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**Testimony before the House Education and the Workforce Committee**

**On “Preparing Today’s Students for Tomorrow’s Jobs:  
Improving the Carl D. Perkins Career and Technical Education Act”**

**November 19<sup>th</sup>, 2013**



Chairman Kline, Ranking Member Miller, Members of the Committee.

IBM appreciates the opportunity to testify on improvements to the Carl D. Perkins Career and Technical Education Act that will prepare today's students for tomorrow's jobs.

IBM is a major U.S. employer with long involvement in education including our recent work with the P-TECH school in New York. Based on our experience and urgent need for work-ready graduates, we urge Congress to reauthorize Perkins to:

- Align curriculum to labor market needs in high-growth industry sectors
- Improve CTE programs with strong collaborations among secondary and postsecondary institutions
- Facilitate participation by local employers in making link between curriculum and needed workplace skills
- Incorporate workplace experience for students through internships, apprenticeships and mentorships with local employers, and experiential teaching methods such as work-based learning classes and project based learning

U.S. economic competitiveness is seriously undermined by the serious and systemic problem of young people being inadequately equipped to make an effective transition from school to career.

According to the Center for Labor Market Studies, employment rates for the nation's teens, ages 16 to 19, and young adults, ages 20 to 24, have dropped to new post-World War II lows. During the two-year period from late 2007 to late 2009, the number of employed teens in the U.S. declined by nearly 25 percent, while the number of employed young adults fell by nearly 11 percent. These employment rates are more than 18 percent below their year 2000 values and nearly 23 percent below their values in 1989 – the peak of the 1980s labor market boom.

But let me proceed. Today, some 12 million U.S. students are enrolled in secondary or postsecondary Career and Technical Education – or CTE – programs. This is an enormous enterprise, and its ability to impact not only the futures of America's young people – but our collective economic prospects – is equally huge.

Once known as Vocational Education, CTE has a checkered history. It is commonly viewed as a system ancillary to the core issues involved in education improvement and reform. "Voc. ed." or CTE teachers, principals and schools were most often an afterthought in sometimes contentious discussions about how to improve our schools, where the focus has been on choice, charters, and teacher evaluation systems. CTE funds available under Perkins were too often spent on equipment, with little serious thinking about curriculum change or alignment first to college and then to career.

As a result, its history is that of a second track for students for whom educational excellence was not expected, but a path from high school to work was anticipated. Look at the historical data and it is not a pretty sight.

Our thinking has been forced to undergo change, largely stimulated by fairly dramatic changes in the 21<sup>st</sup> Century economy and the core issues of U.S. competitiveness that have weakened our nation's economy and put new pressures on government, business and education. It's the economic pain that has dictated a change, first in our views and now, finally, in our actions.

Let's review the facts.

Fact number one: Many job opportunities go unfilled due to the skills mismatch.

Many of the well paying jobs that exist in today's labor force remain vacant because too few job candidates possess the skills needed to fill them. As one example close to home, in August 2013, almost 1,800 IBM jobs were left unfilled, with our company experiencing shortages of skills in technical fields. As a business to business company, we see the same problem with our clients and business partners. In fact, over the next 10 years, 14 million middle skill jobs will be created potentially heightening the problem. According to *Help Wanted: Projections of Jobs and Education Requirements through 2018*, within six years there will be a need for at least 4.7 million new workers with postsecondary credentials. If the country stays on its current path, without addressing the skills crisis, there will be a shortage of at least 3 million workers with the necessary degrees. The implications for our economy are grave.

Fact number two: Less than 25 percent of high school graduates who enroll in postsecondary education via community colleges will earn a certificate or degree within eight years, and the average for young people of color is far worse, with only one in four completing. To lend more clarity, 43 percent of our nation's community college students require remediation. IBM looked at one community college's entering Freshman class and using data analytics, we found that if students were enrolled in two remedial courses, one of them being math, they had a 99 percent chance of dropping out of college before the end of the first semester. If students are not college ready, how can they possibly be ready for today's careers?

Fact number three: While U.S. high school graduation rates are improving, students who complete with only a high school diploma and enter the job market right out of high school will see their wages max out at less than \$15 an hour, condemning far too many to lives of the working poor.

Therefore, the task for today's CTE is to illuminate numerous paths to success for American students to ensure that they are both college and career ready. With high-quality preparation for college and career, our graduates will have access to meaningful, long-term career opportunities and a hopeful future.

Despite these compelling numbers, our CTE programs, largely funded under Perkins, have not changed. This was acceptable in the heyday of U.S. manufacturing and skilled labor, when CTE helped provide the critical workplace skills that enabled economic

mobility for generations of young adults. But today and tomorrow's knowledge-based jobs require more. To succeed in the 21<sup>st</sup> Century economy, employees need skill sets that include problem-solving, communications, and teamwork, coupled with high-quality traditional academic preparation.

