students as they come in to us, and they say gee, I have been told by my teacher that I can earn \$40,000 or \$50,000 a year and we are like, if you can, God bless you. Go ahead. I think the students are given unrealistic expectations about what is out there when they graduate.

Senator LIEBERMAN. Any experience with the proprietary school graduates, even in secretarial help?

Mr. BLOOM. I would have to say they are a minor factor in our situation. Secretarial schools, perhaps maintenance employees, but for our production workers and research workers they are not much of a factor.

Senator LIEBERMAN. How about Aetna?

Mr. LYDEN. We are major employers of people in the data processing and clerical areas. We have frequent openings. I cannot speak specifically about the use of proprietary schools in that mix.

Senator LIEBERMAN. Time is going on. I appreciate very much your time and your contribution. It has been a good introduction, I think, to some of the difficulties that really are out there and some of the efforts that you are making to make it better. I thank you very much.

Let us call the second panel, which is a panel of educators. Sherrill Jamo, Ted Sergi, and Judy Resnick. We are delighted to welcome you here and thank you for coming, and let me go first to—is Jamo the right pronunciation?

Ms. JAMO. Yes, that is correct.

Senator LIEBERMAN. Sherrill Jamo is a teacher at Manchester High School, and we appreciate that perspective particularly. Welcome, and we look forward to hearing from you now.

#### STATEMENT OF SHERRILL M. JAMO, TEACHER, MANCHESTER HIGH SCHOOL, SOUTHBURY, CT

Ms. JAMO. I thank you very much for the opportunity to speak before you today, and my remarks are a conclusion of two experiences in my life. One is that I am about to begin my 24th year of teaching high school at Manchester High School, and the second experience is that this summer and the previous two summers I have been a CBIA fellow, so I have had the opportunity to be one of those people who are attempting to link business and education together.

Senator LIEBERMAN. Tell us a little bit, as you go along, about what it means to be a CBIA fellow.

Ms. JAMO. OK. I need to go on with my prepared statement but I will get back to that, because that is a very important part.

Since I am an English teacher, I feel somewhat compelled to start today by telling you a story.

Once upon a time there was a busy road that had a very dangerous curve, and over the years the traffic on the road increased to the point where there were many traffic accidents at the curve

site. The wisest people in the land gathered together to discuss all the options so as to prevent further human suffering because of that curve and its accidents.

The solution? Obvious to all, and decided after much research and deliberation: Build a fine, modern hospital at the curve site!

Beginning next week, millions of children will get onto the educational road in the United States. The youngest of the group will enter schools for the first time, and presently the prognosis for their having a successful trip is not very good. Studies show that first and second grade teachers can already identify those students who demonstrate at-risk behaviors. Those are the ones who will crash before graduation. These will be drop-outs, the troublemakers, the nonconforming ones who will not stay on the assembly-line path that we have laid out for them with the present educational system.

Also next week, some 1 million children who were in school last fall will have dropped out and will not be returning this fall. 20 to 30 percent of high school students will either drop out or move through our system without competency. Of the group who will make it to the end and graduate, only 39 percent will take the road on to a college education. This means that after graduation, 61 percent do not continue directly on to college.

These students are called a variety of names, both formally and informally, and all of them have a negative connotation. They are called noncollege bound, terminal, job-bound, basic, vocational, skids, slugs, cruds, and low-lives.

Ironically, the system itself contributes by identifying, sorting, and tracking all of our students from a very early age. We have predestined some of what happens at the high school level by lowering the ceiling of expectation through our labeling and our grouping practices at the primary level.

Historically, we have never educated the majority of our public school students to go to college. Presently our high school graduation rate is 75 percent, which is an astounding number of individuals not graduating, but not so dismal when compared to a graduation rate of 58 percent in the 1950's and 63 percent in the 1960's. However, the nongraduates could usually find jobs in the 1950's, whereas today, even some of the graduates, as we have heard from some of our other people today, are not qualified for existing jobs.

Two current trends have made that 75 percent graduation level a critical number. The first trend is the projection that by the year 2000 more than half of America's new jobs will require skill levels beyond high school, and the second trend is the demographic reality of lower numbers of young people available to enter the workforce.

In other words, we need every one of our skids, and we have none to waste, and yet next week when the schools open we will still have hospitals at the curves, and we will have done little to prevent the accidents from happening during the year. Instead of changing the road, we will begin another year of following the old Second Wave factory model of education. Although the real factory has changed, the school model continues.

The factory model school is not concentrating on quality, but on mass production of quantities. The major goal is not mastery, but

graduation. The Back to Basics and its "teach to the test" approach has given us the multiple choice education. Increasingly, the high school diploma has no guarantee behind it. It is possible, for example, to graduate with a D— average in every single class, meaning a 60 percent achievement level. This means a plus or minus variance of 40 percent for any diploma that you look at.

However, schools are not factories in one very important way. We have to accept all the raw materials which come through the door. We cannot move to another supplier if the current supplier begins sending us lesser materials with which to work. Somehow we have to compensate for the difference in quality of the current supply. We not only need good teachers, but we also need teachable students.

The noncollege bound student, which is the one that I have been asked to focus on today, will oftentimes be taught by the youngest, least-experienced teacher who is paying dues until the prestigious college prep classes are earned in later years. There is prestige, even in schools, in who you associate with, not in your accomplishments. The valedictorian may honor you at graduation if you are a teacher. The skid will probably not even be there.

Traditionally, society has tended to concentrate on the minority group of college bound students. The SAT scores are very carefully tracked and announced every year by the media.

The noncollege bound student will often be taught in the traditional teacher-centered and controlled method with the rows all lined up and students rewarded for rote memorization of facts.

The workbook approach is often a watered-down version of the college prep course, with the student seeing little relationship between what is taught in the school and "real life."

The noncollege bound class is sometimes not given equal treatment in teachers, methods, materials, technology access or opportunity for growth. The creative innovations are often reserved for the gifted students. The lower level students are not considered bright enough to handle technical equipment like computers, and they certainly cannot be trusted not to break the technology.

Trust and behavior problems become major issues with the non-college bound students in the school system. In schools of diversity, the gap between the essentially middle class teaching staff and the mixture of students from different cultural and ethnic backgrounds contributes greatly to the learning gap.

I do not mean to infer that this is the way it is for all schools, for all students, nor do I mean to imply massive failure of effort. Teachers have never worked so hard as they have during the last few years, and there has been progress, although in disconnected ways.

For we have continued to build hospitals when we need to build a major new infrastructure, similar to the massive rebuilding taking place in business and industry. We need to form a new vision to emphasize quality for all students, not just the ones we define as "quality students."

Education needs to retool the experienced teaching staff in order to implement this change. We need to recognize schools as places of work and to apply current management techniques. This means giving teachers autonomy, resources, and pay equal to their value.

We must encourage and recruit teachers from other than middle-class, white backgrounds.

From the local community to the Federal level, we must work in concert to provide opportunities for competence. We must build bridges between us so that all those children trudging off to school next week will be able to reach their full potential and participate in the continuance of the American dream.

Senator LIEBERMAN. It was an excellent statement. I am going to ask you rather than wait. Let us talk a little bit more about how we can improve the infrastructure as opposed to building more hospitals. I think that is a great metaphor.

Ms. JAMO. This leads very definitely into the role of the Federal Government. The Federal Government is our big boss in the sky. We are part of the Government. We are a Government agency, and the Federal Government definitely needs to have the leadership role in terms of forming and framing a new vision, new expectations, a new business model.

However, one very important caution is that this means a new approach. It means a new way of working with schools on the State and local level. It does not mean the legislative mandate from afar, which it has been in many cases. In my 24 years of education, I have seen some real disasters in this way.

When the legislation comes either from the Federal or State level, it is often a mandate without involving those people who are going to have to deal with the result on a day-to-day basis. There is funding for a couple of years, and then a new group of people are elected, or budget cuts happen and then the funding is abandoned, but the legislation remains on the books.

Schools all across the country this fall are scrambling to find the money to make up for these deficits. They are being required to do things, to install programs, support programs without Federal funds, and good programs that are working very well no longer have funds and then begin to fall apart.

Senator LIEBERMAN. How can we do it? There is no question about what you are saying. There has been attention in American education generally, that there has been such a strong tradition of State and particularly local control of education, and yet the Federal Government is the Federal Government and wants to be involved, wants to be constructive, has been involved, although not always constructively.

So we walk a line. There is great sensitivity about having mandates from the Federal Government, so we tend to want to put money into place that create incentives for things to happen. We passed a bill through the Senate this year that will create some model schools, so hopefully they will be magnets and attract our best ideas.

But what you are talking about is something very fundamental. I just wonder whether there is a way in which the Federal Government would really have to be more aggressive in trying to make that turn-around.

Ms. JAMO. I think a very important role for the Federal Government is to make sure that education remains a priority and remains a very highly visible priority. I am not criticizing our President in any way. I recognize he is very busy today, especially this

morning, and that school opening next week is not the primary focus of his existence right now. But I keep listening, every time I pick up the paper, and I listen to speeches from all of our major politicians on the Federal level. I keep waiting for them to mention education.

All of these other things are important, but as we are talking this morning, it all gets back to our young children being educated. So just keeping a focus, keeping it in the news, people continually talking about it is important.

I would also support what the gentleman from Aetna said as he was sitting in this seat. The Federal level is a great gatherer but not necessarily a disseminator of information. I just know there are answers. There are great solutions to problems that are being done in other parts of the country, but it is kind of like "Horton Hears a Who." Everybody is yelling, "I am here, I am here," but we are not able to connect with each other, and the Federal Government can certainly act in that capacity of linking us.

Senator LIEBERMAN. You put your finger on what I think is a very real problem, certainly, as we deal with workforce needs, and that is the relative focus on the college-bound in high school as opposed to the noncollege-bound, and the lack of help for them. Give me a few specific ideas. What more can the school systems do to be of help to those who do not want to go to college, or cannot go to college?

Ms. JAMO. This is where the CBIA fellowship comes in at this point. My experience, especially this summer, has—I have undergone a transformation.

I have been working with—I keep saying one of the best small companies in the entire State of Connecticut. It is a company called Rohm and Haas. They have 85 employees, and by next year they will be the world leader in plastic extrusions. They do one thing. They do it very well, and I have been able to observe and be part of their process of transformation.

I have had—as I say, I feel like I have gone to Rohm and Haas University this summer. I have earned my salary because I have given them things, but they have given me a whole new philosophy of change, and they are also in the process of giving me tools of change.

I have been sitting in on their self-regulated teams. I am learning how a new change structure happens, what some of the problems are, and I am more capable now in going back to my school next week and helping to institute change that is going to take place and is already happening within our schools.

Senator LIEBERMAN. So what are you going to do? What are you going to do for the noncollege bound at Manchester High School, based on your experience?

Ms. JAMO. One of the things that we are going to do is break down that academic wall that we have put around schools, where kids are in school all day long, and the whole world is out there and kids have no idea as to what goes on in the world, the real world.

For 12 years they go to school and the only adults that they see during the day are their teachers, and they see other kids, and

they are mostly influenced by other kids. We are trying to break down some of those walls.

I will give you a very concrete, specific example. We have been doing some "what-iffing" with Rohm and Haas. One of the things we are saying is, not only can they offer us things, but we also have things to offer them.

They are starting up a newspaper, where their production workers, who are very lacking in some of the communication skills, are running an in-house newspaper. I am considering bringing over some of our students who also run a newspaper to work in sync together with this group of employees, and in the process I know all kinds of things are going to happen. For one thing, kids are going to be out of school. They are going to be dealing with adults, and they are going to look around and say, so this is what a modern factory looks like.

Senator LIEBERMAN. Thank you.

We are glad to welcome Ted Sergi. I feel like this is *deja vu*. I have been around with Ted several times. Not specifically on this subject, but over the years when I was in the State Senate and of course as Attorney General. I want to read into the record in exactitude your title.

Mr. SERGI. It changes every few years.

Senator LIEBERMAN. You remain vibrant. You must follow the Orlovski principle of "work will make you young."

Ted is the director of the Connecticut State Department of Education, Division of Vocational, Technical and Adult Education. Welcome. We look forward to your statement.

#### **STATEMENT OF THEODORE SERGI, DIRECTOR, DIVISION OF VOCATIONAL, TECHNICAL AND ADULT EDUCATION, CONNECTICUT STATE DEPARTMENT OF EDUCATION**

Mr. SERGI. Thank you very much, Senator. After listening to four other speakers I am compelled to think that the only purpose of written remarks is to vary from them, so I think I will jump right to some of your questions about what the Federal Government could do.

I do feel compelled to say something about vocational education, technical education, elementary and secondary education, but I should say I wanted to talk in my remarks this morning mostly on the problems of adult education, and many of the speakers have already touched on it.

While in my present responsibilities I am concerned with vocational education in the secondary high schools, the vocational technical schools in the State, Eli Whitney, that provided at least two welders to the small company we just talked to.

There has been a lot of progress in the last 5 years in elementary and secondary education in this State. That is documented by student achievement on Connecticut's mastery test.

Back a decade ago, when you were in the State Senate, you remember fighting for one State test at 9th grade. We now have State testing at grades 4, 6 and 8, soon to be grade 10, will be reporting on student achievement indicators in every school building within the next few years. There is no question that the era of ac-

accountability has reached Connecticut, and we think we are doing a much better job than many other States in trying to report on student outcomes.

Senator LIEBERMAN. You think the accountability is helping?

Mr. SERGI. I think it is. I think we have even seen growth in what people consider to be the greatest remaining challenge: Clearly, urban education in this State and our economically depressed areas—as Commissioner Tirozzi calls it, the two Connecticuts—and I know you feel the same way. We continue to have such significant problems in Hartford, Bridgeport, and New Haven with the concentration of poverty, that there is nothing like waking up as a classroom teacher and facing 30 hungry poor kids compared to the teaching experience in our suburban districts.

The State needs to do a greater role there. It needs to continue to do school funding on an equalized basis and continue to target its resources at the greatest needs, and in fact that is what I think my thoughts about congressional action really relate to, and that is you need to target those greatest needs better.

While I am sure that is not difficult, when all the Senators and Representatives want to bring home some piece of the pie, the needs are greatest in certain areas and certainly the urban areas of this State reflect that.

Let me go back and comment on what I mean about adult education in Connecticut. While you also mentioned that it is a day of mixed feelings, we feel a lot is happening and there are a lot of initiatives underway, but it is not enough. It is the glass half empty half filled scenario for us.

We have recognized adult education in this State as a serious need. Take a young person in the City of Hartford, age 16, unable to finish high school for some reason. Maybe not someone who is necessarily turned off to school, but someone who is economically supporting smaller brothers and sisters and a family, cannot go to school during the day.

They are forced to turn to the adult education program in this city, and in that instance, what do they get? They get something like \$200 to \$300 per person per year allocated to them from State, local and Federal money, compared to the \$5,000 to \$6,000 that we spend on an elementary and secondary child.

