



HELP WANTED 2012

Addressing the Skills Gap



The Institute for a Competitive Workforce (ICW) is the nonprofit, nonpartisan, 501(c)(3) affiliate of the U.S. Chamber of Commerce. ICW promotes the rigorous educational standards and effective job training systems needed to preserve the strength of America's greatest economic resource, its workforce.

Through its events, publications, and policy initiatives—and drawing upon the Chamber's extensive network of 3 million members—ICW connects the best minds in American business with the most innovative thinkers in American education, helping them work together to ensure the nation's continued prosperity.

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100 Years Standing Up for American Enterprise
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The U.S. Chamber of Commerce is the world's largest business federation representing the interests of more than 3 million businesses of all sizes, sectors, and regions, as well as state and local chambers and industry associations.

TABLE OF CONTENTS

Introduction
Thomas J. Donohue 4

Kentucky’s Skills Gap Reality: What Business Can Do
Dave Adkisson 5

Education, Jobs, and the American Dream: How We Got Here
Greg Cappelli 7

Creating Solutions and Pathways to Success
Richard Dreiling 9

Courage, Commitment, and Collaboration
Arne Duncan 11

Help Wanted
John Ebersole 14

At the Intersection of Business and Higher Education
William E. Kirwan 16

Closing America’s Skills Gap
Stanley S. Litow 19

America’s Skills Gap and the Need for Postsecondary Education
Jamie P. Merisotis 22

Action Required Today for Success Tomorrow
Ed Rust 24

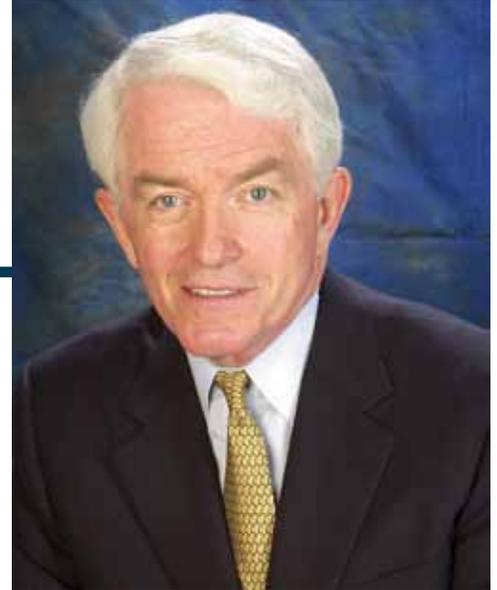
Getting America Back on Track
Thomas J. Snyder 26

Help Wanted: Applying Innovation to Education
Margaret Spellings 28

Reengineering Education
Rick Stephens 30

Help Wanted: Key Themes From Regional Roundtables 32

INTRODUCTION



One key to thriving in a competitive global economy is a properly skilled workforce that can innovate, create new products and services, and bring them to market quickly and efficiently. America remains a leader in innovation, but its workforce is falling behind. Education and workforce development systems have not kept pace with the demands of the 21st century, and we all bear the costs of this failure.

American businesses spend billions of dollars each year training their employees and pour billions more into education. Despite these substantial investments, employers continue to report that too many job seekers are unqualified for modern jobs. Basic training programs alone cannot bridge the skills gap. As a result, more than 3 million jobs continue to go unfilled despite high, persistent unemployment. By allowing these jobs to sit vacant, the United States is missing crucial opportunities to grow the economy and strengthen the recovery.

Meanwhile, our competitors are moving full steam ahead. Germany, India, Korea, and China have all made it a priority to prepare their citizens to work in the 21st century—and their economies are stronger for it. Moreover, capital and investment follow talent. Global investors and major manufacturers will go where the skilled workers are.

The choice is clear: We can act swiftly to bridge the U.S. skills gap, or we can sit back and watch our competitors prosper while our economy plods along.

So how do we bridge the skills gap?

In this report, we'll hear directly from the education and business leaders who strive to manage the skills gap challenge every day. They share with us the deficiencies in their current and future talent pools and outline their vision of what it will take for the United States to regain its footing as the most skilled workforce in the world. These leaders ultimately remain confident that we can fix our education and workforce development systems, and they are prepared to work with local and national leaders to get the job done. We hope policymakers and education leaders will join us in putting America back to work.

A handwritten signature in black ink, appearing to read 'Tom Donohue', with a stylized, cursive script.

Thomas J. Donohue
President and Chief Executive Officer
U.S. Chamber of Commerce



KENTUCKY'S SKILLS GAP REALITY: WHAT BUSINESS CAN DO

Dave Adkisson, President and CEO
Kentucky Chamber of Commerce

“Filling the skills gap is going to become more critical as more jobs are created in the economic recovery and as thousands of baby boomers retire, leaving well-paying positions unfilled.”

Nearly every discussion of creating jobs in Kentucky immediately evolves into a discussion of education and whether our workforce is prepared.

As we look at the future of Kentucky's economy and as we try to think beyond the current economic downturn, we can see the widening of a skills gap where education and skills levels of Kentuckians don't meet the supply of jobs. Filling the skills gap is going to become more critical as more jobs are created in the economic recovery and as thousands of baby boomers retire, leaving well-paying positions unfilled.

According to the Center on Education and the Workforce, by 2018, more than 60% of all jobs will require some sort of postsecondary training. Yet, nationwide a third of all students don't finish high school, and up to half of those who graduate lack the advanced literacy and math skills they need to succeed in college and/or the workforce. Only 38% of Kentucky students are college and

career ready, based on American College Test (ACT) scores, college placement tests, and students meeting career-ready academic or technical benchmarks.

Based on these numbers, it's no surprise that in Kentucky a skills gap already exists in some industries. The shortage is evident for Atlas Machine and Supply Inc., an industrial machinery company in Louisville.

Rich Gimmel, president of Atlas Machine, struggles to fill high-paying machinist positions. “I can buy gas from a college graduate making \$8 an hour, but I can't find qualified machinists who could make an average salary of \$70,000 a year. Right now, if I had a truckload of journeymen machinists show up at our front door, we'd hire them on the spot.”

Gimmel has seen the local secondary career and technical education (CTE) programs dwindle, and he's had to begin recruiting beyond the Louisville metropolitan area to try

to fill positions. His suggestion to solve the problem is to encourage activism by business leaders.

“My advice to other employers would be don’t just sit around and complain,” said Gimmel. “Talk to people who can do something about it. Talk to our education establishment, leaders in Frankfort, and lawmakers. Tell them about the opportunity that kids are missing out on.”

Kentucky’s education and legislative leaders recently got the message that student performance needs improvement to match the demand of employers. The legislature passed a law in 2009 mandating the creation of new, more rigorous standards to better prepare students to be both college and career ready. This will start the process of filling the skills gap.

Kentucky joined the national Common Core Standards Initiative, and in February 2010, the state’s leaders from K–12 and postsecondary education unanimously adopted the new standards for the classroom, making Kentucky the first state in the nation to do so. This signaled a new shared vision among education leaders, unprecedented in previous reforms in Kentucky and in many other states. Since Kentucky adopted the Common Core Standards, 44 states and the District of Columbia have followed suit.

Target goals were established along with new standards to keep the education community focused on achieving college and career readiness for all students. The first goal is to increase the average high school freshman graduation rate from 76% to 90% by 2015. The second is to increase the percentage of students who are college and career ready from 34% to 67% by 2015. These goals are not end points, although reaching them will go a long way toward narrowing the skills gap in Kentucky.

This summer, Kentucky Commissioner of Education Dr. Terry Holliday and I are traveling the state together,

visiting local chambers of commerce, Rotary Clubs, and other community groups. Our mission is to inform business and community leaders of the new, higher standards in classrooms and to ask them to stand together with education leaders when new, less flattering test scores come out and the going gets rough. With the added support of business leaders and local communities, we hope that students will be able to exceed their goals.

Businesspeople like Rich Gimmel know that business has a critical role to play in solving the skills gap problem. As he says, “When it comes right down to it, all we have to sell is what our people can do, and it is imperative that we plant the seeds now to develop future skilled employees.”



EDUCATION, JOBS, AND THE AMERICAN DREAM: HOW WE GOT HERE

Greg Cappelli, Director and CEO
Apollo Group, Inc.

“In today’s global economy there is little room to be a follower, and knowledge is the power that enables leadership. As a result, we must regain our leadership in education and training.”

The United States is losing ground. Between 1880 and 1980, we were a world leader in wage parity, productivity, and technological innovation. Our country gained, on average, about one year’s worth of education per decade. As a nation, we were out-educating and out-performing the world. But something happened, and we began falling behind other nations.

How did we get here? We have dropped from a position of leadership to 16th globally; our 15-year-olds rank 25th in the world in math, and our elementary school enrollment is 79th internationally. As we face the retirement of the baby boom generation, we’re already seeing widespread skills shortages, and by 2018 the U.S. will need 22 million new workers with college degrees.

The old model of educating only 10% to 20% of our nation at the college level no longer works. In today’s global economy there is little room to be a follower, and

knowledge is the power that enables leadership. As a result, we must regain our leadership in education and training.

The American workforce is missing the education it needs to compete in a global economy. We are, by our calculation, short more than 100 million years of education as a society. Each missing year is represented by a decision not to finish high school, not to enter college, not to stay in college, or not to return to college.

Our nation’s “missing years” of education have cost the U.S. gross domestic product (GDP) as much as \$2.3 trillion by one estimate, and threaten to harm America’s ability to compete in the global economy. If we were able to close the educational achievement gap, we could add \$400 billion to \$670 billion annually to our GDP.

