CREATING PATHWAYS TO PROSPERITY

A Blueprint for Action

Measure Progress

Deliver Opportunity

Build Capacity

Cultivate Commitment

Acknowledgments

Foreword

In February 2011 the Harvard Graduate School of Education (HGSE) released *Pathways to Prosperity: Meeting the Challenge of Preparing Young Americans for the 21st Century*. The report, written by Ron Ferguson, Bill Symonds, and me, made a case for revitalizing and expanding the role of career and technical education in our schools. The case was built upon data showing lagging U.S. educational attainment, ominous labor market projections, and impressive performance by the strongest European education systems. We pointed out that only one-third of young Americans attain a four-year degree by their mid-twenties; that nearly one-third of jobs projected over the next decade will be in the "middle skills" category, requiring technical education or training beyond high school but not necessarily a four-year degree; and that countries like Switzerland, Germany, and the Netherlands manage to successfully integrate almost all young people into the labor market by their early twenties through well-developed upper secondary education systems that combine work and learning for 16- to 19-year-olds.

We hoped that our report would trigger a public conversation about two major issues. First, we questioned the wisdom of behaving as if the only successful outcome of a high school education was enrollment in a four-year college or university. And second, we called attention to the nation's failure to invest in a high-quality system of additional pathways alongside the four-year college alternative. We asserted the need for more post-secondary education or training options designed to equip young people with the skills and credentials to make successful transitions into the labor market.

The response to the Pathways report was both gratifying and a bit overwhelming. Our one-person staff, Bill Symonds, spent much of the next year on the road, responding to requests to speak about the report to education and business organizations all across the country, and we had invitations from governmental leaders in Australia, Canada, England, New Zealand, and Switzerland as well. In late 2011 we decided to proceed on two tracks to follow up on the unusual degree of interest generated by the report. Ron and Bill wanted to focus their energies on organizing a large national conference to pull together what we know from successful policies and practices in the U.S. and elsewhere about the core elements of a successful career pathways system. Their immediate goal was to try to convert the energy and enthusiasm generated by our report into the beginnings of a national movement. I reached out to Jobs for the Future (JFF), a 30-year-old Boston-based national nonprofit focused on improving education and employment outcomes for low-income youth and adults. I asked JFF to join HGSE in forming a collaborative Pathways to Prosperity Network. It would work with a group of interested states to help them design career pathways systems spanning grades 9-14 and focused on preparing young people for jobs in such high-growth, high-demand fields as information technology, health care, and advanced manufacturing.

Now two years after the launch of the on-the-ground Pathways to Prosperity State Network, and 15 months since the "Creating Pathways to Prosperity" conference, the proceedings of which are summarized in this report, a Pathways movement is growing in the United States. The Pathways conference brought over 400 leaders from business, education, government, and community-based organizations together in Cambridge to share their knowledge and experience from practice and their enthusiasm for being part of a larger national effort to build a more robust career pathways system. As the report's title suggests, the summaries from the many workshop sessions, and the recommendations culled from those sessions, really do constitute a "Blueprint for Action." Ron and

his colleague Sara Lamback have done a marvelous job in synthesizing this disparate body of material into a clear, compelling set of recommendations—something we resisted doing in our earlier Pathways report in order to focus attention on the problem itself. This report, especially the summaries from the workshops, touches on virtually all of the key elements required to build and maintain a quality career pathways system: career information and guidance; curriculum development and teacher training; effective intermediary organizations; engaged employers; supportive federal and state policies.

These same elements constitute the framework I and my colleagues from JFF have been using with the ten states we are working with in our on-the-ground efforts to help these states build career pathways systems. Later this month we will be releasing our own progress report on the first two years of the Pathways to Prosperity State Network. We hope that these two reports, taken together, provide guidance, encouragement, and support to the thousands of educators, business leaders, and community activists around the country who share our determination to build a career pathways system. Our nation needs such a system to help millions of young Americans make successful transitions not only from school to working life, but from adolescence to adulthood, to help ensure the continuing vitality of both our economy and our democracy.

Bob Schwartz

Professor Emeritus, Harvard Graduate School of Education and
Co-leader, Pathways to Prosperity State Network

More information about the Pathways to Prosperity State Network can be found at www.jff.org

June 2014

Preface

The U.S. school-to-career system is highly developed in some ways and underdeveloped in others. Well-developed pathways function like pristine interstate highways for our most academically skilled children from relatively wealthy communities and households. They move smoothly from kindergarten through elementary, middle, and high school on to four-year colleges from which they graduate into careers. Conversely, students possessing fewer academic skills (no matter what their family backgrounds) or growing up in less well-to-do families and communities, often face narrow and poorly maintained pathways full of potholes, detours, and missing road signs.

The Pathways vision is that young Americans from all racial, ethnic, and socioeconomic backgrounds, and from all parts of the nation will complete secondary school, receive post-secondary preparation and certification for entry into viable careers, and then transition successfully into the adult world of work.

Strong evidence shows that sagging labor demand in recent years has depressed employment for adolescents and young adults. However, the Pathways challenge is a longer-term phenomenon. Structural gaps and systemic inefficiencies in the systems that prepare young people for employment and connect them to jobs are major reasons that many become lost in the transition from school to career.

Early in the spring of 2013, more than 400 business, civic sector, governmental, and academic experts shared their collective wisdom. Called "Creating Pathways to Prosperity," the conference was the first ever convening of the stakeholder community that the February 2011 *Pathways to Prosperity* report helped mobilize. The conference was hosted by the Pathways to Prosperity Project at the Harvard Graduate School of Education, in collaboration with the Achievement Gap Initiative at Harvard University. Over a period of two days, participants distilled essential features of the work we need to do.

Many of the most important ideas are not new. They have been repeated for decades, often with a sense of urgency. This report documents and expands upon conference discussions. It proposes that much of what the Pathways movement needs to achieve has already been conceived and implemented in some locales. Nonetheless, in far too many instances, the work is fragmented and incomplete. For a large segment of our population and in many communities, school-to-career systems in the U.S. remain poorly aligned with 21st century requirements.

Based upon the wisdom of several hundred conference participants—many of whom have dedicated their whole careers to tackling pathways challenges—this report aims to be a curriculum for the Pathways movement. It is a primer for civic leaders who may be new to these issues, but whose active involvement will be absolutely necessary for achieving the vision. It offers a framework for understanding how civic leadership and other key components of the Pathways movement can function in concert to foster progress. By emphasizing both the urgency and the possibility of the moment, we hope the report will help energize and mobilize readers to make the vision a reality.

Contents

I. INTRODUCTION

"We are in an economic war in America. The way out of this war rests in the American people. ...it takes government, education, and industry to cooperate on this...We need to raise these career and technical pursuits from a consolation prize to a national calling."
—Nicholas Pinchuk, Snap-On

"I ask you to not only focus on the young people who are in school. Please include those who have already fallen off the edge into no man's land. Most education efforts ignore these students as if they were worthless, hopeless, or even dead..."
—Dorothy Stoneman, YouthBuild

"Young people coming of age in this economy face a perfect storm... How we communicate about this set of issues has to align with the most deeply held issues and values of people in the United States. ...including the desire for all children to get a good job that pays a decent salary."
—Hillary Pennington, Generations Initiative

If we fail to better prepare current and future teens and young adults, their frustration over scarce and inferior opportunities is likely to grow, along with economic inequality. The quality of their lives will be lower, the costs that they impose on society will be higher, and many of their potential contributions to society will go unrealized. This is a troubling prospect for any society and almost certainly a recipe for national decline...

Meanwhile, business leaders are warning that once the recession ends, they could face shortages of qualified workers in areas ranging from non-residential construction and energy to information technology, healthcare and the STEM fields. ...almost all of these jobs require at least some post-secondary education.

From Pathways to Prosperity, February 2011

On October 4, 1957, the Soviet Union launched an artificial Earth satellite named Sputnik. It was a polished metal sphere, 23 inches in diameter, with four external radio antennas. A spot of light drifting across the nighttime sky, Sputnik captivated earth-bound observers and thrilled amateur radio operators who detected pulses from the antennas. U.S. leaders knew about Sputnik for months in advance, but the average American was shocked to learn we might be falling behind technologically. The response was historic. Commitments to scientific progress in the U.S. accelerated dramatically. The technological benefits have shaped the way we live.[1] The Pathways challenge warrants a national commitment—from both the public and the private sectors—as transformative as the nation's response to Sputnik.

The 2011 *Pathways to Prosperity* report declared U.S. school-to-career pathways are in serious need of modernization. It warned that if we fail to reform our system soon, the U.S. could become an economically divided, underperforming, and socially unstable society toward the middle of the 21st century.

The report scanned a century of educational ascendance, pointing out that in less than half a century, from 1910 to 1940, the nation progressed from graduating only 9 percent of all 18-year-olds from high school to graduating the majority. Then, following World War II, the GI Bill sparked a massive expansion of higher education, helping solidify U.S. preeminence in skills development over the next half century. High school graduation rates stabilized as we approached the century's end while college completion rates kept

rising. We were maintaining our international preeminence.

Or so we thought. Gradually, others were gaining ground. By the end of the century, U.S. ascendance had slowed. Asian and Northern European nations had met and surpassed U.S. graduation rates (Figure 1) and academic skill levels (Figure 2). Furthermore, while the U.S. continued promoting four-year college degrees for the majority of youth, only about a third actually earned such degrees (Figure 3). At the same time, Northern and Central European nations were promoting a broader set of secondary and post-secondary options. As documented in the 2011 report, "Throughout Northern and Central Europe especially, vocational education and training is a mainstream system, the pathway helping most young people make the transition from adolescence to productive adulthood. In Austria, Denmark, Finland, Germany, the Netherlands, Norway, and Switzerland, after grade 9 or 10 between 40 and 70 percent of young people opt for an educational program that typically combines classroom and workplace learning over the next three years. This culminates in a diploma or certificate, a 'qualification,' as it's called, with real currency in the labor market."

In response to the challenges it identified, the 2011 report proposed three goals for how the nation needs to change. First, we need a broader vision for school reform emphasizing multiple school-to-career pathways including both college and non-college options. Second, the report suggested an expanded role for employers in helping to set standards, design programs of study, advise young people, and provide opportunities for work-linked learning. Third, it

FIGURE 1: International Comparisons of High School Graduation Rates—Increments by Decade of High School Completion
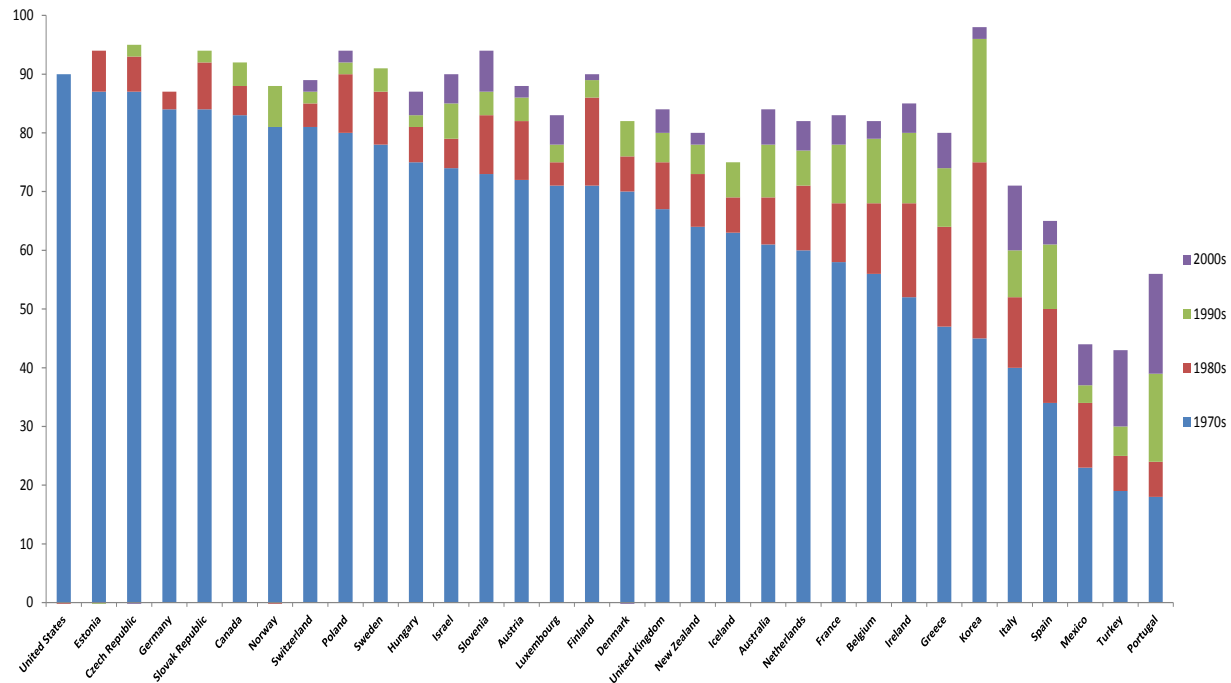
Note: The U.S. fell from 1st place to 10th in high school graduation. Approximated by percentage of persons with upper secondary or equivalent qualifications in the age groups 55-64, 45-54, 35-44, and 25-34 years. Source: Organization for Economic Cooperation and Development, Education at a Glance, 2013. Table A1.2a, p. 36.

proposed a new social compact with youth, promising that if they did their part to become prepared, the adult world would do its part to provide opportunity.

Now, to accelerate progress, leaders in states and localities across the nation need to be more assertive and systematic about cultivating commitment, building capacity, delivering opportunity, and measuring progress. These are the four Pathways imperatives:

- **Cultivate commitment.** Leaders with high-level authority in business, civic, research, philanthropic, and public organizations must become students of the Pathways challenge. They must act with a sense of urgency to direct resources systematically toward achieving the Pathways vision. Similarly, other stakeholders must sense the urgency, embrace the challenge, and commit themselves.

- **Build capacity.** We must upgrade local capabilities to perform vital functions—teaching, training, guidance, job placement, and supervision—in schools and training organizations as well as on early-career job sites. This will require cross-sector leadership and backbone organizations that blend public and private sector authority to overcome inertia and ensure that progress accelerates.

- **Deliver opportunity.** We must require educational excellence with equity. This means delivering high-quality career preparation and school-to-career transition opportunities to students from every racial, ethnic, and socioeconomic background.

- **Measure progress.** Progress measures help motivate stakeholders to play their roles effectively. They can inform deliberations on ways to allocate time, attention, and scarce material resources. They can reveal successes to celebrate as well as remaining challenges.

Some will argue that we already know how to achieve these things. If so, then there exists a massive *knowing-doing* gap. Authors Jeffrey Pfeffer and Robert Sutton, in their Harvard Business School Press book, the *Knowing-Doing Gap*, explain that organizations avoid large knowing-doing gaps when they reframe each task "from being one of merely finding all the problems or pitfalls for a particular course of action to one in which the task is not only to uncover problems

FIGURE 2: Math Achievement Scores for 15 Year Olds: 2012 International Comparisons

Nations with higher scores than the U.S., in rank order:

1.	Shanghai-China	19.	Slovenia
2.	Singapore	20.	Ireland
3.	Hong Kong-China	21.	New Zealand
4.	Chinese Taipei	22.	Denmark
5.	Korea	23.	Czech Republic
6.	Macao-China	24.	France
7.	Japan	25.	United Kingdom
8.	Liechtenstein	26.	OECD average
9.	Switzerland	27.	Iceland
10.	Netherlands	28.	Latvia
11.	Estonia	29.	Luxembourg
12.	Finland	30.	Norway
13.	Poland	31.	Portugal
14.	Canada	32.	Italy
15.	Belgium	33.	Spain
16.	Germany	34.	Slovak Republic
17.	Austria	35.	Russian Federation
18.	Australia	36.	United States

Source: Organization for Economic Cooperation and Development, Programme in Student Assessment (PISA), 2013. "PISA 2012 Results in Focus: What 15-year olds know and what they can do with what they know." p. 5.

but also to solve them." [2] This is the orientation we propose for building Pathways to Prosperity.

The present report is a distillation and synthesis of how more than 400 conference participants conceive the Pathways challenge from their various vantage points. It also covers their priorities for action. This chapter provides an overview of important themes and offers key elements of a framework for the Pathways movement. The second and third chapters summarize recommendations and a call to action. The rest of the report provides a synthesis for each workshop session. Each workshop synthesis identifies key challenges, action strategies for addressing those challenges, impediments to the success of particular approaches, and ideas for how to overcome those impediments.

CULTIVATE COMMITMENT

A dominant conference theme was that vastly improving the Pathways system is urgent and doable. Repeatedly, we heard inspiring examples for virtually every component of the system participants envisioned. However, we also heard that many celebrated

examples are understood by only a small community of insiders, have not been rigorously evaluated, and have been implemented in only a limited number of places, often with distinctly talented leadership, under difficult-to-replicate conditions. It seems that both knowing gaps and knowing-doing gaps remain abundant.

Authors Pfeffer and Sutton concluded from their studies of successful businesses that problem-solving know-how develops mostly from committing and acting to solve problems. Surely, the same applies for building Pathways to Prosperity. What sparks can inflame commitment to the Pathways vision? We identify two categories. One is breakdowns in the Pathways system for teens and young adults without four-year college degrees. The other is fear that our workforce-preparation system may fail to produce a workforce matched to 21st century requirements. This section addresses both.

FIGURE 3: Educational Attainment in the U.S. for Adults Ages 25 to 29 in 2013

▬	Doctoral or professional degree
▬	Master's degree
▬	Bachelor's degree
▬	Associate's degree, academic
▬	Associate's degree, occupational
▬	Some college no degree
▬	High school graduate
▬	Less than high school graduate
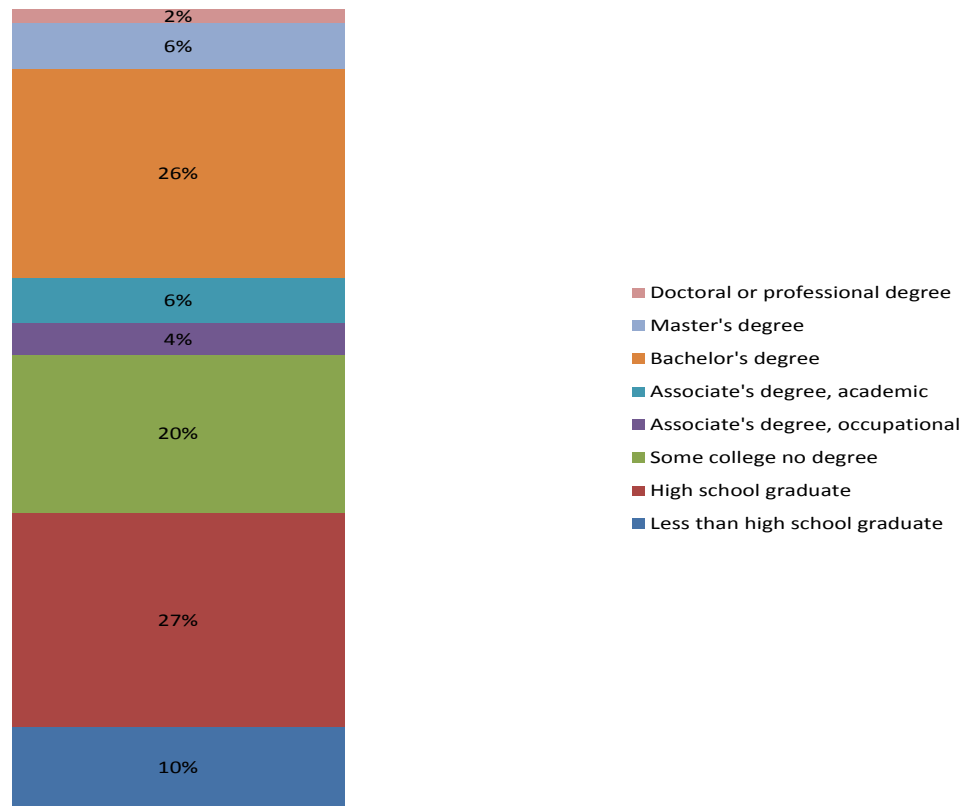
Source: U.S. Census Bureau, Current Population Survey, 2013 Annual Social and Economic Supplement

High School-to-Work Transition Crisis

Trends in teen and young adult employment should trigger a sense of great urgency and an outpouring of concern. This was the message that plenary speaker Andrew Sum delivered at the conference and then repeated with colleagues in an October 2013 report entitled: "The Complete Breakdown in the High School-to-Work Transition of Young, Non-College Enrolled High School Graduates in the U.S.: the Need for an Immediate National Policy Response."

Young people who graduate high school but fail to move directly into post-secondary education or training are in historically dire straits. Referring to youths not in college in the October following high school gradua-tion, Sum, Khatiwada, and McHugh write: "Their employment rates and full time employment rates in October [2012] were the lowest in the history of the employment series, which dates back to 1959. Males, Blacks (especially Black men), Hispanic women, and youth from low income families have experienced the most severe difficulties in making the transition to the labor market in the past 52 years."[3]

Based on the Sum, Khatiwada, and McHugh report, Figure 4 shows full-time employment-to-population ratios for selected years from 2000 through 2012. The data are for high school graduates who were not enrolled in a college of any kind the October following high school graduation. Figure 5 shows the same information for the class of 2012 separately for selected racial, ethnic, and gender groups. Note that white males are the most likely to have full-time employment at a mere 26 percent. Black males—at an appalling five percent!—are the least likely. Hence, of all non-college enrolled high school graduates in these race and gender categories, 74 percent of white males and 95 percent of black males were working only part time, still searching for work, or had given up looking.

According to the U.S. Bureau of Labor Statistics, one-third of 2013 high school graduates were not enrolled in college in the October following gradua-tion. Among this third, three quarters were in the labor force—meaning that they were either working or looking for work. Of these three quarters, 30.9 percent were unemployed and most of the employed worked

FIGURE 4: Full-Time Employment-to-Population Ratios in the October Following High School Graduation for Non-College Enrolled Youth from the Classes of 2000 to 2012, Selected Years (percentages)
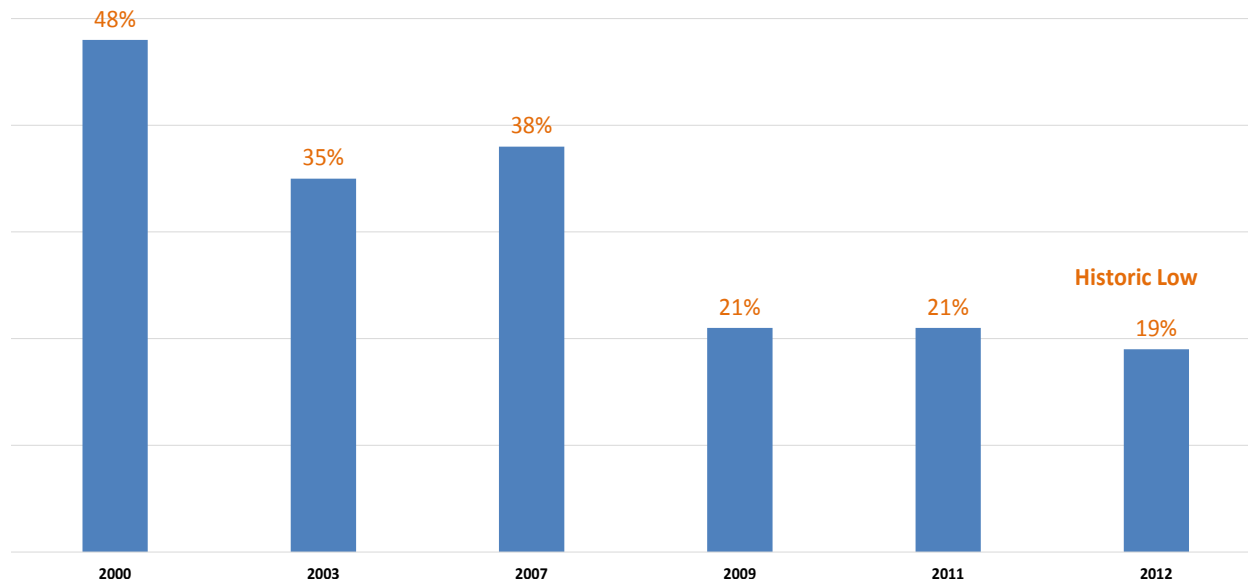
Source: Andrew Sum, Ishwar Khatiwada & Walter McHugh. "The complete breakdown in the high school-to-work transition of young, non-college enrolled high school graduates in the U.S.: The need for an immediate national policy response." Center for Labor Market Studies, Northeaster University, Boston MA, Oct. 2013

only part time. We see no reason to expect that the full-time employment-to-population ratio in 2013 was improved much from what Sum, Katiwada, and McHugh report for 2012.[4]

These poor outcomes reflect problems in three processes: preparing for work, finding work, and sustaining work once hired.[5] Young high school graduates and dropouts tend to have low basic skills, to be poorly connected to job networks, and not well socialized to the etiquette of the workplace. The percentages that quit or are fired tend to be higher than for older workers, especially among less educated youth from disadvantaged backgrounds.[6]

Indeed, circumstances typically conspire to place young workers who are less educated at the back of the hiring queue, no matter what the state of the economy. The abysmal full-time employment rates that Sum and colleagues document for youth over the past several years reflect both the depressed state of the economy and the fact that older and more educated workers tend to have superior skills, experience, and work-readiness.

How concerned should we be? Experts disagree on whether employment will greatly improve for young people. Some expect a skills mismatch will keep many on the sidelines even at the peak of the business cycle—that the underemployment rate for young adults may remain historically high. Others believe there is no current skills gap and, if one existed, a supply response would make the problem temporary. Which perspective is closest to being correct may depend substantially upon how relentlessly communities tackle the issues we address in this report.

Two Conceptions of a Skills Gap

Is there a gap between the skills employers need and those that workers, especially young workers, can provide? Does it matter? This is a topic on which business leaders and economists talk past one another and where both may be correct. Understanding how and why is important.

Economists Andrew Weaver and Paul Osterman of MIT recently studied whether skills mismatches account for the sluggish manufacturing employment recovery from the recession. In their paper, "Skill Demand and Mismatch in U.S. Manufacturing: Evidence and

FIGURE 5: Full-Time Employment-to-Population Ratios in the October Following High School Graduation for Non-College Enrolled Youth From the Class of 2012 by Gender, Race, and Ethnicity (Percentages)
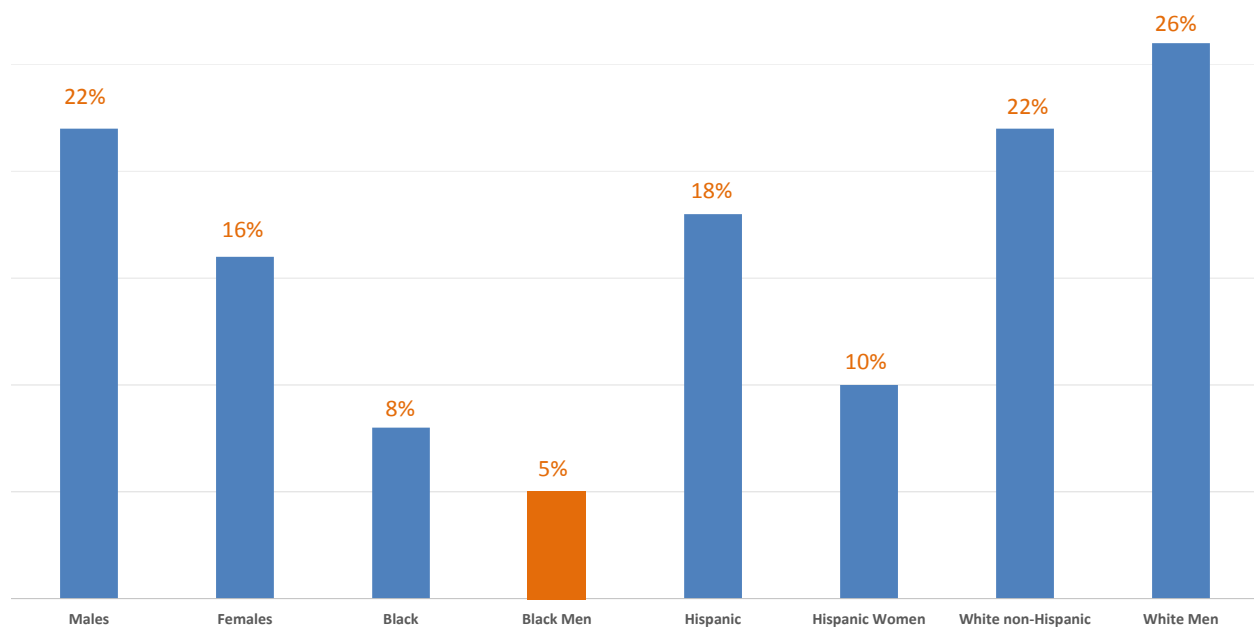
Males	Females	Black	Black Men	Hispanic	Hispanic Women	White non-Hispanic	White Men
22%	16%	8%	5%	18%	10%	22%	26%

Source: Andrew Sum, Ishwar Khatiwada & Walter McHugh. "The complete breakdown in the high school-to-work transition of young, non-college enrolled high school graduates in the U.S.: The need for an immediate national policy response." Center for Labor Market Studies, Northeaster University, Boston MA, Oct. 2013

Implications," they review previous studies and discover findings on both sides of the argument.[7] While most economists find no skills gap, two-thirds of manufacturers reported skill shortages in a 2011 survey of the National Association of Manufacturers.[8] Disagreement persists even among economists, according to Weaver and Osterman, because the data available for recent studies have not been ideal.