Now, I do not say that to say that there is too much money being spent in elementary and secondary education. There is not enough. But there has not been—as a society, we have not recognized the needs of people who are unable to finish school in the K-12, aged 18 routine.

Educators and others have commented on it for years, but it has not been recognized.

Senator LIEBERMAN. What does that mean? That they have to pay themselves more, or they just do not get the quality?

Mr. SERGI. I think they really are now relegated to a second-class status. They are looking for a second chance. They are looking for a different routine.

Mrs. Jamo commented on the idea that high schools in this Nation have not changed for 100 years, and if you cannot fit our schedule and our Carnegie units and our graduation requirements, you drop out in many cases, and I am also describing people who

may have what we consider even more legitimate reasons for dropping out, such as supporting their family, and we just have not dedicated the resources.

It is not money alone. I think you will see in my written comments. Our board, with the Board of Governors of Higher Education, are working on a package of reform for adult education for the 1991 General Assembly, and for that we really owe a great deal of gratitude to the Labor Department, the Governor's Commission on Employment and Training.

They helped push this whole issue of saying adult education needs to be raised to a higher level of concern in this State, that we just expect young people to finish by the time they are 18 the high school diploma as we know it, and if they do not we have these small, very underfunded programs.

We know we can do a better job just coordinating better the role of community colleges, the role of local school districts. It is very difficult in a local community right now to find additional dollars to support adult education, but right now the primary burden is on local school boards.

Senator LIEBERMAN. Let me ask you to think a minute and define adult education. We are really talking about anything beyond the normal K-12 cycle, in other words. This would be somebody trying to finish high school?

Mr. SERGI. That is correct. Generally we define it as basic skills education, English as a second language, and high school completion. It does not include all of the work that the community colleges do with adults who have achieved their high school equivalent, whether they have skills or not. It does not include all of the avocational interests of people who attend courses in their local communities which happen to support some of the basic skills programs as well.

Senator LIEBERMAN. Does that include the kind of free training we were talking about before?

Mr. SERGI. What I am describing is what our Connecticut statutes call adult basic skills education that local school boards have a mandate to provide, but unfortunately individuals do not have a statutory guarantee to say, I demand this of you.

In fact, in Hartford, Bridgeport, and Stamford this year, we have had individuals turned away. For years the issue was we were not drawing people into the doors. The only people who came to the program were those who were motivated to say I want to finish high school, but this year people were turned away due to the lack of resources.

Now, in one sense that was a good sign. Adult educators and others were happy people were demanding that service, but between local and State funds they were unable to provide the additional course, and in a city such as Hartford the demand for English as a second language has been so great that we find Greater Hartford Community College, Prince Technical School, Hartford Board of Education, the Urban League, La Casa de Puerto Rico—maybe 10 providers.

Frankly, when we say a lot has been happening, those groups have been working very well together and the coordination has

happened. Now, it does come down to the fact that more resources have to be dedicated to that.

Senator LIEBERMAN. Is that the first time that they were turned away?

Mr. SERGI. The first time that I remember in 10 or 15 years. The cry that you remember, when people would say, we do not know how to find students, and people would be going out to community based organizations and saying, could you recruit people? People have been going into church groups and others to say, why do you not talk up the whole idea of finishing high school?

I have to say we were becoming more and more a fan of finishing high school, that while basic skills education and English as a second language is critical, in today's world, and our predictions of the future talk about that high school credential as being critical and meaning something, and then potentially moving on. It is what a lot of the corporate sector have been telling us is the ability to keep learning and the stressing of lifelong learning and being able to do that on the job.

In my remarks, I think we comment that as I go round the State to meetings with many of the people here in the audience, we continue to hear about the need for a strong work ethic, and your question of one of the other speakers raises to me the response that we really believe that schools have a role in teaching the work ethic. The work ethic is self discipline and self control and motivation and responsibility, and those are all part of Connecticut's common core of learning that we think are as essential as basic skills.

Senator LIEBERMAN. That is a very important point, and a very important assumption of responsibility for the school system. Traditionally I think we have felt that should be learned, I suppose, in the family or by societal example. Do you think the schools are accepting or adequately fulfilling that responsibility?

Mr. SERGI. I do not think they are adequately fulfilling them. I do not think anyone would say it has been in the forefront of people's minds, but I find more and more people—and I know the Commission would say this—are saying it is irresponsible to say that is the job of the family and the community, as it is difficult to say we take on that burden in elementary and secondary education as our prime education.

But it is wrong to call it incidental to our instruction of the basic skills. It is wrong to call it sort of a nice side effect. It is one of our goals.

As a parent, at times you look at your own children and you say, if I wish they had one thing, it would be a healthy self concept. We do not measure that, so for some educators that becomes a difficult thing to deal with, but as we went around the State asking people what they thought about these skills, knowledge and attitude that all high school graduates should have, that became the common core of learning. The self concept was the single most important aspect.

Senator LIEBERMAN. Some of it is happening now.

Mr. SERGI. Not enough. Clearly, the measure of assessing it is critical. We have to be able to say our students graduate from school with these attributes and these attitudes. In fact, we place

the attributes and attitudes part in the common core of learning ahead of basic skills in reading, writing, and computing.

I should also say that employers keep saying to us they need interpersonal skills and they need a flexibility and an adaptability as technology changes. Do not give us someone who is looking to do the same job forever. The machinist who graduates from our VT schools such as Eli Whitney and Prince Tech needs to be able to read the manuals that come with the new numerically controlled machines, not just complete the same test they have been doing for a number of years.

But they need that work ethic, and we have had some employers say that, maybe, has risen above basic skills lately. If the young person will come to work with us at 8:30 and work until 5, and have some sense of responsibility on the job, that will be important.

Let me get back to the business of what we think Congress could do more of.

Senator LIEBERMAN. Your first major suggestion is we should target more aid to adult education?

Mr. SERGI. Yes.

Senator LIEBERMAN. To me, it is helpful to state it this way: Adult education is finishing high school. That is really what it is. Not going back for an enrichment course.

Mr. SERGI. In this case, in Connecticut we have two major options: A general equivalency diploma, which is a testing mechanism, or completing credits just as if you were in high school, and we are trying to do everything we can from a public awareness standpoint to drive more people into the programs. As we have tried to do that, now we are backing off and being a little sensitive to waiting lists of people. So that will be the first.

Let me also comment, something I know I have mentioned to you before. The whole Federal set of programs that deal with this area from jobs and welfare to JTPA that support the big programs, to vocational education to adult education, fragments, local and regional providers, what are we really, in State government?

In a way we are a passthrough that deals with leadership and some major policy issues, but at the local and regional level we have people constantly saying to us stop fragmenting us with that separate request for proposals, with the separate report. Why can we not merge some of these and consolidate them?

We want to acknowledge that we have done some of that in the State. We have a program where we have merged a couple of State resources and a couple of Federal programs, but in a way we have just put a staple through a bunch of different programs. They still have to have six budgets. Each of those pieces of Federal legislation have a paragraph that says, you should coordinate with the others, period. It is shallow. It is hollow. It means nothing. It still goes on to say, you have to serve this population and you have to do it this way.

If those constraints could be lifted—in my experience in Connecticut, not at the State, region or local level, is there any confusion as to who the population really is that needs to be served? Lift those shackles off and let those local and regional providers target whatever resources they have.

Senator LIEBERMAN. What are the shackles?

Mr. SERGI. If you take each of these five pieces of legislation, each will describe the population you must serve as different. There is some overlap, admittedly, and we have been able to finesse that as much as we can without having Federal auditors question us as to how we are doing it, but they are very different in some ways, and in fact that money is really all targeted at the same population. It is targeted at the Hartford 16- to 24-year old unemployed, undereducated person to get them to complete high school and get into a job.

Senator LIEBERMAN. It is not just administrative.

Mr. SERGI. No. I think by statute you end up defining the population slightly differently because of the interest groups that lobby you to do that. I do not mean to blame Congress solely for it.

They also go on, probably because of the U.S. Department of Education's influence in this, to then say, and here is how you must do it. Even in the new Carl Perkins Act that we hope will be finishing, there is a description as to what you can do with the money. So it is not only the population that has been described but it is the specific program that has to be implemented. The purposes of that act and all those other acts all read the same.

Let me go on to say that we think, in general, I think it is the same issue; that the modification of all the legislation, if it could be in a broader, more specific level, but then with accountability and results for reporting.

I think we are seeing that in the new Carl Perkins Act. What you are really saying is, look, do something, because from the old act to the new, we have seen more flexibility, but now be accountable for results and outcomes. So let us look at what the actual outcomes are, but do not be too prescriptive in terms of who has to be served.

I have mentioned more funds. We could go on for that forever, so I will just pass on that quickly, but clearly more funds that are targeted at high school completion and targeted at technical training. We find in our vocational technical school system, which is my last point, that while there can be criticisms of it, it has been a successful model for over 75 years.

This idea of targeting money at a region and not trying to splinter it out among the 165 communities, works. In the aggregate, it works, and I think that is what the community and technical college model is. It is not by chance we have these successful regional experiences, and we are trying to do it even more with moneys we have supporting the private industry council model. There are nine of them in the State. We support them with our education and training money. That is the level where this coordination cooperation has to happen, at the regional level, and we think anything Congress can do can support those things, that would be important.

One last thought. If Commissioner Tirozzi was here and I did not mention early childhood education, he would be upset, and it is certainly not just his issue. I know in Congress and in the State there has been more and more concern about the lack of attention at that end of the spectrum.

So while it may seem inconsistent for me to talk about adult education and early childhood, it is also interesting that only in the last 3 or 4 years both in Hartford, I think, and in Washington the

recognition of family literacy—some people call it intergenerational literacy. Maybe the best way to describe it is a young welfare mother who knows how to read to her young child is an extremely important investment.

Some people have asked us lately, what would you do with one marginal new dollar of funds, I think we would say to provide it for basic skills, high school completion, and job training for that teen parent. Why? You may be getting two lives for one.

So the merger of emphasis on adult education back to early childhood is very critical. In Connecticut we have several initiatives. I know from the Federal Government's standpoint you have several initiatives, too. That has to be done, and maybe that is the right direction, but a lot more has to be thought of. It is integrated thinking rather than separated.

[The prepared statement of Mr. Sergi follows:]



STATE OF CONNECTICUT  
DEPARTMENT OF EDUCATION



August 16, 1990

Good morning ladies and gentlemen of the United States Senate Small Business Committee. My name is Theodore Sergi, Director of the Division of Vocational, Technical and Adult Education, Connecticut State Department of Education.

It is a pleasure to address you on the issues of education and training, which are clearly priority areas of concern here in the state of Connecticut. Much of my written and oral testimony today has been taken from an earlier document entitled "Educating Adults for the Twenty-First Century" - prepared for the Connecticut Summit Meeting on Adult Literacy and Education, March 1990.

Functional illiteracy -- the lack of basic skills such as reading, writing, and computation -- is a major problem in Connecticut. The lack of sufficient basic skills is a problem for the hundreds of thousands of individuals in need of such skills to support themselves and their families. It is a problem for the thousands of businesses which must rely on a workforce capable not only of reading, but of critical thinking, problem solving and effective communication as well. It is a problem for state and local government, which depend upon the productivity of the economy to fund needed social programs.

Existing resources available to address the basic skills gap among adults include programs offered by local and regional boards of education, community and technical colleges, literacy volunteer groups, community-based organizations and vocational-technical schools. Despite these programs, the number of individuals needing basic skills education far exceeds the availability of services. Only about 9% of the estimated 600,000 adults who don't have a high school diploma enrolled in literacy, basic skills or high school completion programs in 1989. In addition, new federal and state policies, such as welfare reform, and the growing demand for employee basic skills upgrading from the private sector, have increased the pressure on an already strained system.

What can be done to meet the basic skills education demands so critical to Connecticut's economic and social vitality? In the short term, state agencies and local programs must give priority to improving coordination within the existing service delivery system. Ultimately, more resources will need to be allocated to ensure the productivity of the state's workforce and the well-being of all its people.

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As a first step towards strengthening the adult literacy and basic skills education system in Connecticut, the State Board of Education and the Board of Governors for Higher Education, in consultation with other state agencies, will prepare a comprehensive plan, including legislative proposals for the 1991 session of the General Assembly, which will include the following provisions:

- o a statutory guarantee of the right of every adult citizen to basic skills education and high school completion;
- o proposals for revising state aid to local boards of education, community and technical colleges, vocational-technical schools and other providers of adult basic skills education;
- o clarification of the respective roles of providers of adult basic skills education -- community-based organizations, community and technical colleges, employers, labor organizations, local and regional boards of education, regional educational service centers, vocational-technical schools and volunteer groups -- to improve coordination and to expand the services of each of these essential providers;
- o guidelines for building a client-centered system with uniform procedures for assessing clients, placing them in the most suitable educational program, providing the best mix of support services for their needs, and tracking clients' progress through a continuum of services;
- o plans to better coordinate and integrate existing providers of adult basic skills education through regionalization of services;
- o minimum operating standards for adult basic skills programs to ensure maximum quality and accessibility;
- o greater emphasis on the development of services and programs for workforce basic skills, family literacy and adults with disabilities; and
- o a sustained, state-wide program of outreach, recruitment and referral using the media to recruit more adults into expanded programs.

Educators, business, industry and labor leaders, legislators, and state and local officials all have a stake in improving the basic skills of the adult population. Therefore, all sectors must share in the responsibility for improving the system.

Connecticut's ability to remain an economic leader into the twenty-first century will depend largely upon the skills and productivity of its workforce. National and state reports from government agencies and business organizations have portrayed the following conditions under which Connecticut must operate successfully in order to maintain its high standard of living and workforce:

- o demographic changes are producing a workforce increasingly comprised of women, minorities, immigrants and older workers, many of whom lack sufficient basic skills;
- o technology-based production methods and industries are requiring workers to apply not only basic skills, but more complex thinking skills as well; and
- o persistent poverty, unemployment and inadequate educational opportunities are widening the gap between the "haves" and "have nots," perpetuating skills deficits among groups from which new workers must be recruited.

The rapidity of workplace and economic changes requires a workforce that can learn continuously. A merely literate workforce is no longer sufficient.

Connecticut is recognized as a leader in educational reforms designed to strengthen academic skills in elementary and secondary education and to improve the quality of teaching. However, while improvements in K through 12 education are critical for the future, they are not enough to address the growing workforce skills gap. An estimated two-thirds to three-fourths of

America's workers of the twenty-first century already are out of school. Approximately 15 million adults in the workplace today are functionally illiterate. As a nation, we can no longer afford to ignore the learning needs of adults, whether employed or unemployed.

The need for significantly greater resources to address the growing skills gap most recently has been underscored by the Connecticut Employment and Training Commission (CETC). Created in 1989 by Governor William O'Neill, the CETC was charged with developing recommendations for strengthening the state's human resources. In December 1989, the CETC adopted a set of action recommendations which stress the need to invest "...in the continuing education, skills development, and support services our citizens need to enter and/or remain in our work force. Chief among these needs is adult basic skills education." The action recommendations of the CETC are designed to expand and improve adult basic education, literacy, English-as-a-second language (ESL), and high school completion programs. The Departments of Education, Higher Education, Labor, Income Maintenance and Human Resources now are responsible for acting on these recommendations.