For leaders in the business community, these missing years of

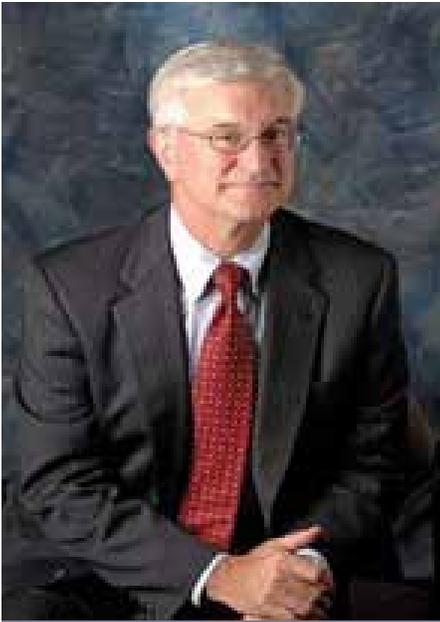
education mean global competitors may be able to deliver more appealing products and services.

For leaders in the labor community, these missing years mean less opportunity and more insecurity for their members. More construction workers will be idle as fewer hospitals add wings, fewer developers build malls, and fewer cities construct new schools. More teachers, police officers, and firefighters will face layoffs, furloughs, pension reductions, and health care cuts.

Making up those missing educational years sounds like a feat beyond America's reach. But, to put the challenge into perspective, it amounts to just one single year of additional education for each of us. Education, jobs, and the American dream are inextricably tied together. Ultimately, as a country we have an interest in finding actionable solutions to closing the skills gap, developing a national strategy for investing in human capital, and holding onto our talent.

At Apollo Group, we are exploring these solutions and related policy, technology, education, and business factors in partnership with leaders in each of these fields. We invite you to read our full report on September 24, 2012, titled *Education, Jobs and the American Dream: How We Got Here*, online at www.apollogrp.edu/workforce.

¹The sources referenced here include the U.S. Census, the Organization for Economic Cooperation and Development (OECD), Georgetown University Center on Education and the Workforce, McKinsey and Company, and Apollo calculations. Complete citations can be found in the full-length version of "Education, Jobs, and the American Dream: How We Got Here."



“As we level the playing field through educational attainment and job skills, we don’t just equalize, we elevate and prosper.”

CREATING SOLUTIONS AND PATHWAYS TO SUCCESS

Richard Dreiling, CEO and Chairman of the Board
Dollar General

A sound economy, thriving business sector, and commitment to equal opportunity are three factors that have played a vital role in developing and maintaining the United States’ position as a world leader. We must remain committed to these factors to ensure our continued global success, and to do that, we must cultivate our greatest resource—the people who live and work here.

In 1939, Dollar General was founded by a farmer’s son who had only a third-grade education. With determination and hard work, he began what has now become a successful and growing Fortune 200 company. As our company and the country have evolved, the work environment has changed dramatically. Hard work and determination remain vital but must be coupled with strong skills and a solid education.

Dollar General employs more than 90,000 people across 40 states at our stores, distribution centers, and

corporate office. We will create an additional 6,000 new jobs this year and open more than 600 stores in communities across the country.

Retail jobs are a great entry point into the workforce for many individuals. Through the retail experience, they learn basic business, customer service, and technology skills that can help them transition into higher-paying management positions within retail or transition to other sectors. Although retail is a great point of entry into the workforce, the evolution of the retail industry has necessitated that Dollar General and many other retailers require a higher level of basic skills for entry-level workers. This is true at our neighborhood stores and in our distribution centers.

Unfortunately, the business needs and skills available continue to move in opposing directions. Our current workforce does not have sufficient skilled workers to meet demand at the same time that many willing workers go unemployed.

So, while we must develop the pipeline and invest in the education of our youth, we must also begin to strengthen our commitment and investment in the educational attainment of individuals already in the available workforce.

As we invest in workforce readiness programs, we must help them align their instructional efforts to meet the growing needs of the business community. There is also a great need to increase awareness of and access to available programs for individuals seeking to elevate their literacy and basic education skills in order to be prepared for more advanced career readiness training or postsecondary education.

Horace Mann said, “Education...above all other devices of human origin is the great equalizer of the conditions of men.” As we level the playing field through educational attainment and job skills, we don’t just equalize, we elevate and prosper. During these times of tight economic constraints and widening skills gaps, we realize that, to protect our position as a world leader and ensure that our nation continues to be a land of equal opportunity, we must all work together to create solutions and pathways to success.



COURAGE, COMMITMENT, AND COLLABORATION

Arne Duncan
U.S. Secretary of Education

“Improving educational achievement for our students is not just a moral issue, it is a national imperative, to ensure the economic vitality and the national security of the United States.”

In the 21st century, more than ever before, education is a nation’s economic engine. Ensuring that U.S. workers have the skills and training they need to compete in the global marketplace is a cornerstone of an economy that’s built to last, as well as the best means to deliver on the promise of the American dream.

Right now, U.S. employers face a skills shortage that threatens our great traditions of entrepreneurship, productivity, leadership in the world economy—and a thriving middle class. Far too many students aren’t getting the high-quality education and training they need to compete for jobs in the knowledge-based economy. Over time, an undereducated U.S. population could slow the innovation that creates new industries and more jobs. And there would be stark long-term consequences for “average” performance on the world stage.

We have an education crisis in our country. Twenty-five percent of students aren’t graduating from high school on time. There are 1,500 U.S. schools that produce around half of our nation’s high school dropouts—schools where fewer than

60% of freshmen are still enrolled as seniors. More than one-third of all first-time students who enter four-year colleges and two-thirds of all first-time students who enter community colleges fail to graduate within six years, and more than one-third of college students need remediation. Improving educational achievement for our students is not just a moral issue, it is a national imperative, to ensure the economic vitality and the national security of the United States. For example, 75% of U.S. citizens ages 17 to 24 are not qualified to join the military because they are physically unfit, have criminal records, or have inadequate levels of education. An undereducated population poses an especially urgent threat to the defense and aerospace industries that contribute to our military readiness and our security sector.

We have to act boldly and decisively to turn the tide. That’s why, soon after taking office, President Obama established an ambitious goal for our nation: By 2020, the United States will once again have the world’s highest proportion of college graduates, and the world’s most competitive workforce. And he has

called on every American to complete at least one year of postsecondary education or training.

To achieve this, we need to engage everyone—parents, teachers, principals, students, business and civic leaders, nonprofits, and the entire community—in a variety of strategies to increase our educational productivity and give us the means to bring postsecondary education or skills-rich training within reach of every American. It requires courageous action to make the changes that will truly prepare today’s students to achieve, and narrow the gap that leaves too many students without the skills they need to compete.

Over the past three years, our nation has made tremendous progress in education reform. Through the leadership of governors and chief state school officers, 46 states have raised standards for teaching and learning that are aligned with college and career expectations. They are game-changers in education. For too long, students didn’t understand until they graduated that they weren’t prepared to do college-level work or succeed on the job. These standards level the playing field by setting a high bar for everyone—one that prepares all students for high-wage, high-skills jobs.

It’s important to emphasize that these standards are designed to prepare students for both college and careers. Too often, people focus on college readiness, and career readiness is an afterthought. Setting a high bar for career readiness is essential because many students may not pursue the traditional path to a four-year degree. A career-ready student must have the knowledge and skills that employers need from day one. In an increasing number of trades and professions, new employees need critical thinking and problem-solving skills, the ability to synthesize information, solid communication skills, and the ability to work on a team. They will also need to advance their careers through postsecondary education,

whether it’s a two-year degree, a professional certificate, or advanced coursework. The students who succeed in those programs most quickly will be those who can take college-level courses without remediation.

Progress at the local level is happening because of bold leadership at the state and local level. At the U.S. Department of Education, our job is to encourage and support K–12 reforms and make college affordable so all students can attend college and eventually earn a degree or market-recognized credential. Since 2009, the Obama administration has devoted significant resources to K–12 reform and made historic investments in financial aid. Thus far, through the Race to the Top program, 21 states and the District of Columbia are pursuing comprehensive efforts to reform their schools and create early learning programs that prepare children for success in elementary school. To help students pay for college, we’ve worked with Congress to raise the maximum Pell Grant and make these grants available to more than 9 million students—a 50% increase since 2008. What’s more, the administration has offered graduates new options to make student loan payments manageable and encourage them to enter public service careers such as teaching and public safety.

Given the strategic role community colleges play in addressing the nation’s workforce development challenges—including enabling displaced and returning workers to “skill up” for new careers—we’re making available \$2 billion in grants, in partnership with the Department of Labor, to help community colleges and others develop or expand programs that train skilled workers in direct partnerships with business. We’ve also released an ambitious blueprint to leverage \$1.1 billion in funding and usher in an era of rigorous, relevant, results-driven career and technical education—meeting the needs of business and industry, and giving students clear pathways to well-paying, in-demand occupations.

All these efforts will prepare the children and young adults of today with the skills they need to succeed in today's workplace. But this nation can't transform our education system and help all our students develop the skills they need to compete unless the private sector is deeply involved. We need your significant and sustained leadership.

This publication includes commentaries by some of the nation's finest thinkers and leaders in business and education, and highlights a number of innovative programs that are already helping to prepare college- and career-ready students across the nation. I commend all of these efforts, and encourage every company represented by the U.S. Chamber of Commerce to engage actively in this agenda. America's employers have a vital role to play—promoting high-impact approaches, developing new initiatives, and collaborating with education and community partners—in order to propel excellent, evidence-driven, publicly accountable education reform.

The challenges facing our nation are significant and they are urgent. Nevertheless, I am confident that together—with courage, commitment, and collaboration—we can meet and master them. Together, we can extend America's great tradition of excellence and innovation, secure our nation's strength and prosperity for generations to come, and help students succeed in school and in the workplace.