Weaver and Osterman launched their own study in 2012. They quantified hiring difficulties at the firm level "by measuring the number of core production worker vacancies that persist for three months or more." The firms they studied were selected randomly from Dun & Bradstreet's national database of manufacturing businesses. Based on these data, their findings are inconsistent with the general argument that manufacturing employment is lower because workers lack the skills that employers demand: "We find that demand for higher level skills is generally modest, and that three-quarters of manufacturing establishments do not show signs of hiring difficulties."[9] For those having difficulty hiring, the explanations appeared to be management problems and factors other than skills mismatches. On average, the employers in the study

received 24 applications per open position. Eighty-five percent of the workers who were offered jobs accepted them.

Despite their conclusion that manufacturing firms do not by and large face a skills shortage, Weaver and Osterman found that skills were indeed required and important. They write: "Basic academic skills and interpersonal skills are important. Demand for basic levels of math, reading, and computer skills is widespread. Requirements for extended reading and computer abilities, in particular, are common, encompassing more than half of all manufacturing establishments. Cooperation and teamwork are also skills that large numbers of manufacturing establishments place great value on."[10]

At the same time, they emphasize, "Even among the plants requiring higher skill levels, the skill demands appear very attainable, particularly with regard to math."[11]

It seems likely that if Weaver and Osterman conducted their study in any of the other sectors that expect high growth over the next decade, their findings would be similar. Specifically, labor demands in the current

economy are largely satisfied by the existing labor supply. At the same time, this does not mean that skills are irrelevant or that young people can easily acquire the skills they lack, learn about existing job openings, or succeed without on-the-job supports once hired.

To understand the difference between economists' and employers' responses concerning skill gaps, it helps to consider that they may have different conceptions. Economists ask whether there is a gap *at current* wage rates between the number of workers available who have the skills required to fill jobs, on the one hand, versus the number employers would like to hire, on the other hand. If there are enough skilled workers available, then jobs will not remain vacant for extended periods. For economists, long-term vacancies are evidence of skills gaps (conditioned on current wage rates). It is according to this conception that the Weaver and Osterman conclude there is not a major skills gap in American manufacturing.

Employers have a different conception. There can be a gap between the skills that workers or job applicants *actually* have, versus those that employers *would ideally prefer* them to have (again, at current wage rates). This gap between the *actual* and the *ideal* can exist even in the absence of a gap between labor supply and demand at current wages. When economists and employers seem to disagree, both can be correct because their definitions differ.

Even if there is no skill shortage in the way that economists define the issue, the employer perspective has merit. Having workers that are more skilled opens a broader range of options for producing goods and services. Even from the perspective of the entire economy, there is greater productivity when workers are more skilled.[12] There have been periods in the recent past when productivity growth outpaced wage growth, but historically, wages eventually rise to reflect productivity growth and the whole society benefits.

Our Sputnik Moment

Like Sputnik glowing in the night sky, the employment crisis that Sum and his colleagues identify, the fact that competitor nations have higher youth achievement and attainment, and the risk that our Pathways system is not structured to meet 21st century skill requirements, should spark a sense of urgency.

"Businesses are trying to compete in a marketplace that delivers goods and services across the world. While there used to be a U.S. market, now there's a global market. Look at steel, textiles, and automotive. Where do these get produced? Why? Skills are very capable outside the U.S. market and we're not able to compete."
—Rick Stephens, Boeing

In addition, the U.S. population is growing most rapidly among racial, ethnic, and socioeconomic groups that tend to rank lowest on measures of academic achievement and attainment. Even to maintain current levels of labor force skill, our education and training institutions have to become more productive.

Several questions beg for answers. First, will labor demand ever reach the back of the hiring queue where so many young, less educated people tend to be concentrated? Second, will young people be ready when the economy fully recovers? Third, what can we do now to give more young people the preparation they need to qualify for current *or potential* openings and the credentials they need to be taken seriously by employers?

In December of 2013, Julia Dennett and Alicia Sasser Modestino of the Federal Reserve Bank of Boston issued a report entitled, "Uncertain Futures? Youth Attachment to the Labor Market in the United States and New England."[13] Their findings supplement other recent research on supply and demand for young workers. They summarized their conclusions in six propositions:

1. While the Great Recession has affected all U.S. youth, teens [aged 16 to 19] experienced a decline in labor force attachment even prior to the most recent downturn.

2. As a result of rising school enrollment, youth [aged 16 to 24] did not become increasingly idle prior to the Great Recession despite the decrease in labor force attachment.

3. The shifting composition of the youth population in the United States towards greater shares of minority, immigrant, and low-income groups does

not account for the observed decline in youth labor market attachment since 2000.

4. The U.S. economy is employing fewer teens within almost *all* industries and occupations—whether these sectors are growing or declining as a share of total employment.

5. The Great Recession appears to have reinforced the pre-existing trends that were observed among youth for the 2000 to 2006 period leading up to the recession. [Specifically, youth were disproportionately employed in sectors *and jobs* experiencing structural employment declines.]

6. It remains to be seen whether the effects of this most recent and severe downturn will persist as today's youth progress through their working lives.[14]

Again, "It remains to be seen . . ." Even though limited labor demand helps explain current conditions, we should still be concerned that millions of young people lack clear and viable pathways into the adult roles that society will eventually need them to play. By the time employers need them, many will have blemished work records and lack experience.

Our concern should be for these young people as well as for the broader society. One popular columnist warns of "the greatest retirement crisis in American history."[15] Specifically, millions of baby boomers will lack sufficient savings to cover their retirement years and will depend on society for supports, while a historically high percentage of young people are being insufficiently prepared to become highly productive workers and taxpayers. They themselves may require public assistance in an economy where unskilled jobs are increasingly rare.

Finally, even without an impending crisis, there would be reasons to improve systems of secondary and post-secondary education and associated supports for school-to-work transitions. The U.S. prospered during the twentieth century because schools got better and served more citizens well. Rising skills enabled the economy to innovate and grow.[16] Employers adapted to workers' skills as much as workers adapted to employer requirements. If the U.S. develops a more skilled labor force, the economy will adapt to make productive use of it.

If we fail to take current conditions seriously—to treat this as our Sputnik moment—the average quality of our workforce may drift slowly downward compared to other nations while our society becomes increasingly divided. We have a choice.

"One of the things we've noticed is that the workforce is different and we need to adapt to it. The mechanical aptitude we see in students has really changed over the decades. There used to be a time when someone could change a tire and work on spark plugs. Young people used to not be afraid—in terms of touching mechanical things and really figuring out how they work... It's a different workforce that's not motivated like the workforce of yesterday. We need to do something about that."
—Dave Bozeman, Caterpillar

BUILD CAPACITY

Who will build the needed Pathways capacity? The Pathways movement has no single planner, architect, blueprint, or builder. Instead, many exercise leadership over a variety of campaigns and projects. The movement is fundamentally civic, not just governmental; it is national, not simply federal. It requires not only public policies, but also private civic structures, both formal and informal, within which to conceive, design, implement, and monitor new work. Stakeholders need to be informed, equipped, and persuaded to play sometimes new and unfamiliar roles. Students, parents, educators, employers, civic leaders, public servants, and elected officials need to allocate their time, attention, and resources in modified ways and adapt to new arrangements. Accelerating progress will require both public and private sector policies to enable and reward needed changes.

Pathways System Coherence

Pathways system coherence and effectiveness are tough to achieve. Not only are many stakeholders involved, there is a problem akin to what economists call market failure. Specifically, organizations and individual actors who could help the system operate more effectively often lack incentives and structural

EXHIBIT 1: Key Players in a Pathways to Prosperity Collective Impact System

Powerful Leaders Pool Commitments in Cross-Sector Organizations

Organizations Perform Key Backbone Functions for System-Level Coherence

Front-Line Organizations Directly Serve Young People and Employers

Local Citizens' Groups Represent Community Interests and Perspectives
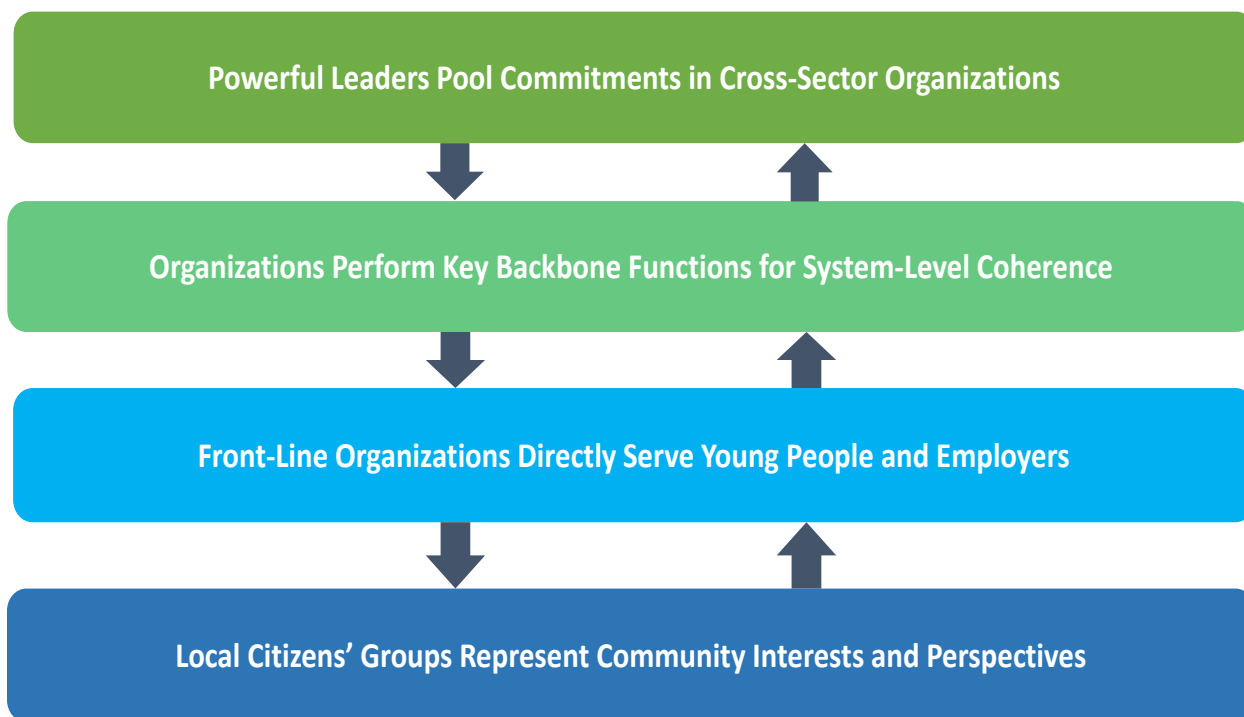
mechanisms for doing so. Market failures are why we have government: we assign governments tax and expenditure authority to serve our collective interests for public goods and services. Nonetheless, there remain functions for which civic and private sector mechanisms are well positioned, and they are needed to play key roles in Pathways system building and maintenance.

Recognition that cross-sector leadership organizations have special roles to play is not a new theme. The past few decades have witnessed an emphasis on public-private partnerships in several domains of public problem solving. "Collective impact organization" is an increasingly common label for groups that aspire to improve outcomes on targeted issues for a range of beneficiaries in a manner that requires participation from a critical mass of otherwise independent organizations (e.g., schools, workforce development intermediaries, employers).

To be most effective, the power brokers who support collective impact organizations—at the local, regional, state, and national levels—include the chairs and top executive officers of major businesses, trade organizations, philanthropies, civic organizations, universities, and governments.

It is important for both conceptual and practical reasons to distinguish the power brokers who support and enable collective impact organizations from the professionals that act as their agents in "backbone organizations." The key "backbone functions" that these organizations perform include building alliances and strengthening networks by convening stakeholders for agenda setting on Pathways priorities. They may also create mechanisms to monitor system performance, provide advice on development of accountability mechanisms, and help resolve inter-organizational misalignments.

Ideally, backbone organizations represent the collective commitment of a region's most powerful actors to serve the interests of the entire community. They should help build and maintain Pathways to Prosperity for local citizens of all backgrounds and be responsive to organizations that represent diverse interests and perspectives.

As repositories of expertise and influence, backbone organizations can be critically important engines for building Pathways systems (Exhibit 1) and driving local progress. They can advise governmental and philanthropic organizations to modernize funding strategies in ways that incentivize grantees to align their work to community-level priorities. They can connect front-line

Organizations and cross-sector consortia develop **National Resources**

| Career-linked Curricula | Certifications, Credentials | Work-linked Learning Protocols | Teacher Training Approaches |

Backbones connect local systems to national resources and shore up local linkages

Local System organizations teach, train, connect, and employ young people

Local Employers

Regular and CTE Secondary Schools

Backbones

Workforce Development Intermediaries

Post-Secondary Education and Training
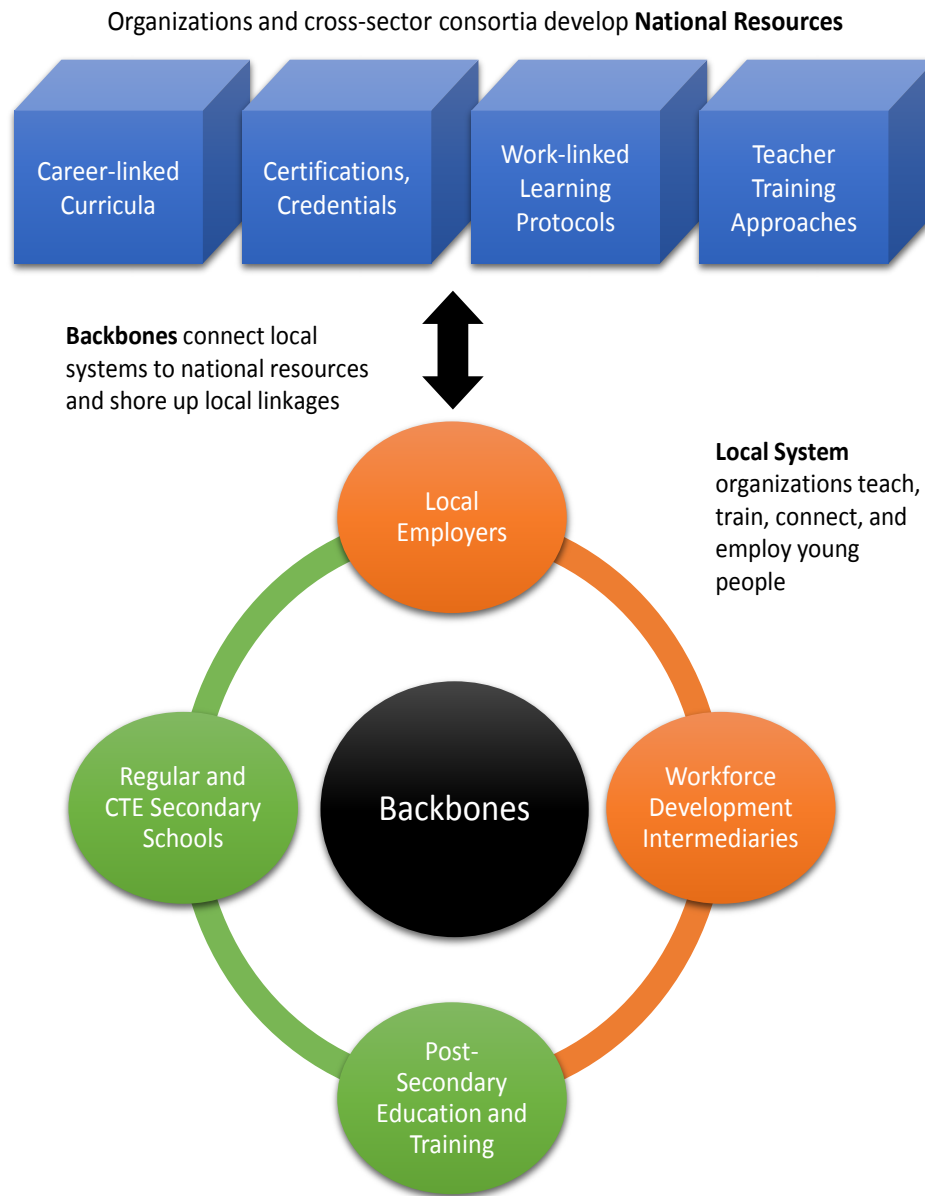
organizations—secondary and post-secondary schools, workforce development intermediaries, employers— to various cross-sector consortia that develop new curricula, credentials, and work-linked learning models (Exhibit 2). They can organize local stakeholders to design or select performance measures then use those metrics to track, publicize, and celebrate progress.

The bottom line is that we need collective impact leadership and backbone organizations in every region—from rural counties to major metropolitan areas—to network with national organizations and

consortia to work and learn together as allies in the Pathways to Prosperity movement.

Key Pathways Movement Elements

Collective impact power brokers, backbone organization professionals, front-line service providers, and local citizens' groups need to mobilize multiple movement elements—goals, strategies, policy supports, institutions, programs, projects, principles, and practices—that require conceptualization, discussion, refinement, and implementation in
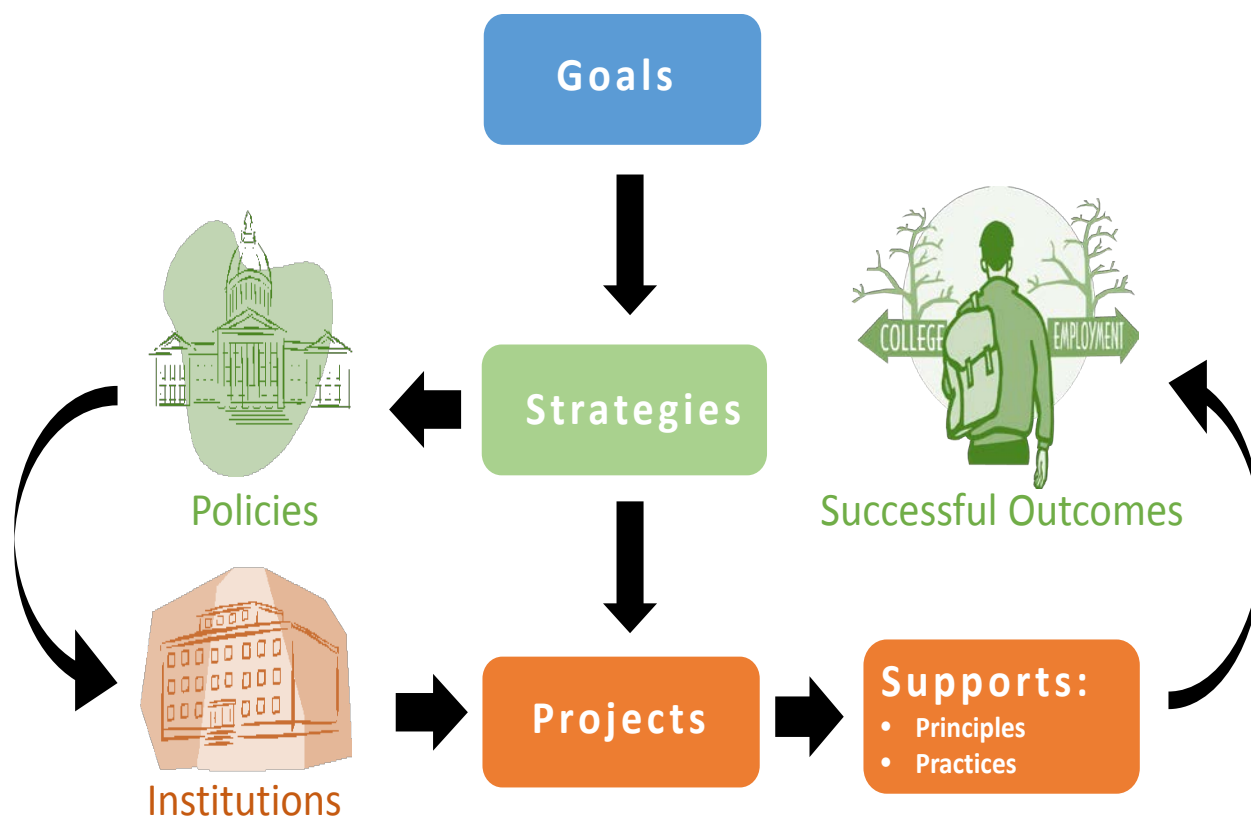
their communities. These elements are represented schematically in Exhibit 3. Specifically:

- Movement **goals,** for example, are that students of all backgrounds and skill levels should identify and begin learning about a limited range of career interests while in high school (or earlier), finish high school, earn post-high school credentials certifying their preparation for work, and move into jobs linked to long-term career aspirations.

- To achieve these goals, **strategies** entail putting in place developmental sequences of learning experiences designed to produce high-quality career preparation.

- To support these strategies, relevant **policies** in both public and private sector organizations need to authorize appropriately tailored resource allocations.

- To carry out the strategies and implement the policies, **institutions**—schools, businesses, training organizations, families, and others—need to develop capacity and take respon-

sibility for designing, implementing, and overseeing Pathways activities.

- To do their work, institutions need **projects** aligned with Pathways strategies, such as projects to design education, training, and support programs.

- Effectively executed projects will create **programs** of training experiences that build on one another and produce career related competencies.

- Inside programs, well-considered **principles** should guide the selection of program practices.

- High-quality and well-implemented program **practices** in schools, training organizations, and at job sites will provide developmental experiences resulting in life and career readiness.

Without the ideas, resources, organizational structures, and activities that these elements bring to light, school-to-career systems are likely to remain incomplete,

EXHIBIT 4: Elements of Career Readiness

Options	• They are aware of multiple career options and have identified a few priority careers *of interest*.
Requirements	• They understand the skill and training requirements associated with each major career of interest.
Personal fit	• They understand how personal skills and talents align with each career of interest.
Where to learn/train	• They know which businesses, colleges, or other organizations supply post-secondary education and training related to their interests.
Where to work	• They know of organizations or businesses where people in these careers work.
On-track status	• They are on track with regard to having the skills necessarily for taking the next steps along the pathways associated with careers of interest.
Plans	• They have career development plans that cover at least the next few years.
Actions	• They are taking the necessary and appropriate steps to execute those plans.
Role models	• They have access to people who can advise them regarding careers of interest, ideally including people who are actually in those careers.

inefficient, and inequitable. Communities need collective impact systems to see that these things happen.

DELIVER OPPORTUNITY

A central tenet of the Pathways vision is that not only schools, but also whole communities should help young people become career ready and then transition from school to career. Of course, career readiness is a narrower notion than life readiness. Communities care about both. Career readiness for high school students can be conceived as shown on Exhibit 4.

Note that each component on Exhibit 4 has to do specifically with career awareness and preparation. Each is something that "career-readiness secondary schools" might be expected to address, in collaboration with other local stakeholders. We distinguish career-readiness components from life skills and supports that have relevance not only for careers, but also for life more generally. These include: strong academic skills; well-rounded knowledge of history, civics, science, arts, health, language arts, and mathematics; self-control, persistence, and focus; social-emotional intelligence; sense of citizenship; and

a network of friends, family, and personal support. All are essential developmental foundations for both life and career.

Community initiatives framed specifically to focus on career readiness may or may not choose to emphasize this second list, but would do well to understand its importance as a career readiness foundation.

Ideally, being ready for life and career should include having a sense of purpose—a sense that one is destined to do things that make a difference in the world. We opened the conference plenary with a metaphor for each young person's unique life purpose. Many participants found it helpful and used it in workshop discussions. We referred to it as the "Green Dot," but have come more recently to call it the "North Star."

MEASURE PROGRESS

Pathways system leaders need metrics to track the progress of commitments secured, capacity developed, numbers of young people participating in particular types of schools and training, and numbers achieving

particular education, training, and graduation/certification milestones.

Local efforts to define measures of success on Pathways goals can be controversial because there is disagreement about what the mix of aspirations should be—what achievements, by which types of young people are worthy of the label "success." Therefore, Pathways systems need dashboards that cover a broad swath of developmental milestones and the numbers of young people that have achieved them.

Each community will have its own configuration of measures and milestones, but an ambitious menu of Pathways metrics to develop and track might include:

Commitments:

- **To Help Develop Curricula:** Numbers of employers participating in school-linked curriculum-support and development.

- **To Provide Jobs and Training for Students:** Numbers of employers that provide particular types of jobs for students of particular age ranges from particular types of schools and communities.

- **To Help Prepare Teachers:** Numbers of employers participating in programs that provide learning experiences to teachers to help them blend academic with career preparation instruction.

- **To Collaborate Across Sectors:** Numbers of K-12 and post-high-school organizations and employers that participate actively in partnerships to develop and deliver opportunity of particular types to area young people.

- **To Use Different Hiring Criteria:** Numbers of employers that make special efforts to set hiring criteria—for example, "skills-based hiring" or standardized credentials—favoring young people from local schools and programs.

Capacities:

- **Teaching:** Numbers of teachers who have participated in training programs to more effectively blend academic and career preparation instruction.

- **Curricula:** Numbers of new curricular units that serve the Pathways vision and have been judged effective by teachers, students, and other stakeholders.

- **Career Counseling:** The counselor-to-student ratio of career counselors in local high schools and community colleges.

- **Certifications and Credentials:** The number of schools and employers that have agreed on particular certifications and credentials for particular sectors and career pathways.

- **Services for Targeted Groups:** The number of slots available in programs targeting particular groups of young people, particularly "opportunity youth" who are disabled or have been disconnected from work and school and "court-involved" youth who have been involved with the criminal justice system.

Opportunities and Outcomes:

- **Middle School:** Numbers of middle school students exposed to career pathways information.

- **High School:** Enrollments and completion rates for each major high school curricular pathway: traditional college prep, blended college and career prep, traditional CTE, or "name-brand" CTE curricula.

- **High School Employment:** Numbers of young people that experience employment—including paid on-the-job learning—during the high school years.

- **Second Chance Programs:** Enrollments and completion rates in programs serving young people who dropped out of high school or who have been disconnected from both school and paid employment for an extended period.

- **After High School:** Enrollments and completion rates for each major after high school pathway: specific career training programs in non-college settings, curricular pathways in community colleges, and four-year college programs of study (both local colleges and non-local colleges for local high school graduates).

- **Young Adult Employment:** Post-completion employment rates for specific categories of young people, classified by age, gender, race/ethnicity, neighborhood, level, and source of education and training. Data such as these can help ground local pathways deliberations. Consensus on particular goals is a worthy aspiration, but may be difficult to achieve. Armed with data on appropriately

defined dimensions, local stakeholders can decide which numbers to celebrate as worthy achievements and which others to select as priorities for improvement.

The next chapter of the report distills the recommendations that emerged from the workshops. It is followed by a one-page "Call to Action," organized by the four Pathways imperatives—cultivate commitment, build capacity, deliver opportunity, and measure progress—around which this first chapter has been organized.

Finally, we present session summaries for each of the thirteen conference workshops. Expert panelists in each workshop described state-of-the art approaches for addressing Pathways challenges, addressed impediments to progress, and proposed ways of moving forward.