State spending by the Department of Education on adult basic education and literacy has grown from \$2 million in fiscal year 1984 to \$7 million in fiscal year 1990. The Governor and General Assembly have supported the expansion of resources, resulting in consistent increases in funding over the past six years. Still, resources are insufficient to meet the growing demand for adult basic skills programs. At present, the state reimburses local education agencies from 10% to 70% of their mandated adult basic education costs. These costs cover mandated programs of basic education, ESL, citizenship and high school completion. (General interest courses, such as photography, real estate, etc., are paid for by tuition and are not supported by state funds.) Local school district adult education programs, which are the largest providers of adult services in the state, cannot expand services unless local boards allocate additional funds, which in turn generate state funds. Unfortunately, local school boards must juggle competing demands for limited funds. Adult education typically receives little to no net annual increase above inflation.

For 1989-90, the total federal, state and local contribution for adult basic education services funded by the Department of Education is estimated to be \$14 million. Approximately \$7 million in state funds is augmented by approximately \$5 million in local tax dollars and \$2 million in federal funds. In terms of per pupil expenditures, in 1989-90 the estimated \$14 million is serving over 50,000 adults, or about \$280 per adult student. The average per pupil expenditure for students in the K through 12 system in 1988-89 was \$5,875. Admittedly, the numbers are not directly comparable because the number of hours of instruction for an adult are far fewer than for a child, and the per pupil cost for adult education does not include in-kind services provided by the local school districts. Nevertheless, the total federal, state and local contribution to adult education is clearly but a fraction of what is spent on K through 12 education.

In 1989-90, the adult basic skills programs funded by the State Department of Education -- local and regional school districts, regional educational service centers, Literacy Volunteers of Connecticut, and a few community-based organizations -- served over 50,000 adult students in basic education, ESL, high school completion, and job-related basic skills programs. This represents less than 9% of the more than 600,000 adults who do not have diplomas. Yet, this past fall Hartford, Bridgeport, Stamford, Danbury and other cities and towns had to turn away hundreds of adult students because their classes were filled to capacity. Similarly, virtually every provider of basic skills and job training in Hartford has waiting lists of several months for accepting new clients. The present funding structure, which depends on limited local, state and federal funds, is inadequate to meet the state's needs. The demand is there; the supply is not. This situation cannot continue if Connecticut is to create the skilled "learningforce" needed for the 1990s and beyond.

Connecticut employers, like others around the nation, are in need of employees who are capable of demonstrating:

- (a) adequate basic skills in reading, computation, writing, speaking, and listening;
- (b) problem-solving skills and the ability to keep learning;
- (c) a strong work ethic and good interpersonal skills; and
- (d) flexibility and adaptability to rapidly changing technologies.

To this end, we would recommend you review Connecticut's Common Core of Learning, adopted by the Connecticut State Board of Education in December 1987, as statement of expectation for every high school graduate. It represents the knowledge, skills, and attitudes that we, as a state, believe every high school graduate needs to be a productive and contributing member of society. We would also recommend our Policy Statement on Vocational-Technical Education which defines quality vocational education as experiential learning that contributes to a student's acquisition of basic skills, problem-solving skills, and work attributes -- as well as occupational skills.

We see the 1990s as a period of major reform and expansion of Connecticut's adult education and training programs. Clearly, the federal government could significantly assist that reform, by pursuing four areas:

- (a) the development of statutory provisions for merging resources from JTPA, Adult Education, Vocational Education, JOBS/Welfare, and other related legislation -- will help reduce the fragmentation of programs, which we hear as a major complaint from local/regional providers of education and training. In Connecticut, we have a model of this concept -- our Coordinated Education and Training Opportunities Program brings two state and three federal programs together into one joint planning and resource allocation process to enhance local/regional collaboration and to improve and expand services to populations in need;
- (b) the modification of existing legislation to become more general and less specific in terms of who can be served and how they can be served, but with stricter accountability for results and uniform reporting of outcomes;
- (c) more funds targeted at high school completion and technical training, and further tax credits for employers who invest in the continuing education and re-training of their employees; and lastly

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- (d) the encouragement of and support for, within state and across states, regional specialty schools that can provide basic skills and job training for youth at-risk, high school dropouts, and adults in need of re-training. Connecticut's Regional Vocational-Technical Schools, 17 schools and 4 satellite programs serve 10,000 full-time secondary school students and over 10,000 part-time adult students. This concept of state (and federal) supported high quality, specialized, regional, magnet schools has been a great success in Connecticut for over 75 years.

On behalf of the Connecticut Commissioner of Education, Gerald N. Tirozzi, and the Connecticut State Board of Education, it has been a pleasure to share these thoughts with you. I know if the Commissioner were here, he would add to my comments the need for significant support for the early childhood initiatives in our economically depressed urban areas, as the single greatest educational need of our state and nation.

The relationship between strengthening early childhood through family literacy programs and stronger adult education has at last been recognized both here in Hartford and in Washington.

I look forward to responding to any questions you may have. Thank you again for this opportunity.

Senator LIEBERMAN. Let me ask you one question, and then I want to involve Ms. Resnick in the discussion.

Is there enough of an interactional link between school and workplace, between education and jobs? In other words, do the programs that you are overseeing adequately prepare kids, or people who are older, for the actual workplace?

Mr. SEGGI. Again, mixed feelings. The direct answer I would say is no, but recently, again in the last few years, I think Lauren Kaufman will comment later on the Connecticut School Business Forum and a new clearinghouse on the issues of school business collaboration.

But a lot could be said about our high school curriculum and how we are not teaching young people to apply all the things we have talked about, Senator. I think the problem is that still, high schools not having changed over 100 years, still teach things in a way that does not deal with the workplace, and the more employers, even after bad experiences with their local public school or their VT school or their community technical college, keep coming back and demanding of the system communication and response, the better off we are.

That is what we keep trying to tell employers, that if you called and asked us for help 10 years ago and someone closed the door on you, try again. The people in there are willing to listen. Sometimes it takes time and effort in breaking down some barriers, but we think that is good.

Senator LIEBERMAN. Thank you. That is a perfect transition, I think, to Judy Resnick, who is the State coordinator for the Business and Industry Services Network for the Community-Technical College System of Connecticut. Welcome, and we look forward to your statement.

#### **STATEMENT OF JUDITH RESNICK, STATE DIRECTOR, BUSINESS & INDUSTRY SERVICES NETWORK FOR THE BOARD OF TRUSTEES, COMMUNITY TECHNICAL COLLEGES**

Ms. RESNICK. Thank you, Senator.

I look forward to the opportunity to provide testimony. It perhaps may sound as if there is an echo in the room, but I do think it is important to go back over some of the material that we talked about in the first panel about what we see out there in terms of the business workplace, and then perhaps what some of the suggestions for Federal roles might be.

What I would like to do is tell you a little bit about the program that I run and some of the needs that that has made us aware of. The Business and Industry Services Network was established in 1986 as a statewide brokering effort of the Community Technical Colleges to provide training and retraining, education, and information to business and industry throughout the Connecticut region, building upon a 25-year history of working with business and industry.

In that capacity, as director of this program, I do meet regularly and often with business and industry, and as such have been exposed to a variety of some of the clamoring you have begun to hear this morning. I try to break them down into four specific issues

that I think are really the loudest cries today, and they are: Rapidly changing technology; the decline in the basic skills in the workforce; the increasing competitive pressure globally; and the changing demographics.

As far as technology goes, as it becomes more complex, as we have also heard there will be a greater number of jobs requiring a higher level of worker skills. Today, that number is about 40 percent. In the year 2000, only about 27 percent of those jobs are going to be classified as limited skills. That means they are predicting a mean educational number of years as 13.5, which means high school and beyond.

Jobs are going to require more technical knowledge and problem-solving abilities than in the past, and the changing technology will require workers to be more flexible, adaptable and able to acquire new skills throughout their working lives. Strong cognitive skills, including the ability to conceptualize and organize complex material, will also be essential, and at the same time, as jobs are requiring a higher level skill and a more educated workforce, what do we find? We find a decline in basic skills of our workforce today.

You have heard the numbers. 25 million functionally illiterate nationally, and in Connecticut that is about 350,000. Our dropout rate, 27 percent, approaching 50 percent in the inner city.

Interestingly, at the same time those skills are declining the definition of basic skills is changing to expand to include the following skills, and again they are called basic skills: Learning to learn, cognitive problem solving, self esteem, self concept, work ethic, communications both oral and written, teamwork and interpersonal relationships, leadership and organizational effectiveness.

New technology has changed the nature of work, creating new jobs and altering others, revealing basic skills problems among workers where we never thought there were any before. A lack of basic skills threatens the drive for quality and productivity improvement.

In a recent study that Jobs for the Future did on the training needs of small business in Connecticut, they reported that the magnitude of the need for basic skills training is daunting: "Basic skills deficiencies are creating bottlenecks for Connecticut's economy, endangering the health of small businesses and impeding workers' success."

We also commissioned a study at the board of trustees to look at business needs and education and a major finding was: "Connecticut businesses are under greater competitive pressure than they have ever experienced at any other time in the past 50 years. Their ability to survive depends on how quickly they can change their technologies, their organization, their management styles, and their mind sets."

In the manufacturing sector we see this move to compete by manufacturers implementing total quality management programs. The problem is, total quality programs require more sets of basic skills, including statistical process control, computer-aided design and drafting, and a higher level of mathematics. Also required again, teamwork, the ability to work with cross functions and strong communications skills. Small and large businesses alike have to find providers to train their employees in those skills.

As far as the demographics, we have heard it before. We have a workforce where we are projected to climb in population, foretells an older workforce and a declining number of younger workers. 80 percent of the new entrants into the workforce will be women, minorities and immigrants. These changes mean that an older, less adaptable workforce faces a job market that requires more flexible skills.

Traditionally less skilled groups and underutilized populations bring problems such as fewer language and basic skills to the workforce. My program in particular is trying to address some of these needs by providing on-site customized training to business and industry. You heard about one of those such programs this morning and you will hear about another one with Pitney-Bowes.

We are a fee-based program, which means that while we do not have to make a profit we do have to cover our costs, and I think that is a critical piece there as well, and it is one that stops small business many times from using our services.

Senator LIEBERMAN. Do you go out to the business community and say, the Community Technical Colleges are there and what do you need us to do? How do you do what you do?

Ms. RESNICK. Absolutely. The only source of funding we have is for positions, mine and approximately 11 other full-time people throughout the State whose job it is to do just that: Go out to talk to business and industry, get to know them, understand their needs and let that relationship build, that partnership that we heard so much alluded to today, and then for us to say, OK, how may we help?

What we do is, we go in and do that thorough needs assessment, and design the program to meet their needs. Not necessarily total quality off the shelf, but total quality for Ms. Orłowski's firm.

Senator LIEBERMAN. So if a particular employer such as Pfizer will come and say we have this problem, can you provide a program? You put a program together and charge them the cost of the program?

Ms. RESNICK. Exactly.

Senator LIEBERMAN. Is that program open to others who want to take it?

Ms. RESNICK. Absolutely.

Senator LIEBERMAN. Does that happen at all?

Ms. RESNICK. Yes. Are you speaking specifically of the Pfizer program?

Senator LIEBERMAN. Well, any of them that you do. Are they so directly tailored that they only relate to the particular business that has asked them to do it, or are they general enough in a skilled job category that others might just read about them, or read your catalogue and sign up?

Ms. RESNICK. I would retract the statement. The answer is no. Those are usually designed for a specific company, with their needs in mind, but the alternative to that is to, in fact, look at some of our noncredit programming that is available to business and industry throughout the State. Statistically, we had 27,000 people enroll in noncredit courses, and many of those courses offered at the 17 2-year colleges are targeted at the needs of business and industry, whether it is writing skills, whether it is financial planning, or

whether it is basic math for statistical process control. Those kinds of courses.

Senator LIEBERMAN. That is a response not to a specific request from a specific business but to your own understanding based on inquiry I presume, of what the job market out there needs.

Ms. RESNICK. Absolutely, and we meet regularly with business and industry through advisory boards, through my program and many other sources.

Senator LIEBERMAN. Do you ever work with the Economic Development Department to create training programs of this kind to attract business to the State?

Ms. RESNICK. We are currently, as a matter of fact, in discussion with DED about how we can join hands to do that. We have not created such a program at this point, but with the whole move toward biotechnology moving into the State that is one of the areas that we are beginning to look at. Can we build programs to attract businesses?

But the problem comes back then, as I talked about, to the funding issue. To create new programs means new resources, and we are not in a position, at this point, to do that.

Senator LIEBERMAN. Typically, on the programs that you are running for businesses, are you retraining workers who are already employed by the business, or are you taking people just hired, entry-level people, and giving them basic training to do the jobs?

Ms. RESNICK. For the most part we are training people that are already in the jobs. The unfortunate part of the basic skills crisis in the workforce is that while we all know it is there, it is the hardest thing to get a company to understand, that in fact it is there, and perhaps they ought to look at that from the day the employee walks into the firm.

There are several instruments that we started working, particularly in the banking industry, to help them do that. We have taken what we call a job test analysis literacy audit and looked at the skills required for a teller, which is considered an entry-level job, which, by the way, is not, and at the same time these new tellers are coming into this particular bank, we are assessing these new employees as to whether or not they meet these competencies required by the job, which then helps us work with the business to funnel those people into appropriate training programs.

But that is rare. It usually does not get attended to in business and industry until it hurts, until rework is an issue; until you have to teach people statistical process control, which requires very sophisticated mathematical skills well beyond the four functions, and that is usually when our relationship with business says, OK, we are ready for you now. It is very difficult for companies to fess up and raise their hands and say, yes, we have a basic skills problem and are willing to commit resources to fund it.

Senator LIEBERMAN. So let me see if I understand. What you are saying is these programs generally do not involve basic skills. They generally involve—am I misunderstanding you?

Ms. RESNICK. That is probably 80 percent of the work we are doing now, is basic skills.

Senator LIEBERMAN. Math, science, and reading?

Ms. RESNICK. Add some of the technologies that are required. For example, coat manufacturing, as it came back into its new being, was a plant that differed tremendously from that of 4 years ago. Their workers came back to new technology.

Hartford State Technical College was involved. We sat down and we tailored curriculum to retrain all of those workers, but it is not high-level training initially. It is very basic. It is math. It is, how do I use the CNC machine and what is the theory behind it, but only enough to get me up and running.

Senator LIEBERMAN. OK, so it is specifically training to deal with the machine, but a lot of it is basic skills?

Ms. RESNICK. Absolutely. The learning to learn. If you understand the basic functions and you understand math and you can read the manual, and you have some problem-solving skills, the rest of the ability to teach, on the job, is a whole lot easier. But without those building blocks, you really cannot proceed.