“...[O]ur current rate of unemployment and the skills gap reported by the Chamber of Commerce won’t be reduced until we wake up to the fact that we can’t compete in a knowledge-based, global economy with a falling rate of degree attainment among our workers.”

HELP WANTED

John Ebersole, President
Excelsior College

As we move ever closer to this fall’s presidential election, we hear more and more about our country’s high rate of unemployment. As this is written, it stands at 8.2% nationally. This means that more than 10 million Americans do not have a job (based on a civilian workforce of approximately 132 million—Bureau of Labor Statistics (BLS) data as of July 6, 2012). Yet, the Institute for a Competitive Workforce at the U.S. Chamber of Commerce reports that there are some 3.2 million jobs that employers can’t fill—today. What’s going on?

If we look more closely at the BLS data, we can see that our unemployment problems may have more to do with education than with the current state of the economy. No doubt, a great number of jobs have been lost. Many, especially those requiring little skill or education, will never return, according to Anthony Carnevale at Georgetown University’s Center on Education and the Workforce (see *Help Wanted: Projections of Jobs and Education Requirements Through 2018*, June 2010).

As job creation resumes, Carnevale estimates that more than 60% of

new positions will require some level of postsecondary preparation, and 33% will require a bachelor’s degree. Although the recession is accelerating the transition, future jobs will become increasingly dependent on postsecondary education.

Even for craft positions, employers increasingly seek new hires with more advanced skills and knowledge. As an example, John Lotshaw of Huntington-Ingalls Industries, a Gulf-based shipbuilder, has noted that “While entry-level craftsmen (welders, pipe fitters, carpenters) don’t spend much time on computers (initially), as people move up the ranks, they spend more and more time with them. Someone in a skilled trade who also knows computers is an all-around, valuable player.”

It is becoming clearer that a strengthening economy will be dependent upon a supply of skilled and educated workers. For those with a bachelor’s degree, the unemployment rate now is 4.1% (BLS data), a level that nears full employment. Having the “sheepskin” may be worth the cost, after all.

It is estimated that 86 million members of America's workforce (about 65%) are without a degree. This, at a time when the BLS tells us that "all of the increase in employment over the past two decades has been among workers who have taken at least some college classes or who have associate or bachelor's degrees" (*Back to College*, BLS Spotlight on Statistics, September 2010).

To sum up, our current rate of unemployment and the skills gap reported by the Chamber of Commerce won't be reduced until we wake up to the fact that we can't compete in a knowledge-based, global economy with a falling rate of degree attainment among our workers. Without an educated workforce, we will see a permanent decline in both our economy and our standard of living.



"...[W]e must recognize our obligation to ensure that our graduates are prepared to meet the rigorous challenges of the new economy armed with the knowledge and skill they need to compete in an ever-changing and increasingly competitive workplace."

AT THE INTERSECTION OF BUSINESS AND HIGHER EDUCATION

William E. Kirwan, Chancellor
University System of Maryland

A recent Bloomberg news report (July 25, 2012) laid out one of America's greatest—and one of its least reported on—challenges in stark terms: Despite almost 13 million Americans looking for work and 8 million more settling for part-time jobs, almost half of U.S. employers surveyed by Manpower say they can't find workers to fill positions.

The U.S. Department of Labor underscored this same challenge, stating that even as the "Great Recession" stubbornly maintains its grip on our economy, companies have reported more than 3 million job openings every month since February 2011. Additionally, college students are not graduating with the essential 21st-century "Deeper Learning" skills, such as critical thinking, analytical reasoning, and ability to effectively communicate and work in teams, which are prerequisites for a successful workforce in today's global market.

As a nation we must address this "skills gap," which is especially acute in science, technology, engineering,

and mathematics (STEM) and other high-demand fields. Our ability to realign educational outcomes with these critical 21st-century skills will be one of the dominant issues that will ultimately determine America's competitiveness over the next several decades.

Neither the business community nor higher education has the wherewithal to alleviate this problem on its own. However, business and higher education working in tandem, along with adequate support from both private foundations and federal and state governments, can meet and master this challenge. In doing so, we can ensure that the United States remains the world's leader in creativity and innovation, and the leader of the knowledge economy.

I recently completed my one-year term as chair of the Business-Higher Education Forum (BHEF), with Wes Bush, chairman, chief executive officer (CEO), and president of Northrop Grumman serving as vice chair. BHEF is the nation's preeminent

organization of senior business and higher education executives—Fortune 500 CEOs and presidents or chancellors of leading research colleges and universities—dedicated to creating and advancing innovative solutions to our nation’s education and workforce challenges. BHEF operates at the intersection of business and higher education—where we must focus in order to align education outcomes and workforce needs.

In an ambitious effort to address the misalignment issue in a fundamentally different and systematic way, BHEF has launched a series of scalable, evidence-based, regional workforce projects across the country. This new model of “innovation partnerships” explicitly addresses recommendations made by the President’s Council of Advisors in Science and Technology (PCAST). BHEF brokers and supports deeper collaborations between business and higher education, exposing diverse cohorts of students to life beyond the classroom in high-demand fields.

In one of the inaugural projects, the University of Maryland, College Park—the University System of Maryland’s (USM) flagship campus—and the Northrop Grumman Corporation will establish a landmark honors program designed to educate a new generation of cybersecurity professionals. The unique program, Advanced Cybersecurity Experience for Students (ACES), will immerse undergraduate students in all aspects of the field to meet growing needs in the nation and in Maryland. Students enrolled in the program will have the option of interning with Northrop Grumman and preparing for security clearance. ACES will produce skilled, experienced cybersecurity leaders highly sought by corporate and government organizations. Over time, through distance education programs, online course offerings, transfer of students, and competitions, universities across the USM will participate in the program.

This is just one example of the type of innovative and outside-the-box programs that will ultimately help close the skills gap. BHEF is launching 12 regional projects, including the ACES program, at about 35 campuses in the first cohort, and anticipates adding others in subsequent years. As these programs take root and grow, and as other business-higher education partnership efforts are established and launched, America’s future will become more prosperous and secure.

In addition, university systems and individual institutions nationwide are undertaking efforts to attract, retain, and graduate the knowledgeable, highly skilled students required in today’s innovation economy. The USM where I serve as chancellor is active on a number of innovative fronts.

A key component of the USM’s strategic plan calls for increasing degree production in the STEM disciplines by 40% by 2020. Through a variety of partnerships—funded by the National Science Foundation, the U.S. Department of Education, and others—we are aggressively reaching out to the K–12 community to improve teacher education, student learning, and student interest in the STEM disciplines. In addition, we are working to improve the retention rate of STEM majors by embracing exciting new teaching and learning strategies. Our “course redesign” efforts employ models that involve active and collaborative learning, better utilize technology and online tutorials, and provide immediate feedback for students. These techniques, which speak to this first generation of “Digital Natives,” are allowing us to boost student success and improving retention. We are investing several million dollars across the USM with the goal of redesigning all of our lower-division STEM courses. Ultimately, we anticipate improved learning outcomes, higher STEM retention rates, and a cost reduction as high as 20% per course.

I must stress that I am not advocating that skills development or job training become higher education's exclusive mission. Education for its own sake is central, and an understanding of history, an appreciation of art and literature, and an awareness of world cultures are indispensable aspects of a civilized society. However, we must recognize our obligation to ensure that our graduates are prepared to meet the rigorous challenges of the new economy armed with the knowledge and skill they need to compete in an ever-changing and increasingly competitive workplace.



“This won’t be the first time that America has stepped up its game to meet the demands of a changing world.”

CLOSING AMERICA’S SKILLS GAP

Stanley S. Litow
 Vice President of Corporate Citizenship
 & Corporate Affairs, IBM
 President, IBM International Foundation

Fearing the Future

In the November 2011 State of Young America poll conducted by Young Invincibles and Dēmos, half of Americans aged 18 to 34 surveyed said they expected to be worse off than their parents. Even more disconcerting, more than three-quarters of those surveyed believed that the American middle class was disappearing. The bleak moods behind these findings are unsettling at best—alarming at worst—and are underscored by the latest Center for Labor Market Studies research indicating that teen and young adult employment rates have dropped to a new post-World War II low. In fact, teen and young adult employment rates have declined 1% per year for the last 23 years.

How can we allow young adult employment rates continue in freefall when high school graduation rates have increased nearly 20% in some states over the past 10 years? For starters, high school training alone (which

typically leads to jobs averaging only about \$15 per hour) is no longer an adequate preparation for a middle-class career. Twenty-first century employers demand employees with work skills coupled with substantive and relevant academic training. And while the solution to this problem would seem straightforward—connect education to jobs by training our young people for in-demand careers—the task of closing the skills gap has been daunting.

The good news is that there is clear opportunity. The U.S. Bureau of Labor Statistics estimates that 14 million new jobs will be created over the next 10 years for holders of associate’s degrees. The bad news is that right now our community college graduation rates have stagnated at 25%, with graduation rates in some cities as low as single digits. The reasons for these low success rates are that only 45% of high school graduates are prepared for college-level work in mathematics, and only 30% have what it takes to pursue

college-level work in the sciences. The future of U.S. competitiveness—and the prospects for a generation of America’s young adults—depends on our ability to turn this situation around.

Fighting Back

This won’t be the first time that America has stepped up its game to meet the demands of a changing world. Throughout the 20th century, we strengthened our commitment to education and training as labor markets required more sophisticated workers. Education beyond the eighth grade was optional through the early part of the century, when skilled (and even unskilled) laborers could earn enough to participate fully in the economy. By the middle of the century—and after World War II—we grappled with and instituted a change by raising the bar for mandatory education. High school graduation became the common standard, with a new generation taking advantage of the G.I. Bill, another major change that allowed large numbers of people to pursue postsecondary education. This change in U.S. policy helped create a large and stable middle class, and ushered in the longest period of economic competitiveness and sustained prosperity in American history.