II. RECOMMENDATIONS FOR CREATING PATHWAYS

"We pay an electrician $90K, which is $30K more than we pay an electrical engineer. I think employers have a deep responsibility to make sure that kids get an opportunity to both experience and know about all the wonderful career tracks that exist."
—*Michael D'Ambrose, Archer Daniels Midland*

"We are part of the problem. I oversee our college recruiting programs and we set a pretty high bar. I would rather see what a young people can do, rather than a resume with what classes they took. At the same time, there is a pressure from inside the corporation and also from competitors due to uncertainty concerning whether other pathways are legitimate. We [in the business community] are struggling with ourselves a little bit."
—*Mark Greenlaw, Cognizant*

(Photo provided by the National FAA Organization)

The *Creating Pathways to Prosperity* conference convened experts on a broad range of Pathways issues. Accordingly, a distinctive feature of this report is that it identifies many elements of what the Pathways movement needs to accomplish. No one is expert on the full spectrum of issues. Nonetheless, public and private sector leaders at local, state, and national levels need to recognize the scope of the challenge. They should be prepared to help craft and support a broad agenda for Pathways progress.

This chapter distills recommendations from conference plenaries and workshops, organized under three major headings:

- Support Federal and State Policymakers
- Design and Implement Vital System Resources
- Develop and Deliver Excellent Programming

Organized under these headings, Exhibit 5 lists all thirteen recommendations. Together, they constitute an ambitious Pathways agenda. Progress requires not only learning in order to close *knowing* gaps; it also requires acting in order to close *knowing-doing* gaps. Following this recommendations chapter, workshop summaries provide numerous examples of the organizations that are leading the way and key features of their approaches.

SUPPORT FEDERAL AND STATE POLICYMAKERS

Prepare Federal Policymakers to Support the Pathways Agenda

Specialists in federal line agencies tend to be well informed and deeply dedicated to Pathways concerns. However, members of Congress, in particular, are often poorly informed and unconvinced that Pathways legislation should be a priority.

The most important policies in this regard are the Federal Workforce Investment Act, the Elementary and Secondary Education Act, and the Carl D. Perkins Vocational and Technical Education Act; all three of which were long overdue for reauthorization at the time of this writing. Federal policymakers control the allocation of federal resources for Pathways programming and their public pronouncements can influence constituents' perspectives on the urgency of the Pathways agenda in their home communities. Therefore, it is important for federal policymakers to be well informed.

Recommendations:

☑   Federal legislators should receive compelling examples regularly on ways that Pathways policies benefit their constituents. More and better information can influence legislative priorities and equip policymakers to communicate effectively with constituents on Pathways issues.

☑   The Pathways movement needs organizations that specialize in collecting, analyzing, organizing, and transmitting information to policymakers and other influential stakeholders. However, we also need mechanisms to identify and resolve conflicting claims and findings in research reports and advocacy materials that such organizations produce.

☑   Professional service providers whose work in localities across the nation depends at least partly on federal Pathways resources should receive regular updates and on how federal resources can support their work. In addition, they should have genuine opportunities to provide feedback to policymakers on the design and management of the policies upon which their work depends.

Organize State Governments to Play Major Roles in the Pathways System

State governments provide much of the public support on which the Pathways system depends. Some states have councils and other structures for aligning rules and regulations and, generally, fostering systemic coherence. Other states, however, remain unfocused and relatively disorganized.

Recommendations:

☑   Generally, in both executive and legislative branches of every state government, there need to be arrangements in place to manage communication, planning, and accountability on issues of importance to the Pathways vision.

☑   These arrangements need to be informed by inter-state consortia that help governors, legislators, and others stay current with how their counterparts are moving forward in other states.

☑   In each state, policies should be routinely reviewed, and periodically revised to remove unnecessary barriers. Reviews should consider how state policies affect the quality and appropriateness of relationships between secondary and post-secondary educational institutions and between these institutions and nongovernmental organizations, including businesses and civic organizations.

Elements of a Pathways Blueprint for Action

Policy	Resources			Programming	
Federal	Research	Teacher & Supervisor Skills & Tools	Blended Curricula	High School Models	Blended Work & Learning
State & Local	Lessons from Abroad	Career Counseling Skills & Tools	Certifications & Credentials	Opportunity Youth Focused	Court-Involved Youth Focused

Backbone Intermediaries Help Mobilize Active Responses
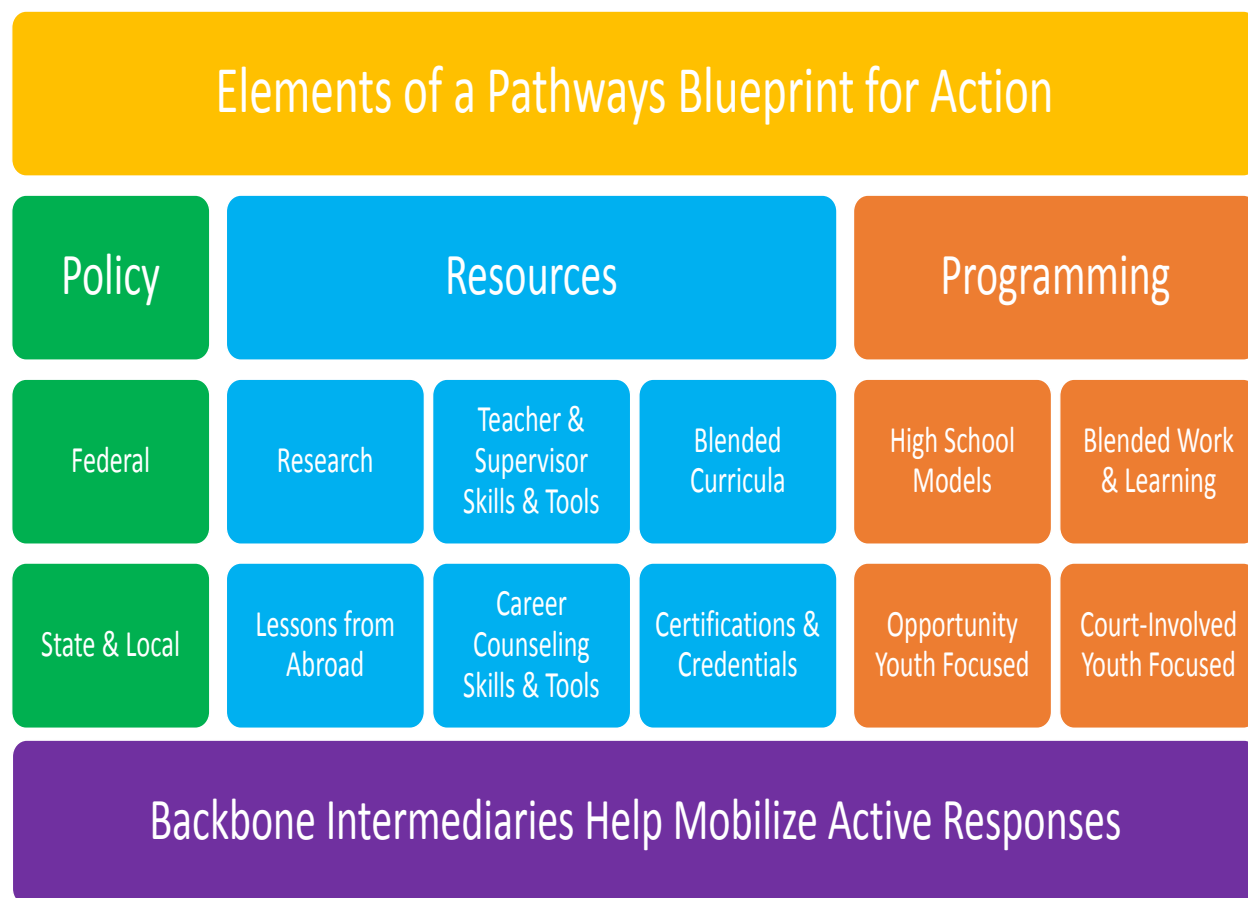
☑ Governors and state legislators should ensure strong interagency leadership so that departmental decisions support Pathways goals, even where achieving such goals requires new types of interagency cooperation.

☑ In addition, staff responsibility for envisioning, inviting, and managing relations with business and civic entities to fulfill important pathways functions should be explicitly assigned within each state agency. This includes being attentive and appropriately responsive to ideas and requests for cross-sector cooperation. Where disagreements arise due to competing interests or different priorities for the allocation of public resources, effective and efficient arrangements should be in place to speed decision making. This includes arrangements for monitoring, evaluating, and sometimes defunding entities that use public sector resources in the provision of education, training, or other Pathways services.

DESIGN AND IMPLEMENT VITAL SYSTEM RESOURCES

Build Intermediary Organizations to Cultivate Pathways Systems

The introduction to this report describes the role of backbone organizations that help cultivate commitment for the Pathways vision, build capacity in local systems, support the front-line organizations that deliver opportunity, and measure progress. Many of the roles these organizations perform would otherwise go undone. Hence, a key recommendation is to build such organizations.

Build a Stronger Research Base to Inform Pathways Decision Making

Ideas and examples that conference participants offered were grounded on decades of experience and accumulated wisdom. Nonetheless, few were backed by evidence of the type that researchers consider definitive.

Recommendations:

☑ The Pathways movement needs a research agenda to inform its expansion. There are a number of policies, organizational forms, and programmatic models featured in the body of this report and highlighted by the Pathways movement more generally. Research to document their operations and determine the conditions under which they work as expected, and for what constituencies, should be a priority.

☑ Researchers can measure the value of apprenticeships and other means of integrating career-related content into secondary and post-secondary education. Researchers and journalists can help the public understand more about the full range of careers that young people can aspire to and the post-secondary options required to prepare them.

☑ Many of the proposals in this report will require stakeholders to accept new or expanded roles for which they are unprepared or about which they feel uncertain. Examples include having school counselors perform more career counseling; having employers help develop secondary and post-secondary school curricula; and persuading leaders of major institutions to invest substantial time and resources in the pathways movement. Research can track the success of these efforts and help identify the most effective methods for achieving them.

Study and Adapt Exemplary Systems and Practices from Abroad

The 2011 Pathways to Prosperity report devoted a great deal of attention to the fact that European nations—especially Germany and Switzerland—have well developed apprenticeship systems. On average, youth in these countries move from school to work more quickly than in the U. S. and experience less unemployment. Leaders at every level of the Pathways movement should take European education and training systems seriously as sources of insight. Developing the capability to incorporate such structures and practices in the U.S. will require a great deal of capacity building. In addition, Americans tend to resist placing youth prematurely on "tracks" or career trajectories. Advocates for young people of color and for students from economically disadvantaged backgrounds will want assurances that the Pathways agenda will expand—not limit—their available options. Nonetheless, several elements are worth considering.

Recommendations:

☑ Several European nations have good systems for aligning curricula to the skills that employers need. Based on these examples, the U.S. should adopt more "blended learning" arrangements that integrate school-based lessons with work-based learning at job sites.

☑ Formal apprenticeships in the U.S. should emulate European approaches that deeply expose students to the real world of work. Youth should interact with real co-workers and clients, report to real supervisors, and use authentic, up-to-date tools and materials.

☑ The Swiss system, in particular, provides upper-secondary degrees that facilitate movement between academic- and career-focused studies. This gives young people who pass the appropriate exams the flexibility to move between more academic- and more career-oriented trajectories. Similarly, Pathways arrangements in the U.S. should allow for permeability between academic- and career-oriented programs of study.

☑ Denmark has a state-of-the-art advising system in which counselors at a network of guidance centers help each young person develop a personal learning portfolio. During the high school years, career advisors help students identify their strengths and weaknesses and develop post-secondary work and learning plans. School systems in the U.S. should learn from the Danish example.

Prepare Teachers to Combine Academic- and Career-Focused Content

At the time of this writing, the number of teachers well prepared to cover both academic- and career-focused content appears to be small compared to the need. In response, school systems are designing ways of attracting professionals from other fields and preparing them to teach. These efforts have produced early examples of what we should hope one day will be routine.

Recommendations:

☑ The U.S. needs fluid provisions for people to rotate between non-education careers and teaching in secondary schools. Mechanisms should be in place to help *rotators* and other teachers learn from one another. In addition, both regular teachers and rotators should receive ongoing coaching, mentoring, and support from experts in both content and pedagogy.

(Photo provided by Year Up)

☑ Indeed, there should be certificate programs that colleges or cross-sector consortia provide, focused on particular knowledge, skills, and pedagogies. As a condition for maintaining certification, both rotators and other teachers should periodically attend refresher courses focused on classroom management, lesson planning, incorporating academic standards with career-focused content, and accommodating students with special needs. Even for regular teachers, the consequences would likely include increased job satisfaction and reduced turnover.

☑ The idea that every teacher knows all they need to know and is fully proficient in delivering instruction is simplistic. Schools should be continuous improvement institutions in which every professional is expected to make year-to-year progress in refining their craft. In addition, regional leaders should take their responsibility seriously to ensure that teaching quality is actively supported and cultivated by the appropriate institutions.

Equip School Counselors and Others to Provide Quality Career Guidance

Well organized and appropriately resourced career guidance is scarce in American secondary schools. High school counselors spend most time on scheduling, academic guidance, social-emotional support, discipline, and helping their best students apply to elite universities. Typically, when it comes to identifying potential careers and associated pathways, students—especially those who struggle academically or come from low-income backgrounds—tend to be on their own.

Recommendations:

☑ Career guidance should be a higher priority for secondary school counselors. To be effective, they need training and informational resources concerning job markets and post-secondary options for their students. They also need time.

☑ Regulations should be passed in every state to discourage school administrators from assigning

counselors tasks outside their job descriptions. In addition, there need to be reasonable limits on the numbers of students that counselors serve. Though regulatory details differ from place to place, counselors are often responsible for several hundred students. Our national goal should be for counselors to be given the time and resources to effectively serve all of the students for whom they are formally responsible.

☑ A worthy and even more ambitious goal is for school-based counselors to become the hub of a community career guidance system that begins as early as upper elementary school. All of the adults with key roles in a child's life—parents, grandparents, teachers, librarians, after-school staff, and job supervisors—should be encouraged and supported to help young people envision and prepare for the future.

☑ Community-level supports could include events and materials that students can examine on their own or with others. For teachers, in particular, there should be curriculum guides with examples of ways that people in real-world careers use the skills, knowledge, and concepts upon which lessons are focused. For parents, materials should show how to encourage children and help them match skills and interests with career possibilities.

Design Curricula that Combine Career Preparation with Academic Rigor

Most secondary-school curricula are not designed to address both academic and career preparation goals. Instead, most high schools focus their academic goals primarily toward preparing students either for college or particular vocations.

Recommendations:

☑ Curricula that combine academic rigor and career relevance should be the norm, not the exception. Secondary schools across the nation need the will, capacity, and opportunity to participate in consortia that focus on state-of-the-art curriculum design and delivery.

☑ Basic forms of career awareness should be introduced early, by the time students enter middle school at the age of twelve or thirteen. Carefully designed and age-appropriate curricula should be sequenced across grade levels. Students' exposure to career-related facts and ideas should increase gradually, as adults in

multiple roles help students identify options that seem interesting to them.

☑ The emphasis should be on helping each student achieve a personal fit between their interests, skills, and career aspirations. Which post-secondary option is best for a particular student should be considered secondarily, based on the suitable options. Curricula should include information about which secondary options are most associated with particular career pathways.

☑ The sharp distinction between college preparation curricula, on the one hand, versus career and technical education (CTE) curricula, on the other hand, needs to diminish. Instead, curricula should be rich in both academic and career-relevant content. In addition, curricula should differentiate instruction for students at different skill levels while still exposing the vast majority to a rich blend of academic and technical material.

☑ We should tell our students that mastery of the high school curriculum—not just graduating—is the best way to prepare for the future. No student should be told that high school graduation is a sufficient and terminal certification for work. We need to make sure that high school curricula are geared to prepare everyone—even struggling students—for post-secondary opportunities.

Develop Portable and Stackable Certifications and Credentials

The U.S. does a poor job of certifying that young people are qualified for particular jobs and occupations. Even when they exist, credentials are often narrowly defined and not portable between firms, industries, or job markets. The result is inefficiency: young people remain unemployed and job vacancies unfilled longer than they would if qualifications could be easily communicated. In addition, if certifications were systematically defined and widely recognized, the incentives to invest in acquiring them would be greater.

Recommendations:

☑ The U.S. needs to develop and maintain systems of skill certification and credentialing in order for young people to signal their work qualifications effectively. Credentials should be awarded for completion of well-defined, sequenced work and learning experiences. Credentials should be "stackable" which means designing them in coherent combinations or sequences.

(Photo provided by Year Up)

☑ Systems of stackable credentials make it less likely that students end up with miscellaneous certificates that cannot be combined into credentials that employers will recognize. Trusted credentials enable employers to more readily distinguish between applicants and reduce hiring costs.

☑ To the extent possible, credentials should be *vendor neutral*, which means that businesses throughout the sector will recognize them. The shift from *vendor-specific* (hence non-portable) to *vendor neutral* (hence portable) credentials on a widespread basis will not be easy to achieve. It will require business, labor, and public sector leadership.

☑ To equip young people with credible credentials, strong partnerships need to exist between education and training institutions and the credentialing agencies associated with particular professions or industrial sectors. In many cases, credentials should be awarded by consortia of education or training organizations and the businesses that operate in a particular sector.

☑ Perhaps less difficult to achieve, is the widespread use of dual-credit opportunities for high school students, in which students receive both secondary and post-secondary credit for coursework. Dual-credit certifications can be passports to multiple forms of post-secondary opportunity, including both job market and post-secondary education. An ongoing concern, however—and this concern relates to all the various forms of certification—is that young people who lack opportunities to acquire certification will be distinctively disadvantaged if employers are unwilling to consider other ways of judging their qualifications. (See the sections below regarding Opportunity Youth and Court-Involved Youth.)

DEVELOP AND DELIVER EXCELLENT PROGRAMMING

Reform High Schools to Emphasize both College and Career Readiness

The number of well-defined high school models with strong reputations for preparing students for both college and career is small. Still, the most well-known

have several things in common. All emphasize preparation for college and career and combine rigorous academics, technical education, and work-based learning experiences. Experts agreed that these qualities—rigorous academics, technical education, and work-based learning experiences—are key ingredients for college- and career-ready high schools.

Recommendations:

☑ Regional leaders should prioritize development of college- and career-ready high schools. Backbone organizations should help public and private sector leaders understand the potential of such arrangements and support their development.

☑ To be successful, college- and career-ready high schools require commitments from businesses, civic organizations, colleges, and others. Standard supports include curriculum design assistance, work-based learning opportunities, job shadowing opportunities, mentoring, equipment donations, and more.

☑ Critical friends arrangements in which visitors from local organizations—including colleges, businesses, and public agencies—observe teaching and learning activities and provide advice for improvement can be particularly valuable.

☑ The sheer number of schools and students to be served in metropolitan regions makes achieving a full system of college- and career-ready high schools a daunting challenge. Hence, standard models may require modification to be implemented at scale.

☑ For schools and students in rural areas, the central challenge is limited access to employers and other supports because of geographic isolation. Fortunately, technology-based tools are increasingly available and can be especially effective when combined with field trips. Indeed, even in urban regions, technology will play a central role in achieving college- and career-ready high schools.

Combine Work and Academic Learning in Post-Secondary Career Preparation

☑ Certainly, as workshop syntheses in this report describe, there are many high-quality options for post-secondary career preparation. Still, the information the U.S. system provides about options for post-secondary education and training, the quality of the education and training provided, and the likelihood of job placements

once programs are completed is of uneven quality. If we can raise the quality of post-secondary education and training—especially in two-year colleges and other settings outside of four-year colleges and universities—entry-level workers will be more successful in their jobs and better prepared to advance in their careers.

Recommendations:

☑ Post-secondary education and training experiences should begin with high-quality recruitment, registration, and orientation. Otherwise, many students give up on post-secondary education and training within the first few months of matriculation. By cultivating a welcoming culture and designing explicit supports to ease the transition for new entrants, institutions may reduce high separation rates.

☑ In particular, post-secondary education and training in associate degree, certificate, or credentialing programs should be designed and delivered collaboratively by education and training organizations and local employers. Students should spend time in work-based learning as well as in traditional classrooms. Even where academic learning is emphasized, instruction should be career-related and designed to be deeply engaging.

☑ As students near program completion, there should be well-planned and effectively-implemented job placement and retention supports. To achieve this, there need to be well organized efforts to support key role players and hold them accountable for quality in the performance of their duties.

Tailor Special Outreach and Employment Supports for Opportunity Youth

Roughly one in six young people aged 16 to 24 is disconnected from both jobs and schooling. The White House Council for Community Solutions dubs these young people *opportunity youth* because they have the greatest need for opportunity compared to their peers, and because their disconnection from jobs and schooling represents lost opportunities for the nation. They include many high school dropouts, high school graduates, GED recipients, young people who started college and stopped, as well as some who have work experience. Some lack employment skills, while others are fully qualified—with both hard and "soft" skills—but lack the credentials to signal their qualifications. For a variety of reasons, many remain disconnected from school and work for extended periods and miss or delay the personal development that should be

normal for young people their age. Young people at risk for becoming opportunity youth are sometimes identifiable as early as primary school because of academic struggles or behavioral problems.

Recommendations:

☑   School-based instructional and counseling supports need to improve so that youth who might otherwise become opportunity youth, never do. In addition, communities need more outside-of-school capacity to serve youth who have dropped out of secondary school and those who have completed high school but have not progressed to post-secondary education or established a stable connection to the labor market.

☑   Some youth simply need information and social network connections to schooling or job opportunities. Others need second-chance programs in order to prepare for additional schooling or jobs. Since the number of slots in second-chance programs is insufficient to meet the need, many young people are turned away. More slots are needed. Programs serving opportu-

nity youth should collaborate with local employers not only to identify and teach participants the skills that employers need, but also to expand the numbers of job and program slots available.

☑   When hired into regular jobs, opportunity youth may experience difficulty adjusting to workplace norms and expectations. There should be supports from job supervisors, family members, counselors, and others who care so that these young people transition successfully into the workforce.

☑   Striving to help each young person get on track for life and career success should be a community priority. If supports become routinely effective, we should expect that employers will become more willing to employ opportunity youth and invest in their success.

☑   Another challenge is that opportunity youth often lack credentials to certify their skills. Leaders should persuade employers to do *skills-based hiring* for such youth. Skills-based hiring is when employers base decisions on whether the

applicant has the skills to do the job, even if they lack the credentials.

☑ Communities should track major efforts to engage opportunity youth and use the results to inform ongoing improvement and share successful methods. Developing systems of support for opportunity youth should be a major priority for the national Pathways movement.

Provide Both Pre- and Post-Release Job Preparation for Court-Involved Youth

There are nearly 200,000 youth aged 18 to 24 released from prisons and juvenile detention facilities each year.[17] Most reenter communities with no more skills than when they left. They are stigmatized by criminal histories and, on their own, have few if any social network connections to potential employers. Isolated and facing dim prospects for legal employment, many are at high risk for recidivism.

Recommendations:

☑ Opportunity youth and court-Involved youth are overlapping populations that have similar needs. Many of the same education, training, and support services that opportunity youth need outside the criminal justice system should be available inside. There need to be more opportunities to learn marketable skills.

☑ Working with local employers, programs can help incarcerated youth earn industry-specific credentials in programs that local employers help educators design. Programs should emphasize personal development in addition to job skills and should build networks of community support that young people can rely on once released. When programs are not provided pre-release, they should be made available immediately after reentry. In either case, the job descriptions of program staff should include persuading local employers to accept the credentials that young people earn in these programs as evidence of employability.

☑ Backbone organizations in partnership with programs for court-involved youth should advocate for state justice reforms that expunge the records of non-violent first time offenders once they complete eligible programs. They should also enlist local workforce development intermediaries to help persuade local employers to give court-involved and opportunity youth special consideration when they have earned it.

All of the above culminates in the following "Call to Action." It emphasizes the need to cultivate commitment, build capacity, deliver opportunity, and measure progress in a Pathways-to-Prosperity Movement serving all of America's youth.

III. CALL TO ACTION

"We don't have the right to complain about what we are getting from education unless we're willing to get off the sidelines, roll up our sleeves and help solve the problem."
—Timm Boettcher, RealityWorks

"It's incumbent upon the private sector to strengthen the ecosystems in which we operate. It has to be a partnership between business, government and nonprofit sector...The other role business can play is lending a business's core competencies to the initiative."
—Laila Worrell, Accenture

"Business has been very remiss in getting involved in the educational process in this country. ...we should all feel a sense of urgency and help publicize the skill sets that are necessary to optimize U.S. competitiveness."
—Doug Pruitt, Sundt Companies

(Photo provided by Meridian Technology Center)

CULTIVATE COMMITMENT: Cultivate and Promote a National Pathways-to-Prosperity Civic Culture that Embodies a Long-term Commitment to Excellence with Equity in School, Career, and Life.

- **Excellence:** We commit to establish and maintain supports and accountability for high quality in all aspects of the Pathways system. Young people from every racial, ethnic, and socioeconomic background should experience consistent and effective support from all of the stakeholders responsible for teaching and guiding them in the Pathways system.

- **Demographic Equity:** We commit to high-quality supports for young people from every background, and we explicitly reject any practice or process that might restrict opportunity based on race, ethnicity, or social class.

- **Career Equity:** We will encourage and enable each young person to explore a range of careers. We will respect and support them in any career pathway they choose, including careers that usually require four-year college degrees and those that do not.

BUILD CAPACITY: Create Strong Pathways Systems Directed by Influential Leaders Who Can Help Realize the Pathways Vision at the Regional, State, and National Levels.

- **Elected Officials:** We call upon elected officials to help develop the policies, programs, and financial supports that a strong Pathways system requires.

- **Business, Philanthropic, and Community Leaders:** We call upon leaders in states and localities to develop cross-sector organizational mechanisms to ensure Pathways systems function well.

- **Employers:** We call upon employers to embrace the Pathways vision and collaborate with educators to provide career guidance, world-class career education, and multiple opportunities for work-based learning.

- **Leaders of Educational Institutions:** We call upon leaders of secondary and post-secondary educational institutions to embrace a multiple pathways approach and develop the capacity to offer excellent education and counseling for a diversified menu of college and career options.

- **Leaders of Research Organizations:** We call for research that will inform, improve, and inspire the design and implementation of high-quality Pathways policies and practices throughout the system.

DELIVER OPPORTUNITY: Supply High-quality Developmental Experiences for All Students Along Multiple Pathways.

- **Teachers:** We will ensure that youth experience high-quality teaching in both academic- and career-oriented classrooms; we will endeavor to blend career and academic curricula.

- **On-the-Job Supervisors:** We will insist that on-the-job supervisors nurture excellence and encourage the personal growth of all young people under their authority.

- **Counselors:** There will be high-quality career and life guidance in school and beyond.

- **Youth Leaders:** Young people will mobilize to establish strong peer supports and hold adults accountable for following through on the Pathways vision.

- **Pathways Linkages:** Institutional linkages (instead of disconnected silos) will foster alignment between institutions and this will enable smooth transitions from high school to post-secondary institutions and from education to work. Linkages will enable mid-course transitions from one pathway to another for young people who decide to change direction.

- **Community Supports:** Families, friends, and associates will value and respect each young person as an individual; they will appreciate that every young person has a unique set of interests, skills, and goals and deserves encouragement to seek his or her own unique life direction.

MEASURE PROGRESS: Design and Implement Indicators to Track and Publicize Progress toward Pathways System Goals.

- **Commitments:** Document and publicize commitments made and fulfilled by major Pathways issue and stakeholder type.

- **Capacities:** Measure growth in system capability to deliver within specific domains of Pathways opportunity.

- **Opportunities:** Measure participation rates in Pathways activities and track the balance between supply and demand in major categories of exposure, education, training, and job opportunity.

- **Outcomes:** Track degree and program completion rates as well as job placement, turnover, and advancement rates for young people in specific education, training, and career pathways.