Senator LIEBERMAN. How unique is your program in the country? Do you know?

Ms. RESNICK. Usually the type of colleges are nationwide. As a model which is statewide, our network is really a 17-college consortium where curriculum and instructors are shared all the way around the State. That, in fact, is unique. That—I have been asked to speak many times now out-of-State because everybody thinks that is quite unusual. Really, what it comes down to is efficiency of effort and money. It means that we do not have to reinvent the wheel every time we are asked to do something.

[The prepared statement of Ms. Resnick follows:]

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STATE OF CONNECTICUT  
**BOARD OF TRUSTEES OF COMMUNITY - TECHNICAL COLLEGES**  
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UNITED STATES SENATE SMALL BUSINESS COMMITTEE

TESTIMONY

AUGUST 16, 1990

My name is Judith Resnick and I am the State Director of the Business & Industry Services Network for the Board of Trustees of the Community - Technical Colleges. I am pleased to provide testimony at the United States Senate Small Business Committee hearing on education and the U.S. economy.

The Business & Industry Services Network was established in 1986 as a statewide brokering effort of the Community - Technical Colleges to provide training, education, and information to business and industry in Connecticut. This centrally coordinated network builds upon the community - technical college system's successful 25-year history of serving business and industry.

The Community and Technical Colleges offer associate degrees and certificate programs in over 90 career areas. In the Fall of 1989, 44,270 students enrolled at the 17 community and technical colleges in credit courses, representing 48% of all undergraduates in Connecticut public higher education. Another 27,000 students were enrolled in non-credit courses.

In my capacity as State Director of the Business & Industry Services Network, I meet regularly with business and industry throughout Connecticut; this work has exposed me to the education and training needs of business and industry. In my

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opinion the four major workforce issues facing business and industry today are:

- 0 rapidly changing technology
- 0 the decline in basic skills of the workforce
- 0 increasing competitive pressure, and
- 0 changing demographics

As technology changes and becomes increasingly complex, a greater number of jobs will require a higher level of worker skills. Whereas 40% of today's jobs require limited skills, it is predicted that only 27% of jobs in the year 2000 will require limited skills. The mean number of years of education required for employment will rise to 13.5, with most jobs requiring workers to have formal education and training beyond a high school diploma. Jobs will require more technical knowledge and problem-solving abilities than in the past. Changing technology will require workers to be more flexible, adaptable, and able to acquire new skills throughout their working lives. Strong cognitive skills, including the ability to conceptualize and organize complex material will also be essential.

At the same time that jobs require a higher skill level and a more educated workforce, we find that the basic skills of the workforce are declining. Nationally, 25 million adults are functionally illiterate while 47 million are borderline illiterates. There are 340,000 functionally illiterate adults in Connecticut. The national high school drop-out rate stands at 27% and that rate approaches 50% in some inner city areas. At the same time, the definition (by ASTD in its study "Workplace Basics: The Skills Employers want") of basic skills is expanding beyond the three "R's", to include:

learning to learn  
 creative problem solving  
 self esteem/goal setting  
 communications (oral and written)  
 teamwork and interpersonal relations  
 leadership and organizational effectiveness

New technology has changed the nature of work, creating new jobs and altering others, and has revealed basic skills problems among workers where none were known to exist. The lack of basic skills threatens the drive for quality and productivity improvement. According to Closing the Gap: Meeting the Small Business Training Challenge (a 1989 Jobs for the Future, Inc. report), the magnitude of the need for basic skills training is daunting, and "basic skills deficiencies are creating bottlenecks for Connecticut's economy, endangering the health of small businesses and impeding workers' success."

A major finding of a study commissioned by the Board of Trustees to identify business needs for education was:

...Connecticut businesses are under greater competitive pressure than they have experienced at any other time in the past fifty years. Their ability to survive... depends on how quickly they can change their technologies, their organization, their management styles, and their mind sets...

American manufacturers are attempting to regain their competitive edge by implementing total quality improvement programs (TQI). However, total quality

programs require a whole new set of employee skills, including statistical process control, computer-aided design and drafting, and higher level mathematics. Also required are teamwork, the ability to work across functions, and strong communications skills. Small and large businesses alike must find providers to train their employees in these skill areas if they are to remain competitive.

The demographic makeup of the workforce is also changing. Demographic studies project declining population growth. This foretells an older workforce and a declining number of young workers. Eighty per cent of new entrants into the workforce will be women, minorities, and immigrants. In Connecticut, these projections are quickly becoming reality. These changes mean that an older, less adaptable workforce faces a job market that requires increasingly flexible skills. Traditionally less skilled groups and underutilized populations bring fewer language and basic skills to the workforce. These factors are contributing to a serious shortage of skilled workers.

The Business & Industry Services Network is addressing these workforce issues by providing on-site, customized training to business and industry. Increasingly, the Network is asked to deliver English as a Second Language, basic skills, and technical training courses to current employees. The community and technical colleges continue to support Connecticut's businesses by turning out more graduates and by offering lifelong learning to employed workers. Increasing emphasis is being placed upon the assessment of basic skills and appropriate course placement. A system planning effort focuses on strengthening the basic skills offerings at the colleges.

Despite these efforts, the unmet need is tremendous. The demand for essential training services far outstrips the capacity of the system to provide services. Inadequate state and federal funding continue to be major stumbling blocks. While large businesses may have the fiscal and human resources to address these training issues, small businesses usually do not have similar advantages. Connecticut is attempting to address the problem in a variety of ways, including increased coordination of key state agencies, specifically the Departments of Labor, Income Maintenance, Education, and Higher Education.

Community and technical colleges act as barometers which evaluate change and recognize need. They offer convenient locations, qualified faculty, academic excellence, experience in meeting the needs of a diversified population, and affordable tuition. I am convinced that education and training are essential for American business and industry to remain competitive and viable. Education and retraining will be critically important to the future and the economic health of the nation. Experiences in my job substantiate the effectiveness of community and technical colleges in Connecticut and throughout the nation in addressing these needs and issues.

There are a number of ways in which the federal government can help business and industry address workforce education and training issues. First, workplace literacy must become a national priority, supported by the President of the United States. Second, the federal government needs to appropriate more money for programs that focus on education in the workforce.

Third, increased coordination between the Departments of Health and Human Services, Labor, and Education, is essential and must focus on adult basic

skills for the employed. Currently, each of these agencies is responsible for certain programs targeting different populations, each having separate priorities and delivery systems. Not unlike at the state level, fragmentation is a serious problem. Joint efforts must be made in order to establish national goals and objectives. Definitive research and evaluation is essential if a national agenda is to be established and supported.

Fourth, national focus and support must be given for the community and technical colleges as delivery agents of basic skills training. As most jobs in the 21st century will require education beyond the high school level (but will not require a bachelor's degree), the community and technical colleges are ideal delivery agents. Historically, community and technical colleges have an excellent track record in working with adult learners, business and industry, and state and federal governments.

Fifth, in the area of better utilization of existing funds, significant changes in the Job Training Partnership Act legislation are called for. JTPA funds for adults are targeted at special populations - the unemployed or the soon to be unemployed. There is no provision of funds for the employed. Authorization of funds for the employed should be added to the current JTPA legislation. In addition, current performance standards discourage workforce literacy training. These performance standards must be revised to support literacy training efforts.

The economic health of business and industry ultimately depends on the availability of an educated and well-trained workforce. It is imperative that the federal government make this a national agenda item to be pursued at the

highest levels.

Thank you again for the opportunity to testify. I would be happy to answer any questions you might have.

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Senator LIEBERMAN. Ted, how do we deal with that same need of linking education and business at the vocational and technical school level? Is that happening also?

Mr. SERGI. Yes. But not as much as I think we would like to. About 4 years ago the vocational/technical school system became more of a system. For years people viewed the vo-tech schools as 17 individual schools out there. I think in the last decade or so they have come together more as a system, operating now with the Superintendent of Schools, with a central office staff. They have two or three people who are primary contacts for all of our nonsecondary programs.

And each of the schools, by the way, has probably a very good relationship with area employers. They peak and valley, though, depending on the administration at the school. In the Groton area we do probably too much work with Electric Boat, I would like to say. Electric Boat adopted the Groton School. They probably will take every one of our graduates, leaving none for Pfizer or any other small businesses.

There are times when Pratt-Whitney and others, a lot of major employers will take all of our graduates, sometimes, very much for the work ethic they think that our graduates have compared to comparable high school graduates. But we do not serve small employers that well. Senator, to be very honest with you as I think back to the focus of your group, we do not because they do not have the resources to come to us and deal in the same way.

Senator LIEBERMAN. That is true of your situation too, is it not? They normally would not have the funds to pay for a program.

Ms. RESNICK. The report that I referenced done by the jobs for the future specifically looked at the training needs of small business and I would recommend that as a beginning point. It points up a number of issues in addition to fiscal resources. Small businesses are struggling, as I think we heard this morning, to meet a bottom line issue which does not leave a great deal of flexibility in terms of time, off task for training, nor do they in many cases have the sophistication of knowing where to go to get it, even if they could pay for it. The bottom line sometimes is not there, and we have not, from a higher education, and I would think Ted might join me, from all of education in this State, done a job—enough of a job yet is to: a creating public awareness that we are here; and, b making our services available through things like consortium models, asking large companies, a la the Aetna Training Institutes, to make slots available in their training programs. There are a number of conclusions that that report suggests and I see that certainly a task that is ahead of us.

Mr. SERGI. Senator, I just think it is important to note that in a couple of areas of the State you do find some small employers have banded together. For years a small manufacturing group, heavy machine tool industry, others, I know have worked with Lauren Kaufman and CBIA in this area. So I think that is one solution, and that is the smaller employers have to combine their problems from an efficiency standpoint.

Ms. RESNICK. Or on the converse, when we see them coming to us with a need to train two people, we then ought to be going out, as we do occasionally, to find the rest of the businesses—

Senator **LIEBERMAN**. To find some more to make enough for a class.

Ms. **RESNICK**. Absolutely.

Senator **LIEBERMAN**. Yes, it is a good point because, all the statistics show, as you know, that most jobs are really performed in small businesses. I could go on, but I think I had better go to the next panel. I appreciate very much the time and the testimony that the three of you gave us. It has been very helpful to me. Thank you.

Let us call the third panel. We welcome each of you. Lauren Weisberg Kaufman, Steven Croncota, Frank Morgan, Glen Cassis, and James Pemberton. We appreciate your being here. We started with a panel, which provided the business perspective. We then went to a panel from education. And now, you are the partnership panel. That is the panel that joins both business and education.

On my list I have got Lauren Weisberg Kaufman first, director of the CBIA Education Foundation.

#### STATEMENT OF LAUREN WEISBERG KAUFMAN, DIRECTOR, CBIA EDUCATION FOUNDATION

Ms. **KAUFMAN**. Thank you, Senator Lieberman. I had just mentioned to your wife that I have heard CBIA mentioned so much and my name that I did not think I needed to testify.

Senator **LIEBERMAN**. Now you have to give your side of it.

Ms. **KAUFMAN**. That is right. I will tell the truth now about what we are really up to. I am the director of CBIA's Education Foundation, which is our nonprofit foundation, which was set up in 1983 with the express purpose of promoting school/business partnerships, and as many of you know, but for the record, I will state that CBIA is the State's largest business association. We recently reached a new number of about 7,000 members and they employ approximately 700,000 people in Connecticut.

And as I am sure also many of you have heard and certainly from our members here today, many of our corporations, the largest businesses and in now many medium- and small-size businesses, have been involved in a variety of partnerships throughout the State.

I am going to focus my remarks specifically on partnerships. I was asked to specifically describe the range of business/education partnerships taking place in Connecticut and my assessment of the role that such partnerships play in training the workforce. So that is what my remarks are designed to address, but I would be happy to answer any other questions as we go along.

As I have mentioned and has certainly been the case nationally, many of the State's largest corporations have been involved in partnerships to improve public education, and these partnerships have taken many forms, from adopted school programs that you mentioned earlier to school volunteers, computer literacy programs, and a wide range of work-study types of opportunities.

In the 1970's and early 1980's, I would characterize these partnerships as stemming from the desire to be good corporate citizens. The companies were often asked to supplement limited resources

that were available in the public schools, particularly in urban schools, and they often were very willing to step to the table.

Mostly for, I believe, the purpose of promoting a positive image for the corporation in the community, out of a sense of corporate social responsibility and wanting to be a good neighbor in the community, they were doing something visible and good for the community. At the same time they were assisting their own public image. I would say that the down side of those programs often was that there was little accountability or evaluation of the impact of these programs.

The 1980's, however, have really, I think, changed the nature of business involvement in education. Education has seriously become a bottom line issue for business and industry as you have heard from the previous panels. There is increasing concern, and I doubt that there is a week that goes by that a new report is not issued on the quality of the workforce in America and our international competitiveness or lack of international competitiveness. As those issues have emerged, the issue of a quality workforce has really risen to the top of the business agenda and I think has really changed the dynamic that is currently going on nationally and in Connecticut.

With changes in manufacturing, the type of issues you described, for example Motorola, the things that Judy Resnick was talking about, manufacturing has really changed very dramatically, and unfortunately the schools have not kept pace with manufacturing. It is the same whether you are in the high end of the service sector. The expectations of employers, the kind of person that they need has changed very dramatically, but the rules have not changed in schools, and schools are continuing to produce the same types of individuals that they always have.

I think that most recently, "America's Choice: High Schools or Low Wages", which is the recent report of the Commission on the status of the American workforce which is just being released this month, has very seriously documented and has done a lot of comparisons internationally with other countries on why the United States is faring so poorly, and has really, I think, raised a number of serious issues that need to be addressed, both for the adult person that Ted Sergi is describing, those that are already employed as well as those that are trying to enter employment, as well as a lot of serious implications for the education system.

Because we have had so many people testify earlier about the problems and issues, I did not really want to go into them in my testimony, but I do want to make it clear that our membership, and we hear from them an awful lot on these issues, are very, very concerned about the quality of the workforce. I thought that the woman today, speaking from the perspective of a small business really interjected a sense of reality about the problem. Sometimes you hear it from the corporate perspective and it all kind of sounds like a problem, but you do not realize how really immediate and serious the problem is, and when you hear it from a small business person and you multiply that throughout this State and throughout the Nation, I think we really do have very serious concerns.

In fact, just to give you a little statistic, I was surprised to find out myself, we were doing some mailing labels this week for our

very large corporations and as I said, we have some 7,000 members, we wanted to just target companies that have over 100 employees in this State and we only pulled 553 out of our entire mailing list. We have certainly well over 5,000 members who joined CBIA predominantly for our group insurance programs which are designed for those employers with under 10 employees. So as you can see, the real bulk of companies in Connecticut are small businesses and they certainly do not have the kind of resources available to them to address the issues that have been raised here.

Not to be all doom and gloom, I did want to talk a little bit about some of the examples of some positive partnerships that are going on, and Sherrill, I think, spoke most eloquently about our Teacher-Fellowship Program that we have at CBIA, but I did want to address a little bit the underpinnings of why we run that program.