Change is required once again, as the need to adapt our educational requirements to marketplace demands has never been more pronounced. Perhaps now is the time to bring to scale the innovative grades 9 through 14 schools model—pioneered in New York City and being replicated in Chicago—that offers desperately needed innovation and change to tackle high unemployment and rejuvenate the sagging middle class.

Connecting Education to Jobs

In the fall of 2011, the New York City Department of Education, The City University of New York, and

IBM opened the Pathways to Technology Early College High School (P-TECH) in Brooklyn’s Crown Heights neighborhood—among the city’s most challenging and distressed. This innovative grades 9 through 14 school will confer both the high school diploma and an associate’s degree in technology, the culmination of a rigorous academic program in which the curriculum maps to skills required for entry-level positions with IBM. P-TECH is not a charter school, and does not have special admissions requirements. It is located at the former site of another school, and therefore did not require new construction or a special budget.

P-TECH’s unique curriculum was developed through close collaboration among the public schools, higher education, and the private sector. This involved mapping skills required for entry-level, high-paying jobs at IBM with the curriculum required to meet academic standards. To help achieve these high standards, each P-TECH student works with an IBM volunteer mentor for academic reinforcement and guidance in the development of workplace skills. And as students in P-TECH’s inaugural class prepare to enter 10th grade this fall, they look back on a year of significant achievement:

- P-TECH had a 95% attendance rate, among the highest in New York City.
- Although one-third of P-TECH’s students entered ninth grade with significantly lagging reading scores, nearly 100% earned promotion to 10th grade.
- Many of P-TECH’s rising 10th graders began taking college courses during their summer recess, and all will have college courses integrated into their 10th grade curricula.

A critical component of the P-TECH model is that every student who finishes the six-year program becomes “first in line” for jobs at IBM. Inspired by the success of

New York P-TECH, Chicago Mayor Rahm Emanuel backed the opening of five P-TECH model schools in September 2012 in partnership with IBM, Motorola, Verizon, Cisco, and Microsoft.

At the national level, U.S. Secretary of Education Arne Duncan has released a Blueprint to Transform Career and Technical Education. Secretary Duncan's game plan calls for all CTE schools to be developed and funded in accordance with core principles of the P-TECH model. Those principles include strong public-private partnerships between educators and industry, a link to labor market data showing real employment growth, and innovative models that define success by connecting skills to career advancement. The Blueprint also calls for reauthorization of funding for the Carl D. Perkins Vocational and Technical Education Act—the core economic incentive for CTE programs across the nation.

The federal Blueprint clearly is a positive step, and will go a long way toward encouraging large-scale reforms to link education more directly to real jobs. But leaders such as New York Mayor Michael Bloomberg and Chicago Mayor Rahm Emanuel—along with their partners from the public schools, higher education, and the corporate sector—already have demonstrated that Congressional consensus is not required to affect educational reforms.

Business and government leaders with the will to embrace reform, a commitment to change, and the foresight to help young adults lead productive lives and contribute to their communities, can act now. IBM created the STEM Pathways to College and Careers Schools Development Guide to provide step-by-step instructions that any city or state can follow to create its own grades 9 through 14 model school in collaboration with interested corporate partners and motivated

higher education providers. These innovative programs are recipes for success for our next generation, for the communities in which they live, and for a nation that needs their skills.



AMERICA'S SKILLS GAP AND THE NEED FOR POSTSECONDARY EDUCATION

Jamie P. Merisotis, President and CEO
Lumina Foundation

“We have reached a critical crossroads when it comes to funding higher education in this country because our usual approaches—increasing tuitions on families and asking governments to invest an increasing proportion of their declining revenue base—just aren’t working anymore.”

The Great Recession that began in late 2007 revealed several shortcomings in America’s workforce, and our growing skills gap was among the most alarming. Now, a new study from the Georgetown University Center on Education and the Workforce, co-funded by Lumina Foundation, shows that workers without some form of postsecondary education are increasingly being left behind. The gap threatens our ability to compete in the global economy and shows that policymakers, employers, and institutions must do much more to produce the skilled talent our nation needs.

According to the Georgetown study, nearly four out of every five jobs destroyed by the recent recession were held by workers with a high school diploma or less. And throughout our so-called recovery, this group has lost another 230,000 jobs. By comparison, workers with a bachelor’s degree or better have led the way, with an increase of 2.2 million jobs since the recession began.

That’s good news for those completing college, but unfortunately there simply aren’t enough Americans with degrees beyond high school to meet our current, or future, workforce needs. A quick scan of online job classifieds in Chicago shows that there are currently more than 2,600 open positions in the engineering, media, and technology-related fields alone. Many of these positions have been open for months, and similar challenges can be found in nearly every metropolitan market across the country.

The skills gap in America is real, and it is growing. In the 1970s, fewer than 30% of jobs in the United States required any education beyond high school. Now, it is estimated that by 2018, 63% of all jobs will require some form of postsecondary education or training. This means employers will need 22 million new workers with postsecondary degrees. And at our current rate of college attainment,

we will fall short by 3 million workers without a dramatic change in course.

That dramatic course change must involve addressing the issues of college affordability and rising student debt. We have reached a critical crossroads when it comes to funding higher education in this country because our usual approaches—increasing tuitions on families and asking governments to invest an increasing proportion of their declining revenue base—just aren't working anymore.

It's time for a thoughtful redesign of the postsecondary system. The path forward must be student-centered and focused on better serving the growing number of low-income, first-generation, minority, and adult students across America. We must also bring more attention to postsecondary certificate programs and embrace the notion that a one-size-fits-all approach will fail in allowing us to teach students the workforce skills they'll need to compete in this evolving marketplace.

The latest Georgetown study found industries that had lower proportions of jobs requiring postsecondary education, such as manufacturing and construction, were the ones hit the hardest in the recent recession. By comparison, nearly 1.5 million jobs were added in industries with higher concentrations of college and higher learning-educated workers.

The Great Recession exposed our need for a more educated workforce and a new system that can deliver it. If we intend to compete in the global economy, we have to find a way to educate more workers for skilled jobs and prepare them for the working world. Employers prefer individuals who have gained specialized and broad knowledge, intellectual skills, applied learning, and civic learning through some type of high-quality educational experience. This could be the most serious challenge that we face as a nation, and it's time for policymakers and business leaders to take notice.



“A Nation at Risk’ emphasized that “history is not kind to idlers.” Wise words. As business leaders, we must not be timid. We must make our voices heard.”

ACTION REQUIRED TODAY FOR SUCCESS TOMORROW

Ed Rust, CEO
State Farm Insurance

As millions struggle to find work, millions of jobs go unfilled because applicants lack the skills or knowledge required in today’s world of work. The consequences of this growing skills gap are becoming readily apparent. Whether we respond constructively to these realities, or fail to act, the consequences are real and closer than they appear.

“A Nation at Risk,” the 1983 report published by the National Commission on Excellence in Education, stated, “What was unimaginable a generation ago has begun to occur—others are matching and surpassing our educational attainments. If an unfriendly foreign power had attempted to impose on America the mediocre educational performance that exists today, we might well have viewed it as an act of war. As it stands, we have allowed this to happen to ourselves.”

Indeed, an escalating number of students in other countries are completing high school with the necessary skills to immediately enter the workforce or pursue higher levels of education. Countries previously considered to be emerging

economies have overtaken us in terms of the percentage of young people entering the workforce with the skills to be productive and competitive in today’s rapidly evolving global economy. Studies find on average that young Americans entering the workforce are not as well prepared academically as older Americans who are approaching retirement. While some baby boomers may be delaying retirement because of current economic issues, an estimated 40% of the current workforce is expected to turnover in the next five years.

Clearly, we are facing an enormous skills gap in our workforce, more pronounced than any of us have seen in our lifetimes. Fortunately, the problem is not without remedy. There are schools developing solid records of change and success as they focus on academic standards, assessments, and accountability surrounded by truly professional teacher development. We must be “all-in,” working together to provide a world-class, competitive system of education through a multifaceted approach. Yet time is not on our side. We must act, and act now to expand on these pockets of success.

As a nation, we must take steps to close the gaps in the academic performance of tomorrow's leaders and workers while not slowing our future growth or causing harm to the overall economy or society.

"A Nation at Risk" emphasized that "history is not kind to idlers." Wise words. As business leaders, we must not be timid. We must make our voices heard. We must draw the clear connection between education and the world of work. We must partner with public officials and education leaders across the country. We must step forward through collaboration and shared learning. We must be engaged in the effort, providing critical support as tough but necessary change is implemented.

Each of these topics—education, jobs, the economy, and the growing skills gap—is often viewed as an independent issue. As business leaders, we know they are clearly interrelated. If we are not successful in closing the skills gap, the population of skilled labor necessary to function in a 21st-century economy will dwindle, our economic strength will decline, and future opportunities will dim. It is only when we help others see how all the pieces are connected that we will begin to scale meaningful solutions to these problems in the years to come. Business leaders must take their critical seat at the table.



“Getting America back on track begins with a new narrative about what’s available to our students after high school.”

GETTING AMERICA BACK ON TRACK:

CHANGING THE NATIONAL CONVERSATION ABOUT COLLEGE OPTIONS MAY BE THE KEY TO CLOSING THE SKILLS GAP

Thomas J. Snyder, President
Ivy Tech Community College

When faced with a challenge as daunting as our nation’s skills gap, it’s tempting to believe the solution lies in broad, sweeping initiatives requiring significant investments of time and resources—and it’s true that there are few easy answers. However, one key to closing the gap may require little more than a simple shift in our thinking.

I’ve come to believe that one of the issues holding our nation back when it comes to workforce development is our somewhat incomplete understanding of the options that students have after high school. We perceive it as a two-track system, with the choices being either immediate entry into the workforce or enrollment at a four-year residential college. This omits, of course, several worthy options—including the community college.