IV. SUPPORT FEDERAL AND STATE POLICYMAKERS

GETTING FEDERAL POLICY RIGHT

STATE BLUEPRINTS FOR PROMOTING PATHWAYS SYSTEMS

"We need to get employers on board to offer either paid internships or coops—some kind of real experience. My concern is that kids need to have the real work experience and they need to have something of substance on their resume. No one is going to want to see a resume with all courses taken online on your handheld device. Employers want soft skills, the ability work on a team, and to do analysis on the job site. The only way to have this is through real experience. We need to push employers to hire these kids temporarily through some type of paid internship. That's how we change the paradigm."
—Jane Oates, U.S. Department of Labor

(Photo provided by the National FAA Organization)

GETTING FEDERAL POLICY RIGHT

Moderator: Bob Wise, President, Alliance for Excellent Education; former Governor of West Virginia

Panelists:

Brenda Dann-Messier, Assistant Secretary for Career, Technical, and Adult Education, Office of Career, Technical, and Adult Education, U.S. Department of Education

Dane Linn, Vice President, Business Roundtable

Jane Oates, Assistant Secretary for Employment and Training, U.S. Department of Labor

Alisha Hyslop, Assistant Director of Public Policy, Association for Career and Technical Education

Sharon Miller, Director of the Division of Academic and Technical Education, Office of Career, Technical, and Adult Education, U.S. Department of Education

Remarks (via prerecorded video):

U.S. Senator Patty Murray, Democrat from Washington State

U.S. Congressman Glenn Thompson, Republican from Pennsylvania

As head of the Alliance for Excellent Education, moderator Bob Wise is a respected leader in the education reform movement, advising the U.S. Department of Education, the White House, and key policymakers in the U.S. Congress. The panel included two prominent members of the executive branch, Brenda Dann-Messier and Jane Oates. They were joined by members of two leading interest groups, Dane Linn and Alisha Hyslop, both of whom play an advocacy role. Senator Patty Murray and Congressman Glenn Thompson provided remarks via prerecorded video.

PANELISTS DISCUSSED WAYS THAT CURRENT FEDERAL POLICY COULD BE MORE EFFECTIVELY IMPLEMENTED AS WELL AS THE CHALLENGES OF EDUCATING POLICYMAKERS TO SUPPORT POLICIES THAT ALIGN BEST WITH PATHWAYS GOALS.

THE CHALLENGE: LEVERAGING FEDERAL POLICY TO PREPARE ALL STUDENTS FOR CAREERS

Moderator Bob Wise framed the discussion around what he called two "inseparable" federal policy imperatives: the moral obligation to ensure all students receive a high-quality education and the mandate to safeguard the national economy.[18] The session examined the role of federal policy in meeting these two challenges.

Panelists focused on three key pieces of legislation that affect education, job training, and workforce development:

- The Workforce Investment Act (WIA)
- The Carl D. Perkins Vocational and Technical Education Act (Perkins)
- The Elementary and Secondary Education Act (ESEA)

Each of these bills was overdue for reauthorization: WIA was scheduled for reauthorization in 2003, ESEA in 2007, and the most recent Perkins authorization expired in September 2013. A delay in Perkins reauthorization may not be particularly problematic. However, in the case of both WIA and ESEA, the long delay has prevented structural problems in the legislation from being remedied and has jeopardized implementation of updated programs and policies.

THE VISION: MODERN LEGISLATION TO SUPPORT EDUCATION AND WORKFORCE DEVELOPMENT

Panelists agreed that WIA, Perkins, and ESEA should be aligned to work together effectively to establish a coherent national agenda on education and workforce development. They described how their respective agencies and organizations have approached the reauthorizations and presented their views on how federal policy could serve the Pathways mission more generally.

Brenda Dann-Messier described the Department of Education's (ED) report "Investing in America's Future: A Blueprint to Transform Career and Technical Education." That report proposes four principles to guide new Perkins legislation.[19] Recommendations aim to "…usher in a new era of rigorous, relevant, and results-driven CTE."[20]

EXHIBIT 6: Four Principles to Guide New Perkins Legislation

Alignment	Collaboration
Accountability	Innovation

Source: "Investing in America's Future: A Blueprint to Transform Career and Technical Education." 2012 U.S. Dept of Education

They include (Exhibit 6):

1. Alignment between CTE programs and labor market needs;

2. Collaboration among secondary and post-secondary institutions, industry and employers to improve programs;

3. Accountability for improving outcomes and building technical and employability skills in CTE programs; and

4. Innovation supported by the systemic reform of state policies and practices to support CTE implementation of effective practices at the local level.[21]

Dann-Messier emphasized that federal agencies are collaborating on these issues more than in the past. For instance, the Departments of Labor, Health and Human Services, and Education issued a joint letter defining career pathways and urging states to use pathways as a framework to promote alignment across systems.[22]

According to Jane Oates, the WIA reauthorization has been the highest priority at the Department of Labor (DOL). She stressed that, in contrast to the first WIA—which was passed during the full employment economy of 1998—the next generation needs to include "flexibility and interconnectivity" to work effectively with other legislation, especially ESEA and Perkins. Oates used two recent innovations to illustrate DOL's approach in the absence of new legislation. First, in conjunction with local workforce boards, DOL has developed a suite of online tools and mobile applications that provide up-to-date labor-market information for job seekers. One application sends a text message when a particular type of job opens within an individual's zip code.

DOL has overhauled program funding to rely increasingly on results instead of on service delivery alone. Oates said, "You're going to have to prove that not only can you do world-class training beginning with the employer in mind, but that you have the skin in the game to place kids in a job." She pointed out that for many community colleges, community-based organiza-

tions, and training programs, this will require partnerships with employers who can actually provide job placement opportunities.

> *"In order to get funded by my agency, you're going to have to prove that not only can you do world-class training beginning with the employer in mind, but that you have the skin in the game to place kids in a job."*
> *—Jane Oates,*
> *U.S. Department of Labor*

Dane Linn represented the Business Roundtable, which counts CEOs from leading corporations among its members. Linn said the organization is motivated by the desire to eliminate the "skills gap" that employers consistently report. To this end, the group has concentrated on specific reforms to WIA and Perkins reauthorizations, including the recommendation that WIA reauthorization should prioritize programs that lead to employer-recognized credentials.

Alisha Hyslop provided the perspective of the Association for Career and Technical Education (ACTE). ACTE wants to include language in ESEA legislation to create a more equal partnership between core academic and CTE teachers. Perkins does not "ask academic teachers to integrate applied learning," but it does ask CTE teachers to integrate academic content.

A KEY BARRIER TO PROGRESS: LACK OF POLITICAL WILL TO CHALLENGE THE STATUS QUO

Senator Murray and Representative Thompson stressed their mutual support of career and technical education. Indeed, both Democrats and Republicans embrace the "Pathways vision." President Obama also called for better pathways in his 2013 State of Union address.

Hyslop offered several reasons why bi-partisan support has failed to yield legislative action:

1. The political climate in Washington, D.C. leaves little room for compromise or cooperation. This makes it nearly impossible for legislation to move forward, even when some fundamental agreement exists.

2. Policymakers are reluctant to sponsor innovative approaches. "When, for example, you start to talk about changing federal legislation to support things like students leaving high school to engage in alternative forms of work-based learning," Hyslop said, "People start to get a little nervous." Less conventional suggestions are politically polarizing among constituents as well as legislators.

3. Legislators often lack deep understanding of the policies they are authorizing. Hyslop and Oates agreed that lawmakers might not grasp the ways that policies affect their constituents or understand how different pieces of legislation can be designed for use in tandem. As a result, they take disjointed approaches that fail to consider how different pieces of legislation can be complementary.

4. Frequent federal funding crises—including the fiscal cliff, sequestration, and continuing resolutions—distract policymakers and delay the reauthorization of legislation up for renewal. Further, a narrow focus on the deficit fosters resistance to initiatives that may have a significant upfront cost, even if they could generate savings in the long run.

THE WAY FORWARD: LOBBY AND EDUCATE FEDERAL LAWMAKERS WHILE FULLY EXPLOITING EXISTING LEGISLATION

Panelists outlined recommendations they believe will help move the Pathways agenda forward. They include state and local innovation, community pressure on lawmakers, and prioritizing funding.

State and local innovation can provide federal policymakers with examples of policy and programming that federal legislation can potentially support. Linn described how the German industry conglomerate Siemens worked with officials in Charlotte, North Carolina. Facing a skilled labor shortage, Siemens partnered with Central Piedmont Community College. They brought curriculum developers from Germany to design a training program for pipeline workers. According to Linn, such examples could push legislators to think differently about ways of helping constituents. They could help create a political imperative to transcend Capitol Hill partisanship.

Others on the panel stressed that pressure from constituents is another way to overcome partisanship. Constituents can help policymakers understand that federal Pathways programs should receive priority in spending decisions. Hyslop acknowledged the

impact of the deficit on federal reluctance to increase spending. Nonetheless, she asserted, "If we think CTE is a priority, then it needs to be a priority." Therefore, it must be funded by Congress.

Considering the status of current policies, Hyslop suggested that Perkins legislation might be improved while waiting for reauthorization. She explained, "A couple years of delay will actually give us more time to institute more of the work of career pathways and to dig down to identify what is essential to running high-quality CTE programs."

Panelists agreed that pending ESEA, Perkins, and WIA reauthorization, other federal solutions need to be explored. Oates described how she would create greater flexibility for states and programs by exercising her ability to grant waivers to transfer funds or create innovative service delivery models.

Miller pointed out that there is some flexibility in the current legislation that could be effectively exploited. For example, the last Perkins reauthorization included a "program of study" provision supporting collaboration between businesses and schools to integrate academic and technical content linked to career pathways. Miller added, "We have started a new national activities group project with Jobs for the Future to provide technical assistance. The group is currently working with five states to do this work of connecting CTE to the broader systems of pathways that are developing in states." Fortunately, such promising work continues, despite the legislative stalemate.

"If we think CTE is a priority, then it needs to be a priority."
—Alisha Hyslop,
Association for Career and Technical Education

STATE BLUEPRINTS TO PROMOTE PATHWAYS SYSTEMS

Moderator: Paul Reville, Professor of Practice, Harvard Graduate School of Education; Massachusetts Secretary of Education from 2007 to 2013

Panelists:

Eleni Papadakis, Executive Director, Washington Workforce Training and Education Board

Blake Flanders, Vice President of Workforce Development, Kansas Board of Regents

Jackie Dowd, Deputy Commissioner on Policy, Education and Training, Indiana Department of Workforce Development

Joseph Meyer, Secretary of Education and Workforce Development Cabinet, Kentucky

Kentucky, Indiana, Kansas, and Washington have made substantial progress in developing effective Pathways systems. Drawing from their expertise as prominent state policymakers, panelists Joseph Meyer, Jackie Dowd, Blake Flanders, and Eleni Papadakis each described their respective systems.

PANELISTS HIGHLIGHTED THE POLICIES, ACCOUNTABILITY STRUCTURES, AND FUNDING MECHANISMS THAT LED TO PROGRESS IN THEIR STATES. THEY NOTED THAT INFLEXIBLE FEDERAL PROGRAMS, INEFFECTIVE PARTNERSHIPS, AND DISADVANTAGED STUDENTS' LACK OF ACCESS TO POST-SECONDARY PROGRAMS REMAIN CHALLENGES. THIS WORKSHOP DESCRIBED SEVERAL STRATEGIES TO BUILD MORE COHERENCE AMONG STATE, FEDERAL, AND LOCAL INITIATIVES.

THE CHALLENGE: UNDERDEVELOPED PATHWAYS APPROACHES AT THE STATE LEVEL

Moderator Paul Reville opened the session by emphasizing the powerful role that states play in education and workforce development systems. Unfortunately, many states have been unable to translate their formal authority into effective and coherent systems of school-to-career pathways.

THE VISION: AGENCY ALIGNMENT, BUSINESS INVOLVEMENT, AND STRATEGIC INCENTIVES FOSTERED BY INNOVATIVE STATE LEADERSHIP

Panelists summarized Pathways policies and structures from their respective states. Each state's approach is unique. Nonetheless, alignment, business involvement, innovative funding, and new accountability structures were common themes (Exhibit 7).

Kentucky

Joseph Meyer credited Kentucky's initial progress to alignment in the education sector. He explained that a 2009 legislative act "broke down the barriers" between the secondary and post-secondary communities and helped establish a dual credit CTE system. Strong interagency leadership also facilitated cooperation and alignment among the Department of Education, Department of Workforce Investment, Education Professional Standards Board, the Council on Post-Secondary Education, and the state cabinet.

According to Meyer, business involvement began when the state's Workforce Investment Board recommended a sector strategy approach to workforce development. To support this approach, Kentucky required educational partnerships to have industry leadership. Meyer explained, "We want business to bring in other partners, but the partnership has to be business-led, simply because their pace of change is so great." The partnership between Bluegrass Community and Technical College and Toyota—which has won numerous awards for its advanced manufacturing technician program—is one promising example that emerged from this approach.

Kentucky also embraced new educational accountability policies. For example, the state created incentives for school districts to place equal emphasis on academic and career preparedness. Meyer described how districts now earn a bonus point in the state's accountability calculation for each student who is both college and career ready.[23]
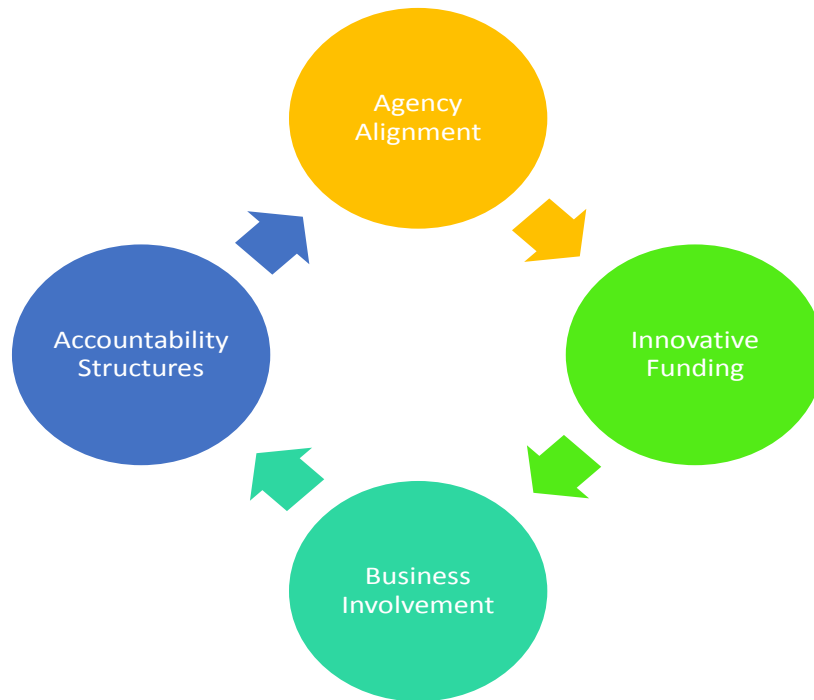
Indiana

Jackie Dowd explained that in Indiana, "The story is really driven by adult education." The state restructured the governance and funding of adult education to build partnerships and support new credentialing programs. The legislature transferred adult education from the Department of Education to the Department for Workforce Development. As a result, the state then rewrote all policies that govern adult education including those for post-secondary CTE and GED oversight and administration.

Indiana also developed a regional structure for adult education delivery. Each region identified local industry sectors with long-term and short-term job prospects. The state then created stackable post-secondary credentialing programs to meet each region's employer needs in the identified sectors.

The state also instituted a competitive, performance-based approach to funding adult education programs. The state awards funding to consortia of adult education providers, CTE providers, post-secondary institutions, and workforce partners. Dowd reports that these policies have led to promising early results.

Kansas

Blake Flanders described how Kansas integrated education and workforce development by creating a joint position with the Board of Regents and the Department of Commerce (which encompasses its workforce development and apprenticeship programs). This new role has fostered collaboration and alignment across agencies.

Kansas also redesigned its approach to funding post-secondary technical education. To qualify for state funds, programs must collaborate directly with business and training and culminate in an industry-recognized credential. To encourage institutions to offer high-demand programs—even if they are more costly—the state now employs a tiered approach to funding that accounts for differential program costs.

According to Flanders, Kansas provides incentives to post-secondary career and technical education programs for high school juniors and seniors. The state pays the students' tuition and awards high schools $1,000 for each student who completes an industry-recognized credential in a high-demand occupation before graduation.

Washington State

Eleni Papadakis focused on the role the Workforce Training and Education Coordinating Board in Washington State has played. This tripartite board includes labor, business, and the lead government agencies. It ensures that "major administrators of public and state

investments in workforce education [are] sitting at the same table." The Board is charged with creating a performance accountability system, leading state strategic planning, and advising the state legislature on ways to support the system.

Papadakis emphasized the importance of the accountability role, in particular. The Board informs and updates state officials about the number of students getting jobs, earning livable wages, and the total number of quality credentials earned. In addition, Washington conducts a return-on-investment (ROI) analysis every four years to document fiscal payoffs for taxpayers.

According to Papadakis, this approach ensures "better, more strategic investment in high employer-demand programs of study" across the state. She said that Washington's efforts to integrate academic and technical education have gone particularly well. For example, the Alliance for Student Success in Education and Training (ASSET) program is designed to increase work-based learning opportunities for secondary and post-secondary students by matching employers and young people.

Papadakis also described Washington's "All Means All" strategy to expand access to post-secondary education. It is based on the belief that "there's a place in the economy for absolutely everyone who wants to get there." The Integrated Basic Education and Skills Training (I-BEST) program provides underserved students with basic skills instruction while they complete a certificate or degree and is one part of this strategy.

> *State accountability structures ensure "better, more strategic investment in high employer-demand programs of study."*
> *—Eleni Papadakis,*
> *Washington Workforce Training and Education Board*

KEY BARRIERS TO SUCCESS: INSUFFICIENT CAPACITY TO REACH ALL STUDENTS, LACK OF FEDERAL INNOVATION, AND INEFFECTIVE PARTNERSHIPS

Panelists agreed that the inability to reach all students, the lack of effective federal leadership, and struggles related to building high-quality and sustained collaboration remain challenges. Even with effective program-

ming, reaching all students—especially young people with disabilities, young people of color, and those who are economically disadvantaged—is difficult.

> *"The feds and state need to set high-level strategic outcome measures and goals that all systems are responsible for."*
> *—Eleni Papadakis,*
> *Washington Workforce Training and Education Board*

They described the challenge of aligning federal and state priorities, especially in funding. According to Papadakis, federal funding streams often lack flexibility and include restrictive process measures. For example, she said, limitations on Workforce Investment Boards make it "nearly impossible" for them to function as regional intermediaries between business and education—even though they are well positioned to do so.

Furthermore, they acknowledged that establishing partnerships among government agencies and business rarely comes easily. Dowd reflected on this fact and described collaboration as "an unnatural act between non-consenting adults." Flanders agreed effective collaboration is often the result of individual leadership and relationships. He underscored the need to ensure that Pathways arrangements "live beyond people" so that leadership turnover does not disrupt progress.

A WAY FORWARD: "TIGHT ON THE WHAT" BUT "LOOSE ON THE HOW" FEDERAL REGULATIONS

Panelists envisioned a more effective Pathways system with greater coherence between federal, state, and local actors. They outlined strategies to reach more students, allocate funding more effectively, and build broad-based collaboration.

Meyer said he had "very low expectations of the federal government," but other panelists expressed optimism that federal policy might better support state Pathways development. Papadakis recommended that "The feds and states need to set high-level strategic outcome measures and goals that all systems are responsible for" and that states and localities should have flexibility in how they achieve them. Dowd agreed and called for policies that are "tight on the what, loose on the how."

While panelists did not identify a silver bullet to improve collaboration, they emphasized the importance of a "client-centered" approach to Pathways development. They agreed that prioritizing the needs of both students and employers can ensure "short wins" for stakeholders and build momentum for the movement. With this in mind, Dowd closed by telling the audience: "Urgency is critical. Express this in your states and then DO something" to support this movement.

> *"Urgency is critical. Express this in your states and then DO something" to support this movement.*
> *—Jackie Dowd,*
> *Indiana Departments of Workforce Development*

V. DESIGN AND IMPLEMENT VITAL SYSTEMS RESOURCES

DEVELOPING EFFECTIVE INTERMEDIARIES

IMPROVING RESEARCH DIRECTIONS

ADAPTING LESSONS FROM ABROAD

DESIGNING AND IMPLEMENTING CREDENTIALS

CREATING WORLD-CLASS CURRICULA FOR CAREER EDUCATION

TRAINING TEACHERS FOR TOMORROW'S WORKERS

COMMON PRINCIPLES AND PRACTICES IN THE MOST EFFECTIVE U.S. POST-SECONDARY PROGRAMS

DISTILLING PRINCIPLES OF EFFECTIVE POST-SECONDARY PROGRAMS

"Skill-based and problem-based learning—in conjunction with MOOCs—will solve a significant portion of the [skills] gap; and, there should be a proper segmentation of the education channels that lead to the job market … The comprehensive development of the economy will happen with these multiple paths; that kind of a channeling should happen with the schooling."
—Moorthy Uppaluri, Microsoft

DEVELOPING EFFECTIVE INTERMEDIARIES

Moderator: John Kania, Managing Director, FSG

Panelists:

Jeff Mays, President, Illinois Business Roundtable

Amy Loyd, Director, Pathways to Prosperity Network, Jobs for the Future

Jeff Edmondson, Managing Director, National Strive Network

Moderator John Kania is one of the nation's leading thinkers on "collective impact" structures and processes. Panelists Jeff Mays, Amy Loyd, and Jeff Edmondson are each professional change agents from three of the most important Pathways projects currently underway in the U.S.

PANELISTS DISCUSSED THE NEW ROLE OF "BACKBONE" ORGANIZATIONS, THE FUNCTIONS THEY PERFORM, AND THE WAYS THEY BRING COHERENCE TO SOCIAL CHANGE EFFORTS. SINCE BACKBONE ORGANIZATIONS ARE A NEW APPROACH TO IMPLEMENTING SYSTEMS CHANGE, THEY ALSO SUGGESTED HOW FUNDERS COULD SUPPORT THEIR SUCCESS.

THE CHALLENGE: BUILDING AND SUSTAINING COLLECTIVE IMPACT

Panelists agreed that progress on the Pathways agenda will require new organizational forms to coordinate the work of educators, public officials, business people, philanthropists, and civic leaders. They identified current weaknesses in formal structures as well as informal norms. Other issues highlighted were the lack of effective mechanisms to convene people who need to work together, ineffective norms for communication, and differences (even within particular sectors) in defining and measuring success. As moderator John Kania put it, "We find ourselves in a situation where the sectors aren't accustomed to speaking with each other."

THE VISION: USING INTERMEDIARIES AS FACILITATORS

The vision entails establishing what some call "intermediaries" and others call "backbone organizations" whose sole purpose is to help collective action efforts succeed. Kania opened the session by outlining a five-point "Collective Impact Framework" (Exhibit 8) consisting of the following:

1. **A Common Agenda:** Key players work across sectors to create a common agenda that they commit to and hold one another accountable for achieving.

2. **Shared Measurement:** There is agreement on a limited number of indicators to track progress and measure success. These indicators can be aggregated to the community level and used to measure the contribution of individual organizations.

3. **Mutual Reinforcement:** Organizations within and accross sectors craft strategies to work in mutually reinforcing ways, with defined roles and responsibilities.

4. **Continuous Communication:** Very senior people communicate regularly.

5. **A "Backbone" Entity:** An organization dedicated to the alignment and coordination of the collective impact system.

Kania argued that organizations dedicated to creating the necessary connections and structures for progress are necessary. He asserted that when collective impact efforts fail, the absence of an effective backbone entity is often the key reason.

EXHIBIT 8: FSG's Collective Impact Framework

He identified six support roles that these backbone organizations perform:

1. Guide the development of a common vision, strategy, and agenda;

2. Align activities by creating new organizations, engaging participants, and convening stakeholders;

3. Establish shared measurement practices and help organizations interpret and measure their own contributions;

4. Build public will;

5. Advance and align policies; and

6. Mobilize resources including funding and other community assets.

Jeff Edmondson highlighted the distinction between a "backbone function" and a "backbone organization" in post-conference correspondence.[24] He explained how the semantics of "backbone function" could help communities avoid power struggles over which entity should be designated as the sole "backbone organization." Furthermore, he said, "This shift helps us see that this work is not about a central power center that

gets created in a traditional hierarchical paradigm, but it is instead about a set of shared roles that need to be played as we look to connect the dots instead of recreate the wheel." [25]

He provided this point of view after the conference, so it is difficult to say whether other panelists would have agreed. The question of whether there is a power center should be distinguished from whether all backbone functions are performed by a single organization. If a local or regional "power center" is defined as a group of people who control resources and use them to support agendas, then a power center may sometimes be needed in order to overcome resistance to change in well-established but inefficient local institutional arrangements. Even in communities with strong power centers, the best ways of allocating backbone functions across organizations may differ from one community to another.

Most backbone organizations are young and still evolving. The panelists illustrated the three examples that they represent.

The Illinois Business Roundtable

Jeff Mays represented the Illinois Business Roundtable. Concerned about the need to replace retiring baby boomers, the Roundtable commissioned a study of labor supply conditions. The study concluded supply would be relatively flat through 2015, but that both numbers and skills of Illinois workers would decline thereafter. This led the Roundtable, the State Board of Education, and the Department of Commerce and Economic Opportunity to form the Illinois Learning Exchanges as part of the Illinois Pathways Initiative and the state's STEM agenda. The Roundtable plays a backbone role.

Key industrial clusters were identified and state agencies were pressed to align their support. Business and trade organizations representing each of the identified sectors were invited to develop agendas. Some groups responded strongly. For example, members of the Illinois Manufacturers Association expressed their support by stating: "We own the Manufacturing Exchange, and we're going to get out there and talk about credentials and apprenticeships and work-based learning and mentors and getting those teachers out in our worksites—we own that."

The information technology association CompTIA stepped up to lead the Information Technology (IT) Exchange. The Illinois Science and Technology Coalition volunteered to lead the Research and Development (R&D) Exchange. Mays characterized the work as "industry-driven partnerships of the willing." While these efforts were in the early stages of development at the time of the conference, he expressed optimism about their potential.

Jobs for the Future

Amy Loyd of Jobs for the Future spoke on behalf of the Pathways to Prosperity Network, which is a direct outgrowth of the Pathways to Prosperity report of February 2011. Following the report's publication, co-author Robert Schwartz established the Pathways to Prosperity Network at Jobs for the Future. The Network is a coalition of states focused on showcasing what taking the Pathways challenge seriously would look like. The Network's approach is to have state officials select the most appropriate regions and, within regions, industries on which to focus. Work is then organized to influence state policies, employer engagement, career counseling and awareness, and the development of intermediaries. Loyd explained, "You have to do the tough work of bringing stakeholders together, determining what's important to them, and discovering who can play key roles."

"You have to do the tough work of bringing stakeholders together, determining what's important to them, and discovering who can play key roles."
—Amy Loyd,
Jobs for the Future

Strive Together

Edmonson represented Strive Together, the most mature intermediary on the panel. The model developed in Cincinnati, Ohio, with Edmonson as its director. He provided a few examples of why Strive Cincinnati has been successful.

Strive Cincinnati received a great deal of publicity when Kania published an article in the Stanford Social Innovation Review that featured Strive as the most mature example of a collective impact organization.[26] Interestingly, Edmonson reported that the article made the work in Cincinnati more difficult because it focused so much on Strive leadership. Edmonson advised, "Always lift up your partners, every single chance you get," and let other people talk about what a positive difference you are making instead of tooting your own horn.

Edmondson's second example concerned aligning work around outcomes. John Pepper, former president and CEO of Procter and Gamble, had told Edmonson that his meetings were boring, except when they were about data. Now, every meeting of the Strive partnership begins with a discussion of the vision and a presentation of data. An attendee at one meeting remarked, "This is truly the Tower of Babel and the only translator we have is data … don't ever stop talking about it."

Edmonson also addressed the importance of political cover, underscoring that "There need to be five, six, or seven CEO-level partners who are willing to go to bat for the work of the intermediary." These can include presidents of universities, superintendents of school systems, or heads of major businesses, nonprofits, and civic organizations. He advised, "Bring your champions to meetings when something is likely to be a problem."

A KEY BARRIER TO PROGRESS: NOVELTY OF THE INTERMEDIARY'S ROLE

Two major impediments to developing effective intermediary organizations are first, the lack of understanding among business elites, civic leaders, and funders concerning the contributions that such organizations can make, and second, a shortage of people with the experience to run them effectively. At the same time, there is growing demand for collective impact investments. Policymakers, philanthropists, and business decision makers need the type of information that backbone organizations can help assemble to evaluate these investments.

Intermediaries serving as backbone organizations for collective impact is still a new concept. Consequently, many influential people, lacking an understanding of their roles, question whether they are necessary. Another impediment to progress is that many existing organizations cause confusion by proclaiming themselves backbone organizations.