We started the program in 1984, and we felt then and we continue to feel very strongly, the teachers needed exposure to changing technologies in the workplace to career opportunities for their students in fields that they were unfamiliar with, and to the collegial teamwork concept and restructuring of the private sector that is currently going on in most companies today. We felt very strongly that to motivate and turn kids on, you needed motivated and turned on teachers, and at the time that we started the program it was really before the Education Enhancement Act had gone into place in Connecticut.

And many teachers—the program initially was targeted only to math and science teachers because we felt they were most at risk of leaving teaching. We had heard a lot of criticism that the private sector was pulling the best and brightest technical teachers out of the school system because they could make much higher wages in private industry, and we really wanted to develop a program that would offer them an opportunity to get exposure to business and industry and not have to leave teaching, and really be able to bring back those experiences into the classroom.

I am very pleased that Sherrill felt this summer's experience was so positive and I feel very comfortable saying that the kinds of experiences that she had, what Dr. Bloom discussed with the teachers that participated at Pfizer this summer, has really been our experience through the years.

Senator LIEBERMAN. How many teachers are involved every summer?

Ms. KAUFMAN. This summer we had 19 companies and 24 teachers, which is down for us and I think reflects some of the problems that are going on with companies today. When they are laying off it is hard for them to justify being able to hire someone from outside.

Senator LIEBERMAN. Are they mostly in science and math?

Ms. KAUFMAN. They are predominantly science and math. The program is also open to English as well, so we have those three and we have had many requests to begin to open it up to teachers in the vocational/technical fields, which we are considering doing for next summer.

Senator LIEBERMAN. What are they actually doing?

Ms. KAUFMAN. They do a variety of things. They do some of the kinds of things Sherrill described. When they are at Pfizer they

have actually worked in scientific research labs doing lab experiments. We have teachers, for example, at IBM who are involved in computer programming. We have had teachers at Southern New England Telephone who actually run training programs in their corporate training areas. So it really just depends on what the company's needs are and how they could best match that with the teacher.

And since the program began we have had about 202 teachers who have been in the program. So it gets to something that I will mention a little later, but 202 sounds great to us and it is hard to develop these placements. We want them to be meaningful work experiences. We do not want them to be coming in and doing gopher work. So it really takes a special chemistry between the teacher and the company. But it is the kind of thing that we would like to see much more interest and involvement in and be able to expand the availability of placements. The letter that I got from your office said, talk about what the Federal Government can do that does not require money, which is hard because where we were able to really expand the program 2 years ago we had a Federal grant under a School/Business Partnership Program and we were able to subsidize the involvement of small businesses. We added 15 small businesses to the program, because through the Federal grant we could pay for half of the teacher's salaries, and we lost every one of those companies this year, who could not, even though they were very positive about the experience, they just could not come up with the salary.

Just to go on a little bit, we also have a grant from the National Science Foundation under which we began the Hartford Alliance for Mathematics and Science Education, and this is a true public/private partnership to improve math and science in one urban school district. And we have used a combination of Federal and private sector funds to provide hundreds of teachers with hands-on science experiences, with workshops in a program called Operation Physics, which is a curriculum that has been developed for the fourth to eighth grade teacher who often is very, very uncomfortable about teaching science and who needs to really understand basic concepts of electricity, magnetism, light, optics. through these hands-on workshops, we have given teachers kits and tools to be able to go back into the classroom and we really have testimonial after testimonial from teachers who have participated in that program.

We run a Mini-Grants Program that the private sector entirely funds which allows teachers, for very small amounts of money, grants ranging from \$75 to \$500 maximum, to really do innovative things in the classroom. Sometimes it is just a little bit of money, but it enables the teacher to try out something and do something they have never been able to do before.

Senator LIEBERMAN. Is the National Science Foundation very active in this area or is this an unusual grant?

Ms. KAUFMAN. Well, this is something I would like to really talk to you about for a minute. The National Science Foundation started a program 2 years ago when we were in the first round of grants called Private Sector Initiatives to Improve Math and Science Education, and we were the only business association in the

country that applied, and in fact, one of the few groups representing businesses. Even though it was a private sector partnership, almost all of the grants came from public sector institutions.

We have been very pleased with the results of it, and I understand we may be getting, I do not have official notification yet, but a second grant, a follow-up grant from NSF to continue the work and particularly to focus on secondary mathematics curriculum.

One of the issues I wanted to raise, and when you were asking earlier about what can the Federal Government do that I have been a little concerned about, I understand the National Science Foundation is reconsidering the funding they have been putting into educational programs and wants to get back to the more "serious" R&D that they have done traditionally, funding higher-education institutions and professors. I would be very concerned about that because I think some fantastic, creative things have been happening at the local level through the Science Education Programs they have been running, and the Math Education Programs. Lots and lots of teachers have been able to participate, and lots of students, and I think Glenn can talk to some of the funding that CPEP has received and will receive from NSF to run programs for talented minority youngsters and inner-city kids to go and really do some interesting experiments in science, and I am worried that that funding is not going to be available.

Senator LIEBERMAN. OK. We will carry that word back.

Ms. KAUFMAN. Thank you. A couple of other areas, the U.S. Department—

Senator LIEBERMAN. Let me ask you to try to sum it up as soon as you can and we will get back to you.

Ms. KAUFMAN. OK. I can, in fact, I could probably stop anywhere. I just wanted to mention—the one point I think I would like to make is that I think that the arena for public/private partnerships has changed dramatically. Companies now, as you know, there is a National Business Round table effort going on. There is, in Connecticut, a business round table called the CEO Working Group that is headed by Bob Kennedy at Union Carbide. CBIA has a taskforce that is helping us with our legislative programs that is being chaired by Dave Carson at People's Bank.

All of us are looking at the issues of educational performance and increased accountability, very concerned that as we are making a massive investment in education in the State, that we are not seeing, and maybe we want to see results too soon, but that we have not built in the kind of performance measures, the kind of accountability that I think business feels is very fundamental, and so I think efforts to look at restructuring schools to provide increased authority and decentralized management at the local level are things that the business community really wants to get behind. But they are not going to unless there is some connection with an increased performance, emphasis on performance.

[The prepared statement of Ms. Kaufman follows:]

**Testimony of  
Lauren Weisberg Kaufman  
Director, CBIA Education Foundation  
Connecticut Business and Industry Association  
Before the U.S. Senate  
Small Business Committee  
Hartford, Connecticut  
August 16, 1990**

Good morning. My name is Lauren Weisberg Kaufman. I am the Director of the CBIA Education Foundation, a 501 (c) (3) non-profit foundation established in 1983 to promote school-business partnerships. CBIA is the state's largest business association with 7,000 member companies which employ approximately 700,000 people. Our members range from the state's very largest corporations to thousands of small businesses who employ under 10 employees. Many of our members are involved in a variety of types of partnerships with the local schools in their communities.

I have been asked to specifically describe the range of business/education partnerships taking place in Connecticut and my assessment of the role such partnerships play in training the workforce Connecticut needs to stay competitive and productive. I appreciate the opportunity of being asked to do so.

As has been the case nationally, many of the state's largest corporations such as The Aetna, The Travelers Companies, Peoples Bank, Union Carbide Corporation, United Technologies Corporation, IBM, Northeast Utilities, General Electric Corporation, Southern

New England Telephone and Xerox, to name only a few, have been involved in partnerships to improve public education, particularly in the state's urban school systems. These partnerships have taken a variety of forms from adopt-a-school programs, to school volunteers, computer literacy and work-study programs.

In the 1970's and early '80's, I would characterize these partnerships as stemming from the desire to be good corporate citizens, supplementing the often limited resources available to local schools. These partnerships were seen as a means to help the schools, while promoting a positive image for the corporation in the community. And, for the most part, they were restricted to the largest corporations with foundations and public affairs departments. Doing something visible and good for the community was an end in itself and little accountability or evaluation of the impact of these programs was expected or required.

The 1980's, however, have seen, I believe, a dramatic increase in the number of partnerships currently existing in the state, and very different reasons for business and industry to become involved in them. Education has become a "bottom-line" business issue for companies in Connecticut, as it has nationally. As concern has grown about the economic competitiveness of the United States and our ability to meet and beat our international competition, in Asia and Europe in particular, a strong education system able to prepare a quality workforce has risen to the top of the business agenda

nationally and in Connecticut.

With changes in manufacturing processes and production models and dramatic changes in the technologies used in financial services and other industries, a highly literate and skilled workforce is critical - and the United States fares poorly vis a vis the international competition. America's Choice: high skills or low wages, the recent report of the Commission on the Skills of the American Workforce, is the latest in a series of studies, reports and books documenting why, in powerful language, the United States is falling further and further behind many other industrialized countries in the world, when it comes to educating all of our citizens.

As you have many other individuals here today to testify about the problems business and education face in preparing a quality workforce, I won't go any further into those issues here. Suffice it to say that our membership is extremely concerned about the quality of education in Connecticut, motivated to get involved and anxious to work with state and local government and the schools to dramatically improve the situation.

Examples of partnerships in Connecticut which are striving to prepare a better-educated citizen and productive workforce are considerable. At CBIA, we began the Fellowship Program for Distinguished Teachers in 1984, to provide summer internships for

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math and science teachers in our member companies. We felt then and continue to feel very strongly, that teachers needed exposure to changing technologies in the workplace, to career opportunities for their students in fields they were unfamiliar with and to the collegial team-work concept prevalent in most corporations today. To motivate and "turn on" kids, teachers need to be motivated and "turned on." The Fellowship Program, which has placed over 200 Connecticut teachers in CBIA member companies, has re-charged the batteries of many excellent teachers who might have left teaching if this opportunity had not been open to them. It has provided them with meaningful professional development in real-world settings and they have carried a wealth of practical applied knowledge of the subjects they teach back into the classroom.

Similarly, under a grant from the National Science Foundation, we began the Hartford Alliance for Mathematics and Science Education - a public/private sector partnership to improve math and science education in Hartford. Through a combination of federal and private sector funds, we have been able to provide hundreds of Hartford teachers with hands-on science programs and industry-based workshops designed to upgrade their technical skills, overcome their anxiety about teaching science and provide fun, easy to use materials and experiments for elementary and middle school classrooms. Through industry-funded mini-grants, teachers have been able to design and implement low-cost but high-impact programs that are creating infectious enthusiasm for science. If we can

help teachers feel more comfortable about teaching science, they, in turn, will motivate many many more students who will, one day, become our scientists, engineers and technicians. Our programs, and programs such as the Connecticut Pre-Engineering Program of the Science Museum, PIMMS and many others throughout the state, are however small scale, unable to reach the thousands of teachers and students who could benefit from them.

We do know what works and what kinds of professional development opportunities and enrichment activities most benefit teachers and students. The problem remains one of how to expand and institutionalize these programs so that they are available in all of our schools in the state.

A growing number of businesses are interested and willing to become involved with the schools in their communities. Through company tours, guest lecturers, lending management expertise, technical assistance, mentoring, work opportunities for students and teachers and special programs; the list is really endless in terms of the types of roles business can play and the resources they can bring to the table. However, along with this increased interest and support for education, business is starting to ask some tough questions about the impact these resources are having. They are starting to develop more strategic approaches to corporate giving of time and resources and increasingly want to invest in those schools that are interested in real change and success for

all their students. The National Business Roundtable, Connecticut's CEO Education Task Force (as our BRT group is called) chaired by Robert Kennedy of Union Carbide, and CBIA's Directors Task Force on Education, chaired by David Carson, CEO of Peoples Bank, are all asking for significant increased public accountability from the schools. They want to see education become performance based with adequate resources to successfully educate all children, de-centralized school management and decision-making and accountability for the educational performance of students.

These issues are just beginning to take shape in Connecticut, and nationally, we have models that are being discussed and implemented, but we don't have any proven track records of success when we enter the arena of major structural reform of education.

The federal government could help us greatly, if we did not all have to re-invent the wheel by costly trial and error, and could learn from each others' mistakes and successes. Under Assistant Secretary Christopher Cross at the U.S. Department of Education, the federal R&D effort has re-emerged as a national priority, which is essential, but the end-users at the state and local level need timely information about successful model education-business partnerships that work.

State Senator Kevin Sullivan and I co-chaired a legislative task force last year on school-business partnerships, which has

resulted in legislation which will soon create, in Connecticut, an on going policy-forum of business people and educators concerned about school reform issues. CBIA will be appointing the eleven business representatives to the forum, and interest has been very strong. Commissioner Tirozzi will convene the first meeting on October 2. The legislation also calls for CBIA to expand on our Clearinghouse for School-Business Partnerships, which, to date, has been limited to model math and science programs operating in the state.

While it seems to be the trend today, to discount partnerships such as adopt-a-school programs because they appear to merely tinker at the margins of education without bringing us any closer to meaningful reform or even improved student performance, I believe this blanket criticism is short-sighted and probably unfair. For businesses to become a real actor in the educational arena, they have to first get their feet wet, develop credibility and staying power. Partnerships allow this to happen, and when successful, lay the ground-work for meaningful dialogue for "structural reform." In particular, for small businesses, it is a way for them to get involved, when resources are scarce. And, partnerships can tie into a reform agenda. For example, Pitney Bowes is supporting the Stratford Public Schools by providing funding to hire remedial instructors for students who fail the sixth grade mastery test, a mandated service the school system was having difficulty fulfilling.

I see business involvement in education on a continuum, building and establishing relationships which, undoubtedly, when hard issues are put on the table, will be strained. Without that involvement and base of experience, business simply would not be able to penetrate the educational establishment. I believe school-business partnerships are essential to meet the challenges we face in education today and have spent my last seven years at CBIA working towards that goal. Successful partnerships can be an end in themselves, but increasingly they are becoming a means to an end, in which all the partners involved need to feel that their respective agendas are being realized.

Thank you for your attention. I would be very happy to answer any questions you may have.

Senator LIEBERMAN. Thank you.

Mr. Croncota.

Mr. CRONCOTA. With your indulgence, Senator, Dean Morgan would like to make just a couple of opening remarks on behalf of the college.

SENATOR LIEBERMAN. Certainly

**STATEMENT OF FRANK J. MORGAN, DEAN OF CONTINUING EDUCATION AND COMMUNITY SERVICES, NORWALK COMMUNITY COLLEGE**

Mr. MORGAN. Senator, thank you for allowing me to testify. I will be brief with my remarks, because we have established the problem. I think the previous speakers and myself have all recognized that to this point there has been a lack of coordination, that the effort is fragmented, that monies are not being spent as effectively as we would like to have them spent, and programs are not as effective as we would like them. We recognize that the Federal Government will play a greater role. My appeal to you today is that in doing so you not create additional bureaucracies for us to have to deal with.

In the case of workplace literacy, I think as a result of the program that Mr. Croncota will describe for you and others, we have come to realize that the community colleges, and when I say community colleges I use it as a comprehensive term which also includes technical education in Connecticut technical colleges.