There’s a good reason why our vision is limited in this way: At one time, the two-track system was a reality. Everyone was assured the promise of a remunerative, fulfilling career,

with those entering the workforce immediately after high school able to do very well, even if their earning potential wasn’t quite equal to that of most college graduates. Our workforce needs were also satisfied, since a high school diploma was an adequate prerequisite for many jobs. A two-track system was enough, in short, to get our economy where it needed to go.

Fast-forward to 2012, and it becomes clear that the two-track system is nothing more than a memory—and a misleading one at that. The track from high school to the workforce has quite simply become a dead end as technology and other factors have led employers to require new skills. According to a recent report from the Georgetown Public Policy Institute, for example, those with no education beyond a high school diploma lost 5.6 million jobs from December 2007 through December 2009, the period generally believed to be the global recession. But even during the subsequent period of

recovery, this same group lost an additional 230,000 jobs. Does the end of a high school diploma as a viable start to a career, however, mean that the only track remaining is a four-year college degree? Absolutely not. During the same period of recovery in which those with no education beyond a high school diploma lost 230,000 jobs, those with a two-year associate's degree or some college experience gained 1.6 million jobs. It appears that reality has caught up with something long known by those at community colleges: There is another way. The two-track system has been replaced by something much more complex, with many of the best opportunities existing somewhere between the high school diploma and the bachelor's degree. This realization comes at a critical time for our nation, because the community college also offers ready solutions to some of our greatest higher education challenges.

Community colleges provide unmatched affordability at a time when higher education is drifting beyond the reach of most middle-class families. Consider that the average cost of a four-year residential college experience is \$69,000, and the average annual household income is approximately \$50,000. Is it any wonder that 2010 college graduates left school with an average debt of more than \$25,000?

Community colleges provide “tracks” that are more reflective of today's workforce needs. While our economy certainly benefits from having a workforce prepared with bachelor's and advanced degrees, we also need workers equipped with the two-year associate's degrees and short-term certificates that community colleges confer. In fact, these may actually be better options for many workers: In 2010–11, for example, those with an associate's degree earned more than those with a recent bachelor's degree in 38 of 92 counties in my home state of Indiana.

The open-access community college model makes higher education accessible to a much broader population.

We will not close the skills gap by restricting college enrollment to the few. The community college is our best chance of improving the skills of a critical mass of U.S. workers.

In Indiana, we are fortunate in that these attributes are well understood, and that Ivy Tech Community College is seen as integral to closing the skills gap. We have a seat at the table, working alongside other colleges to innovate across the higher education continuum. Our position, however, seems somewhat unique among American community colleges—and more the exception than the rule.

The reality is, we are still limiting ourselves to a two-track vision, and therefore limiting our possibilities. It's time to insist that the community college becomes better represented in the national conversation, because the benefits inherent in doing so will be wide ranging. A more diverse population will see higher education as within its reach. More employment candidates will emerge, leading to greater economic growth. Our economy will benefit further from lower levels of student debt and higher earnings. Best of all, we will give middle-class families hope for a brighter future even when the four-year residential college experience is impractical or out of their reach.

Getting America back on track begins with a new narrative about what's available to our students after high school. Their future depends upon it—and so does ours.



“We must ensure that education systems deliver, and we must hold ourselves accountable for the results.”

HELP WANTED: APPLYING INNOVATION TO EDUCATION

Margaret Spellings, President
U.S. Forum for Policy Innovation, U.S. Chamber of Commerce

The late Steve Jobs of Apple, Inc., by any measure one of the greatest of American innovators, once noted that “innovation distinguishes between a leader and a follower.” As home to the most prolific innovators in the world, the United States has long been not just a leader, but the leader in the global economy. From the Wright brothers’ first flight at Kitty Hawk to finding a cure for polio, to inventing the Internet and putting Neil Armstrong on the moon, America has led the world in breakthroughs and advances that have changed the world.

But a host of alarming indicators suggest our position of global primacy is slipping—giving way to a significant skills gap. Americans are attaining college degrees at a slower pace than 15 other industrialized countries. The Center for the Next Generation reports that by 2030, China will have 200 million college graduates—more than the entire U.S. workforce. The same group finds that more Americans think

the “next Bill Gates” will come from China or India than from the United States.

As president of the Forum for Policy Innovation at the U.S. Chamber of Commerce, I hear what businesses are saying. Americans are poorly trained for the demands of the skilled jobs they need to fill, across the board—from welders, manufacturers, and machinists to all varieties of scientists, mathematicians, and engineers.

We rightly point to education as critical to addressing the skills gap. But if we want America to be a great innovator, then innovation must also drive how we prepare the next generation of American entrepreneurs, visionaries, citizens, and patriots.

Search on the phrase “secrets of innovation” and you will see the common threads that define innovative people and organizations. Innovators scrutinize the behavior of their customers

to develop a deep understanding of what they need. Innovators try out new ideas. The great ones aren't afraid to experiment. They are outcome-focused and ambitious about finding what works—and they stay nimble to adjust when they find something isn't working. Being insulated is antithetical to innovation. Innovators thrive on competition. They go out of their way to get diverse perspectives, to learn from other fields, to be open to change, and to attract the best and brightest.

America's history of innovation should encourage us. With all we've accomplished, surely we can close the skills gap. Unfortunately, the ways American education systems typically work don't sound much like how innovators operate.

If consumers were important in education, we'd have a wealth of new schools, new thinking, new models, and new laboratories of learning. Students and families would have information with which to make choices about their education, and there would be accountability for results because consumers would be able to vote with their feet.

If our education systems were ambitious about finding what works for students, we'd get serious about tailoring education to individual needs. We would see learners moving at their own pace and we would harness the power of technology to completely customize and change how our schools work. We would have more schools challenging the myth that some children just can't learn. If our schools were driven by innovation, we would use time and people in more strategic ways.

Higher education institutions would focus on being more customized, convenient, relevant, efficient, and affordable. They would embrace, rather than just tinker with, new models of education delivery provided by folks we at the Chamber of Commerce call "edupreneurs." They'd also be more responsive to

business as customers in need of a prepared workforce, which might help close a skills mismatch that has 3.2 million skilled jobs unfilled in an economy in the midst of a deep recession.

In the global economy, and in our increasingly flat world, the educational needs of our students are rapidly changing. To be successful, students must be able to adapt and learn quickly. They must appreciate diversity and have a deep capacity for problem solving and critical thinking.

But we must face the cold, hard truth: We will not have students college and career ready by 2020 if we say it's impossible to get them to grade level in reading and mathematics by 2014. When I served as White House Domestic Policy Advisor and U.S. Secretary of Education, we made progress under No Child Left Behind. Achievement rose, especially for those too often left behind: poor, minority, and special education students. In reading, for example, 9-year-olds made more progress a decade than in the previous 28 years combined. But the achievement gap persists.

Closing the gap is, in part, a matter of will. The United States isn't going to be an international leader if it departs from the promise of serving every child, everywhere. Turning back the clock, as we are seeing now, to the days when we set different standards for kids based on the color of their skin or how much money their parents make isn't going to raise America's international standing. With an education and a dream, every American can make his or her own success.

But that ambition isn't enough. If we are going to educate the next generation of American innovators, we must tap the intellect and ideas of every possible sector. We must embrace new ways of doing business in our schools. We must ensure that education systems deliver, and we must hold ourselves accountable for the results.



“We need to think beyond the classroom, because a classroom education by itself is not enough to prepare the workforce of the future.”

REENGINEERING EDUCATION

Rick Stephens

Senior Vice President of Human Resources and Administration, The Boeing Company
Chairman, Aerospace Industries Association
Workforce Steering Committee

High-tech manufacturing companies like Boeing are concerned about the United States’ ability to sustain its leadership role in technology and innovation. The state of American education—and even the academic rigor required to earn an engineering degree—has become a frequent talking point at the national level. Some even mistakenly theorize that our students are not up to the challenge of studying engineering, math, and science because it’s just too hard. The answer to this national crisis lies not in changing the engineering, math, and science curriculum but in changing learning environments and how these subjects are taught.

What difference will this make? Plenty. Over the past six years, the number of engineering enrollments in U.S. universities has increased about 83,000, to slightly more than 450,000. Yet the annual number of engineers graduating from U.S. engineering schools has remained relatively flat, averaging about 74,500 during the same time

span. This trend is particularly alarming because despite about 8% unemployment nationwide, the skills needed by high-tech industries are expected to outpace the supply, especially as seasoned and skilled workers retire and insufficient numbers of capable workers are being prepared to replace them.

Right now half of the students who show up for the first year of engineering school graduate four years later—in other words, about a 50% yield. But some universities are achieving an 85% yield. And if we were able to get an 85% yield on all engineering curricula, we’d have about 110,000 engineering graduates each year, much closer to what we need in this nation to narrow the skills gap and ensure future competitiveness.

Those engineering schools that are succeeding in graduating more students tend to follow four simple yet highly effective best practices. Incoming freshmen are assigned to a professor who mentors and guides

students during the transition into college. Engineering professors teach two of the highest dropout courses for engineering students—mathematics and physics—and emphasize practical application versus pure theory. Freshmen are assigned hands-on engineering projects so they can experience solving problems and working with customers. And schools continue mentorship and guidance throughout the undergraduate experience to ensure that curriculum, internships, and other experiences effectively support selected majors.

Students learn best by doing, not rote memorization, and experiential learning delivers skills training that is directly transferrable to the workplace. Experiential learning programs also enable students to see themselves as future innovators and even entrepreneurs. And further integrating classroom learning with practical, real-world experiences not only inspires imagination and innovation but also creates a career-ready workforce able to fill the current and future demand for technical workers.