Edmonson worried that there is a proliferation of self-nominated backbone entities because "everybody wants to play this cool role." In an effort to better define the role of backbone organizations, Strive Together has started to develop and disseminate quality benchmarks for how to do this work effectively.

THE WAY FORWARD: FUNDING BACKBONE INTERMEDIARIES TO GUIDE AND MONITOR CHANGE

The panel asserted a need to change grant-making practices. According to Kania, "This isn't new money into the system; it's a different way of doing business." Edmonson added how, in the past, funders "pooled a lot of money and then had everybody work to prove that they deserved to get some of it." Instead, he suggested that funders propose the following: "In order to get our resources, we want you to be part of a network of practitioners that is working to improve [some outcome]." That encourages the entities to work together, as long as the backbone organization can assemble the capacity to enable it to do its job effectively. Alternatively, funders can say, "I've got [a certain amount of money] available if you can develop a collaborative to figure out how to achieve [some outcomes]."

To assess an organization's effectiveness, Edmonson suggested a "value exchange." Specifically, he proposed issuing a "request for engagement" that asks: "Would you be willing to come to the table to move this dial if we were able to negotiate with you about what you would need to move the dial if we work on making

it happen together?" That would define the value exchange: "What would the intermediary be willing to do for the practitioners and what would the practitioners be willing and able to do in order to move the dial collectively? A value exchange is a profound concept."

The national Strive Together organization urges communities to identify funders interested in one or more of the outcomes that the local Strive aims to influence. Each funder is asked to invest $40,000 or $50,000 to help fund an intermediary organization. Central among the intermediary's roles is to assemble information that funders can use to make better decisions—with more collective impact.

Kania said, "This is still fairly visionary. Funders typically want to fund programs and look at their outcomes," instead of funding systems change. He continued, "Half a million dollars can fund a good backbone organization that helps align and coordinate seven billion dollars' worth of budgets. You don't get much leverage than that."

"Half a million dollars can fund a good backbone organization that helps align and coordinate seven billion dollars' worth of budgets. You don't get much more leverage than that."
—John Kania,
FSG

IMPROVING RESEARCH DIRECTIONS

Moderator: James Kemple, Professor, New York University; Executive Director, Research Alliance for New York City Schools

Panelists:

David Autor, Professor and Associate Head of the Department of Economics, MIT

James Rosenbaum, Professor of Education and Social Policy, Northwestern University

Kevin Hollenbeck, Vice President, Senior Economist and Director of Publications, W.E. Upjohn Institute

Volker Rein, Senior Research Associate, Federal Institute for Vocational Education and Training (BIBB), Germany

Moderator James Kemple has spent much of his career at MDRC conducting rigorous evaluations. He currently heads the Research Alliance for New York City Schools based at New York University. MIT economist David Autor shared insights on key labor market trends that have implications for training.

Kevin Hollenbeck of the W.E. Upjohn Institute drew on his experience evaluating workforce development programs and CTE training in Washington State. Northwestern University's James Rosenbaum offered insights on ways that post-secondary learning opportunities should be structured. Volker Rein, from Germany's Federal Institute for Vocational Education and Training, discussed U.S. and German research needs in CTE and related areas, emphasizing that high unemployment among low-skilled youth is a challenge facing both nations.

PANELISTS DISCUSSED WAYS THAT RESEARCH CAN INFORM AND HELP IMPROVE PATHWAYS POLICY AND PROGRAMMING. THEY ACKNOWLEDGED THAT HIGH-QUALITY RESEARCH CAN SEEM EXPENSIVE. BUT THEY POINTED OUT THAT THE COST TO SOCIETY OF WIDELY REPLICATING INEFFECTIVE PROGRAMS CAN BE MANY MULTIPLES THE COST OF A GOOD EVALUATION.

THE CHALLENGE: OVER RELIANCE ON LIMITED EVIDENCE

Moderator James Kemple began by emphasizing the importance of research in the Pathways movement. He explained that high-quality evidence helps us understand the nature of challenges and informs us on "what works, for whom, and under what circumstances." Panelists highlighted insights from their own research as well as from other work on labor market trends, secondary and post-secondary programs, and CTE. At the same time, they emphasized that the current research base is incomplete, fragmented and, in too many cases, of poor quality. Hence, much of our discourse about programs is based on special cases. There is often little distinction between what has worked well under special circumstances and what will work routinely under normal circumstances. Panelists said high-quality research is necessary to make such distinctions reliably and to document quantitative impacts.

THE VISION: RESEARCH-BASED DECISION MAKING

David Autor initiated the discussion by summarizing the implications of recent labor market research. He reported that the trend toward automation in middle-skill clerical and manufacturing positions has led to a decline in the demand for middle-skill workers. "A very tempting inference," he explained, is that advanced countries "should give up on middle-skill education because middle-skill jobs have no future." However, Autor was optimistic. He said that there will be some recovery of middle-skill demand because many new middle-skill opportunities in the economy require competencies that cannot be easily automated. He explained that in many cases, these jobs "incorporate technical skills with some interpersonal skills" and involve "human flexibility and adaptability." Medical paraprofessionals, skilled repair workers, and trades people are several such middle-skill jobs.

It is important to note that these jobs often require specialized post-secondary training in the form of a certificate, associate degree, or industry-recognized credential. Thus, such jobs can be a bridge to higher skill positions. Autor explained, "Education is cumulative. People can't reach high skills without reaching middle skills." He continued, "You can't learn calculus until you've learned algebra; you can't write great essays until you've learned how to write a complete sentence." And, "From a pure equity point of view, you want to expose everyone to that set of skills."

"Education is cumulative. People can't reach high skills without reaching middle skills."
—David Autor, MIT

James Rosenbaum turned to successful for-profit occupational colleges to highlight several practices that could make community colleges and other post-secondary institutions more effective. First, he said many private colleges use an "incremental success model." This stands in contrast to the "B.A. mentality" prevalent in public community colleges.

According to Rosenbaum, the program of study in occupational colleges is often built around a "degree ladder" which enables students to earn progressively higher-level credentials throughout their college career. He pointed to a program that offers a certificate after one year, followed by an associate degree after two years, and finally a bachelor's after the full sequence has been completed.

This system, Rosenbaum said, is designed with a respect for the "chaotic lives" that many students must navigate. If life circumstances dictate a premature break from schooling, a "laddered" system ensures that the credits a student has already accumulated hold significant value in the job market.

According to Rosenbaum, private occupational colleges also offer lessons on the importance of career advising and job placement. While this can be expensive, he added, it has "really big payoffs" for students. Rosenbaum described how registration systems can be automated to enable counselors to see when students are registered for the wrong courses or if they are failing. This allows counselors to target support for students more efficiently. He noted that counselors should also provide assistance for students navigating the job market. He explained, "We have students who on their own are going to choose jobs that have no way of using the job skills that they have acquired … We should be making sure that students take the right kinds of jobs" based on their skills, interests, and the (monetary and non-monetary) benefits a particular position offers.

Kevin Hollenbeck described his evaluation of Washington State's workforce development programs. He focused on findings related to the state's secondary CTE system. Hollenbeck's quasi-experimental study measured average earnings and employment impacts

through a matching methodology: students who had graduated from CTE programs were matched to otherwise identical high school graduates.

He found that compared to non-CTE students, CTE students had better employment outcomes and higher earnings in both the short and long term.[27] Hollenbeck acknowledged that such studies are imperfect due to inexact matching of treatment and comparison groups. However, he underscored that his findings align well with previous work by both Paul Campbell at the Center for Research in Vocational Education and John Bishop at Cornell University.

Volker Rein provided insight into Germany's dual vocational education and training (VET) system. He described both the challenges the system faces and how it can inform work on developing a better U.S. system. Rein introduced the term "edutraining" to describe the fact that in Germany—and some other European Union nations—education and training are designed very intentionally to be part of an integrated system. For example, VET students experience a mix of theoretical and practical education centered on specific, marketable skills that can be credentialed. This approach is embedded in a holistic conception of competency that encompasses a combination of academic, occupational, civic, and personal capabilities—a conception that many agree should be a goal in the United States as well.

According to Rein, Germany is piloting competency-based curricula to promote the transparency, stackability, and certification of credentials. A key idea is that once an individual earns a credential signaling competence in a specific skill, they become more valuable to apprenticeships or other training programs. This, in turn, can be a foundation for even higher credentialing. Rein proposed that nationally recognized credentials based on competencies could be an important building block for improving the U.S. career training system. He acknowledged that such a system would require an unprecedented level of coordination between public and private sector stakeholders.

Rein also highlighted how Germany attempts to ensure permeability between university and VET tracks. Through advanced vocational degrees, students with industry expertise and experience can qualify for bachelor's or master's level university programs. However, Rein contrasted the high-quality opportunities available to the most skilled young people with the relative scarcity of opportunities for students who have low basic skills. There is a system of preparatory vocational training programs aimed at preparing such students for apprenticeships. However, because such

programs are known to serve low-skilled students, they tend to be stigmatized. As a result, students who complete these programs are rarely recruited for apprenticeships in businesses.

KEY BARRIERS TO PROGRESS: A SHORTAGE OF HIGH-QUALITY RESEARCH TO HELP CHANGE THE BIAS FAVORING ACADEMIC SKILLS AND CREDENTIALS

Rein emphasized that apprenticeships can be effective pathways into middle-skills jobs and that career-oriented credentials can pay off. Nonetheless, he noted that "strong biases" remain in both the American and German job markets in favor of traditional academic skills.

He said, "Everyone says Germany is doing well but we have a structural problem. …Currently there are 300,000 young people who because of weak academic skills don't have a chance at apprenticeships. While the youth unemployment rate of 7.9 percent seems to be comparatively low, it is an ongoing societal concern ... we are doing a lot of research on how to solve this problem."

In addition, Rein reported that expanding the supply of apprenticeships in Germany has been difficult, even in times of economic prosperity. Currently, only 20 percent of German companies and public institutions offer apprenticeships. The rest get their workers from the traditional labor market and academic skills are highly valued. Rein explained that because of the perceived association between academic skills and traditional university degrees, "Research university graduates are the privileged ones and compete more successfully when it comes to winning management positions with higher skill requirements."

Rosenbaum spoke of a similar "misguided mentality" in many U.S. community colleges that a four-year college degree is the only worthwhile goal. He used the phrase "B.A. blinders" to characterize the mindset in community college systems, where virtually all administrators and people who design programs have bachelor's degrees themselves. There is an infatuation with electives.

Rosenbaum explained, "We in the B.A. world love electives … that has led to massive amounts of credits that don't count, that don't accumulate. People have 60 credits and still don't have an associate degree." For students who attend community college with little direction, such challenges are exacerbated by a poor advising system with overburdened counselors and registration systems that are uninformative about how course selections should relate to careers.

> *"We in the B.A. world love electives … that has led to massive amounts of credits that don't count, that don't accumulate. People have 60 credits and still don't have an associate degree."*
> *—James Rosenbaum, Northeastern University*

Rosenbaum acknowledged that hiring more counselors is costly. Nonetheless, his research shows that successful "for-profit colleges that care about the bottom line pay for [better counseling] because there is a payoff." If connecting students to the working world is an explicit goal, then an investment in advising is essential.

THE WAY FORWARD: INVEST IN HIGH-QUALITY RESEARCH AND ALLOW FINDINGS TO INFLUENCE DECISIONS

Panelists agreed that research on the impacts and cost effectiveness of career counseling is important. In addition, both Autor and Rosenbaum proposed that institutional linkages should be a focus. Autor identified a need for research on exposure to career opportunities at the secondary level. Specifically, "the type of exposure that makes students think: A) that it's worth getting my high school degree; and B) that there is something to shoot for when I am done with it."

Rosenbaum explained that research can inform how decision makers organize to align and coordinate relationships. This can include inter- and intra-organizational networks in which career counselors are embedded. For example, Rosenbaum suggested that profiling the organizational structures, processes, and employer relationships associated with counseling at successful private occupational colleges might be a way to learn more about which advising investments have particularly high multiple-outcome payoffs. Similarly, Rein identified the need for "a lot of research on how to create stackable credentials." He lamented the insufficient interest in apprenticeships and work-based learning among employers in both countries. He suggested that researchers and policy professionals in both the United States and Germany should strive to design and study legal frameworks and financial incentives aimed at motivating employers to invest more in education and training.

There was agreement that whether evaluating systemic solutions, on the one hand, or particular programs, on the other hand, methodological rigor is imperative. Any well-constructed impact study needs a credible estimate of the "counterfactual" — in other words, an estimate of what would have happened in the absence of the intervention or policy change whose impact is being evaluated. By definition, the impact of a program or policy is the difference between what actually happens versus the counterfactual that would have happened in the absence of that program or policy. Conclusions from impact evaluations are only as good as the quality of their counterfactual estimates (which are often simply informed judgments).

In program evaluation, the random assignment of candidates to treatment and control groups is the gold standard, because there is no systematic difference at baseline between the two groups. Hence, what happens during the treatment period to the control group provides a high-quality estimate of the counter-factual for the treatment group.

Studies of this nature can seem quite expensive. However, Autor spoke for everyone on the panel when he stated, "We spend tens of billions of dollars a year on programs that we actually don't know their efficacy and are reluctant to blow ten million dollars on figuring out if they actually work. These questions are completely answerable. Researchers have the tools. And there are organizations that are geared up to do them."

In circumstances where the random assignment approach to evaluation is impractical, rigorous statistical matching techniques—such as Hollenbeck's—that create a comparison population can be the best available option.

Panelists agreed that no matter what technique is used to structure an evaluation, a priority should be to measure multiple outcomes, not just earnings. Rosenbaum cited national survey data on how students answered the question "What do you value most in your job?" Responses included "autonomy and skill variety, career preparation, and advancement potential." Indeed, a study by Redline and Rosenbaum that focused on "skill relevance" as the outcome concluded, "Earnings vary little among recent graduates, and can be a poor indicator of job success immediately after graduation."[28] The study found that advisers in some of the most successful associate degree programs actually deemphasize immediate wages in post-graduation job placement, focusing instead on jobs that use the skills developed in school and that provide future promotion opportunities.[29]

"We spend tens of billions a year on programs that we don't actually know their efficacy, and are reluctant to [spend] ten million dollars to see if these programs actually work."
—David Autor,
MIT

LESSONS FROM ABROAD

Moderators: Ursula Renold, Visiting Fellow, Harvard Graduate School of Education, assisted by Kathrin Hoeckel, Policy Analyst, Organization for Economic Cooperation and Development

Panelists:

Robert Lerman, Fellow in Labor and Social Policy, Urban Institute; Professor of Economics, American University

Gaurav Gujral, Global Lead, Delivering Public Service for the Future Program, Accenture

Michael van der Cammen, Head of International Relations for German Employment Services

An expert in comparative education systems and a Harvard visiting fellow, moderator Ursula Renold provided first-hand knowledge of the Swiss dual-education model. Michael van der Cammen, head of international relations for the German Employment Services offered expertise in that country's system. Assistant moderator Kathrin Hoeckel, a policy analyst at the OECD, and Gaurav Gujral, head of Accenture's Delivering Public Service for the Future program, each provided an international perspective on school-to-work transitions. Robert Lerman, fellow in labor and social policy at the Urban Institute, drew from his research in education and workforce development.

PANELISTS DISCUSSED HOW INTERNATIONAL EXAMPLES MIGHT INFORM U.S. EFFORTS TO IMPROVE CAREER PREPARATION AND SCHOOL-TO-WORK TRANSITION SYSTEMS. THEY IDENTIFIED AMERICAN MISPERCEPTIONS OF VOCATIONAL EDUCATION AND TRAINING PROGRAMS AS A CHIEF IMPEDIMENT TO A MORE EFFECTIVE SYSTEM. IN RESPONSE, PANELISTS ENVISIONED HOW CREATING AND PUBLICIZING LOCAL APPRENTICESHIP PILOT PROGRAMS WOULD ADDRESS THESE MISPERCEPTIONS AND ENABLE THE U.S. TO VASTLY IMPROVE HOW IT PREPARES YOUNG PEOPLE TO ENTER THE WORKFORCE.

THE CHALLENGE: LEARNING FROM INTERNATIONAL EXEMPLARS

In 2013, the youth unemployment rate in the United States hit 16 percent, up five percentage points from 2007.[30] In contrast, the youth unemployment rate has remained near 8 percent in both Germany and Switzerland, according to the latest figures [as of this writing] from the Organization for Economic Cooperation and Development (OECD).[31] Just as important, four out of five young Germans found a job within six months of completing their education in 2007. In the United States, fewer than half did.[32]

Panelists considered why Germany, Switzerland, and other European countries are so much more effective at transitioning young adults from school to work. They examined how the European models can inform our approach in the U.S. Certainly, the U.S. faces challenges that the European nations do not share. Hence, moderator Ursula Renold emphasized, "You never can export a system, but you can figure out what sort of key factors are crucial so you can build up the American solution."

> *"You never can export a system, but you can figure out what sort of key factors are crucial so you can build up the American solution."*
> *—Ursula Renold, Harvard Graduate School of Education*

THE VISION: AN AMERICAN MODEL OF EMPLOYER ENGAGEMENT, PERMEABILITY, PERSONALIZATION, AND RESEARCH-BASED APPROACHES

Panel members agreed that understanding the Swiss and German CTE systems could help American policymakers improve the U.S. system. Thus, they began by discussing specific strategies that have proven effective abroad. Some of the best analysis of the German and Swiss CTE systems comes from two reports: the OECD's 2010 *Learning for Jobs*[33] and *Delivering Quality Education in the 21st Century*[34], produced by Accenture in 2013. Each provides an international perspective, highlighting research on youth labor market transitions and exploring how dual "vocational education and

training" (VET) programs are organized in Europe. A third resource the panel discussed was Lerman's 2012 paper, *Can the United States Expand Apprenticeships?*[35] From these resources and their own experience, panelists identified four priorities for effective CTE systems: employer engagement, system permeability, personalization, and the integration of research and practice.

Employers play an essential role in defining the skills and aptitudes they want the system to supply. Kathrin Hoeckel described business sector engagement as "the number one factor that drives quality in a vocational education and training system." European dual VET programs use a blended learning model in which students split their time between traditional classroom learning and complementary apprenticeships in actual workplaces. Germany offers apprenticeships in 349 industries, while Switzerland has about 250 options. Students learn authentic skills that employers value in workplace settings with "actual colleagues, actual bosses, actual clients, and up-to-date tools and machinery," Hoeckel said.

Apprenticeships also benefit employers. Michael Van der Cammen explained that in Germany, apprentices are less expensive than adult workers—even accounting for training costs. At the end of an apprenticeship, employers can retain successful apprentices. This reduces their recruitment and hiring costs.

Robert Lerman highlighted South Carolina's nationally recognized Apprenticeship Carolina program. Apprentices sign up through the Department of Labor and participate in one of nearly 600 registered programs in industries such as advanced manufacturing, tourism, energy, health care, and information technology. Apprenticeship Carolina collaborates with community colleges to ensure students acquire important academic skills to complement their job site training. Employers receive a $1,000 tax credit for each registered apprentice they sponsor.

Panelists agreed that career pathways should be permeable—meaning that young people can move between them. Switzerland achieves this through a system of upper-secondary vocational degrees that run parallel to academic programs. Students can transfer credits from a vocational degree track to a university (or vice versa) by passing the Federal Vocational Baccalaureate exam or the University Aptitude Test. According to Renold, this flexibility creates "pathways with no dead end."

Gaurav Gujral drew from Accenture's work advising governmental agencies to highlight four structural shifts occurring in world-class public service systems:

1. From standardized to personalized services;

2. From reactive to insight-driven;

3. From public management to public entrepreneurship; and

4. Driven by mission productivity.[36]

Asserting, "Youth are not the same, and their goals are not the same," Gujral described personalization as a key to effective career counseling. He highlighted Denmark's intricate advising system. The Danish youth guidance centers cooperate with schools to create a "personal learning portfolio" for each student. During the final four years of high school, students also work with a career advisor to identify strengths and weaknesses and craft a plan for additional schooling or work-based training. This approach requires significant public funding, but Gujral pointed out that it does a good job of matching students' skills and interests with employers' needs. As a result, there is less turnover throughout the system.

Ongoing research and feedback in European systems help ensure that arrangements remain effective over time. Hoeckel referenced OECD's *Learning for Jobs* paper as an example. She recommended that researchers can influence vocational education and training in three ways:

1. Providing information on training programs to students;

2. Informing employers about the skills and knowledge students retain from their education and training; and

3. Evaluating training schemes for policymakers.

KEY BARRIERS TO PROGRESS: MISTRUST OF TRACKING SYSTEMS AND MISPERCEPTIONS ABOUT APPRENTICESHIPS

The U.S. history of unequal access to opportunity for children of different racial, ethnic, and social class backgrounds, leads many Americans to be wary of any system that sends children down different pathways, especially before college. Typically, European youth select apprenticeship pathways during early adolescence. The panel agreed that mistrust of school tracking systems and misunderstanding of apprenticeships are barriers to the expansion of apprenticeships in the American context.

Panelists agreed that the belief a four-year college degree should be the goal for everyone has led Americans to prioritize academic skills at the expense of occupational skills. Lerman explained, "The college-

for-all approach ignores widespread evidence that weak workplace and occupational skills are at least as important as limited academic skills in explaining the gaps between worker capabilities and employer demand."

Lerman also pointed out that because apprenticeships are relatively uncommon in the United States, there are many misperceptions. "Americans know little about apprenticeships [and] those who do [know anything] often believe they are only relevant to workers in construction trades."

THE WAY FORWARD: PUBLICIZE LOCAL APPRENTICESHIP PILOT PROJECTS INFORMED BY EUROPEAN EXAMPLES

Panelists stressed that the success of apprenticeship models in Germany, Switzerland, and Denmark would not have been possible without substantial government investment. Establishing an effective system in the U.S. would also require up front funding for system infrastructure. However, van der Cammen's description of the German VET system provided evidence that a system can become self-financing in the long term, if large numbers of businesses adopt apprenticeships as a strategy for human capital development.

Public approval for expanded investments in apprenticeship systems will require correcting misperceptions. Lerman believes that if Americans understood how effectively apprenticeship approaches could create employment opportunity for young people, they would be more supportive. He said, "Apprenticeships should appeal to Americans for their pragmatism and extensive use of the market and public-private collaboration."

While the United States is far from having the infrastructure to support a dual vocational training and education system like those of Germany or Switzerland, domestic examples such as Apprenticeship Carolina demonstrate that progress is possible. Panelists agreed that together with lessons from abroad, successful pilot projects in the U.S. can lay the foundation for a nationwide system in the future.

"The college-for-all approach ignores widespread evidence that weak workplace and occupational skills are at least as important as limited academic skills in explaining the gaps between worker capabilities and employer demand."
—Robert Lerman,
Urban Institute and
American University

TRAINING TEACHERS FOR TOMORROW'S WORKERS

Moderator: Janet Bray, Founder and Chief Strategist, Bray Strategies

Panelists:

Marie Barry, Director, Office of Career and Technical Education, New Jersey Department of Education

Jesús Fernández, Associate Provost, DeVry University

Belinda Cole, Associate Professor, Oklahoma State University

Ron J. Stefanski, Chief Business Development Officer, ed2go, Cengage Learning

Moderator Janet Bray has been a leader in CTE education for several decades. Panelists Marie Barry of the New Jersey Department of Education, Jesús Fernández of DeVry University, and Belinda Cole brought experience working directly with young teachers, while Ron J. Stefanski of Cengage's ed2go represented an innovative online training model.

WITH EXPERIENCE IN STATE GOVERNMENT, HIGHER EDUCATION, AND THE PRIVATE SECTOR, THE PANELISTS OFFERED DIVERSE PERSPECTIVES ON HOW TO RECRUIT, TRAIN, AND SUPPORT THE NEXT GENERATION OF CTE TEACHERS. THEY HIGHLIGHTED TENSIONS AROUND THE CONTENT OF CTE TEACHER TRAINING AND UNDERSCORED THE NEED FOR ADDITIONAL RESEARCH TO IDENTIFY THE MOST EFFECTIVE PRACTICES.

THE CHALLENGE: TOO FEW WELL PREPARED CTE TEACHERS

Moderator Janet Bray warned, "If we don't have the right teachers, with the right knowledge, and the right skill sets … then all of what we're talking about is for naught."

As baby-boom teachers retire, the United States faces a looming shortage of secondary and post-secondary CTE teachers. Panelist Marie Barry explained, "The greatest shortages are … in areas with the greatest demand and industry needs," such as health sciences, STEM, and manufacturing. Panelists pointed out that there are not enough good CTE teacher training programs to accommodate this growth. Existing programs are frequently inadequate and CTE teaching is a "revolving door." Panelists examined several promising strategic responses to this dilemma.

## THE VISION: RECRUIT, TRAIN, AND RETAIN QUALIFIED CTE EDUCATORS

Panelists discussed strategies (Exhibit 9) to expand the number of qualified CTE teachers, beginning with recruitment. Belinda Cole emphasized high school students in CTE courses tend to be unaware that CTE teaching is a career option. She proposed recruiting high school students for undergraduate teaching programs in CTE fields. Oklahoma, for example, has developed modules to highlight CTE teaching as a career path.

Panelists said public recognition is common for agricultural teachers who inspire students to join their profession. They believed in spreading this norm to other CTE specializations. They also identified alternative certification programs as ways to attract potential CTE teachers from business and industry. When people from business and industry choose to become CTE instructors, they bring valuable experience, relationships, and technical skills.

However, teachers who enter through alternative certification may lack pedagogical knowledge. To address this issue, Marie Barry shared that new regulations in New Jersey in 2009 required a specific preparation program for CTE teachers. The program is 200 hours long and takes a blended learning approach. It combines peer group meetings, a mentor, and practice-based experience in schools. Training integrates academics with technical content. It also addresses topics specific to CTE, such as work-based learning and safety. The program includes instruction in classroom management and other pedagogical issues. Candidates apply their new skills in a capstone project where they earn up to 15 college credits. Completers
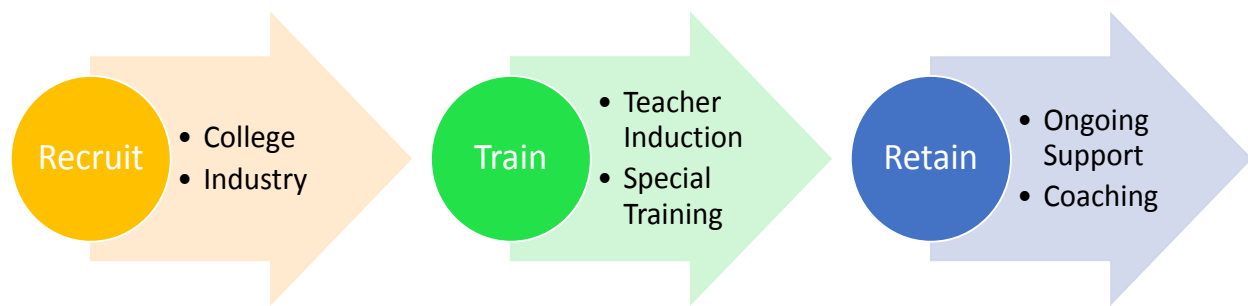
receive a certificate of eligibility with no need to earn a bachelor's or associate degree.

Belinda Cole said Oklahoma began its teacher-induction program to support first year CTE teachers. Each receives an Oklahoma State University mentor, with whom they meet monthly. They also work with school-based mentors who provide 72 hours of mentoring over the school year. Mentors receive a stipend. Oklahoma experienced an increase from 50 percent retention to as high as 80 percent for new CTE teachers during the program's first decade.

To complement the teacher-induction program, Oklahoma recently worked with the Southern Regional Education Board (SREB) and Oklahoma State University to develop a fast-track program for CTE teachers. Participants undergo ten eight-hour days of training before beginning to teach. The training is delivered in four modules. Each covers an area in which new CTE teachers tend to feel most unprepared: instructional strategies, instructional planning, classroom management, and classroom assessment. During the first year of teaching, new teachers participate monthly in a video conference call during which there is observation by a university-based instructional coach. According to Cole, the program is only two years old, but anecdotal reports suggest that beginning CTE teachers are better prepared and more confident than in the past.