We have been asked historically to play a role in this effort. We are being asked to play a major role now. I am suggesting to you, Senator, that in the community colleges you will find that we have the ingredients as part of our ongoing responsibilities of education of outreach, recruitment, teaching literacy on and off our campuses and at worksites, development and research of programs and curricula, obtaining grants, tutoring and counseling, evaluation and placement of learning disabled, testing and placement for employment.

We are geographically located to provide regional coordination for agencies offering literacy programs. We can act as a clearinghouse, and in fact it was interesting when Ms. Orłowski was talking, we are dealing now with the Southwestern Area Commerce and Industry Association, (SACIA), in an effort to create what will be, we think, a 911-type emergency response mechanism for people who need literacy training, particularly workplace literacy training, so that businesses can find the appropriate program for their needs.

In addition, we are controlled by the necessary checks and balances of accreditation and evaluation through our State Department of Higher Education and other nationally recognized accrediting organizations.

A very important ingredient in this is that we are not dealing, in our case, with the high school population. It is an adult population. It is a population, many of whom are foreign born, almost all of whom must, in some way, master the English language. They are similar to the population that the college normally serves.

So it is my belief that community colleges are uniquely qualified to provide this coordination role as well as programmatic role in this effort, and I ask for your support.

Senator **LIEBERMAN**. Thank you very much. We appreciate your being here. I should note for the record that both of these gentlemen are from Norwalk Community College. Mr. Morgan is the Dean of Continuing Education and Community Services, and Mr. Croncota is the Business Services Coordinator.

#### **STATEMENT OF STEPHEN J. CRONCOTA, BUSINESS SERVICES COORDINATOR, NORWALK COMMUNITY COLLEGE**

Mr. **CRONCOTA**. Good morning, Senator, and I join Dean Morgan in expressing our appreciation for being able to participate in this discussion of what I think is perhaps one of the most crucial domestic issues facing our country at this time.

According to the National Alliance of Business, and I quote,

By the year 2000 a multitude of jobs will remain vacant from a lack of skilled employees. Jobs that must be filled will go unfilled. Work that must be done will remain undone. The issue of workplace readiness can no longer be thought of as either a public or private responsibility. It is both. We all need to work together, business, Government, education, media, labor, and other community groups. You cannot wait for someone else to take the first step. It is up to you.

I am now going to discuss how one Connecticut company has responded to that challenge. Pitney Bowes, Inc., the largest manufacturer remaining in lower Fairfield County is providing its workforce with unique educational opportunity to help them succeed in the changing business world of the 1990's. Chairman and president George B. Harvey recently outlined the conditions which make the program necessary and the solutions, as Pitney Bowes sees them when he said:

The business world of the 1990's will be characterized by change. The technological advancements in our products and processes will require changes in the way we manage, manufacture, and provide service to our customers.

He went on to say that:

Pitney Bowes is determined to develop its business by developing its own employees. Thus, we are changing our approach and emphasis on employee training and development. Employees will have opportunities to strengthen their existing skills and obtain the new skills necessary to produce, sell, and service technologically advanced products.

The company recognized that to remain a world class corporation and compete effectively in the increasingly global marketplace, its work teams of the future would require employees with a combination of current and new skills different from those of its present workforce.

The first phase of the programs was a task analysis to catalog the components of current and future jobs followed by an assessment to measure the extent to which the employees' present skills, knowledge, and abilities matched the skills, knowledge, and abilities required in the factory of the future. Training and education programs were then developed to close the gap between today's skills and tomorrow's needs.

Currently, 217 Pitney Bowes employees with low level reading skills are participating in programs being presented during work-hours at the work location by Norwalk Community College. Classes

have been divided into four skill levels and employees are attending two 2-hour classes each week for up to 18 months utilizing traditional educational materials as well as material which is work-specific, forms, reports, charts, and so forth. They are receiving instructions designed to improve their skills in reading, writing, listening, speaking, and group interaction.

The program involves 22 teachers teaching 34 2-hour classes twice weekly for a total of 136 classroom hours per week and a total of 868 person-hours for the participating employees. It is anticipated that the number of employees participating in similar programs will double before the end of the year. In addition, we expect to be offering a number of basic math courses in the near future.

The instruction is being provided by credentialed teachers holding advanced degrees or equivalencies in their fields. They are experienced trained professionals who understand literacy and language acquisition, and the methodology utilized in teaching these disciplines. They are well-qualified, both educationally and experientially to provide programs to a diverse multicultural audience.

Norwalk Community College has long been a leader in the development and delivery of education programs to a similar population. The college has been selected to participate in a U.S. Department of Education project designed to increase employee effectiveness on the job for limited English proficient employees.

However, this is just the beginning since it is now realized that learning is a lifelong experience and must follow the individual as he or she progresses into new positions and new responsibilities.

Thank you.

Senator LIEBERMAN. Thank you. Let me ask you one quick question, and I appreciate your telling us about a specific program because it does make it real and it really contributes to the record we are trying to put together here.

I could just as easily, I suppose, have asked this of the earlier panel, but let me ask both of you. One of the things we are talking about here is the changing requirements of the workforce and trying to bring skill levels up to those new requirements. Now, you are dealing with an existing faculty at the school. Are they able to adjust to provide the services that are required here, or do you bring people in specifically for this program? Or is it just basic skills that we are working with so anybody who is a good teacher can do it?

Mr. CRONCOTA. It is really both of the above, Senator. In this particular program at Pitney Bowes, primarily because it takes place during the workday, it is difficult to get existing faculty that would be available, so what we have done is through the network that Judy Resnick referred to and through our own inventory of qualified people, we have been able to tap into a very large resource of individuals who have substantial experience in the whole area of adult education so that most of the teachers currently at Pitney Bowes are not full-time faculty, but the encouraging thing is that we can also access the existing faculty and department heads, as we have done at the college, for systems and curriculum development, assistance with learning disabled and things of that nature.

Mr. MORGAN. And I think, Senator, that one of the—it is a benefit, I think it is kind of sad for the society that it has come to this, but it is a benefit that the recent history of community colleges in the State of Connecticut in particular, is that we offer a high number of remedial courses. Now this is caused by a lack of abilities of the students coming out of the schools—

Senator LIEBERMAN. This is for your regular students?

Mr. MORGAN. For our regular students. It is also caused by the influx of new immigrants into the society. But the fact is that we have this experience now, and the experience is transferable to the workplace. In the case of English as a second language, 10 years ago we had approximately 30 students at the college. This year we have about 500 just in English as a second language courses. So this too is transferable because this program is multicultural.

There are 16 different languages spoken on the workfloor at Pitney Bowes, so you cannot just go in there with an English-speaking teacher who is use to teaching 30 adult students and expect this teacher to deal with this kind of a problem.

We found in our research that the research is fragmented. The knowledge base of how to really deliver these programs is fragmented. We are at the cutting edge, and while it is exciting, it is also a recognition of the seriousness of the problem.

Senator LIEBERMAN. Very interesting.

OK. Glenn Cassis is the executive director of the Connecticut Pre-Engineering Program affiliated with the Science Museum of Connecticut in West Hartford, and has with him a student in the program, I gather, Mr. James Pemberton. Thanks for being here and thanks for your patience. You are the clean-up hitter.

**STATEMENT OF GLENN A. CASSIS, EXECUTIVE DIRECTOR, CONNECTICUT PRE-ENGINEERING PROGRAM, . . . SCIENCE MUSEUM OF CONNECTICUT, ACCOMPANIED BY JAMES PEMBERTON**

Mr. CASSIS. Thank you and good afternoon, Senator. The Connecticut Pre-Engineering Program, better known as CPEP, is a nonprofit educational services corporation designed to increase the number of underrepresented minority students who graduate from high school and eventually from a 4-year college or university in the fields of engineering, computer science, physical science or other mathematics-based majors. These students are predominately African-American, Hispanic, Asian-American, and women.

CPEP is one of 26 member programs of the National Association of Pre-College Directors known as NAPD whose goal it is to promote success in pre-college science and mathematics throughout the country. CPEP is unique because it began as an outreach program of the Science Museum of Connecticut.

CPEP provides enrichment programs and services for 400 public school students in the cities of Bridgeport, Hartford, and New Haven from grades 5 to 12. CPEP aims to develop their academic skills, increase their career awareness, and raise their educational aspirations by providing year around programs. Our effort is to try to repair the pipeline which I will speak to a little later.

Our research experience indicates that the future work force, as many people have talked about today, that this Nation is depending upon to fill positions in industry and business, will not be able to assume leadership positions because they will lack the necessary skills.

People of color are the fastest growing population in the United States and they are primarily attending public schools in the urban centers throughout the country. And as we all know, these urban centers, usually the public education sector, are poorly funded.

The youth in the urban public schools are not advancing successfully beyond high school or to college in numbers that industry requires. Too many minority students are being turned off and/or tuned out of mathematics and science and problem solving techniques so early that they are closing off their future hopes of being in positions in the technology track.

We see how the pipeline is broken and our effort is to try to repair that pipeline so that more of these students flow through it.

Senator LIEBERMAN. How do you identify these students? What is the selection process? Are they identified as students who are particularly promising or have some kind of scientific or engineering bent?

Mr. CASSIS. We identify students as those who have at least achieved a C plus average, who have an interest in science or mathematics, who are good students that are motivated, that are attending school regularly, that are basically interested and just need a little push to have them continue on. There are a lot of bright students in the school system, but if they are not nurtured in the right direction they end up going in other fields or deciding that this is not for them.

CPEP nurtures students interested in mathematics and science very early so that they can remain involved in these fields. Through the CPEP Program there will be at least 19 graduates who graduated in June from the high schools in Hartford, CT who will be going on to colleges, majoring in science, mathematics, or engineering related fields. Some of these colleges include the University of Connecticut, MIT, Yale, University of Hartford, Boston College, Central Connecticut State University, Worcester Polytech, Trinity College, and several others around the country and in the Northeast.

A little bit of what happens when a student gets in our program. Once they are enrolled, CPEP students participate in a comprehensive year around program. CPEP provides after school programs, Saturday enrichment programs, field trips, exposure to role models, summer enrichment programs, academic advising and counseling, career exploration, tutoring, and teacher training. Program offerings are designed to be "hands-on" and very interactive.

CPEP also feels very strongly that support from the student's family is very important and very valuable. Parents and guardians are encouraged to participate in programs, including field trips, award programs, the annual CPEP Day Program, workshops, advisory boards, orientation programs and parent committees. Involvement by the family is critical to the success of the student.

CPEP receives financial and in-kind support from a broad range of sources. We find that if a program like this receives funding

from only one source that we would be in a very compromised position if those resources ever dried up. So we try to spread our resources as much as possible.

We receive direct financial support from the Department of Higher Education here in the State of Connecticut, the Carnegie Corp., State and local foundations, including the Hartford Foundation of Public Giving, New Haven Foundation, corporations, including United Technologies, the Travelers Corp., AT&T, Aetna, ABB, and Xerox Corp. We also receive support from national agencies, the Department of Energy which has funded two of our summer programs for the past 2 years. Through the National Science Foundation's Young Scholars Programs; CPEC has been to offer a state-wide summer program at Wesleyan University. We are also continuing to apply to the National Science Foundation for other meaningful programs. The National Action Council for Minority Engineers (NACME), which is out of New York, has provided seed funding for our program.

We are constantly submitting proposals and grant requests from all sorts of programs. Institutions of higher education have also come through by providing facilities, staffing, and support of our programs.

Senator LIEBERMAN. How important is the Federal money from the National Science Foundation?

Mr. CASSIS. It is very important and it is becoming more and more important. We are able to bring in well over, well for the last 2 years, well over 100 students into our summer programs. Without that support from the National Science Foundation we would not be able to do that, and we are hoping that that continues. We need that kind of support from our National Science Foundation.

Senator LIEBERMAN. I gather that CPEP started out of the Science Museum basically with the museum support and corporate support at the beginning?

Mr. CASSIS. Yes, with the museum and then with NACME, and with some State support.

Senator LIEBERMAN. Do you, I ask for the record, I presume I know what your answer will be, but do you feel generally satisfied with the record that you have had so far, in other words, the effect that you have had on individual students in the program?

Mr. CASSIS. Very, very positive about it. We are seeing students who at one time had aspirations of just graduating and perhaps not maximizing the talent they have, and now going to prestigious universities and getting into programs that they never thought they could.

Senator LIEBERMAN. Would you say that the, again this may be an obvious question, but that the demand for the kind of reinforcement program that you offer goes well beyond the number of students you have been able to incorporate in CPEP?

Mr. CASSIS. Absolutely. We are constantly receiving phone calls from cities and school districts that we cannot serve because we are not able to, asking us, "Why are you there and not at our school," or "why are you not serving our school," and we just do not have the resources to expand that quickly. So we definitely have a shortage of resources to provide or to keep up with the kind of demand that is out there.

[The prepared statement of Mr. Cassis follows:]

THE UNITED STATES SENATE  
SMALL BUSINESS COMMITTEE

HEARING ON EDUCATION AND THE U.S. ECONOMY

TESTIMONY SUBMITTED BY:

MR. GLENN A. CASSIS  
EXECUTIVE DIRECTOR  
THE CONNECTICUT PRE-ENGINEERING PROGRAM, INC.

THURSDAY, AUGUST 16, 1990  
ROOM 2B LOB  
150 CAPITAL AVE.  
HARTFORD, CT

Description of CPEP

The Connecticut Pre-Engineering Program, Inc. (CPEP) is a nonprofit educational services corporation designed to increase the number of underrepresented minority students who graduate from a four year college or university in engineering, computer science, physical science or other mathematics based major. These students are predominately African-American, Hispanics, Asian-Americans and women.

CPEP provides programs and services to public school students in the cities of Bridgeport, Hartford and New Haven. CPEP aims to develop their academic skills and raise their educational aspirations. Students in grades 5 - 12 are selected to participate in CPEP by teachers, guidance counsellors and CPEP staff. Attracting students at the earliest moment in their educational development is crucial to the success of the student. To be eligible for CPEP, students must have a C+ grade average in mathematics, science and language arts, achieved grade level scores on MAT or other standardized achievement tests, receive a teacher's recommendation, receive parental or guardian permission to participate, have a strong interest in mathematics or science and must be enrolled in academic level (college bound) courses while attending school.

Once enrolled in CPEP, students participate in a comprehensive year round program. CPEP provides after school programs, Saturday Programs, field trips, exposure to role models, summer enrichment programs, academic advising and counseling, career exploration tutoring and teacher training. CPEP strives to make learning mathematics and science enjoyable and fun. Program offerings are designed to be "hands-on" and interactive. Students apply academic skills to solve problems and design projects. Participants are encouraged to work in groups and to explore their interests beyond what may be required by traditional curriculum offerings.

CPEP feels very strongly that support from the student's family is very important and valuable. Parents and guardians are encouraged to participate in programs including field trips, award programs, the annual CPEP DAY program, workshops, advisory boards, orientation programs and parent committees. Involvement by the family is critical to the success of the student.