We need to think beyond the classroom, because a classroom education by itself is not enough to prepare the workforce of the future. Boeing's partnerships with two-year vocational schools to create hands-on career pathway programs enable workers to gain the skills needed for in-demand, cutting-edge aerospace manufacturing jobs. And programs like FIRST Robotics—where students and their mentors build complex robots—not only teach technical skills but also develop important life skills like critical thinking, leadership, and teaming. These are but two examples of how success is being achieved through hands-on, real-life projects and experiences.

We also need to get back to basics and reinforce the importance of role models, mentors, and incentives and motivations to work hard. We need parents, caregivers, teachers, media, and others to emphasize the importance of engineering, math, and science so more young people

are motivated and inspired to pursue technical careers. Finally, we need to ensure that education policies and programs incorporate outcome-based performance measures so we can adjust in response to the data we see and continue to provide lifelong learning opportunities, including retraining, so more of our citizens enter the workplace with the skills that industry needs.

Nothing is more fundamental to sustaining our ability to compete and win in a global economy than a strong pipeline of skilled workers. As technological advances accelerate across all industries, our nation will face greater challenges in finding workers who will provide the creativity to drive growth and a competitive advantage. Through a combination of education reform and real-world learning, we can narrow the skills gap and ensure continued innovation and sustained prosperity.

HELP WANTED: KEY THEMES FROM REGIONAL ROUNDTABLES

Overview

While the country has high unemployment, employers cannot find skilled workers. The reason: The country's higher education and workforce development systems are broken. These systems are not producing the skilled workers that employers need.

There are many reasons for this: Educational institutions don't necessarily know the skills needed, or don't care, focusing on "education" instead of readying students for the workforce. Higher education institutions have to spend significant resources on remediation; don't measure outcomes; don't view employers as customers; and aren't efficient, transparent, or innovative. Few students focus on the return from their education investment. They study what they are interested in as opposed to subjects that will provide valuable skills needed by employers.

And workforce development programs have not been a solution. These programs are fragmented, bureaucratic, and focus on training unemployed, low-skilled workers, rather than filling jobs.

Employers and workforce development experts see several potential solutions. Higher education institutions need to better understand the skills that employers need. Students need to be aware of different educational and career options so they can develop skills that will prepare them for good, in-demand jobs. Technology can be used to deliver education more effectively and efficiently; new ways of assessing and credentialing need to be developed

that focus on skills and not credit hours; and new ways of allocating funds that focus on outcomes are needed.

Making changes in higher education and workforce development won't be easy. There are entrenched parties and strong politics. But as one participant said, "The country with the best workforce will win." Since today's higher education system and workforce development system aren't working, for America to win, innovation and changes are needed.

Context

In the spring and summer of 2012, the Institute for a Competitive Workforce conducted regional retreats in Las Vegas, Chicago, and Atlanta. These retreats brought together 50 business leaders from across the nation and most industry sectors, including leaders from both major employers and small businesses, to examine the following:

- The workforce skills and capabilities that employers need.
- Deficiencies in the postsecondary education system.
- Policy recommendations addressing these deficiencies, with a focus on improving return on investment and productivity, transparency and accountability, and innovation.
- The current workforce development system and recommendations to improve it.
- Participants offered perspectives and shared lessons and success stories.

Today's Workforce

There is a significant gap in the skills that employers need and what is supplied by today's workforce.

There is a significant and growing skills gap in the United States, which many employers see as a looming crisis. Even with high rates of unemployment, there are millions of unfilled jobs. These jobs remain open primarily because while there are large numbers of unskilled workers, employers can't find enough qualified people with the right skills to fill those positions.

“Welders are not Ph.D.s in philosophy, but jobs await.”

—Retreat participant

Open positions. When asked which positions remain open, retreat participants answered—

- Jobs requiring a STEM education. Employers are having a very difficult time filling any positions requiring education in science, technology, engineering, or math. In particular, there are shortages of engineers.
- Other professional positions. Employers also have difficulty filling software engineer positions and other information technology positions. There also are too few doctors, accountants, and finance people. Further, there is a shortage of qualified people to work in high-tech manufacturing.
- Trade workers. There is an acute shortage of welders, machinists, maintenance workers, and people for various allied health care roles. It was noted that individuals can have great careers in these trades that pay well.

Employers see big gaps in both hard and soft skills.

Employers can't find enough employees who have the skills they are looking for, including both hard skills—knowledge of specific subjects—and soft, professional skills.

- *Lack of hard skills.* Employers need individuals who have the appropriate education and technical skills to qualify them for the open positions described above.
- *Lack of soft skills.* Particularly lacking, even among some individuals who have the necessary technical skills, are soft skills. Many individuals today lack analytical skills, critical thinking skills, creativity, and presentation skills. They don't plan well, don't work well on projects, don't work well in small teams, and don't communicate effectively orally or in writing.

Even more important, many individuals who want to be part of the workforce lack basic professionalism and basic life skills. They aren't punctual, aren't appropriately dressed, and don't have appropriate etiquette; for example, they wear hats and answer their cell phones in the middle of an interview. They frequently fail drug tests and often have criminal records. Employers have no confidence that such individuals would represent them well in interacting with customers.

“The main complaint we get from customers is about soft skills and work ethic. How do you teach that?”

—Retreat participant

Many underlying reasons were cited for this skills gap.

When employers can't find enough qualified workers, they can't grow as fast as they need to or can't sustain current operations. As a result, the workforce ultimately affects their profitability and, in a worst case scenario, threatens their existence. Employers at these retreats provided many reasons why this skills gap exists.

Among them:

- *A mismatch.* There is a major mismatch in the type of workers desired by employers (who are increasingly high-skilled individuals) and the type of individuals seeking jobs (who are increasingly low-skilled individuals). Many of these low-skilled individuals, who are currently unemployed, are completely unqualified for the positions that employers need today and will need in the future.
- *The needs of business are not understood.* One of the reasons cited why the educational system isn't producing the types of skilled workers that employers need is that educators don't know what employers need. The argument was that employers need to do a better job of quantifying and communicating exactly what they need, and educators need to do a better job of seeking this information

“States and cities don't always know what the high-growth jobs are.”

–Retreat participant

- *A poor feeder system.* Employers don't get candidates with the skills they need, because the higher education system isn't producing them. Those in higher education say that they aren't supplied with enough qualified candidates from the K–12 system. And K–12 educators say that the problem begins in preschools and with inadequate childhood education. Each stage blames the one before it. The reality

is there are problems at each stage, and the entire pipeline is deficient. As a result, at each educational stage remediation must take place to teach students what they should have learned, but didn't, at the previous stage.

- *Lack of awareness of the options available.* Students in high school are largely unaware of the need for engineers, or opportunities to be a welder or work in the trades. Many aspire to be crime scene investigators (CSIs) based on exposure to this profession via television. They are unaware of the many opportunities that are available and don't have any pathways that prepare them for these opportunities.

“There is a lack of awareness of the options and pathways available. We don't encourage nontraditional workers and career technical education.”

–Retreat participant

- *A general perception that after high school comes college.* Many individuals who don't see themselves attending college don't even complete high school and get no further education. And many who go on to college major in some area of personal interest that provides no skills that employers value, such as oceanography or French literature, believing that any college degree will be sufficient to obtain quality employment. The result is that the focus on college prevents individuals from gaining the skills that employers need and that will help them get attractive jobs.
- *Lack of awareness of other educational options.* With the focus on four-year colleges, there is inadequate exposure to other educational options, including community colleges and career technical education (CTE). In addition to lack of awareness

among students of various educational options and careers, there remains a stigma associated with these educational options and with many careers (like manufacturing). So students avoid them, or head to college where many either drop out or get a degree without gaining valuable skills.

- *Lack of awareness of the skills needed and the jobs available.* Educators, parents, and students are unaware of the jobs and opportunities that are available. Contributing to this is that employers have not educated these groups on pathways and haven't "invited them in." An exception is Wall Street, which has aggressively targeted those with degrees in areas such as physics, providing a path for how that education can be used. But in general, manufacturers and other types of companies haven't done this very well.
- *Lack of guidance by counselors.* The perception is that educators and guidance counselors don't do a good job of making students aware of the various jobs of the future and the type of skills needs to be qualified for these jobs.
- *An aging workforce.* In many professions and at many companies, skilled workers are older (sometimes age 55 or older) and are approaching retirement. There has been a shortage of younger workers with the necessary skills to replace them. The Great Recession delayed this problem, as it kept some of these older workers in the workforce longer than they previously planned, but it didn't solve the problem.
- *Societal attitudes.* The general perception was that many young people in America are unaware and feel entitled. They don't have the work ethic of previous generations. They don't want to work in manufacturing (which they perceive as old and dirty, with no understanding of high-tech manufacturing); once they learn that being a CSI takes science and math, they give up because it is "too hard." And they simply expect that high-paying jobs will be waiting for them.
- *Cultural attitudes.* Among some lower-income groups, such as Hispanics and African Americans,

education and skill development haven't been seen as a path to success. Kids in these groups haven't seen themselves as engineers or trades people, saying, "This is not for me."

- *Lack of assessments.* There aren't standards or good tools to assess students' hard or soft skills or capabilities.
- *Lack of a national strategy.* Employers perceive that other countries (like Singapore) have a cohesive national strategy focused on types of education (like STEM) and/or particular industries. The United States has no such strategy.

"The perception is, 'I don't want to work for a manufacturing company.' They are not aware of high-tech and advanced manufacturing. The result is that hundreds of thousands of manufacturing jobs are open."
—Retreat participant

Employers see many solutions that exist to address these skills gaps.