Far too many current CTE programs are not aligned with labor force needs, meaning that the jobs they are preparing our young people for either do not exist in the numbers needed, or they do not exist at all. Businesses share in the blame. Business involvement, which is critical to connecting education and economic need, is spotty at best. With very little business involvement, few CTE programs are aligned to real jobs and needed skills, so the skills stressed in the workplace are missing both from college and high school curriculum, leaving graduates underprepared. The cost to businesses in training is astronomical.

What's clear is that the burden of preparing workers cannot be the sole responsibility of schools. A fully prepared workforce requires a multifaceted response. Employers, educators, and government and community leaders must collaborate, with each contributing its specific expertise to solve complex employment needs and prepare the new generation of workers.

That is not to say that there are not some exemplary programs, there are, but they are the exception and not the rule.

One stark exception in which IBM has been intimately involved is Pathways in Technology Early College High School, or P-TECH, the nation's first grades 9 to 14 school. This unique collaboration between IBM, the New York City Department of Education, The City University of New York, and New York City College of Technology, launched in September 2011 in Brooklyn, New York. We initiated this model because the existing system simply does not work, and we needed a change. Every student graduating from P-TECH will earn an Associate in Applied Science degree either in Computer Information Systems or Electromechanical Engineering Technology. That degree will signify that they are college and career ready – able to continue their studies without remediation in a four-year postsecondary institution or to embark upon a career in the IT industry. IBM, with our skin in the game, our steadfast belief in the P-TECH model and its young people, principal and teachers, has promised that successful graduates will be first in line for jobs at our company. And we believe with some evidence and reason that other companies are more than ready to step up to the plate.

The school, which is in its third year, has 335 students. Students are accepted into the school solely based on interest – not grades or testing requirements. The vast majority – 74 percent – are boys, with Black and Hispanic males making up more than 60 percent of the population. More than 80 percent of students are on free or reduced lunch and 16 percent have Individual Education Programs because of special learning needs.

Against this backdrop, by any measure, the students at P-TECH are excelling. While the typical New York City high school student *may* have taken up to two required New York

State Regents exams before entering the third year, 74 percent of all P-TECH students have passed at least three Regents exams for graduation; 51 percent have passed four and 23 percent have passed five Regents exams *before entering year three* at P-TECH.

These results can be attributed to the core elements of P-TECH, which differentiate it among most CTE programs and demonstrate the great promise of reinventing high school CTE programs along this innovative model.

First, the curriculum is mapped to the skills required in high growth jobs and careers. IBM identified the skills required for entry-level jobs, and working with our partners, developed a scope and sequence of courses that would ensure that students graduated with academic, technical and workplace skills needed in the IT industry. This means that the core curriculum in math, science, English and all other subjects are focused on ensuring that students are career-ready. Our skills mapping process has been documented and is available to any public-private partnership or CTE program wishing to do this same process of alignment. Aligning curricula with local job opportunities should be the highest priority in reauthorizing Perkins.

Second, students move through a personalized academic pathway, aligned to college and career requirements, which is closely monitored by his or her teachers and advisors, based on their individual needs and performance. The focus is on mastery not seat time. The alignment allows students to take the courses as they are ready, reducing the need to wait, repeat courses, or jump over gaps in their learning. As a result, students begin taking college classes the summer after the ninth grade. Today, 125 students (44 sophomores and 81 juniors) are enrolled in at least one of 12 college courses. To date, students enrolled in college courses have earned 12.6 college credits on average. Several students have earned 21 college credits, and will have as many as 33 credits by January 2014. Fifteen students in the first class are on target to graduate with their AAS degree in just four years. The collaboration between secondary and post-secondary institutions helps P-TECH students and could dramatically improve all Perkins CTE programs.

Third, a 21<sup>st</sup> Century workplace learning curriculum is provided to every student. This curriculum includes skills like critical thinking, problem solving, communication and leadership skills that need to be developed in young people before they become part of the workforce, and is importantly designed to develop within them those habits of mind like “persistence” and “grit” that are found in our most successful employees. Employers have a shared interest in a Perkins Act that develops “soft skills” in students.

Finally, each student has a volunteer IBM mentor, who provides academic support, career guidance and invaluable inspiration. While much of the interaction happens in person, IBM also has developed a safe and secure online platform to enable frequent communication, with a focus on academics, between mentors and their students. To further support career-readiness, students participate in structured workplace visits and project-based learning. And this summer, 75 students will begin paid, skills-based internships where they will hone and advance their skills, while helping work on actual projects for the businesses that hire them. This type of experiential learning is one of the

best ways of linking the workplace to the classroom and provides students opportunities to solve real challenges on today's topics with the current tools in use by potential employers. Incorporating workplace experience and experiential learning is one of the most significant opportunities for Perkins reform – students, teachers, administrators, and employers all benefit from ongoing interaction.