CPEP receives fiscal and in-kind support from a broad range of sources. Due to the magnitude of the program offerings, CPEP cannot depend on support from a single source, therefore a wide base of support is desirable. Fiscal support has come from the Department of Higher Education, the Carnegie Corporation, state and local public foundations (i.e. the Hartford Foundation for Public Giving, New Haven Foundation and others), corporations (i.e. United Technologies Corporation, the Travelers Companies, AT&T, Aetna, ABB (formerly Combustion Engineering), Xerox Corporation and other Connecticut businesses) and national agencies (the Department of Energy, the National Science Foundation, the National Action

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Council for Minority Engineers (NACME)). CPEP constantly submits numerous proposals and grant requests for support of programs. Institutions of higher education and businesses from around the State of Connecticut provide staff, facilities and support for program activities. For instance, classroom space is donated for Saturday and Summer Enrichment programs. Businesses provide and coordinate tours of plant facilities for students and teachers. Professors and professionals visit schools to instruct special classes and meet with students and teachers. The Science Museum of Connecticut also provides special exhibits and activities for the Program.

CPEP has an established presence in Bridgeport, Hartford and New Haven. There are sixteen upper level elementary, middle and high schools involved. CPEP will serve at least 450 students during the 1990-91 school year. The goal of the program is to provide enrichment activities which will "turn-on" students to mathematics and science. Students are encouraged throughout their years in CPEP to take all the mathematics and science courses possible in order to have the best preparation for entrance into college. Students are required to maintain a B average in their mathematics, science and language arts classes. If a student experiences difficulty in maintaining good grades they are encouraged to obtain tutorial assistance provided by CPEP. CPEP encourages students to participate in as many academic oriented contexts and programs as possible. This includes statewide Science Fair, Invention Convention, CPEP DAY, Math Counts, JETS Achievement test, the National History Day Contest, etc. CPEP works to expose the inner city students to activities and programs that they would not otherwise have an opportunity to experience.

#### How CPEP Began

CPEP began as an outreach program of the Science Museum of Connecticut in January of 1986. Robert F. Content, Director of the Museum, had the vision to recognize that more needed be done to increase interest in science. He felt that building a coalition of community leaders, educators and representatives from business, industry and government, Connecticut would begin to address the need to increase the shrinking pool of a technically skilled labor force. Through several meetings with leaders from Hartford and NACME, initial seed funding was granted to begin a pilot program at Lewis Fox Middle School (Hartford) with 46 students and 2 teachers. CPEP was designed after many similar model pre-college programs which compose the National Association of Pre-College Directors (NAPD).

As successes were achieved, the program expanded to two middle schools and then to the three high schools in Hartford. When the program grew, so did the need for funding support. Support came

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from the Hartford Foundation for Public Giving, United Technologies Corporation, the State of Connecticut and the Science Museum. In 1988 the Carnegie Corporation of New York awarded CPEP a three year, \$300,000 grant for expansion to Bridgeport and New Haven. This grant also provided the leverage CPEP needed to gain funding for summer enrichment and Saturday programs.

Why CPEP Began

CPEP began because of the future economic needs of the State of Connecticut. Jobs For Connecticut's Future, a 1986 report issued jointly by the public and private sector, highlighted the growing mismatch between the education that our young people are receiving and the skill levels required for many jobs. Statewide, jobs are predicted to grow 15% by 1995, while the labor force will only grow 10%. Given the 44% decline in Connecticut's 18 year old population by 1995, coupled with the current 3% unemployment rate, Connecticut cannot afford to lose young people simply because they lack the skills necessary for employment. Without strong mathematics and science skills, these students will be locked out of industries that are in desperate need of help. Currently the basis of Connecticut's flourishing economy -- it's thriving aerospace, pharmaceutical, biotechnology, fiber-optics, computer and financial service industries -- is severely threatened by this situation.

The nation's leadership in science and engineering cannot be maintained unless the the education pipeline from pre-kindergarten through graduate school is repaired so it can yield a larger and more diverse group of scientists and engineers at all levels. Underrepresented groups -- African-American, Hispanics and women -- make up the fastest growing segment of the population in the state. African-American and Hispanic students now make up approximately 22% of the state's populace. Projected forward, this 22% becomes 33% of the work force within the next dozen years. If dropout rates were to continue at the current 40-60%, and those who graduate do not have skills much beyond basic literacy, there will be serious shortages of competent, highly skilled workers. Connecticut needs competent, highly skilled workers.

The Department of Education's recent PEER report showed that Connecticut's urban minority students fail to take college prerequisites in science and mathematics. This report showed that in a typical high school Computer Science II course, 60.18% were Anglo males, 36.98% were Anglo females, 1.89% were minority males and .94% were minority females. The number of minority students enrolled in advanced science, mathematics and engineering in Connecticut is also extremely low. Of the 1,800 undergraduates at the University of Connecticut School of Engineering, only 40 are African-American or Hispanic. In 1989 not one African-American or Hispanic was awarded a Ph.D. in the physical sciences, mathematics, computer science or engineering by any Connecticut college or university. It is for these reasons that it was necessary to join in the national effort to respond to the growing need for a strong science and technology based work force.

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Benefits of CPEP

CPEP provides many benefits, both measurable and immeasurable, for students and the economic well being of the state and nation. For the students in the program, they gain exposure to exciting and highly desirable career opportunities. Students begin to build self esteem and an appreciation of their abilities. Students achieve self confidence by successfully completing projects or winning awards for science competitions. By attending classes on college campuses, students are exposed to the higher educational environment. This enables the student to realize that college is achievable and should be a part of their future. Role models and mentors provide students with guidance and advice which leads toward career goals. Students also learn that mathematics and science can be fun and is an essential part of everyday life. Through guidance counseling, students learn how to prepare for taking tests, develop leadership skills, learn how to work effectively in groups, plan academic course schedules, and learn how to obtain financial support for college. Students learn how to implement problem solving strategies and use critical thinking skills. Students in the program gain an appreciation for exploration in science and mathematics. They learn how to use a computer as a tool for achieving results and solving problems. Students are encouraged to strive to reach their full potential.

After our first four year cycle, there have been several successes. At this time 18 out of 21 high school seniors have been accepted to at least one college. Some of our students will be attending UCONN, MIT, Yale, University of Hartford, Boston College, Central Connecticut State University, Worcester Poly (WPI) and Trinity College this fall. More than 80% plan to major in a science or mathematics related field. CPEP students have received awards for projects submitted to the state Science Fair and Invention Convention competitions and the National History Day Contest. CPEP students have made presentations at national conferences and have received scholarships to attend Space Camp. These and the many other student achievements probably would not have been in the reach of these students had it not been for their involvement in CPEP.

Recommendations:

Recognizing the budget constraints of the Federal Government, Washington must take effective steps to insure the success of educating the future work force. If the government fails to assume a major role now, future training costs will be staggering. The Federal Government should:

- Continue to increase funding support to agencies like the NSF and the Departments of Education and Energy. These agencies have established competitive grant programs for school districts that implement locally developed initiatives to improve mathematics and science education for underrepresented groups.

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- Make it easier for established pre-college programs to obtain funding support. Direct funding sources to these programs rather than re-inventing the wheel by creating programs that overlap the efforts of existing programs. Guidelines need to be made clearer. A clearinghouse (like the Quality Education for Minority Network, Inc.) needs to be utilized to link funding sources with established associations like NAPD .
- Laboratory facilities need to be made available to students and teachers. These facilities should sponsor "hands-on" programs and teacher training similar to those provided by NASA Regional Education Centers.
- Research scholarship programs should be established for high school students. This would provide students with early research experiences and will encourage students to pursue bachelor degrees in the sciences. These programs should be tailored to attract minority and women students.
- Incentives should be established to encourage all employees and retirees to donate time and experience to urban public school and pre-college programs.
- The government should public recognize the efforts of businesses that actively suppo. pre-college programs. Special or distinguished service awards should be presented to corporations that make significant contributions to this effort.
- The government should initiate a campaign to heighten awareness of the crisis that confronts the nation if underrepresented populations are not brought into the future work force. A massive effort is needed to alert decision makers of the impending crisis.
- The government should encourage state legislatures and state departments of education to provide additional fiscal support for mathematics and science education.

The Federal Government should take the lead and demonstrate its support of initiatives that concentrate on improving skills in mathematics and science education. The Government must provide support to state, local, business and community partnerships.

Thank you for allowing me this opportunity to share my views and insights with you.

Respectfully submitted by:



Glenn A. Cassis  
Executive Director

Senator LIEBERMAN. Would this be an appropriate time to involve Mr. Pemberton?

Mr. CASSIS. Yes, my bodyguard. I do have some recommendations, actually, I would like to speak of after Mr. Pemberton.

Senator LIEBERMAN. OK, good. Mr. Pemberton, tell us how you became involved in the CPEP Program and what your experience is. Maybe you should introduce yourself first and tell us where you are from.

Mr. PEMBERTON. Hi. My name is James Pemberton and I am from Hartford. I just graduated from Buckley High School. I will start with my statement.

Good afternoon, my name is James. I am here to talk about the way CPEP has helped me as a student. The Connecticut Pre-Engineering Program helps students by developing and increasing their skills in math and science CPEP provides students with special courses at different universities as Mr. Cassis already said. For example, in Trinity College I learned about projectile trajectories and catapults.

At the University of New Haven I learned about superconductors. I also learned about CAD, better known as Computer Aided Design at Central Connecticut State University. As a group, we visited the AT&T building in New York, and in Boston we visited the aquarium and the Boston Museum of Science. CPEP has also provided me with tutoring, which is very well needed at times in school, and I also got a job at the Museum of Science in Connecticut in West Hartford.

Right now I plan to follow a career in engineering because CPEP has inspired me to do so. Even though I am the top math student in our school I cannot go to college right now because I cannot afford to do so. I have enlisted in the Air Force and I will follow a mechanical career and later use these skills and benefits to get into college and obtain a degree.

Senator LIEBERMAN. So there were no loan programs available or not enough to make it possible for you to go on to college?

Mr. PEMBERTON. Oh yeah, definitely. It is just that I also wanted to do this.

Senator LIEBERMAN. Tell us about the tutoring services. Who helped you and how was it organized?

Mr. PEMBERTON. Well actually my chemistry teacher provided me with a tutor in physics when I was taking physics class.

Senator LIEBERMAN. Right. So you think that you would not have had the same goals if you had not been involved in CPEP?

Mr. PEMBERTON. I do not think so. I mean CPEP, you know, I just look at it different.

Senator LIEBERMAN. How old were you when you got involved?

Mr. PEMBERTON. 15, I think.

Senator LIEBERMAN. OK. Thanks very much for coming in. Mr. Cassis, do you want to offer some of the recommendations that you have?

Mr. CASSIS. I think continue to increase the funding support for agencies like the NSF and the Department of Education and if Energy is going to make a big difference in the programs. The support for next year's Department of Energy has increased for summer programs, prep programs from \$350,000 to \$1.3 million,

and that is going to aid greatly for the pre-college programs like CPEP. This has helped us in our programs for the summer.

I think it is also important to make it easier for pre-college programs to obtain funding. There needs to be a clearinghouse in Washington which will aid us in understanding who are the players and who are the sources of funding. A organization called the Quality Education for Minority Network, Inc., which is an offshoot of the Carnegie Foundation, is being established in Washington. Their main goal is to try to coordinate the programs that are in Washington and get that information out to the pre-college program effort, and that is going to be of major importance to us as an association.

Senator LIEBERMAN. Is there a broad-based national effort in pre-college programs of this kind? In other words, is CPEP unique or are there many others like it around the country?

Mr. CASSIS. There are about 26 other programs like this, National Association of Pre-College Directors (NAPD), which is a program that kind of emanated out of NACME, is around the country right now and that helps us stay together and understand what we need to do in terms of being more effective. So there is that program around. I have some brochures on that organization.

Laboratory facilities need to be made available to students and teachers similar to what was talked about here. We need to have more of those kinds of facilities. NASA Regional Education Centers is a very good program for teachers and students. I would like to see more of those kinds of things happening.

Research scholarship programs for high school students should be advanced. This will provide our students with early research experiences and have them better prepared and encouraged to go on into research fields and to pursue bachelor's degrees in science.

Incentives should be established to encourage all employees and retired employees to give back or to donate back to the community. We depend a lot on mentors and role models to let students know that they can be successful and we just need to see more of that happening. A lot of times people who like to do this just do not have the time or feel that they do not have the permission from their companies to do this kind of thing.

The Government should publicly recognize the efforts of businesses that are actively supporting pre-college programs. Special distinguished awards or presentations to corporations that are making headway or who work with groups like this, should happen. People ought to know that some nice things are going on from corporations.

Also, I think the Government should initiate a campaign to heighten the awareness that the Nation is facing in terms of its crisis, and that under-represented populations, minorities in particular, are going to be depended upon to fill positions in the future workforce.

A massive effort is needed to alert decisionmakers of the impending crisis. And also, added to that, we spend a lot of time, and I am not against sports or anything like that, but we spend a lot of time recognizing achievements of professional teams for the championships they win and things like this. I think we ought to spend a little bit of time recognizing the achievements of our great scien-

tists, our mathematicians, our engineers. If that kind of awareness is heightened, I think our youngsters would have role models, will know that these kinds of careers are attractive and are needed in this country. Sure, we need to be physically fit, but I also think we need to be mentally awake and sound in terms of our economy.

Finally, the Government and State legislatures and State departments of education provide additional fiscal support in mathematics, science, and education and especially to third party programs like CPEP and other college programs around the country.

Senator LIEBERMAN: Thank you. Thank you very much for your testimony. One of the things that clearly comes out here this morning is that there is a problem in the workforce. Also, that there is a tremendous amount of activity going on, a lot of it stimulated by the business community because of its obvious need for a capable workforce, and Government is trying to obviously do its part, too.

I am almost tempted to ask you, is there too much going on, or is it going on in too many separate places? Do we need to better coordinate it, or is this one of those cases, really, where we gain from all these separate centers of initiative? What do you think?

Ms. KAUFMAN. I guess I would answer, I think you need both. I think that one of the things I was going to talk to in here is, I think partnerships have kind of gotten a bad rap. When you look at a lot of the literature that has come out recently on partnerships, it says you are tinkering at the margins. You are not really bringing about any fundamental reform, and that is where a lot of the emphasis for structural reform came about.

But I do not think business people have that much credibility in the educational arena, and the way they get that credibility is through a sustained partnership. When they really are making an impact in an individual school district with individual teachers and students, they develop staying power, and then I think they can be there as a much stronger catalyst for reform.

So I think you need some of the individual efforts. You need many of them to build that dialogue and build that amount of credibility and discussion between the different actors.

But I do think you need the coordinating role, because one of the things I feel very strongly is, we are not learning from each other's mistakes. We are all trying to do the same things. We are all trying to do things that we think are very good.

I think there is a body of knowledge that probably is being developed now that we could learn from, and that is a role that the Federal Government—I mean, with all the clearinghouses and all the information that is out there, we still do not seem to be able to pull it together in a very meaningful or useful way for people.