Following the identification of various skills gaps and the reasons these gaps exist, participants were asked what can be done to address these gaps. Among the solutions offered were these:

- *Determine and communicate the exact skills needed.* A common theme was that on a local basis, more efforts need to be made to define the high-growth jobs of the present and future, and to then determine the skills that will be needed for those jobs. This should be a collaborative process including both employers and educational institutions.

Employers need to communicate the information to leaders at all levels of education, including high schools, four-year and two-year community colleges, and CTE institutions. This information needs to flow to teachers and guidance counselors who play key roles in informing students about their options.

Also, employers need to use this information to help shape curriculums to ensure that what students learn is relevant in developing the needed skills. Participants at each retreat mentioned that community colleges, for-profit institutions, and CTE institutions are the most receptive and responsive to input from employers.

- *Make students aware of options and opportunities.* Greater efforts need to occur to increase student awareness about the types of skills they need to be qualified for high-growth jobs. One way to provide exposure is by inviting speakers from various industries into the classroom to describe their careers. The challenge is sustaining and scaling this activity.
- *Focus on project-based learning.* The general perception is that the amount of project-based learning has decreased. But when done right, project-based learning helps students develop many of the soft skills that are needed. Through project-based learning, individuals have to work in teams, set goals, develop plans, deal with budgets, achieve milestones, and correct problems. They need to demonstrate teamwork and communication skills, and in doing so, develop confidence.

“There needs to be more project-based learning at colleges to prepare students for the workforce.”

–Retreat participant

Project-based learning that includes peer review can be particularly valuable, as students are highly motivated and engaged. Teachers need to be trained to oversee project-based learning.

- *Provide more internships for students.* Internships are seen as a valuable solution. They provide students with exposure to the real world, where they can see what skills are needed in various positions, and how they are used. Employers get the opportunity to see which students have good soft skills and work ethics. There are some very positive internship programs; even more are needed.

“We don’t just need more business people in classrooms; we need to bring educators into the business to see and understand the skills that we need.”

–Retreat participant

- *Provide more educator and guidance counselor “externships.”* Another way to increase awareness and exposure to the types of skills that are needed is by inviting educators and counselors to visit or work in different environments.
- *Educate parents.* Many parents are unaware of the types of skills that are required and the opportunities that exist. As a result, they provide bad advice to their children. Therefore, educating parents regarding the types of jobs that are available and the skills required for these jobs is essential.
- *Change the stigma of CTE and of various jobs/professions.* In addition to lacking awareness of various education and job options, individuals shy away from some options because they lack prestige. The stigma of attending a community college or working in an area like manufacturing needs to be changed.

Employers are investing in training.

A perception exists that businesses no longer invest to train employees. Representatives from large companies and from small businesses said this isn't accurate. Businesses are struggling to find qualified people to hire. But once the right people are hired, businesses spend considerable amounts of time and money training them. Businesspeople made the following points:

- *Large investments.* Large companies often hire tens of thousands of people each year and spend tens of millions of dollars training them. A representative from one large company described his firm's 14-week training program. A person from a smaller business described how it might take three to five years for the engineers hired by his firm to become productive.
- *Lack of reliance on government.* Employers aren't relying on the government to fund employee training or to train potential employees. They are doing it themselves.

*"We can't wait for the government to help us. We will do it."
—Retreat participant*

A representative from one major multinational company mentioned that not only does it spend a great deal training employees, through 35,000 "learning events," but it also gives away its curriculum and provides both hardware and software to community colleges to make it easier for them to develop the workforce skills that this and other companies need.

Higher Education

The discussion of higher education focused on issues related to the inefficiency in higher education, the lack of data and transparency, and the lack of innovation. Ideas were provided to improve efficiency, improve transparency and accountability, and increase innovation. In each area, it is important for the business community to help drive change.

The United States is not getting the production or return that is needed from the higher education system.

Labor market projections show that there will be a big gap: in six years the U.S. workforce will be 7 million people short, and two-thirds of those jobs will need some type of postsecondary education, ranging from Ph.D.s to certificates.

There is a great deal of pressure on higher education to—

- *Better serve employers.* If employers can't find qualified workers, their ability to grow, expand, and compete is limited.
- *Serve as many students as possible.* The system serves a large number of students, many of whom never graduate. The median graduation rate from four-year colleges—over six years—is just around 50%. For two-year colleges, it is only about 20%, and just one state has a graduation rate from two-year institutions of more than 50%; 34 states are below 25%, and 13 states are below 15%. This is a major fiscal problem, resulting in a high cost per degree.

Part of the problem is that college takes too long to complete, often due to bloated course loads. For example, a student might need 30 credits to get a degree in a STEM field, but ends up taking more than 60 credits to satisfy various requirements. This takes the student longer and costs more. Also, credits are often difficult to transfer, which adds costs and increases the time required.

- *Do more with less.* Due to financial pressures on state governments, funding for higher education is flat at best, and has been slashed in many states. Schools are under pressure to attract and graduate more students, which is keeping tuition flat or even lowering it.
- *Improve efficiency.* Today colleges and universities are not efficient. The national median cost to produce a four-year degree is about \$65,000. The median cost to produce a two-year degree is \$58,000. Currently, it costs 21 states more than \$50,000 to produce a credential at a two-year college, and eight states spend more than \$65,000 per credential.

A reason these costs are so high is the amount spent on dropouts and on remediation.

The United States is not getting the production or return that is needed from the higher education system.

Most retreat participants agreed that colleges and universities are producing too few high-quality graduates in the right fields. They agreed with the data indicating that the higher education system is inefficient and that it produces a poor return based on the amount of resources invested. Reasons given for this high inefficiency and poor returns included the following:

- *Disagreement about the purpose of higher education.* There is a big disconnect. Employers largely believe that the purpose of higher education should be to prepare individuals to enter the workforce. Academics view the primary purpose of higher education as “educating the whole person.” They are not focused on “preparing the workforce,” which they view as demeaning. As such, they don’t see employers as “customers.”
- *Many students are unprepared for higher education, and extensive remediation is required.* One participant mentioned that 80% of the higher education students in his state take classes for remediation.
- *Most students lack the perspective that higher education is an “investment.”* Many students are encouraged to pursue a major based on personal interest, without viewing their college education as an investment. They don’t understand how much debt they will be left with, what their future income will be (even if they find a job in their field of interest), and how many years it will take to pay off their debt. Guidance counselors need to encourage students to think of their education as an investment of time and money, and give them the tools to assess the return. One idea is for students, upon enrollment, to think about their job upon graduation.

“The incentives are to have people come to school. The incentives aren’t about the results.”

—Retreat participant

Taxpayers and policymakers also have not thought of higher education as an investment, though higher education receives significant government funding. Policymakers must begin to view public spending on higher education as an investment and must demand a return for that investment.

- *Colleges and universities offer everything.* All colleges and universities seem to offer a wide number of fields of study. As a result, within one state there will be multiple law schools, medical schools, and places where students can take classes in a broad number of areas.
- *The incentives of higher education are broken.* Higher education institutions are financially incented to have the highest possible enrollment. The more students, the more money. And higher education leaders want their schools to have the most prestige, the best sports teams, and the best facilities—all to attract the most students. Leaders also want to fare well in rankings,

which include measures such as selectivity. However, these measures don't include productivity, return on investment, or measures of teaching effectiveness (as there aren't good measures of these factors).

- *Time to completion is increased by students who change direction.* Several participants mentioned that a factor affecting the amount of time in college is that many students change direction. Were guidance counselors to provide more information and clarity up front, this could reduce the number of students who change direction.
- *The high cost of higher education is part of what makes the returns so bad.* One factor affecting poor returns is the high cost of college, which many people view as excessive.
- *There has not been a demand for change.* With incentives that reward universities for enrolling more students, professors who have tenure, and institutions that are highly political and slow to innovate, there are many factors that resist change and there has been little demand for change. Now that budgets are tighter, inefficiency and poor returns are more under the spotlight. Some institutions are finally seeing the need to change. The business community must be a catalyst for change.

Ideas were shared that might increase the productivity and efficiency of the higher education system.

Among these ideas were the following:

- *Improve the communication between business and education.* The goal would be for business to better communicate where jobs are and what skills are needed.
- *Have students develop a "completion plan."* This plan would be developed by incoming freshman, with assistance from guidance counselors. The plan would be based on where jobs are, would be focused, and would help guide students in picking classes. The goals of such a plan would be to improve the graduation rate, help students graduate faster, and ensure that they graduate prepared to enter the workforce in an area with jobs.

- *Have active guidance counselors.* They should help students not just with administrative matters but with making decisions about majors based on available jobs.
- *Change incentives.* Increase incentives for high-demand fields and decrease incentives for low-demand fields. This could be done by increasing or decreasing the interest rate of student loans, or by providing incentives to graduates in certain fields, such as STEM graduates.

Few data exist about the actual effectiveness of higher education.

Overall, there is a lack of data about the effectiveness of higher education. Institutions' websites have information about the beautiful campuses, the sports teams, and the rock walls—but not about educational outcomes. This is because data aren't collected and outcomes aren't measured.

Currently, many states are pouring a great deal of money into data collection, with more than 20 states collecting some form of longitudinal data. But, only four states are measuring learning outcomes. In general, the data collection is poor, expensive, and hard. The data that are collected are not synthesized so that they are useful to employers.

The discussion of data included the following points:

- *Including transfer data into college completion information.* Data are lacking about whether a student graduates after transferring. Adding data post-transfer would provide a more complete picture.
- *Employers wanting measures of program effectiveness.* They would like to see which programs produced graduates in specific areas and how many graduates were produced. They also want to see how capable these graduates are, with data around pass rates of credentialing tests and possibly even how many are still in the field five years after they graduate.
- *Having data on "student success."* This would be data showing the success of students after they graduated with a degree in a certain area. The data might

show salaries of previous graduates to help students understand the likely return on their investment based on their choice of major.