Working off the P-TECH playbook, P-TECH was replicated in four schools in Chicago in September 2012. IBM is spearheading one school, the Sarah E. Goode STEM Academy, in collaboration with the Chicago Public Schools, City Colleges of Chicago, and Richard J. Daley College. Other lead companies that IBM is working with include Cisco, Motorola Solutions and Verizon Wireless. Goode currently has 463 students in Years One and Two, all facing similar challenges to the students at P-TECH. Operating under the same model principles, we are seeing similar promising results. In one year, Goode's inaugural class gained an overall average of 1.5 years growth on Chicago's 9<sup>th</sup> grade exam. Goode was ranked 2<sup>nd</sup> out of 17 high schools in the Southwest Area High School Network and 4<sup>th</sup> out of 106 high schools in the City of Chicago with regard to average growth.

In New York City, two more schools modeled on P-TECH opened in 2013: Energy Tech High School, partnered with ConEd and National Grid, and Health and Emergency Response Occupation (HERO) High School, partnered with Montefiore Medical Center. Three more NYC schools will open in 2014, in partnership with Microsoft and New York-Presbyterian Hospital, SAP, and the American Association of Advertising Agencies.

Last August, Governor Andrew M. Cuomo announced the 16 winners of a statewide competition that will implement the P-TECH model, preparing thousands of New York students, in urban, suburban and rural areas, for high-skills jobs of the future in technology, manufacturing, healthcare and finance. Each school is based in one of the state's 10 economic development regions and will help advance the Governor's Regional Economic Development Strategy by linking job training directly to employment opportunities in the regions. Fifty businesses, including IBM, and 19 colleges, both public and private, are participating, in an effort that will change the trajectory of more than 6,000 students.

Inspired by IBM's work in New York and Chicago, the J.A. and Kathryn Albertson Foundation is creating a new school model based on P-TECH. Rather than creating brick and mortar schools serving a few hundred students, the Foundation is now creating a network that will serve ALL Idaho students, providing students in rural areas with the ability to gain – at little or no cost – meaningful credentials and pathways to Idaho jobs in healthcare, high-tech manufacturing and information technology.

Many other states are approaching IBM discussing state-wide replication, and are on board to implement more, and many businesses are as well. These involve many other themes, not just IT – themes such as advanced manufacturing and healthcare, business and finance, telecommunications and hospitality.

Business interest in this issue is very high, born out of the necessity of changes in the economy. In fact, tomorrow the Harvard Business School will host a forum attended by many business leaders to discuss how business engagements that have up to now been sporadic and achieved limited scalability and sustainability can be reformed. They will cite the P-TECH model, which has been documented in a new Harvard Business School case, as being illustrative of the direction that businesses should consider taking.

Replication has moved rapidly because, as a public school model, spending for these schools is the same as other public schools. In addition, because they embrace open enrollment, we know that this model works in communities with significant and serious economic and educational needs and can address great disparities in opportunity that have plagued many school districts across the country.

I, and a great many others, strongly believe that this model is so significant, and the early results so impressive, that we can and will see dozens more grades 9-14 schools opening along this model. But dozens of schools is hardly enough. For the U.S. to be competitive we need more – much more. It will take many other political leaders, like Mayors and Governors, supporting it, many more companies stepping up as we at IBM have, and many universities, motivated by the high completion rates and strong link to employment, owning it. But the good news is that we have documented some early successes and importantly codified the tools required to achieve success. IBM, with our partners, is committed to making these tools available online to each and every state, district, college and employer that is interested in embracing this change.

As they develop the second generations of schools, administrators, teachers, and employers will benefit from the emerging tools that allow teachers and administrators to more accurately understand and predict a learner's educational pathway, and align and deliver content relevant to the student's learning needs. Understanding where learners are strong or challenged allows educators to tailor instruction programs for each learner, and can ease the challenges in aligning the correct instructional resources an educator will use to align the learner, classroom and the workplace.

Which bring us to the role of the federal government. We need your help, too. Which brings us to the Carl D. Perkins Act. Imagine that instead of dozens of schools modeled after P-TECH, there were thousands of them, providing a clear path from school to career and offering hundreds of thousands of young people a middle class wage. The opportunity to affect the lives of young people and strengthening the U.S. economy is enormous.

Perkins can be the linchpin to U.S. competitiveness. A reauthorized Perkins must include:

- Alignment of state and locally developed curriculum by secondary and postsecondary with skills in demand by local industry as demonstrated by job openings, and Department of Labor data, attainment of industry-recognized certificates, inclusion of work-based learning classes, and project based learning

- Alignment of secondary curriculum with postsecondary institutions
- Participation by employers in making link between curriculum and skills needed for employment
- Student participation in industry internships, apprenticeship and mentorships, and other workplace placements

As the American CTE system continues to grow and evolve, education leaders and policymakers can learn a great deal from our international peers, who arguably have more sophisticated systems in place that better prepare students for career success. In the U.S. skills are taught through school programs; in many European countries, students master workplace learning components in real world settings.

This is not a pipedream, it can be done. It requires political will and action, and the support from business, labor, universities will follow, as the results begin to show that CTE programs can revolutionize American education – and our nation’s economy. We’re seeing it right now in Brooklyn, New York, with a group of inspired, motivated young people whose dreams are now within reach.