Jesús Fernández described a faculty-support approach developed at DeVry University. A team of experienced college-level instructors provides three types of support: operational/administrative, advocacy, and academic. These "Faculty Managers" remain in touch with faculty members throughout the academic year and conduct annual course observations. A key role

is to coach faculty on how to incorporate recommendations from course evaluations into their teaching practices. "Overall we feel very positive about how we train and support faculty. Our survey feedback from faculty is very good," Fernández said. This support extends beyond the first year.

KEY BARRIERS TO PROGRESS: ATTRITION AND LACK OF CONSENSUS ON TRAINING

CTE teachers trained in alternative certification programs leave the profession at very high rates. Both Cole and Barry attested to the "revolving door" for CTE teachers who enter and then quickly leave because they feel underprepared—especially in effective pedagogy, classroom management, incorporation of academic standards, and serving students with special needs.

Panelists identified inadequate funding for recruitment and training as a major problem. Another challenge was resistance to innovation in teacher preparation. Cole had encountered skepticism that SREB's fast-track induction program for CTE teachers could deliver high-quality training in so much less time than traditional college preparation.

"Many teachers leave after the first couple of years once the entry supports have gone away."
—Belinda Cole,
Oklahoma State University

Bray asked whether CTE teachers should be trained separately from teachers of core academic subjects. There was no consensus among the panelists. Nonetheless, they did agree that training in pedagogy, lesson planning, and classroom management is necessary. Ron Stefanski cited ed2go, an e-learning program where teachers self-select courses to take. Classroom management and discipline are two of three most popular courses (the third is Singapore math). "What that tells us," he said, "is that these are endemic problems in every classroom situation, for every person coming into the teaching profession."

Others suggested that academic core subjects could benefit from CTE approaches such as contextual learning. Fernández ventured, "Training for CTE shouldn't be different. It should maybe be the new model for training across the board... I want my faculty to be master teachers, be academically prepared in their disciplines, and to have an idea of what it's like to be a practitioner."

Cole and Barry described how teaching CTE differs from academic teaching, asserting that CTE entails unique skills better addressed through specialized programs. These include developing structured work-based learning experiences, managing laboratories and other worksites, ensuring students' safety when using equipment, and collaborating with partners in industry to update curricula. The fact that so many individuals enter CTE training programs from industry and without prior college experience was another reason they gave for having specialized programs. Panelists expressed several points of view on whether CTE teacher training should emphasize general as opposed to career-specific skills. There were different emphases as well as points of disagreement.

> *"I want my faculty to be master teachers, be academically prepared in their disciplines, and to have an idea of what it's like to be a practitioner."*
> *—Jesús Fernández,*
> *DeVry University*

THE WAY FORWARD: ASSESS CURRENT AND EMERGING APPROACHES TO CTE TEACHER TRAINING AND CERTIFICATION

Many questions remain unanswered. CTE teachers in New Jersey and Oklahoma have made it clear that they would like additional training and support on classroom management, lesson planning, incorporating academic standards, and accommodating students with special needs. Are these needs fundamentally different for CTE teachers as compared to academic teachers? Could training on topics that seem unique to CTE, such as managing equipment and communicating with industry partners have any value for regular academic teachers? Should the standard approach include curricula that overlap for CTE and academic teachers, but also have specialized elements? The field needs a detailed appraisal of current and emerging approaches to CTE teacher training and certification. Approaches vary widely across the nation. Better evidence on the structures and outcomes associated with particular models can help identify the most promising strategies for widespread adoption.

PROVIDING EFFECTIVE CAREER GUIDANCE

Moderator: Rich Feller, President, National Career Development Association and Professor, Colorado State University

Panelists:

Richard T. Lapan, Professor, School of Education, University of Massachusetts Amherst

James R. "Bob" Couch, Director, Center for Advanced Technical Studies, South Carolina State Department of Education

Spencer G. Niles, Professor and Department Head, Educational Psychology, Counseling and Special Education, Penn State University

Phil Jarvis, Director of Global Partnerships, Career Cruising

Lourdes Rivera, Associate Professor, Queens College

Rich Feller of the National Career Development Association and Colorado State University served as moderator. Panelists included some of the nation's leading experts on designing, administering, and researching career guidance systems. Three are researchers and counselor educators: Rich Lapan, Spencer Niles, and Lourdes Rivera. Bob Couch, of the South Carolina Department of Education, has worked to reform that state's approach to providing career guidance. Phil Jarvis is a leading developer of web-based career exploration, guidance, and planning programs.

PANELISTS NOTED THAT DESPITE CONSENSUS ON BEST PRACTICES, HIGH-QUALITY CAREER GUIDANCE REMAINS AN ANOMALY IN MOST OF THE NATION'S SCHOOL SYSTEMS. IN RESPONSE, THEY RECOMMENDED A LOCAL APPROACH TO COUNSELING THAT INTEGRATES THE EFFORTS OF COUNSELORS, TEACHERS, PARENTS, AND EMPLOYERS. IN ADDITION, THEY CALLED FOR FEDERAL LEGISLATION TO CODIFY AND SUPPORT COMPREHENSIVE COUNSELING IN SCHOOLS.

THE CHALLENGE: HIGH-QUALITY CAREER GUIDANCE REMAINS RARE

Panelist Rich Lapan reported that at least half of American 12th graders fail to receive the career guidance they need for understanding post-secondary options. Conditions are worst for low-income students. Lapan reported evidence that career guidance confers significant advantages on those fortunate enough to receive it.

Panelists examined effective school counseling programs and called for a paradigm shift in the nation's approach to career guidance. They considered how to stop relegating career counseling to the final years of high school. They advocated for a system of in-school and out-of-school supports beginning in elementary school.
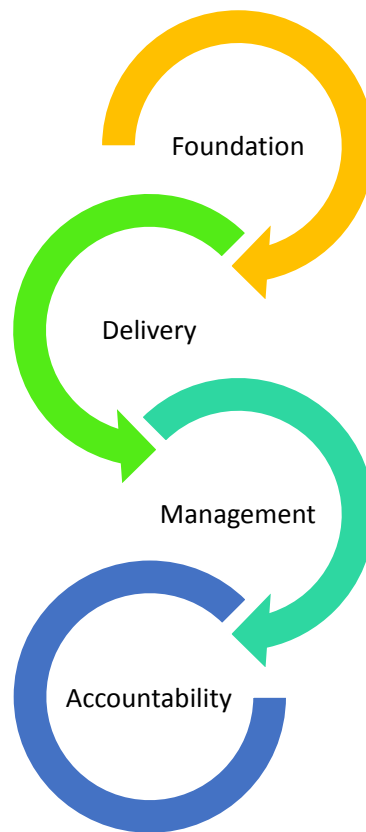
THE VISION: A PARADIGM SHIFT TO INCREASE THE PRIORITY OF CAREER GUIDANCE

Rich Feller distinguished career guidance from the academic, personal, and social-emotional supports that school counselors typically provide. The other forms of counseling receive much more attention than career guidance. Panelists advocated raising the priority of career guidance and strengthening career guidance skills and resources.

Lapan introduced a blueprint called "National Model: A Framework for School Counseling Programs," developed by the American School Counseling Association (ASCA). Updated in 2012, the model is generally accepted by the counseling community as representing "best practices" for delivering comprehensive school-based counseling services. The ASCA website stipulates four components:

1. **Foundation:** School counselors should create comprehensive school counseling programs that focus on student outcomes, teach student competencies, and are delivered by trained professional counselors.

2. **Delivery:** School counselors provide both direct and indirect services to students in conjunction with parents, school staff, and the community. Direct student services include collaborating with K-12 teachers to deliver the school counseling core curriculum, helping students develop personal goals and future plans, and responding to immediate student needs and concerns. Indirect services include providing referrals for additional assistance and consultation, and collaboration with parents,

teachers, other educators, and community organizations.

3. **Management:** School counselors incorporate organizational assessments and tools that are concrete and clearly delineated. These tools include: use-of-time assessment; annual agreements; advisory councils made up of students, parents, teachers, counselors, administrators, and community members who make recommendations about the counseling program activities and results; use of data; use of online career guidance programs; curriculum, small group, and closing-the- gap action plans; and annual and weekly calendars to keep stakeholders informed.

4. **Accountability:** School counselors must demonstrate the effectiveness of their programs in measurable terms using data—including on student achievement, attendance, and behavior. Such data should guide future action and be used to improve future results.[37]

"We need to fight against the old paradigm [of school counseling] that is individually-oriented, passive, and reactive… not developmental; a paradigm that traps counselors in the excessive performance of non-guidance tasks."
—Richard Lapan, University of Massachusetts, Amherst

The journal *Professional School Counseling* devoted a special issue to the benefits students derive from comprehensive school counseling.[38] Studies in the volume—which examined school counseling practices in six states—found measurable benefits for students who received college and career counseling from their

school counselor. Reported benefits range from fewer disciplinary incidents and better school attendance to higher scores on the ACT standardized test, higher graduation rates, and improved workplace success.[39]

Panelists pointed out that one of the main outcomes counselors should facilitate is a successful post-secondary transition. The discussion emphasized that career guidance should foster hope and be developmentally appropriate. Lapan explained, "We need to fight against the old paradigm [of school counseling] that is individually-oriented, passive, and reactive…not developmental; a paradigm that traps counselors in the excessive performance of non-guidance tasks."

Spencer Niles conducts research on hope-based interventions. He explained the connection between student hope, engagement in school, and academic performance. Unfortunately, he said "Many students lack hope about their future. Without this, planning for their future feels futile." Bob Couch added, "When [a young person] finds passion about what they want to do, a lot of other issues begin to fade away."

Students benefit from developmentally appropriate career information delivered across the school years. According to Niles, "Career development tasks can be divided into predictable developmental tasks." Careers "unfold across a lifespan in a pattern that is predictable in childhood and adolescence."

Phil Jarvis highlighted the role computer-based guidance systems can play. They can provide career pathways information that is up to date and appropriate for each grade level. When supported by trained counselors, computer-based systems help students discover information on pathways well suited to their interests and skills.

Through ePortfolios or Individualized Learning Plans, students can build on their discoveries throughout their secondary and post-secondary years. Such systems can also engage the adults who support students and make them more effective in their guidance roles. At the same time, panelists warned against allowing online resources or untrained people to replace professional counselors as a way of saving money.

Couch introduced South Carolina's Pathways to Success program as a comprehensive approach to counseling and career guidance. The approach closely approximates the vision that the panelists shared. Couch explained that South Carolina aimed to develop a career planning "system" spanning pre-K through grade 20. During the elementary years, Pathways to Success emphasizes career awareness and exposure to a broad array of options. In middle school, students identify a

"high interest" career industry or sector and develop a flexible individual education plan in conjunction with parents and the counselor.

Meetings to assess progress and revise this plan occur throughout the middle school and high school years. As sophomores, students identify a career major, which helps them to develop an individual post-graduation plan—for additional education or direct transition into the workforce. Couch explained that counselors encourage high school students to participate in internships and other forms of work-based learning. With this approach, he said, "We've tried to transfer ownership of the pathway from the counselor to the student. …Traditionally, the counselor has owned the decision, but we're trying to put students in the driver's seat."

According to Couch, South Carolina has moved away from a narrow emphasis on AP coursework or four-year college enrollment to a pathways metaphor that emphasizes students' assets and a comprehensive career planning system. "We see it as a super-highway with many exit points … and all students are on the highway together," he said. Like many of the approaches reported at the conference, the South Carolina approach has not undergone a rigorous evaluation. However, Couch reported that preliminary evidence suggests that Pathways to Success has made a positive difference. The high school graduation rate has increased, the project-based learning emphasis has made education more rigorous and relevant for students, and there are more supports for students at risk of dropping out. Furthermore, the transition from high school to post-secondary education has become more seamless because of dual-credit opportunities.

"We're trying to put students in the driver's seat."
—Bob Couch,
South Carolina Department of Education

A KEY BARRIER TO PROGRESS: THE "IMPLEMENTATION GAP"

Lapan said that the current challenge for the nation is best described as an "implementation gap." Despite a consensus around the desirability of providing counseling aligned with ASCA's national model, most school systems still deliver very little career guidance. Panelists attributed this to a variety of factors.

First, schools face resource and staffing constraints. As a result, counselors perform administrative or disciplinary tasks, reducing the time left for counseling. Second, the majority of counselors have too many students to serve, making it difficult to establish personal relationships.

According to The American Counseling Association, the average student-to-counselor ratio is nearly 500 to 1—twice what the ASCA recommends.[40] Finally, Niles explained, "At the macro level, there is little or no federal policy support" for expanding career development counseling and associated interventions. Panelists reported that many students have access to computerized guidance systems, career days, and college fairs. However, these opportunities tend to exist in isolation—rarely as part of a comprehensive, integrated approach to career guidance.

THE WAY FORWARD: ASSIGN CAREER GUIDANCE ROLES TO TEACHERS, PARENTS, AND EMPLOYERS TO SUPPLEMENT SKILLED SCHOOL COUNSELORS

Despite barriers to widespread adoption, many building blocks for quality career counseling are actually in place. Niles suggested, "We're a lot closer to some meaningful solutions than it may appear at first glance; we are [currently] operating in a siloed mentality." He explained that much of the research on career guidance is well established and that the U.S. is a leader. To spur better implementation, Niles recommended that the next reauthorization of ESEA include the words "career guidance." He explained, "Policies matter. Let's advocate for infusing career language in policy—it will make a difference."

Panelists recommended that the student-to-counselor ratio be reduced to 250 to 1. Niles said that this can be complemented with group counseling, which is also effective and is substantially less expensive. The ASCA guidelines suggest that counselors should spend about 30 percent of their time dealing with social and emotional issues and no more than 20 percent on administrative and other lower-level tasks.[41] The panelists acknowledged that compliance with such rules would require additional financial resources, but they believed the long-term benefits would justify the expense.

Perhaps most importantly, panelists agreed there should be a local counseling system: career guidance should be a collective responsibility. Other adults in the child's life, including teachers, parents, and employers, should supplement the counselors' work. Lourdes Rivera added, "We need to be more inclusive about who becomes part of this process." Though counselors should provide the leadership and advocacy to push the work forward, she said, "Everyone in the school has to have a role."

The panelists provided suggestions on how to involve each stakeholder type. Guidance interventions can be integrated into standards-based instruction. To accomplish this, Feller recommended that counselors advise academic teachers and interdisciplinary teams on how to incorporate career development activities into their lessons. Feller asserted that doing so can foster student engagement, since "Students like career development activities." In fact, Feller has found from student surveys that career guidance "is often one of the things that students actually want help with." Integration of career themes into teaching would help "bring this to scale in a way that is sustainable" and create greater "synergy" between teachers and counselors.

Parents can also be engaged. Rivera, who works extensively with low-income students and families, insisted, "These parents do care," and asserted that we need to think more creatively about opportunities to bring parents into the counseling process. Employers and community members can sponsor worksite visits for older students and employee visits to the classrooms of younger students. For older students, employers can provide work-based learning opportunities or mentorships. Employers can identify emerging employment opportunities and the preparation students needed to qualify. Jarvis explained, "Counselors, teachers, and parents will never be experts in the world of work—especially in emerging markets. Thus, we need to include employers and take advantage of the expertise they can offer."

"Everyone in the school has to have a role."
—Lourdes Rivera, Queens College

CREATING WORLD-CLASS CURRICULA FOR 9-14 CAREER EDUCATION PROGRAMS

Moderator: Jim Stone, Director, National Center for Career and Technical Education, University of Louisville

Panelists:

Gene Bottoms, Senior Vice President, Southern Regional Education Board

Patrick Ainsworth, Assistant Superintendent, Career and College Transition Division, California Department of Education

Andrew Rothstein, Special Advisor, Education Policy, National Academy Foundation

Lauren Woodman, General Manager, Education Programs, Microsoft Corporation

David Dimmett, Senior Vice President and Chief Engagement Officer, Project Lead the Way

Moderator Jim Stone conducts CTE research and evaluation at the University of Louisville's National Research Center for Career and Technical Education. Panelists included Gene Bottoms of the Southern Regional Education Board, David Dimmett of Project Lead the Way, and Andrew Rothstein of the National Academy Foundation—three examples of nationally recognized, high-quality curricula. Patrick Ainsworth, from the National Association of State Directors of Career and Technical Education Consortium contributed his expertise in state standards development. Microsoft's Lauren Woodman shared her experience with initiatives to foster more skill-based learning, especially in technology.

PANELISTS HIGHLIGHTED THE ELEMENTS OF A SUCCESSFUL CTE CURRICULUM. THEY CALLED FOR EXPANDING ACCESS TO SUCH PROGRAMS AND INCREASING BUSINESS AND INDUSTRY INVOLVEMENT IN THEIR DEVELOPMENT AND IMPLEMENTATION.

THE CHALLENGE: INADEQUATE PREPARATION FOR POST-SECONDARY OPTIONS

Traditional high school models prepare too few young people for post-secondary success. Consider that only one-quarter of graduates who took the ACT college entrance exam in 2013 met the exam's Readiness Benchmarks in English, reading, math, and science.[42] It is well known that high school graduates often require remedial coursework at the post-secondary level, while those who enter the workforce directly frequently lack the skills and dispositions that employers seek.

The high school CTE movement has long trumpeted the value of relevant, work-based learning. Still, CTE instruction is rarely offered as a coherent program of study and has historically lacked rigor. As originally conceived, CTE aimed to prepare young people for direct entry into the workforce. However, in the current economy, it is increasingly important for CTE curricula to provide high-quality preparation for both the workforce and post-secondary study—whether in the form an industry-recognized certificate, an associate degree, or a bachelor's degree.

THE VISION: WIDESPREAD USE OF HIGH-QUALITY CAREER AND TECHNICAL EDUCATION CURRICULA

The panel challenged the notion that CTE necessarily lacks rigor by describing several highly successful models. They illustrated how high-quality CTE curricula help prepare students for the world of work.

Southern Regional Education Board

Gene Bottoms explained how the Southern Regional Education Board (SREB) consortium facilitated the development of curricula for high-demand career fields among its sixteen member states. Each state committed to develop a four-course sequence around an industry that is particularly important to its economy. Business and industry representatives play an integral role in helping to develop authentic projects. He noted, "A majority of the folks who participate in [the project development] stage of curriculum development are from the private sector."

Through its participation in the SREB consortium, Alabama designed an aerospace engineering sequence. Kentucky developed an advanced manufacturing and informatics curriculum. All are mapped to the common core state standards to ensure sufficient depth and scope and are then shared with other states in the consortium. They are available to non-member states for a fee. Bottoms emphasized that this collaboration

enables SREB to accomplish what "no state can do alone."

Project Lead the Way

David Dimmett described the STEM curricular programs that his organization, Project Lead the Way (PLTW), has developed, which at the time of the conference were used in over 5,000 middle and high schools in all 50 states. PLTW, which was profiled as a "model of 21st century career and technical education" in the 2011 Pathways report, engages students in project- based learning, allowing them to apply what they learn in science and math to relevant, real-world contexts.[43] In contrast to most schools that break learning into discrete subjects, Dimmett noted that in a PLTW class, students "learn to put the world back together" in a way that resembles the integrated demands of a real-life job.

National Association of State Directors of Career and Technical Education Consortium

Patrick Ainsworth introduced the work of the National Association of State Directors of Career and Technical Education Consortium (NASDCTEc), which launched the Common Career Technical Core (CCTC) standards for CTE students in 2012. Ainsworth stressed that these standards not only define what students should know and be able to do at the end of a program of study, but also put forward a common definition of "career readiness" for the first time. The standards are divided into sixteen Career Clusters, such as Architecture & Construction and Government & Public Adminis- tration.[44] The CCTC standards have been voluntarily adopted by 42 states as of this writing.[45]

Microsoft

Lauren Woodman reported that Microsoft could not fill 10,000-13,000 open jobs because of the lack of skilled labor. As a result, Microsoft centers its education work in several key areas: STEM education, integrating technology into the classroom, and teacher profession- al development. Woodman emphasized that Microsoft is particularly committed to building the technological and soft skills that prepare young people for the global economy.

National Academy Foundation

Andrew Rothstein represented the work of the National Academy Foundation (NAF) network, which is the largest career academy network in the country, currently serving 62,000 students in 39 states. Students in NAF career academies choose one of five themes (finance, hospitality & tourism, information technology,

health sciences, or engineering) to complement their core academic coursework.[46] This material is taught through project-based learning, aligned to current industry standards. Students also complete internships with local business partners.

Rothstein presented a framework outlining the elements of a successful curriculum, much of which was echoed and amplified by the other panelists.

1. **Balance communication between teachers and students.** This ensures that students engage in deeper learning. It promotes active participation since the students—not the teacher—are doing the work. NAF requires that its teachers do no more than 15 minutes of lecturing at a time.

2. **Foster common purpose across stakeholders.** Aligning business, community partners, teachers, and administrators creates a broad base of support. PLTW and SREB also work with post-sec- ondary partners to ensure that students can receive college credit for their technical course- work, when possible.

3. **Employ work-based learning.** Students should participate in authentic projects in the workplace. According to Rothstein, "…all students have to do work-based learning. Our curriculum—as well as that of our partners at Project Lead the Way—deliberately plans lessons and activities that require students to engage with professionals as part of their work."

4. **Emphasize programs of study, not just individual courses.** The curriculum should "focus on the long term" to ensure progressive levels of complexity and foster industry-specific knowledge. The NAF career curriculum, for example, extends from 9th grade to 12th grade, which enables students to build continually on prior knowledge. The SREB curricula have similar progressions.

5. **Stress project-based learning.** This means includ- ing interdisciplinary and student-centered tasks in the curriculum. Bottoms emphasized that high school students, especially those in grades 9 and 10, "need a place to get out of their seat, go to a lab, and do real things that connect their hands, their heads, technology, and academics together."

6. **Encourage reinvention.** A curriculum is a living document that should be updated and revised regularly. As Woodman pointed out, "many of the practical skills that students learn will be irrelevant in less than a decade." As an example, Dimmett said that an integrated manufacturing course recently incorporated 3D printing into the

EXHIBIT 11: Elements of a Successful CTE Curriculum
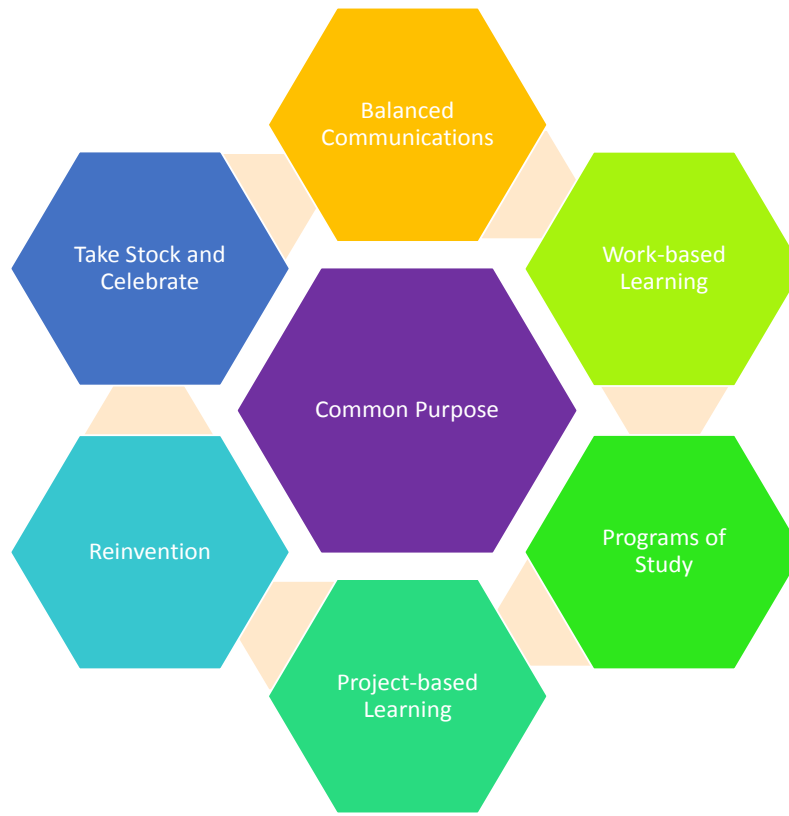
curriculum, based on the expectation that 3D printing will be in very high demand over the next decade.

7. **Regularly take stock—and celebrate.** Regular assessments provide both an indication of student learning and information on the fidelity of program implementation. Bottoms explained that within the SREB curricula, they don't just judge a project but also "the [technical and academic] learning around the project" in an attempt to shift the culture away from high-stakes end-of-course exams. These opportunities, Rothstein added, "allow teachers to measure growth and to celebrate each student for what they're doing when they do it well."

KEY BARRIERS TO PROGRESS: A SHORTAGE OF QUALITY CTE PROGRAMS

Programs such as NAF and PLTW show that high-quality CTE curricula exist and can be implemented successfully. Nevertheless, Bottoms emphasized, "The problem is that too few students have access to robust CTE programs." Panelists agreed this reflects both bias against CTE and inertia in the current system. Resources at the state, district, and school levels continue to be

targeted toward college preparatory tracks rather than CTE. This arrangement sustains the perception that CTE is a second-class pathway.

"The problem is that too few students have access to robust CTE programs."
—Gene Bottoms,
Southern Regional Education Board

THE WAY FORWARD: PRESS EMPLOYERS TO HELP DEVELOP INTEGRATED VOCATIONAL AND ACADEMIC CURRICULA

Panelists agreed that the standards developed by NASDCTEc represent an important step in the expansion of high-quality CTE curricula and will attract renewed energy and attention to CTE programming. There is substantial work to be done, however, in implementing this vision:

- First, is to develop state and district policies that promote "balanced accountability." According to Bottoms, this would mean putting as much emphasis on high school graduation rates as on achievement. He spoke of one possible system in which students would receive a "point" for career readiness and another point for college readiness. Only students who achieve two points can graduate. Such a system would prompt schools and districts to develop curricula that foster both career and college readiness.

- Next, is to recognize all forms of accelerated learning. While many post-secondary institutions offer credit for passing Advanced Placement tests, very few also provide credit for passing certification exams. Bottoms suggested that accelerated learning credits linked to a career pathway should be available. A variety of accelerated credit options is conceivable.

- Finally, systems need capacity. Panelists discussed a number of strategies to better integrate technical and academic content. They included expanding the role of business and industry in secondary education, professional development for teachers, and vertical alignment of curricula.

The discussion returned repeatedly to the important role that business and industry have played in developing and implementing CTE curricula. Woodman urged the audience to not only continue this work, but to also, "Push us…not just Microsoft, but push all the industries to say 'what more can you do to help us prepare our kids?' Because we need to make sure that we have a good partnership with education so that we're providing what educators need, what schools need, and what policymakers need in order to make sure that these kids are effective." Dimmett added, "No matter how good the curriculum is, it's only as good as the teacher who teaches it." Teachers need training to blend technical with academic content.

Dimmett and Woodman also agreed on the need to expand the scope of CTE curricula to include the full K-12 spectrum. Indeed, Dimmett called for a "cradle-to-career" approach. He reported that PLTW has even developed an elementary curriculum. Vertical integration beginning in elementary school can foster a problem solving mentality and an interest in STEM fields. Such experiences can be foundations for later career choices.

*"Push us…not just Microsoft, but push all the industries to say 'what more can you do to help us prepare our kids?'"
—Lauren Woodman, Microsoft Corporation*

DESIGNING AND IMPLEMENTING CREDENTIALS AND SKILL CERTIFICATIONS THAT PROVIDE PASSPORTS TO WORK

Moderator: Richard Kazis, Senior Vice President, Jobs for the Future

Panelists:

Ron Bullock, Chairman, The Manufacturing Institute; Chairman, Bison Gear and Engineering Corporation

Roger Tadajewski, Executive Director, National Coalition of Certification Centers

Gretchen Koch, Senior Director, Workforce Development, CompTIA

Steve Greene, Vice President, National Center for Construction Education and Research

Arnold Packer, Former Director of the SCANS 2000 Center, Johns Hopkins University

Moderator Kazis brought his experience as the head of Jobs for the Future's policy and advocacy efforts. The panelists included prominent speakers from three industries: Ron Bullock of the Manufacturing Institute; Steve Greene of the National Center for Construction Education and Research; and Gretchen Koch of CompTIA, a global information technology company. Panelists Roger Tadajewski of the National Coalition of Certification Centers and Arnold Packer, formerly of SCANS (Secretary's Commission on Achieving Necessary Skills), a Department of Labor commission and Johns Hopkins University, provided perspectives on credentialing.