- *Requiring that colleges make data available.* For-profit schools are required to make data available, but not all institutions are. An idea would be that if an institution received government funding (which almost all do), the institution should have to share certain data.
- *Needing to collect consistent data standards.* For data to be useful, there must be apples-to-apples comparisons among states and institutions, which are not available today. This requires consistent standards for the data that are collected.
- *Using data from the Department of Education.* It was mentioned that the U.S. Department of Education collects a great deal of longitudinal data, which could be very useful. But many political issues would be thrown up to prevent the use of such data.

Ideas were shared on how data are being used or could be used effectively:

- *To guide students and parents in selecting schools and programs.* Data on education effectiveness would influence students in deciding in which program to enroll.
- *To guide employers in their recruiting.* Data on the number of graduates and the quality of graduates from different programs would be used by employers in deciding where to recruit and how to allocate their recruiting resources. These data would have value to large and small businesses alike.
- *To create “scorecards.”* An example was shared of community colleges that are using scorecards to measure progress against goals. These scorecards have been used to reallocate resources.

The general view is that business can play a key role in pushing the higher education system to use consistent data to measure academic outcomes.

Innovation in higher education has been largely non-existent.

The traditional model of higher education is not working and little innovation is taking place. But today there are lifelong learners, who get some education, enter the workforce, and then desire more education. With the changes in the workforce, there need to be changes in higher education. But any type of innovation in higher education faces significant obstacles. Reasons for the lack of innovation include the following:

“Universities have a big interest in keeping the status quo.”

–Retreat participant

- *The paradigm of “credit hours.”* The entire model of higher education is based on the idea of credit hours. But what really matters is skill development.
- *Gainful employment.* To receive federal aid, for-profit institutions must show that a certain percentage of their graduates are gainfully employed, a criterion that does not apply to traditional programs.
- *Accreditation.* Institutions of higher education must be accredited. Yet the entities charged with accreditation are incredibly conservative and slow to innovate.
- *State regulations.* Regulations serve to protect state-run institutions. In doing so, they inhibit innovation.
- *Institutional inertia.* Making any changes within academic institutions is difficult and is often resisted. For example, one state tried to decrease the courses offered by various branches of its state universities, only to be fought by unions.

There are many ideas for innovations in higher education. The challenge is implementing them.

Participants at each retreat had ideas for innovation in higher education. However, they recognized that these ideas would face opposition and would prove difficult to implement. Among these ideas were the following:

- *Decouple instruction and assessment.* Imagine a model where a student could learn on his or her own, using online tools from MIT or organizations such as Khan Academy. Then, the student could find an institution that could assess his or her competency in a specific area. Participants noted that this is beginning today. Some participants liked this model, as it enables students to be self-directed and focused on competencies and skills. Others felt that students already lack guidance, which would only be furthered by this type of “do-it-yourself” model.
- *Change the way credentialing occurs.* Today credentialing is tightly controlled by existing institutions. Participants imagined a new type of credentialing system—such as “badges”—that focuses on skills. Bringing about such a system will have to be driven by business, as colleges and universities will fight to preserve the existing credentialing system.
- *Use technology to make instruction much more efficient.* Participants believe that online learning for many courses can be much more efficient and effective. For example, participants felt that the 300-person English 101 class should become obsolete. Instead of each university in a state or in the country having a different professor conduct a different course, the best course should be identified and put online. Students can review the material at their own pace, repeating information they are struggling with as often as they need. Resources can be made available to assist students as necessary.

For many courses, this will change the paradigm of education, but it will do so in a way that improves education and makes the delivery much more efficient. This idea was enthusiastically received by most participants who believed it would be resisted by the higher education establishment. But, not all classes can be delivered in this way. There is still a role for live, team-based learning.

One participant described CTE courses being delivered in this way. Students can learn at their own pace, from their own location. They then take a test to receive a credential. The pass rate has been 85%.

“This has changed the delivery model for industrial skills training.”

—Retreat participant

Online learning also reduces the variability and provides data to compare student performance.

- *Streamline the offerings at state-run institutions.* Not every institution needs to offer every course. This means that a state doesn’t necessarily need multiple medical schools, law schools, or other types of programs. One participant described eliminating 700 courses in his state because they offered no value. Another participant described how his state’s educational system has eight “career academies” focused on particular areas like engineering, energy, and health care.
- *Change institutions’ incentives.* Instead of compensating institutions based on their enrollment, provide incentives to create high-quality graduates for high-growth sectors. This requires a fundamental change in how higher education institutions receive federal funding.

Because all of these changes will be difficult and are likely to be resisted by higher education, business needs to align and push for innovation.

Workforce Development

The Workforce Investment Act was passed in 1998 and is overdue for reauthorization. Congress hasn't had a sense of urgency to do so. Even though both parties have worked on legislation, nothing is likely to pass this year.

Currently, workforce investments are fragmented, with many programs across multiple agencies. Workforce programs are viewed as inefficient, with lots of waste, and little spending that goes toward training. Much of the spending is for administration and services. Streamlining or consolidating programs is extremely difficult for political reasons. Even discussion of efforts to eliminate redundancy has provoked a strong backlash.

Also, recipients of workforce investment programs must go through a highly bureaucratic "sequence of services." The perception of most participants is that workforce programs involve a great deal of spending and negligible results.

Workforce development programs need to be transformed.

There were examples of local workforce development boards engaging in positive collaboration. Employers communicated their needs to institutions such as local community colleges and CTE schools. These institutions then worked to produce graduates with the skills that employers need. But these successes were viewed as isolated.

On a national basis, retreat participants felt strongly that workforce development programs need to be transformed. When given the opportunity to completely reinvent workforce development in the United States, participants offered the following ideas:

- *Change board requirements.* There should be fewer "mandated partners" who have to be on local workforce development boards. Their presence makes boards too large, unwieldy, and ineffective. Boards should be smaller and should still include employers who can say, "Here are the programs we need in our region."
- *View the employer as the customer.* Traditionally, the workforce development system has served two primary customers equally: the individual and the employers. One participant described workforce development as a safety net program that is funded to serve maybe 5% of the eligible population. These job seekers can receive various services to improve their skills with a goal of making them more attractive to employers. This has focused on the supply side.

But a few participants felt strongly that workforce development could be dramatically improved if employers were viewed as the primary customer. Workforce programs would be solely focused on meeting the needs of these customers, by filling open positions with qualified individuals. Instead of "placing candidates" (a worker-focused approach), workforce development programs would supply employers with qualified candidates. By focusing on employers as the customers, everyone would benefit.

"We need to change the focus from serving individuals to serving employers."

—Retreat participant

- *Change the incentives of workforce programs.* Today, workforce programs receive funding based on formulas that provide more funding if more people

are unemployed. But this has nothing to do with outcomes. It was suggested that the incentives be changed so that workforce development programs receive funding after their activities fill jobs. This would tie funding to outcomes.

Some participants believe that programs shouldn't focus on filling jobs or developing the workforce; they should focus on economic development. Current programs aim to assist only a few people, who tend to be low-income and unskilled. A different paradigm would develop America's economy by improving the skill levels of medium- and high-skilled workers.

- *Measure outcomes.* A suggested change is to measure outcomes and results as opposed to activities. For example, instead of the unemployment rate being the metric that drives funding, the key metric might be "jobs filled." This would measure the effectiveness of workforce programs.

"We don't need any more money. The workforce development system would perform better if we knew the outcomes we were trying to achieve."
 –Retreat participant

- *Decrease federal regulation.* The amount of regulation is seen as onerous. One result is that employers, especially small ones, don't want to participate in federal programs because doing so is too difficult. Also, most participants felt that states should have more flexibility to make decisions about allocation of workforce resources.
- *Consider shifting to a voucher system.* One idea was to eliminate government administration of various workforce development programs. Instead, eligible

individuals would receive a voucher for a certain amount to be used for training. Individuals could then use this voucher with approved training providers that were most appropriate to help them gain the skills they desire. Individuals might receive more funds for training in a particular area, such as an engineer in a STEM field.

- *Offset the training costs of private employers.* A representative from a large employer said that in 2010, American corporations spent \$170 billion training workers. Companies would like to see policies that offset part of this cost.
- *Create a tiered workforce development system.* Most participants didn't believe that workforce development should be limited to those currently out of work. Workforce development shouldn't end when a low-skilled person gets a job. To be competitive, the United States needs to constantly develop its workforce. Every person should be able to develop greater skills.
- *Train endangered workers.* An idea that most participants agreed with was identifying endangered workers and helping them develop new skills. This has been done successfully on a limited basis in a few locations.

Too often, workforce programs have not involved input from businesses. For these programs to be effective, business must be at the table and have a strong voice. Businesses must communicate their needs and the types of programs that will best meet these needs.

"Workforce development is highly fragmented and is not a 'system.' We need a more cohesive system."
 –Retreat participant

Other Important Points

Key partners.

When asked who are the key partners to ensure that the voice of business is heard, respondents answered: community colleges; local workforce development groups; other Chambers in the region; and human resources people within companies.

U.S. News ranking.

The hunger for the data provided by U.S. News shows the overall dearth of data. These rankings don't include data on educational outcomes; the data are mainly about prestige. But their popularity shows how few data exist in higher education.

Perkins Act reauthorization.

The Obama administration recently released its proposed reauthorization for the Perkins Act. Funds would go to states based on a formula, but would go from states to local areas based on competition. To get funding would require an employer match. At first blush, this sounds like a tax on employers.

Immigration reform.

At each retreat, the topic of immigration was mentioned. The general view is that the United States is educating foreign students who then can't stay in the United States. So, they return home and compete with U.S. companies. Immigration rules must be changed to allow graduates of American colleges to stay here after they graduate.



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