Senator Kevin Sullivan and I were co-chairing a legislative task-force last fall and out of that we passed a piece of legislation which is calling for a school business partnership forum in the State, and it will have 33 representatives, 11 from business and industry and the rest from higher education and from the K-12 education system. The purpose of that is to have that kind of dialogue around an ongoing reform agenda where you can get a lot of buy-in from the various actors.

The other piece of legislation called for expanding CBIA's clearinghouse—we have a very small-scale clearinghouse at CBIA. It

has really been focused on the math and science programs in the State, and I think we have been able to disseminate information on that. Now, hopefully, we will be able to expand that. Part of that problem is figuring out what kind of information do you really want to disseminate, what would be useful for people, and how do you not make the burden and the task of gathering information and analyzing it so overwhelming that you really cannot provide something that is useful to users.

I was part of a review panel recently in Washington on the new center that is being set up on educational quality of the workforce, and as I read through all the proposals, what struck us—and I think there was a lot of debate on the panel. There were 11 of us reading the proposals. Some came in, all from fine educational institutions, all from universities because that is who their competition is really for.

Some were so abstract and theoretical, it was frustrating, because you felt that they may have wonderful theoretical views of how to bring about a better quality workforce, but it will never affect business people or practitioners who really need to make decisions and need fairly good information in a fairly decent timetable, and I think we were leaning more toward the applied side of things, and I think that is also part of it. I think that R&D is really critical, but then we really have to pay attention to how do we make that information useful for people? So it is a balance.

Senator LIEBERMAN. So part of what you are saying is that the business community may naturally create or instigate educational reform, basic educational reform, just by their demands?

Ms. KAUFMAN. I think it has gone beyond that. They are getting very organized in a way they have not been organized before. The National Business Roundtable and now the Business Roundtable efforts that are happening in State: are really, I think, going to put business out in the forefront at a fairly high level profile on education reform, and that is going to change the nature of the dialogue, I think.

Senator LIEBERMAN. How about the forum that you talked about? Is that composed of people who are now involved in organizations that are active in this area?

Ms. KAUFMAN. Well, we are just at the point—Commissioner Trozzi will be convening the first meeting October 2, so we are making the appointments now. CBIA is appointing the 11 business representatives, and they are primarily going to come from companies that have been involved in education reform—the CEA, the CSFT, all of the different associations and interest groups will be appointing their representatives to it, and we will have that by the beginning of September.

Senator LIEBERMAN. You described a rather extensive list of groups in Connecticut involved in this problem. Is there overlap there?

Ms. KAUFMAN. I think there is clearly overlap. Again, I am not so sure that is negative, but we need a place where it comes together.

One of the things that I see happening is the business community is out here talking about what they mean by school restructuring or accountability and the workforce needs and you have educa-

tors here and boards of education, and nobody is talking to each other, and that is why I think we felt we needed a place where we talked to each other.

Senator LIEBERMAN. I wonder if there is a way that the Federal Government can stimulate that in the various States? Maybe that is something to think about, to create those kinds of central locations for coordination.

Yes, Dean Morgan.

Mr. MORGAN. We have been meeting with a committee of SACIA, some very high-level business people from IBM, Pitney Bowes, from Champion. We met about four times, and the issue of what level of education they need, how it is to be delivered, in the beginning we discussed a number of pretty indepth possibilities.

In the end, the committee voted to put together a directory. That is all we could come to grips with, because it is so fragmented. The need is so fragmented and the delivery methods and the delivery agencies are so fragmented that the frustration was so high, at least in lower Fairfield County, that at least give us a directory.

That is where we came up with a 911 number that we are going to institute at the college, just to let them have somebody who can give them the answer as to where the better program might be available for their needs.

Senator LIEBERMAN. Just a final question, and it goes back to the one I asked before. To what extent are the proprietary technical, trade, secretarial schools playing a role in better preparing students or adults for the workforce? Have you had any experience, Mr. Cassis, with that?

Mr. CASSIS. No, I don't have any experience with that.

Senator LIEBERMAN. What is your sense from your employers?

Ms. KAUFMAN. My sense is they do a pretty decent job, because they are so focused and they are selective about who they have that come in as students, and they are expensive, so students—when you make the commitment that you are going to spend the kind of money to go to a private institute, technical institute, or Morse School of Business, you are basically as an individual and as a student making a commitment and saying I am going to put some resources there, although with some of the issues of the Student Loan Program it is a little bit arguable.

But I do think they have a pretty good track record and they can customize and tailor their programs, I think, more quickly and more effectively than many of the public sector institutions can, although I think Judy Resnick's Business Services Network has been able to do through the community colleges has really been able to replicate that in the public sector and has been much more targeted and focused.

But I think the private proprietary institutions, the good ones, are very effective and I think Ted's division is who monitors the ones, and there are some that are not so good. Ted can talk to that.

Mr. SERGI. We approve 80 private occupational schools in the State, and I think in the words of both our Commissioner and Commissioner Glasco, they exist generally because the public sector has left gaps in training and we do have quite a range of quality but they are quick to respond, as Lauren said, and they do bring the

problems that we have had with student grants and other things, because of the profit motive involved, as well as the educational.

Senator LIEBERMAN. I went out to visit one yesterday. I think it is called Diesel Technology Institute out in Enfield. This is a very focused program, training adults to deal with diesel engines, and they have more than a 90 percent placement rate. It is expensive. They pay over \$6,000 for the program. I think it lasts 7 or 8 months, but these folks, or 90 percent of them, are getting placed and making pretty good salaries. But that is a very focused program and meeting an obvious market demand.

Ms. RESNICK. I might add that I would agree that the proprietary schools are indeed very focused, but one of the things that, being that focused and that compressed in terms of timeframe, does not allow for is those workplace based skills—the problem solving, the critical thinking, the basic skills, that oftentimes need to go with those practical, hands-on skills. The training that is provided for the most part is very good, but it is a very small piece.

Senator LIEBERMAN. The gentleman who showed me around there yesterday actually stressed that is just what they are trying to train their people in, and maybe he anticipated your comment.

Ms. RESNICK. Might I say, we differ in opinion.

Senator LIEBERMAN. I understand, and I do not know enough about diesel engines to enter this fray. But it was very interesting because he said we are trying to train these people to think. They are going to be out there having to maintain a diesel engine on a truck, or heavy construction or marine equipment, and we are not going to be there to help them think about it.

Thank you very much. Let me also, for the record, thank Sarah Walzer who is my legislative assistant involved in, among other things, education, and Susan Grad, who is with my office in Washington for how long—6 months? I forgot the name of the program officially, but she actually works for the Social Security Administration and she is on an internship with our office. They have both been very helpful in putting this program together.

I thank all of you. I thank you for what you are doing out there, and I thank you for sharing your experiences with us, because they give us some sense of hopefulness. And Mr. Pemberton, we wish you good luck in your future.

Thank you. This will now officially adjourn the hearing.

[Whereupon, the hearing adjourned at 12:30 p.m.]

A P P E N D I X  
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HEARING ON EDUCATION AND THE U.S. ECONOMY  
SMALL BUSINESS COMMITTEE  
August 16, 1990

John E. Saunders, III  
Deputy Commissioner, Employment and Training  
Connecticut Department of Labor  
200 Folly Brook Boulevard  
Wethersfield, Connecticut

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■ ■ ■ TESTIMONY ■ ■ ■  
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SENATOR LIEBERMAN, THANK YOU FOR INVITING ME TO SUBMIT A STATEMENT FOR THE HEARING RECORD. THE DEPARTMENT OF LABOR HAS A VITAL INTEREST IN ISSUES OF WORK FORCE PREPAREDNESS. WE WELCOME YOUR ATTENTION TO THE ISSUE AND REMAIN AVAILABLE TO SERVE YOU AND THE COMMITTEE IN YOUR PURSUITS.

THE SUBJECT OF THIS HEARING: THE LINK BETWEEN EDUCATION AND THE TRAINING NEEDS OF BUSINESSES IS ONE WHICH RECEIVED CONCENTRATED ATTENTION FROM THE CONNECTICUT EMPLOYMENT AND TRAINING COMMISSION WHEN IT CREATED THE STATE'S FIRST STRATEGIC PLAN FOR WORK FORCE DEVELOPMENT - THE CONNECTICUT HUMAN RESOURCE DEVELOPMENT PLAN. THE COMMISSION, COMPRISED OF REPRESENTATIVES FROM BUSINESS, LABOR, EDUCATION, GOVERNMENT, AND COMMUNITY BASED ORGANIZATIONS RECOGNIZED - ALONG WITH YOU - THE IMPORTANCE OF THIS LINK.

AS A RESULT, THE STATE'S HUMAN RESOURCE DEVELOPMENT PLAN EMPHASIZES THREE THEMES. THE FIRST OF THESE IS WORK FORCE INVESTMENT. THE STATE'S HRD PLAN RECOGNIZES THAT ADULT EDUCATION SERVICES WHICH PROVIDE THE OPPORTUNITY TO GAIN BASIC SKILLS AND TO EARN A HIGH SCHOOL DIPLOMA ARE CRUCIAL TO THE CONTINUED

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COMPETITIVENESS OF CONNECTICUT'S WORK FORCE AS ARE THE CONTINUING EDUCATION, SKILL DEVELOPMENT, AND SUPPORT SERVICES OUR CITIZENS NEED TO ENTER AND/OR REMAIN IN THE WORK FORCE.

THE SECOND MAJOR THEME OF THE STATE'S HRD PLAN IS CHILD AND YOUTH DEVELOPMENT. MEMBERS OF THE COMMISSION RECOGNIZED THAT EARLY CHILDHOOD ENRICHMENT AND SCHOOL RETENTION PROGRAMS IN THE MIDDLE GRADES PREVENT RATHER THAN SOLVE PROBLEMS. THESE NECESSARY PROGRAMS, COUPLED WITH CONTINUED, RIGOROUS ATTENTION TO STUDENT ACHIEVEMENT, HELP ASSURE SUCCESSFUL SCHOOL-TO-WORK TRANSITION.

THE THIRD FOCUS OF THE CONNECTICUT HRD PLAN ALSO COINCIDES WITH THE INTERESTS OF THIS COMMITTEE INsofar AS THE SUBJECT OF THIS HEARING EMPHASIZES LINKAGES. THE THIRD THEME IS SERVICE DELIVERY IMPROVEMENT. THE COMMISSION BELIEVES THAT REGIONAL BOARDS, COOPERATING WITH STATE AGENCIES AND THE CONNECTICUT EMPLOYMENT AND TRAINING COMMISSION, ARE APPROPRIATE TO IDENTIFY PRIORITIES FOR USE OF EDUCATION AND TRAINING FOR EMPLOYMENT RESOURCES, TO COORDINATE RESOURCES IN SUPPORT OF THOSE PRIORITIES, AND TO EVALUATE HOW THESE RESOURCES, COLLECTIVELY, ADDRESS PRIORITIES. IF YOU ARE FAMILIAR WITH THEIR REPORT, YOU WILL RECOGNIZE THE CONCEPT OF REGIONAL BOARDS AS ONE THE COMMISSION ON SKILLS IN THE AMERICAN WORKFORCE ALSO ENDORSES.

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WE ARE HOPEFUL OUR OWN STATE LEGISLATURE WILL WELCOME AND ACT FAVORABLY UPON PROPOSALS WHICH REFLECT THE COMMISSION'S PRIORITIES. WE RECOGNIZE THAT TO PROVIDE EVERY CONNECTICUT ADULT THE OPPORTUNITY TO GET A HIGH SCHOOL DIPLOMA, TO ASSURE EVERY YOUNG CHILD THE OPPORTUNITY TO GROW INTO A HEALTHY AND PRODUCTIVE MEMBER OF THE WORK FORCE, AND TO DECENTRALIZE PLANNING FOR HUMAN RESOURCE DEVELOPMENT TO THE REGIONAL LEVEL WILL REQUIRE THE COMMITMENT OF ALL STATE LEADERS. MAINTENANCE OF CONNECTICUT'S QUALITY OF LIFE AND ECONOMIC GROWTH, I'M SURE YOU AGREE, DEMAND SUCH A COMMITMENT.

IT IS MY UNDERSTANDING THAT THIS COMMITTEE WILL HOLD A SERIES OF HEARINGS ON EDUCATION AND WORK FORCE ISSUES. I AM HOPEFUL THE DEPARTMENT OF LABOR WILL BE AFFORDED THE OPPORTUNITY TO PROVIDE ADDITIONAL INFORMATION AT FUTURE HEARINGS. SINCE THIS IS A HEARING OF THE SMALL BUSINESS COMMITTEE, HOWEVER, I WANT TO TAKE THE OPPORTUNITY NOW TO SUPPLY YOU WITH SOME PRELIMINARY INFORMATION ABOUT THE SERVICES THE CONNECTICUT DEPARTMENT OF LABOR PROVIDES.

STATE EMPLOYERS TRAINED MORE THAN 4,000 PEOPLE WITH FINANCIAL SUPPORT OF \$2.8 MILLION AND TECHNICAL ASSISTANCE FROM THE DEPARTMENT'S OFFICE OF JOB TRAINING AND SKILL DEVELOPMENT;

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- . THE DEPARTMENT OF LABOR, IN COOPERATION WITH THE DEPARTMENT OF ECONOMIC DEVELOPMENT, INITIATED TWENTY (20) PROJECTS WHICH PROVIDED 504 PEOPLE WITH THE TRAINING NEEDED TO ATTRACT NEW BUSINESS AND INDUSTRY OR TO ASSIST ESTABLISHED FIRMS TO ADAPT NEW TECHNOLOGY;
- . IN RESPONSE TO HEALTH CARE OCCUPATION SHORTAGES, THE DEPARTMENT OF LABOR IMPLEMENTED A NEW MODEL TRAINING PROGRAM TO UPGRADE ENTRY LEVEL HEALTH CARE WORKERS TO REGISTERED NURSES AND LICENSED PRACTICAL NURSES;
- . ONE THOUSAND SEVEN HUNDRED SEVENTY FIVE (1,775) NEW APPRENTICES REGISTERED LAST YEAR, BRINGING THE TOTAL OF REGISTERED APPRENTICES IN THE STATE TO 8,633. THAT IS THE HIGHEST PER CAPITA RATE OF APPRENTICESHIP ENROLLMENTS OF ANY STATE IN THE UNION. ONE THOUSAND AND ONE (1,001) OF THESE ATTAINED FULL JOURNEYPERSON STATUS; AND
- . FIFTY (50) CONNECTICUT FIRMS TOOK ADVANTAGE OF THE STATE'S CORPORATE TAX CREDIT IN THE MACHINE TOOL TRADES TO INCREASE THEIR NUMBER OF APPRENTICESHIPS.

THE DEPARTMENT OF LABOR LOOKS FORWARD TO DISCUSSING OTHER ISSUES OF WORK FORCE PREPAREDNESS WITH YOU AT FUTURE HEARINGS.

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