PANELISTS DISCUSSED THE ROLE OF HIGH-QUALITY CREDENTIALS IN ADDRESSING LABOR MARKET NEEDS AND SUGGESTED HOW THE U.S. COULD CREATE PORTABLE, MULTI-SKILL CERTIFICATIONS FOR BOTH WORKPLACE AND ACADEMIC COMPETENCIES.

THE CHALLENGE: FILLING "MIDDLE SKILL" JOBS WITH NEW WORKERS

Moderator Richard Kazis opened by citing statistics from the Lumina Foundation estimating that by the year 2025, the United States will require an additional 10 million workers with sub-B.A. certificates.[47] These are the "middle skill" jobs that require an associate degree or a sub-baccalaureate industry-specific certification.

This session explored solutions to the misalignment between future labor market needs and workforce skills. Panelists reported that middle-skilled workers are needed for jobs not only that baby-boomers are leaving, but also in expanding or emerging sectors of the economy. Young people need training to fill these jobs and credentials that confirm their qualifications.

THE VISION: BETTER CREDENTIALS, BETTER CONNECTIONS

The panelists discussed what it might take to build a higher quality sub-baccalaureate credentialing system than currently exists. They described the features such a system might have and underscored the urgency of developing a more efficient system to fill projected job openings. "A full half of our workforce is eligible for retirement over the next 15 years," Ron Bullock pointed out. He estimated that manufacturing will need 3.5 million skilled workers to replace the retiring generation. Steve Greene added that the need will be especially acute in the construction industry. Citing estimates by McGraw Hill, Greene reported that construction labor demand is projected to increase 73 percent over 2011 levels by the year 2015.[48]

> *"A full half of our workforce is eligible for retirement over the next 15 years."*
> *—Ron Bullock,*
> *The Manufacturing Institute*

To respond to these challenges, Bullock highlighted the importance of partnerships between education and training institutions and credentialing agencies such as ACT (with its National Career Readiness Certificate), the Manufacturing Skill Standards Council (which offers certification programs for Production Technicians and Logistics Technicians), the American Welding Society, and the Society of Manufacturing Engineers. As an example, he described Harper College in Illinois.

Students at the college take manufacturing-specific course modules while completing an on-site internship with one of nearly 70 partner manufacturers. The program culminates in the industry-recognized ACT certification.

Gretchen Koch focused on the impact of within-sector portability, emphasizing the advantages of vendor-neutral certifications. Much of the IT industry relies on "vendor-specific" credentials issued by companies such as Microsoft, Cisco, and Oracle. However, CompTIA provides a credential that organizations throughout the sector recognize. With the help of industry experts who define criteria for certification, CompTIA's portable IT credentials ensure that holders qualify for a broad range of opportunities across many organizations.

Another CompTIA initiative provides dual-credit opportunities in CTE high school programs. These enable students to obtain a market-valued credential while still in high school. According to Koch, CompTIA designed this credential to have both job-market and post-secondary educational value. As a result, the credential "helps kids get a good job before they get to their post-secondary education [and] it will give them course credit while they are in high school for secondary education, providing a bridge into college."

A KEY BARRIER TO PROGRESS: LIMITS TO PORTABILITY

Kazis characterized the current American credentialing system as "a clutter of disconnected, piecemeal, sometimes overlapping, usually unaligned ways of certifying skills." He emphasized sequencing and portability as key issues. Without a system of sequential credentials, people have trouble identifying long-term career strategies. In addition, credentials that lack portability restrict labor mobility between firms or industries.

The nation's current credentialing system is "a clutter of disconnected, piecemeal, sometimes overlapping, usually unaligned ways of certifying skills."
—Richard Kazis,
Jobs for the Future

Arnold Packer described the difficulty of designing occupation-specific soft-skill credentials. He pointed out that jobs are "idiosyncratic" and "performance is in a context." He added, "Responsibility on a construction job is not like responsibility in a hospital's operating theater." Even within a single sector, Packer noted that jobs require many different skills, depending on the context. He gave the example of car sales. "Customer service at the local used car dealer is not like customer service in a Jaguar showroom." That is, if a particular credential gave an employer the confidence to hire an individual to do one specific job, the same credential would rarely be directly relevant in a completely different sector. According to Packer, it is up to employers to decide if the fit is close enough.

THE WAY FORWARD: CREATE PORTABLE, MULTI-SKILL CERTIFICATIONS FOR WORKPLACE AND ACADEMIC COMPETENCIES

The panelists suggested two directions for future work. One was to expand the number of programs that link employment and education, including well-defined, sequenced work and learning experiences. Such programs can certify work and education as a combined career development experience. The other direction was to build mechanisms to unify credentialing across diverse programs.

Panelists suggested the development of a powerful umbrella organization to oversee this effort. To date, linked pathways for work and education have often been accomplished through "2+2" (two years of work, two years of school) initiatives or, in a similar vein, "3+1" programs. In other cases, students simultaneously work and complete course requirements. Generally, the programs start with a focus on an industry credential, but students may continue on to pursue either two- or four-year degrees.

As Bullock noted, integrated work and learning approaches may be especially appealing for individuals interested in STEM fields. They can begin to earn a salary and then take advantage of employer subsidies to pursue additional degrees while on the job. Bullock acknowledged that such programs are "still a new model for lifelong learning." He pointed out that this approach can start young people on pathways that include later post-secondary training as it becomes relevant to their careers.

The panelists also explored strategies for increasing cross-sector portability, emphasizing the need for multi-sector umbrella organizations responsible for credentialing. The National Coalition of Certifi-

cation Centers (NC3), for example, plays this role in several industries. It is a clearinghouse for certifying competencies in the transportation, aviation, and energy sectors. Roger Tajadewski described how NC3 certifies cross-sector competencies such as torque, a skill for which students in all three of the organization's concentrations—transportation, aviation, and energy— get trained and certified. As a skill, torque is the ability to apply appropriate and effective force to cause an object such as a screw, bolt, or wheel to rotate.

Finally, panelists discussed soft skills certifications. Tajadewski described the NC3 "Train-a-Trainer" program. In this program, instructors from credentialing programs learn to combine technical training with effective workplace and communication skills. Packer reminded fellow panelists about the value of a "verified resume." In a verified resume, an accredited supervisor signs off on an individual's soft skills, such as punctuality, communication, or teamwork. There was agreement that the idea has potential as a way of enhancing job mobility for workers and reducing hiring costs for employers.

VI. DEVELOP AND DELIVER EXCELLENT PROGRAMMING

PROVIDING HIGH-QUALITY HIGH SCHOOL PROGRAMS

EFFECTIVE POST-SECONDARY PROGRAMS: COMMON PRINCIPLES AND PRACTICES

PROMISING PATHWAYS FOR OPPORTUNITY YOUTH

CREATING PIPELINES FOR COURT-INVOLVED YOUTH

"We've seen that there's a transformation young people typically go through when they have that experience that leads to the first paycheck and leads to growing skills and knowledge and confidence that come with an on-the-job learning. What we're doing is really based on this transformative power of work."
—Gail Gershon, Gap Inc.

"Non profits pay a crucial role in finding people who may have dropped out of the traditional education system and getting them to the point that they are employable. The dialog between businesses and nonprofits can find creative solutions to skill shortages."
—Laila Worrell, Accenture

(Photo provided by Year Up)

PROVIDING HIGH-QUALITY HIGH SCHOOL PROGRAMS

Moderator: Betsy Brand, Executive Director, American Youth Policy Forum

Panelists:

Michael Fitzpatrick, Superintendent-Director of Massachusetts's Blackstone Valley Vocational Regional School District

Tom Friedemann, Superintendent, Francis Tuttle Technology Center, Oklahoma

Richard Hinckley, President and CEO, Center for Occupational Research and Development

Gary Hoachlander, President, The California Center for College and Career

Moderator Betsy Brand of the American Youth Policy Forum has concentrated on education, workforce preparation, and youth development throughout her career. Panelists included two educators dedicated to career and technical education at the high school level, Michael Fitzpatrick of Massachusetts's Blackstone Valley Vocational Regional School District and Tom Friedemann of the Francis Tuttle Technology Center in Oklahoma City. Panelist Gary Hoachlander shared his experience at The California Center for College and Career, an umbrella organization that provides technical assistance to schools in developing pathways-based programs of study. Richard Hinckley drew from his work at the Center for Occupational Research and Development, a nonprofit that provides schools with curricular tools and professional development to promote career pathways.

TOGETHER, THE PANELISTS EMPHASIZED THAT A SUCCESSFUL HIGH SCHOOL CURRICULUM SHOULD INTEGRATE ACADEMIC, TECHNICAL, AND WORK-BASED LEARNING. THEY EXPRESSED CONCERN FOR THE LACK OF POLITICAL WILL TO REDESIGN HIGH SCHOOL CURRICULA AND CALLED FOR THE REORGANIZATION OF LOCAL VOCATIONAL SYSTEMS AROUND CTE PROGRAMS PROVEN TO BE EFFECTIVE.

THE CHALLENGE: USING HIGH SCHOOLS TO PREPARE FOR TOMORROW'S JOB MARKET

A recent Brookings Institution report entitled "The Future of Middle Skill Jobs" estimates that employer demand for both "middle skill" workers (those with a sub-baccalaureate credential) and "high skill" workers (those with a bachelor's degree) are on the rise.[49] Nearly 80 percent of job openings over the next decade are expected to fall into one of these categories, with more than half in the "middle skills" group.[50] Fewer and fewer opportunities will exist for young people with only a high school degree.

Panelists considered how high schools—and the entire K-12 system—can prepare students more effectively for post-secondary options.

## THE VISION: PRIORITIZE ACADEMICS, TECHNICAL EDUCATION, AND WORK-BASED LEARNING

Panelists examined high school reform models they believe prepare young people for both college and careers. They also considered how proven models could be scaled up, particularly in rural school districts.

ConnectEd's Linked Learning Initiative

Gary Hoachlander drew lessons from ConnectEd's Linked Learning initiative. Models within the initiative include Career Academies, small theme-based high schools, and others such as Big Picture Schools, High Tech High, and New Tech. All emphasize college and career preparation. Each combines rigorous academics, technical education, and real world experience. Hoachlander acknowledged there is no one "right way" to design a high school curriculum, but he proposed what he believes should be four common principles:

1. **A challenging academic core:** Emphasize real-world applications in challenging college preparatory courses.

2. **A technical core curriculum:** Link technical courses geared toward industry standards to academic subjects. Focus on the technical content in a student's specific career pathway, ideally through problem-based learning.

3. **A systematic approach to work-based learning:** Whether it includes an internship, apprenticeship, or coop, work-based learning should enable students to apply both academic and technical skills at a job site and learn soft skills. Opportunities should allow students to "interact with working adults to produce real value."
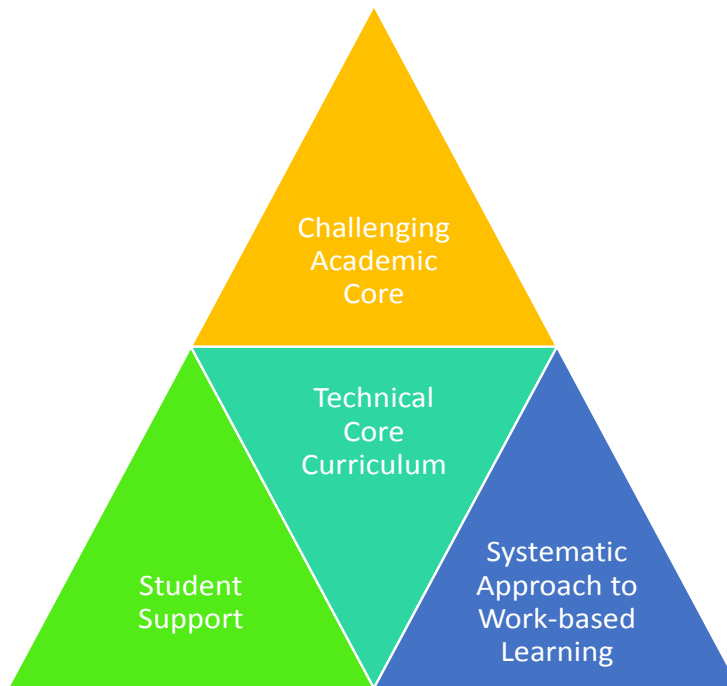
Source: Gary Hoachlander

4. **Student support:** Provide supplemental instruction for students who struggle academically as well as supports for their health and wellbeing.

Systematic Approach to Work-based Learning

Hoachlander illustrated the Linked Learning approach by describing a typical final project. A group of students from the Digital Media pathway pitched a documentary on the history of discrimination in the Los Angeles Unified School District to an MTV network vice president. They researched the two-minute trailer in social studies class, wrote the script in English class, and produced the actual video in a videography class.

Panelist Richard Hinckley described his organization's partnership with A.J. Moore Academy in Waco, Texas. A Career Academy high school, A.J. Moore allows students to choose from one of eight specializations. Hinckley highlighted the Finance Academy, recognized recently by the Internal Revenue Service as the number-one Volunteer Income Tax Assistance program in the nation. The Academy had prepared more than 10,000 tax returns annually since 2005 for Waco residents.[51] Hinckley attributed A.J. Moore's success to its advisory committee of more than 60 business, education, and community leaders who can be tapped for job shadowing, paid summer internships, mentoring, and mock interviews. This support network also

provides equipment donations, curriculum assistance, fundraising, and continuing industry education for teachers and staff.

Oklahoma's Francis Tuttle Technology Center

Tom Friedemann described the Francis Tuttle Technology Center and the Oklahoma system of career and technical education, illustrating how independence and funding can help programs succeed. Francis Tuttle is neither a high school nor a technical college, though its programs offer credit at both levels. Students come from six school districts. They attend the Center for half of the day before returning to their home schools for academic coursework. Post-secondary students pay tuition and receive technical training through the same 36 competency- and progress-based programs.

"Foundations, faith-based, philanthropic, or civic organizations, as well as local businesses serve as important sources of support."
—Richard Hinckley,
Center for Occupational Research and Development

According to Friedemann, the Center is possible because of Oklahoma's unique financial and jurisdictional structures. The state has specified career and technical education to be one of three education entities with its own state board. It has a state director and a dedicated funding stream. Each Oklahoma Technology Center (including Francis Tuttle) is a consolidated district with its own taxing authority, bond capacity, and locally elected board. As a result, he said, Francis Tuttle is "well funded."

Blackstone Valley Regional Vocational Technical School

Michael Fitzpatrick introduced Blackstone Valley Regional Vocational Technical School. The school has nearly 20 programs of study, an extended school year, and integrated technical and academic courses. The school has received a number of state and national awards, including recognition on the 2013 College Board AP District Honor Roll.

Fitzpatrick underscored the school's mission: "The curriculum is a launching pad for students to advance their general interest and their dreams … [The] integrated academic and vocational tech instruction is intended to liberate the humanity and the potential in every child we serve."

Blackstone Valley Tech incorporates a variety of feedback structures to ensure the school does not "cultivate complacency." Fitzpatrick explained that he and his colleagues "aggressively seek industry's input" to plan professional development experiences for staff. A leadership team regularly reviews the school's performance and shapes its goals. Management practices at Blackstone Valley Tech ensure a quick feedback loop that allows problems to be identified quickly and fixed. Staff at the school are recognized for their performance and provided with targeted professional development.

A KEY BARRIER TO PROGRESS: A LACK OF POLITICAL WILL TO REDESIGN HIGH SCHOOLS

The lack of political will to redesign high schools constitutes a major barrier to progress. Each of the highlighted programs serve limited numbers of young people. Panelists agreed that school districts tend to develop "one-off" pilot projects. As Hoachlander put it, "If we continue to go about this pathway-by-pathway, school-by-school, we're going to continue to produce the islands of excellence that we have seen for the past 30 years."

"If we continue to go about this pathway-by-pathway, school-by-school, we're going to continue to produce the islands of excellence that we have seen for the past 30 years."
—Gary Hoachlander, ConnectEd

Brand pointed out that the challenge may be greatest in rural districts. Serving one in five American students, rural districts tend to be geographically isolated, strapped for resources, and lacking the extensive network of employers that urban and suburban districts can engage as partners. At the same time, as described by the Alliance for Excellent Education's report *Current Challenges and Opportunities in Preparing Rural High School Students for Success in College and Careers,*[52] rural schools are challenged by high dropout rates and low post-secondary enrollment. These are precisely the conditions that warrant rethinking approaches to high school.

THE WAY FORWARD: REORGANIZE LOCAL VOCATIONAL SYSTEMS AROUND EFFECTIVE CTE PROGRAMS AND CONTINUOUSLY MONITOR QUALITY

Panelists agreed that to move beyond "islands of excellence," fundamental changes are needed. These include a new relationship between vocational and academic educators, resources, curricula, and administrative systems. There was agreement with Fitzpatrick's assertion that "There are new opportunities to reconfigure curriculum, finance, and relationships between vocational and non-vocational systems and doing so will be in the best interest of students across the country." Unfortunately, decisions about the mix of academic and vocational coursework are typically left to the discretion of local school districts. They suggested that serious integration of academic and career-oriented high school coursework may need to be mandated in state or federal policy.

Panelists proposed that policymakers could require school systems to select from models that are well developed and have evidence of effectiveness. Requirements could include procedures for monitoring fidelity to effective pathways models. Clear arrangements for quality assurance could build support for wider adoption of effective models.

Beyond formal mandates, panelists said that familiarizing local stakeholders with a school's mission can help expand resources. Building relationships with multiple types of local organizations can also help with long-term sustainability.

They agreed that resources may be most difficult to assemble in rural districts. Therefore, rural leaders need to be especially creative. Hoachlander asserted, "Even in the most remote rural school, where there may not even be employers, it's possible to develop school-based enterprise and other strategies for … integration of academic and technical knowledge."

Further, they said, it is important for rural areas to include geographically dispersed partners. Technology—especially video conferencing software and social media—provides opportunities for web-based learning. In addition, even very rural areas have financial services business and construction firms. These can anchor local pathways initiatives.

Finally, panelists advocated integrating pathways efforts into a broader continuum of work, stretching across the education sector. Ideally, Hoachlander said, federal, state, and local policymakers will be "committed to making career and technical education an integral part of the larger education system, whether we're talking about K-12 or post-secondary."

EFFECTIVE POST-SECONDARY PROGRAMS: COMMON PRINCIPLES AND PRACTICES

Moderator: Bryan Albrecht, President, Gateway Technical College

Panelists:

Kathryn Jo Mannes, Senior Vice President, Center for Workforce and Economic Development, American Association of Community Colleges

Doug Major, Superintendent and CEO, Meridian Technology Center

Sharon Thomas Parrott, Senior Vice President, External Relations and Global Responsibility and Chief Regulatory Compliance Officer, DeVry Inc.

John Mills, President, Paul Smith's College

Lieutenant Colonel Steven Betts, Commander, U.S. Army Recruiting Battalion, New England

The panelists represented a variety of approaches to post-secondary education—including for-profit institutions, dual-enrollment centers, community colleges, two-year institutions, and the military.

THE PANELISTS HIGHLIGHTED THE ELEMENTS OF SUCCESSFUL POST-SECONDARY PROGRAMS AND ENVISIONED STRATEGIES TO OVERCOME TWO PRESSING CHALLENGES THE SECTOR IS FACING: STRONG BIASES AGAINST CTE PATHWAYS AND POOR STUDENT RETENTION.

THE CHALLENGE: MATCHING POST-SECONDARY EDUCATION TO WORKFORCE OPPORTUNITIES

The American Association of Community Colleges (AACC) projects that nearly two-thirds of the nation's jobs will require a post-secondary certificate or degree by the year 2018.[53] This session examined how post-secondary programs—especially those that provide sub-baccalaureate credentials and certifications—can do a better job of meeting current and future workforce needs. Panelists shared their organizations' innovative approaches and envisioned the elements of a more coherent post-secondary system in the U.S.

THE VISION: GUIDANCE AND PREPARATION LEADING TO JOB PLACEMENT

Panelists provided examples of how their very different organizations meet the specific career-preparation needs of the populations they serve.

DeVry Education Group

Thomas Parrott described DeVry's work in both secondary and post-secondary education. A private, for-profit education institution, DeVry has established a niche serving "non-traditional students," including first generation and low-income college students. They also educate students working full time, career-changers, elite athletes, or students with a history of academic difficulty. Parrott pointed out that these students are quickly becoming the "new majority" of students in post-secondary education and the current system is not prepared to meet their needs.

She cited a recent report by the Pell Institute that attributed DeVry's success with non-traditional students to three main approaches:

1. **Approaching support services for students as customer service:** DeVry personalizes the educational experience for its students with student advising, early intervention, and job placement services.

2. **Providing early, in-depth, on-campus student opportunities to ease the transition to college:** DeVry offers dual-enrollment opportunities for high school students and "foundations" coursework to build their social and cultural skills.

3. **Establishing and sustaining a shared sense of community:** DeVry fosters a campus-wide culture through collaborative programming and deep faculty involvement.[54]

"Career and technical education is starting to get the recognition it deserves in terms of ensuring the economy is strong."
—Doug Major,
Meridian Technology Center

Oklahoma's Regional Technology Centers

Doug Major introduced Oklahoma's regional technology centers, which offer both secondary and post-secondary CTE training.[55] These centers are accountable to both local citizens—who provide resources and rely on the centers for relevant job training—and to regional businesses that depend on them to train skilled workers. Major described how officials from Meridian Technology Center meet regularly with business and industry councils to "identify, define, and update the curriculum and make sure that we are meeting employer needs for a highly skilled and highly qualified workforce." In addition to a variety of short-term business and industry offerings, Meridian offers programs in 71 career majors.

According to Major, 94 percent of students who graduate with a certificate or credential are either employed or pursuing further education six months later. He explained, "We track that religiously because it's how we maintain our relevance and ensure that we're meeting a need."

Paul Smith's College

John Mills introduced Paul Smith's College, a small private college in upstate New York that offers programs in Forestry and Natural Resources; Hospitality, Resort and Culinary Management; and Sciences, Liberal Arts, and Business. The school's motto, "It's about the experience," captures its approach to education. Mills reported that students "spend more time in the lab, in the field, and in the kitchen than they do in the classroom. We've found a way to keep students engaged in real work while they also gain experience in higher education." Like the Meridian Technology Center, Mills said Paul Smith's College consistently connects more than 90 percent of its graduating class with jobs or school within six months of graduation.

The United States Military

Steven Betts described how military enlistees begin by taking the Armed Services Vocational Aptitude Battery (ASVAB), which identifies their interests and aptitudes. They also receive a personal consultation with a recruiter to discuss their career goals. Betts emphasized, "Once we have students interested in serving and they're qualified, our focus is on finding a job that they want and that they can do well throughout the course of their career." Job opportunities in the military are so diverse that, as Betts put it, "If there is a job in the civilian world, we have it as well." Recruits receive training in a variety of forms and professional development continues throughout a person's military career.

BARRIERS TO PROGRESS: UNDER APPRECIATION OF CAREER EDUCATION AND LOW RETENTION RATES

Panelists believed that the chief impediments to overcome are the lack of societal familiarity with non-traditional post-secondary credentials and poor student retention. The panelists were particularly concerned about widespread under appreciation of CTE education. Mills cited the perennial tension between CTE and the liberal arts.

According to Mannes, community colleges face the same challenge. For example, the AACC's report *Reclaiming the American Dream*, describes how "Too many senior college and university leaders, faculty, department chairs, and deans are ambivalent about community colleges, understanding them not as having different missions, but as inferior because of their open-door admissions."[56] In addition to concerns about CTE's relationship to other segments of the academic community, all four panelists underscored the need to ensure that prospective CTE students, parents, and other educators need to understand the value of CTE pathways.

Despite the isolated success of some institutions, low retention and completion rates continue to challenge the broader post-secondary community. The AACC report claims that "Fewer than half (46 percent) of students who enter community colleges with the goal of earning a degree or certificate have attained that goal, transferred to a baccalaureate institution, or are still enrolled six years later."[57] Similarly, the Pell Institute report found that, for associate degrees and certificate programs, "Private and public institutions graduate students at rates of 48 percent and 21 percent, respectively."[58] Kathryn Jo Mannes said that community colleges clearly recognize this challenge and "are committed to improving their completion rates, in line with the goals of the Obama Administration and several leading foundations."

THE WAY FORWARD: COMMUNICATE THE VALUE OF CTE EDUCATION AND COMMUNITY COLLEGE

According to Mannes, the AACC's report provides a useful roadmap for improving community colleges in partnership with industry and other post-secondary partners. The report outlines three main recommendations, called the "3 Rs." They provide a framework for "reimagining" the U.S. community college system. They are:

1. **Redesign students' educational experience:** Improve completion rates and improve college readiness—especially for low-income students and students of color.

2. **Reinvent institutional roles:** Refocus institutional missions and roles on 21st century education and employment needs. Develop support structures that help multiple institutions meet local, state, and national needs.

3. **Reset the system:** Invest strategically to promote student progress and to ensure rigor, transparency, and accountability in the sector.[59]

Referring to the second element of the framework, Mills related an example of how Paul Smith's College has exhibited flexibility. Historically a two-year school, the college recently considered abandoning its associate degree programs in favor of the newer baccalaureate programs. Partly as a result of the Pathways report, Mills consulted local employers about the impending decision. He reported, "[Employers] were telling us, yeah, we need these people, and in fact, we're getting baccalaureates applying for the job and we don't need them." As a result, the college decided to "reinvigorate" instead of remove the associate degree programs. At the time of this conference, Paul Smith's College was actually considering more two-year programs.

Panelists agreed that the most daunting of the report's challenges may be the third element: to "reset" the post-secondary system. They emphasized the need to break down longstanding cultural barriers to systemic reform. According to Major, career education must be broadly promoted as "a pathway to careers of choice." By emphasizing the value of post-secondary credentials, panelists envisioned a new discourse around the entire CTE system. Organizations such as the AACC that promote community college and CTE educational systems can play a significant role in helping the public understand the value and potential of such programs.

Community colleges "are committed to improving their completion rates, in line with the goals of the Obama Administration and several leading foundations."
—Kathryn Jo Mannes, American Association of Community Colleges

PROMISING PATHWAYS FOR OPPORTUNITY YOUTH

Moderator: Harry Holzer, Professor of Public Policy, Georgetown University

Panelists:

Angela Cobb, Director, Return on Inspiration Labs, New Options Project

Leslie Beller, Founder and Director, MHA Labs and New Options Chicago Zone Leader

Jamai Blivin, Founder and CEO, Innovate + Educate and New Options New Mexico Zone Leader

Shawn Bohen, National Director for Strategic Growth and Impact, Year Up

Jean-Claude Brizard, Senior Advisor, Career Readiness, The College Board

Moderator Harry Holzer has written extensively about employment for disadvantaged youth. The panelists are leaders who represent three programs that target "opportunity youth": Leslie Beller of MHA Labs, Jamai Blivin of Innovate + Educate, and Shawn Bohen of Year Up. In addition, the panel featured Angela Cobb of the New Options Project—which is the incubating organization for Innovate + Educate and MHA Labs—and Jean-Claude Brizard, a former large-school superintendent currently with the College Board.

PANELISTS DISCUSSED THE PRACTICES OF PROGRAMS THAT EFFECTIVELY CONNECT OPPORTUNITY YOUTH TO THE WORKFORCE OR FURTHER EDUCATION. WHILE LIMITED PROGRAMMATIC CAPACITY AND NEGATIVE EMPLOYER PERCEPTIONS OF THIS POPULATION POSE CHALLENGES, PANELISTS DISCUSSED HOW INNOVATIVE APPROACHES—SUCH AS SKILLS-BASED HIRING—AND IMPROVED FUNDING MODELS COULD CREATE A MUCH MORE FAVORABLE "ECOSYSTEM" FOR THIS POPULATION.

THE CHALLENGE: CONNECTING OPPORTUNITY YOUTH TO THE WORLD OF WORK

One in six young adults between the ages of 16 and 24 is neither employed nor enrolled in school.[60] The White House Council for Community Solutions defines these young people as "opportunity youth." They include high school dropouts, high school graduates, GED recipients, young people who have had some experience in higher education, and many with work experience.[61] What they have in common is their current disconnection from any viable pathway into the adult world of work.

> *"The situation [of opportunity youth] is not only tragic from a justice point of view, but also economically costly and untenable in the long run."*
> —*Harry Holzer, Georgetown University*

Moderator Harry Holzer cited the work of Clive Belfield and colleagues who estimate the lifetime cost associated with disconnectedness among 16 to 24 year olds to be as high as $750,000 per person.[62] The lost output and earnings, combined with the cost to taxpayers amounts to nearly $5 trillion.[63] As Holzer described it, this situation is "not only tragic from a justice point of view, but also economically costly and untenable in the long run."

The panelists considered how training and workforce development opportunities can help opportunity youth to get on track toward realizing their potential. They drew on expertise in well-established and innovative programs that serve this population. Limited programmatic capacity, biased hiring practices, and limited labor market demand remain major challenges. They envisioned a better system with targeted research and dissemination of best practices, skill-based hiring practices, and more flexible funding streams.

THE VISION: PROGRAMS TO PREPARE OPPORTUNITY YOUTH FOR CAREER SUCCESS

Angela Cobb introduced the New Options Project (NOP). NOP is a "backbone organization" that helps create innovative tools and approaches to connect opportunity youth to employment pathways. For example, NOP provided a three-year "seed investment"

EXHIBIT 13: MHA Labs' Six Skill Building Blocks

for teams in New Mexico, Chicago, and the Baltimore/ Washington, D.C. region to launch demonstration projects, position their enterprises, and eventually, demonstrate market traction.

Jamai Blivin represented Innovate + Educate. Located in New Mexico, the organization targets youth who have dropped out of school or who are unemployed. It focuses on expanding the practice of "skill-based" hiring. Blivin described how Innovate + Educate assesses skills using the Work Keys assessment. Companies post jobs according to the Work Keys skills they require. Innovate + Educate determines if candidates have those skills. By getting employers to rely on skills for hiring—instead of degrees or years of experience—this system expands job options for opportunity youth.

Leslie Beller introduced MHA Labs, a research and development nonprofit housed within the Chicago Public schools. They focus upon 21st century skills, which Beller says are "one of the largest drivers for youth employment and advancement." MHA Labs designs tools to assess and develop six "skill building blocks": personal mindset, planning for success, social awareness, problem solving, verbal communication, and collaboration (Exhibit 13).

Soft skills are "one of the largest drivers for youth employment and advancement."
—Leslie Beller, MHA Labs

The organization considers peers, families, teachers, and career advisors as potential "21st century skill builders." Beller explained that MHA Labs' "Human Achievement Toolkit" would provide skill-building tools, evaluations, and trainings on the six skill building blocks.

Year Up has existed longer than MHA Labs and Innovate + Educate. It has demonstrated success serving low-income adults between 18 and 24 with a high school diploma (or GED) who have not transitioned successfully into the workforce. A year-long program operating in 11 states, Year Up combines five months of skills training with a six-month internship at a Fortune 1000 company.

Shawn Bohen explained that Year Up emphasizes both technical and professional skills, developed through a "high support, high expectations" model. During the first half of the program, participants receive training in their field of interest (e.g., information technology or

investment operations) along with soft skills. Then, for the second half, they apply these skills in an internship, which is often followed by a job with the internship company. Year Up conditions participants' weekly stipend on their adherence to professional norms and standards. A key feature of the Year Up model is that corporate partners pay the program only if the internship is successful.

For many opportunity youth, failures and hardships have taken a psychological toll. Typical hardships include dependent children, lack of transportation, and substance abuse among family members. Programs help participants manage these hardships and overcome associated mindsets. Year Up, for example, connects participants to mentors, psychologists, social workers, and other services to ensure they have supports to navigate personal challenges. Bohen emphasized that Year Up's work is really "human transformation work."

A KEY BARRIER TO PROGRESS: A SYSTEM OF "RANDOM ACTS OF OPPORTUNITY YOUTH EMPLOYMENT"

Panelists identified lack of program capacity, negative employer perceptions, low employer demand, and the lack of funding flexibility as impediments to a more effective system. The result, Blivin said, is a system of "random acts of opportunity youth employment."

The number of opportunity youth applying to participate in programs far exceeds the available slots. Demand is especially high for programs that formal evaluations have shown to be effective.[64] Jean-Claude Brizard shared that when he was the CEO of Chicago Public Schools, approximately 25,000 dropouts were interested in participating in a credentialing program. Only 7,000 slots were available.

Holzer pointed out that the majority of programs are geared toward youth who have at least threshold levels of academic skill or substantial motivation. Consequently, youth at the bottom of the skills and motivation continuum have the fewest opportunities for both jobs and program services.

> *"In this labor market, it's a 'buyer's market' for employment; many employers can afford to be choosy."*
> *—Harry Holzer, Georgetown University*

Panelists expressed concern about the negative perceptions many employers have. Opportunity youth face stigmas and biases associated with race and ethnicity, disability, criminal status, socioeconomic status, and teen parenthood. Negative assumptions about opportunity youth diminish their job prospects. This is even true for skilled youths who have been diligent and successfully completed rigorous programs.

The problem worsens when labor markets are slack and employers have little need to hire opportunity youth. Holzer added, "In this labor market, it's a 'buyer's market' for employment; many employers can afford to be choosy." Opportunity youth are routinely passed over in favor of candidates considered "less risky" to hire.

Panelists also expressed their concern that federal policies to fund programming can be too rigid. As a result, combining federal funds with support from other sources can be difficult. They said that combining funds to creatively support unconventional programming can be especially difficult and discourage innovation.

THE WAY FORWARD: EXPAND PATHWAYS FOR OPPORTUNITY YOUTH AND CHALLENGE NEGATIVE PERCEPTIONS

Panelists imagined a more supportive ecosystem for opportunity youth. They highlighted the need to challenge public perceptions, expand the knowledge base of effective practices, and embrace innovation—especially around hiring practices and funding models.

Cobb underscored the need to cultivate a more "favorable context" for this work and for opportunity youth in general. NOP is partnering with Year Up, Public/Private Possibilities, and other organizations to work with the AD Council on a public relations campaign to raise awareness that opportunity youth are a talent pool.

Panelists called for research on features of effective programming and ways to achieve desired outcomes cost-effectively. Year Up, for example, has embarked on several initiatives aimed at increasing capacity. Bohen described several "deeply embedded" community college experiments to figure out how to partner effectively with these institutions. Year Up Founder and CEO Gerald Chertavian explained in a recent article that the organization's aim is to "reduce program costs to a level that can be covered by Pell Grants and internship fees, and thus require no philanthropy."[65]

To spread these ideas in the business community, Bohen envisioned a digital platform that would

highlight companies doing "extraordinary things" with regard to opportunity youth training or employment. Cobb said this would be especially valuable for small employers.

Panelists agreed that new approaches, such as skill-based hiring, could greatly expand the jobs available to opportunity youth. Blivin reported Innovate + Educate's finding that only 1 percent of the young people they target would be hired by an employer based on degree or experience, but 33 percent would qualify if the decision were based on cognitive skills.[66] The organization concluded that skill-based hiring also benefits employers by reducing turnover, time to hire, cost to hire, and time to train.[67] Blivin added that in Innovate + Educate's experience, skills-based hiring reduces discrimination because it encourages employers to focus solely upon the skills each young person brings to the job.

Panelists asked for governmental and philanthropic policy reforms to allow easier commingling of federal, state, and local funds. Bohen also suggested a "pay for performance" approach in which payments to program providers depend upon how effectively they produce desired outcomes.

CREATING PIPELINES FOR COURT-INVOLVED YOUTH

Moderator: Ray McNulty, Dean of Education, Southern New Hampshire University

Panelists:

John Dillow, Executive Director of the National Capital Region, Living Classrooms

Dennis Torbett, Senior Vice President, Home Builders Institute

Ann Higdon, President and Founder, Improved Solutions for Urban Systems

Joni Blakeslee, Senior Manager, Corporate Affairs, Cisco

Moderator Ray McNulty drew on his extensive experience in K-16 education, including as former state commissioner of education in Vermont. Panelists Dennis Torbett of the Home Builders Institute, John Dillow of Living Classrooms, Ann Higdon of Improved Solutions for Urban Systems, and Joni Blakeslee of the global technology firm Cisco, each represented programs that work directly with court-involved youth.

PANELISTS IDENTIFIED COMMON FEATURES OF SUCCESSFUL PATHWAYS PROGRAMS FOR COURT-INVOLVED YOUTH. THEY MADE SEVERAL POLICY RECOMMENDATIONS TO ADDRESS CHALLENGES THAT COURT-INVOLVED YOUTH OFTEN FACE IN PREPARING FOR WORK AND FINDING JOBS.

THE CHALLENGE: TOO FEW OPTIONS

Each year, prisons and juvenile correctional facilities release nearly 200,000 young adults under the age of 24.[68] A large number have gaps in their academic preparation, little work experience, and lack a positive network of peer and family support—all factors that make it difficult to secure meaningful work.

Panelists discussed job preparation and placement programs designed specifically for court-involved youth and highlighted practices common to the most effective. They identified the stigma of a criminal record and limited job skills among factors that court-involved youth need help overcoming in the eyes of potential employers.

THE VISION: CONNECTING YOUTH TO OPPORTUNITY

The four programs featured in this session each combine industry-specific job training, personal development, and intentional support networks. Panelists all emphasized that work-based learning can provide concrete work experience, improve motivation, and build self-confidence. Torbett summed it up, "You put a tool belt, some work boots, and a hard hat on someone and you're going to see an attitudinal shift; demeanor is going to change; self-esteem is going to rise; and behavioral problems will decrease."

Cisco's Networking Academies

Cisco uses a blended learning model to prepare young people for entry-level positions in information technology. Networking Academy students work toward Cisco IT Essentials and CompTIA A+ certifications. Joni Blakeslee shared how Cisco has recently expanded its Networking Academy model, traditionally located in technical colleges, community-based organizations, or universities, to correctional facilities in Colorado and Massachusetts.

"You put a tool belt, some work boots, and a hard hat on someone and you're going to see an attitudinal shift; demeanor is going to change; self-esteem is going to rise; and behavioral problems will decrease."
—Dennis Torbett,
Home Builders Institute

Based on Cisco's work with prisons in United Kingdom, the company partnered with the Denver Women's Correctional Facility to pilot a 20-week Networking Academy program in 2010. Twelve participants were chosen from more than 1,000 applicants, eleven of whom ultimately received certification. Funded by the federal Second Chance Act, the initiative had expanded to 21 classrooms in seven prisons across Colorado at the time of the conference. Cisco was working to implement a similar program in Massachusetts in cooperation with the State Department of Corrections.

Cisco's Networking Academy exposes participants to a variety of positive role models. Professional women in the technology sector visit the program to discuss their careers, answer students' questions, and provide encouragement, helping participants envision themselves as successful professionals.

Home Builders Institute (HBI)

Dennis Torbett represented HBI, which offers Pre-Apprenticeship Certificate Training (PACT) through partnerships with juvenile justice agencies, YouthBuild, workforce investment agencies, and Job Corps. PACT uses an "open-entry/skilled exit" approach that provides approximately 500 hours of classroom, laboratory, and on-the-job training. Students engage in work-based learning that combines technical and academic skills, which they apply at jobs with contractors on community service projects. After successfully completing the program, PACT students earn a portable and stackable industry-recognized credential that enables them to obtain entry-level employment in the homebuilding and construction trades.

Torbett explained that HBI uses a civic justice model in which young people are granted "good time" for their work on these projects, ultimately speeding their path to employment. Furthermore, HBI students can earn their Occupational Safety and Health Administration's (OSHA) 10-hour Safety Training certificate, GED, or driver's license, each of which can improve their job market prospects.

Living Classrooms

John Dillow described two Living Classrooms programs: Fresh Start and Project SERVE. Recognized by the U.S. Department of Labor for "best practices," Fresh Start is a 40-week youth offender program for young men who are referred by the Maryland Department of Juvenile Services. Fresh Start uses carpentry to teach reading, writing, history, and science. Participants work at the Living Classrooms Foundation Maritime Institute and the Douglass-Myers Maritime Park boat building workshop; they make toolboxes, furniture, and boats while also receiving academic instruction and one-on-one tutoring.

Project SERVE provides four to six months of job training for disadvantaged and unemployed young adults from East Baltimore, targeting those reentering the community after incarceration. Participants learn construction skills through work on a variety of community revitalization projects.

Improved Solutions for Urban Systems (ISUS)

Founded by panelist Ann Higdon, ISUS is a network of three small charter high schools in Dayton, Ohio that enrolls at-risk youth, many of whom have been involved with the juvenile justice system. Students spend part of the day on academic coursework and the remainder in service-oriented work-based learning. For example, IT students refurbish computers, construction students build houses, and healthcare students work in a local hospital. ISUS has been successful not just in providing training, but also in fostering high academic achievement. In 2011, the three ISUS schools earned the academic rating of "excellent" on the state report card.[69]

Higdon also underscored the importance of personal development in programs. She explained that an asset-based, high-expectations approach guides ISUS's philosophy and all interactions with students. ISUS attempts to "build an image for these young people in which they become an asset—not an imposition." This is reinforced through practices such as reciting a daily creed, regular "family meetings," and the culture of interpersonal accountability. At the same time, ISUS students are held to high standards. Higdon says construction students don't build standard houses, but historic replicas of Thomas Edison's Menlo Park or the Wright Brother's homestead. These achievements nurture self-worth while enabling participants to showcase their skills to the community.

Panelists agreed on the importance of strong support networks. Ray McNulty asserted that cultivating networks of support is "one of the critical challenges we face with youth who have been incarcerated. If they feel like they don't belong anymore, we haven't done enough to raise their level of expectations."

"The hardest work [for the young person] is not being in the program; the hardest work is the day [they] leave."
—John Dillow,
Living Classrooms

Dillow described the ongoing support that Living Classrooms provides, which often begins before a young person is released from incarceration. Funding from the Annie E. Casey Foundation has enabled Living Classrooms to identify incarcerated individuals who will be returning to East Baltimore. According to Dillow, staff members pick them up when they are released so they can start work in the program the following day. The staff also ensures that participants are connected to any wraparound services they may need.

In addition, Living Classrooms employs dedicated "retention specialists" who support students for three years following program completion. Dillow noted "the hardest work [for the young person] is not being in the program; the hardest work is the day [they] leave." This continuum of support contributes to both the low recidivism and high employment rate of Fresh Start and Project SERVE participants. Strikingly, nearly 80 percent of program graduates remain employed or in school three years after completion of Project SERVE.[70]

ISUS, HBI, and Living Classrooms support networks extend to the surrounding community. Service learning reconnects court-involved youth to their communities and provides opportunities for making positive impacts. ISUS students refurbish computers for disadvantaged youth, volunteer in hospitals, and build new homes. Project SERVE students provide renovations for low-income residents. They also identified the need for a gang intervention initiative in their East Baltimore neighborhood and then worked with program staff and community members to develop a program called "Safe Streets."

KEY BARRIERS TO PROGRESS: STIGMA AND NO COHERENT FEDERAL POLICY

Work by Harry Holzer and colleagues for the Urban Institute indicates that employers are more reluctant to hire ex-offenders than any other disadvantaged group. Only 40 percent of employers would fill a recent job vacancy with an ex-offender.[71]

Higdon and Dillow reported that court-involved youth often face legal limitations in the types of work they can do. Jobs that require contact with children, some security and delivery services, and certain health service occupations can be closed to individuals with a record, especially in the case of a felony. Panelists expressed frustration that states and localities often apply employment restrictions too broadly.

Moreover, McNulty pointed to the lack of systematic federal policy targeting court-involved youth as an additional barrier. He acknowledged federal funding

"We still don't have a coherent federal policy that deals with the entirety of the problem [of court-involved youth]… even though our approach has gotten much better, our problems have also gotten much greater."
—Ray McNulty,
Southern New Hampshire University

streams that support some innovative programs, but said, "We still don't have a coherent federal policy that deals with the entirety of the problem … even though our approach has gotten much better, our problems have also gotten much greater."

THE WAY FORWARD: A TARGETED ECOSYSTEM OF ACTIVE POLICY, INNOVATIVE PROGRAMS, AND ENGAGED EMPLOYERS

Panelists pointed out how important it is for programs to reinforce the value these young people offer businesses. Torbett explained, "We deal with it from a business approach, not a social services approach," since these young people have what is necessary to be successful on the job and "can be assets and can help employers make money."

As an example, Dillow cited a school-to-career partnership between Living Classrooms and UPS that hired court-involved youth who had been in the foster-care system.[72] According to Dillow, UPS appreciated the low turnover rate "…what UPS found is that the 90 day churn rate gets reduced, so there's a real value that corporations can associate to that cost of not having to replace as many people in the first 90 days." Over time, employers' positive experiences with program graduates creates a pipeline of opportunity for future participants.

Panelists suggested several policy shifts they would advocate. Dillow recommended that states should differentiate more clearly between sentences for violent and non-violent (especially drug) offenses. This distinction, he said, should extend to post-sentence limitations to ensure that restrictions are proportionate to the original offense. Higdon mentioned legislation in Ohio that expunges the records of non-violent first time offenders once certain criteria have been met.

Panels envisioned how to lay groundwork for a system that is, McNulty said, "successful by design." In his view, innovative programs—such as those represented by the panel—are a step toward policy change. They "disrupt" assumptions concerning what can be done and push organizations to shift their practices. However, McNulty emphasized a need for better evidence in order to make the most effective case.

Panelists all agreed that grassroots activism can raise awareness and help drive policy. Higdon suggested that a vocal constituency of parents and young people can cultivate an understanding of the challenges court-involved young people face and press legislators for more enlightened policies.

ENDNOTES

1. The idea that we are in a Sputnik moment is credited to Bill Shore, Director of U.S. Community Partnerships for GlaxoSmithKline, from his talk at the North Carolina Chamber of Commerce Education Summit, July 2011.

2. Jeffrey Pfeffer & Robert Sutton (2000). *The Knowing-Doing Gap,* p. 66. Cambridge, MA: Harvard Business School Press.

3. Andrew Sum, Ishwar Khatiwada & Walter McHugh (October 2013). *The Complete Breakdown in the High School-to-Work Transition of Young, Non-College Enrolled High School Graduates in the U.S.: The Need for an Immediate National Policy Response*, p.15. Report prepared for Jobs for America's Graduates by the Center for Labor Market Studies at Northeastern University.

4. U.S. Department of Labor, Bureau of Labor Statistics (April 22, 2014). *College Enrollment and Work Activity of 2013 High School Graduates*. Washington, D.C.

5. William T. Dickens (1999). "Rebuilding Urban Labor Markets." In R. Ferguson and W. Dickens, eds., *Urban Problems and Community Development.* Washington, D.C.: Brookings Institution Press.

6. Ronald F. Ferguson & Randall F. Filer (1986). "Do Good Jobs Make Good Workers?" In R. Freeman and H. Holzer, eds., *The Black Youth Employment Crisis*. Chicago, IL: University of Chicago Press.

7. Andrew Weaver & Paul Osterman (2013). "Skill Demand and Mismatch in U.S. Manufacturing: Evidence and Implications." MIT Sloan School of Management.

8. Deloitte & The Manufacturing Institute (2011). *Boiling Point? The skills gap in U.S. manufacturing*, p. 1. Retrieved from: http://www.themanufacturinginstitute. org/~/media/A07730B2A798437D98501E798C2E13AA. ashx

9. Weaver and Osterman, op. cit., from the Abstract.

10. Weaver and Osterman, op. cit., p. 21.

11. *Ibid*.

12. For example, see: Lawrence Katz & Claudia Golden (2008). T*he Race Between Education and Technology*. Cambridge, MA: Harvard University Press.

13. Julia Dennett & Alicia Sasser Modestino (December 2013). "Uncertain Futures? Youth Attachment to the Labor Market in the United States and New England." Federal Reserve Bank of Boston. New England Public Policy Center Research Report 13-3.

14. Quoted verbatim with permission from the author and the Federal Reserve Bank of Boston.

15. Edward "Ted" Siedle (March 20, 2013). "The Greatest Retirement Crisis in American History." *Forbes*. Retrieved from: http://www.forbes.com/sites/ edwardsiedle/2013/03/20/the-greatest-retirement-cri- sis-in-american-history/

16. Katz & Golden, op. cit.

17. According to estimates developed by Daniel Mears and Jeremy Travis in: Daniel P. Mears & Jeremy Travis (2004). "The Dimensions, Pathways and Consequences of Youth Reentry." Research Report from the Urban Institute Justice Policy Center.

18. Alliance for Excellent Education (2012). "Insepara- ble Imperatives: Equity in Education and the Future of the American Economy." Retrieved from: http://all4ed. org/wp-content/uploads/2013/06/InseparableImpera- tives.pdf

19. The U.S. Department of Education, Office of Vocational and Adult Education (2012). *Investing in America's Future: A Blueprint for Transforming Career and Technical Education*. Retrieved from: http://www2. ed.gov/about/offices/list/ovae/pi/cte/transforming-ca- reer-technical-education.pdf

20. *Ibid*, p. 2.

21. *Ibid*.

22. The U.S. Department of Education, U.S. Depart- ment of Health and Human Services & U.S. Depart- ment of Labor (2012). *Joint guidance letter on Career Pathways*. Retrieved from: http://cte.ed.gov/docs/ RPOS_2012/Joint_Letter_Career_Pathways.pdf

23. Students demonstrate college readiness by passing the state-designated cut score on the Armed Services Vocational Aptitude Battery (ASVAB) or by achieving "silver level" or above on the National Career Readiness Certificate (which is based on the Work Keys assess- ment). To be "career ready," students must enroll in three CTE courses that—when possible—culminate in an industry-recognized credential.

24. Jeff Edmondson (December 3, 2013). "Backbone Organization or Backbone Function? [blog post]," Striving for Change: Lessons from the Front Line. Retrieved from: http://www.strivetogether.org/blog/2013/12/backbone-organization-or-backbone-function/.

25. *Ibid*.

26. John Kania & Mark Kramer (2011). "Collective Impact," *Stanford Social Innovation Review*. Winter 2011 issue. Retrieved from: http://www.ssireview.org/articles/entry/collective_impact.

27. Kevin M. Hollenbeck & Wei-Jang Huang (2003). "Net Impact and Benefit-Cost Estimates of the Workforce Development System in Washington State," W.E. Upjohn Institute for Employment Research. Retrieved from: http://www.upjohninst.org/publications/tr/tr03-018.pdf

28. Julie E. Redline & James E. Rosenbaum (2010). "School Job Placement: Can it Avoid Reproducing Social Inequalities?" *Teacher's College Record*, *112*(3) p. 843-875.

29. *Ibid*.

30. Organization for Economic Cooperation and Development (2013). "OECD Harmonized Unemployment Rates," p. 4. News release: May 2013. Retrieved from: http://www.oecd.org/std/labour-stats/HUR_NR07e13.pdf.

31. *Ibid*.

32. *Ibid*.

33. Organization for Economic Cooperation and Development (2010). *Learning for Jobs*. OECD Publishing. Retrieved from: www.sourceoecd.org/education/9789264082236.

34. Accenture (2013). *Delivering Quality Education in the 21ˢᵗ Century: An Overview.* Retrieved from: http://www.accenture.com/in-en/Pages/insight-delivering-quality-education-21st-century.aspx.

35. Robert I. Lerman (2012). *Can the United States Expand Apprenticeship? Lessons from Experience*. Retrieved from: https://www.american.edu/cas/economics/research/upload/2012-18.pdf.

36. Accenture (2012). "Delivering Public Service for the Future: Navigating the Shifts." Retrieved from: http://www.accenture.com/SiteCollectionDocuments/PDF/Accenture-Delivering-Public-Service-for-the-Future-112812.pdf.

37. American School Counselor Association (2008). "ASCA National Model: A Framework for School Counseling Programs," Executive Summary. Retrieved from: http://www.ascanationalmodel.org/Ascanationalmodel/media/ANM-templates/ANMExecSumm.pdf.

38. John Carey & Carey Dimmit (2012). "School Counseling and Six Outcomes: Summary of Six Statewide Studies," *Professional School Counseling*, *16*(2). Retrieved from: http://schoolcounselor.metapress.com/content/753362168v57765w/?p=be63c07176f54be4af28b95c3144a34a&pi=1.

39. *Ibid*.

40. The American School Counselor Association, Office of Public Policy and Legislation (2011). "United States Student-to-Counselor Ratios for Elementary and Secondary Schools." Retrieved from: http://www.counseling.org/PublicPolicy/ACA_Ratio_Chart_2011_Overall.pdf

41. American School Counselor Association (2008). "ASCA National Model: A Framework for School Counseling Programs," Executive Summary, p. 1. Retrieved from: http://www.ascanationalmodel.org/Ascanationalmodel/media/ANM-templates/ANMExecSumm.pdf.

42. ACT (2013). "The Condition of College & Career Readiness: National," p. 1. Retrieved from http://www.act.org/research/policymakers/cccr13/pdf/CCCR13-NationalReadinessRpt.pdf.

43. Willliam C. Symonds, Robert B. Schwartz & Ronald Ferguson (2011). *Pathways to Prosperity: Meeting the Challenge of Preparing Young Americans for the 21st Century*, p. 27. Report issued by the Pathways to Prosperity Project, Harvard Graduate School of Education. Retrieved from: http://www.gse.harvard.edu/news_events/features/2011/Pathways_to_Prosperity_Feb2011.pdf

44. The National Association of State Directors of Career and Technical Education Consortium/ National Career Technical Education Foundation (2012). "Common Career Technical Core." Retrieved from: http://www.careertech.org/career-technical-education/cctc/info.html

45.   The National Association of State Directors of Career Technical Education Consortium (2014). "Common Career Technical Core" website. Retrieved from: http://www.careertech.org/career-technical-education/cctc/info.html.

46.   National Academy Foundation (2012). "NAF Academies." Retrieved from: http://naf.org/naf-academies

47.   The Lumina Foundation (2013). "Lumina Foundation Strategic Plan 2013 to 2016," p. 6. Retrieved from: http://www.luminafoundation.org/advantage/document/goal_2025/2013-Lumina_Strategic_Plan.pdf

48.   McGraw Hill Construction (2012). "Construction Industry Workforce Shortages: Role of Certification, Training and Green Jobs in Filling the Gaps," p. 4. SmartMarket Report. Retrieved from: http://www.usgbc.org/Docs/Archive/General/Docs18984.pdf.

49.   Harry J. Holzer & Robert I. Lerman (2009). "The Future of Middle Skill Jobs." Brookings Institution CCF Brief #41. Retrieved from: http://www.brookings.edu/~/media/research/files/papers/2009/2/middle%20skill%20jobs%20holzer/02_middle_skill_jobs_holzer.pdf.

50.   Ibid., p. 5.

51.   Waco Independent School District (April 17, 2013). "Student tax preparation program in the spotlight: A.J. Moore Academy of Finance gets national news coverage." Retrieved from: http://ajmoore.wacoisd.org/cms/One.aspx?portalId=11392&pageId=127820.

52.   Alliance for Excellent Education (2010). *Current Challenges and Opportunities in Preparing Rural High School Students for Success in College and Careers: What Federal Policymakers Need to Know*. Retrieved from: http://all4ed.org/wp-content/uploads/2010/02/RuralHSReportChallengesOpps.pdf

53.   The American Association of Community Colleges (2012). *Reclaiming the American Dream: Community Colleges and the Nation's Future*, p. viii. Retrieved from: http://www.insidehighered.com/sites/default/server_files/files/21stCentReport.pdf.

54.   The Pell Institute (2011). *Promising Practices Supporting Low-Income, First-Generation Students at DeVry University*, p. 7. Retrieved from: http://devryeducationgroup.com/resources/pdfs/Pell_DeVry_Report_May2011.pdf

55.   Oklahoma's Technology Centers are also featured in the "Providing High-Quality High Schools" session.

56.   The American Association of Community Colleges, op. cit, p. 10.

57.   *Ibid*.

58.   The Pell Institute, op. cit. p. 13.

59.   The American Association of Community Colleges, op. cit, p. 25.

60.   Clive Belfield, Henry Levin & Rachel Rosen (2012). "The Economic Value of Opportunity Youth," p. 1. Retrieved from: http://www.civicenterprises.net/MediaLibrary/Docs/econ_value_opportunity_youth.pdf.

61.   White House Council for Community Solutions (2012). "Final Report: Community Solutions for Opportunity Youth." Retrieved from: http://www.serve.gov/sites/default/files/ctools/12_0604whccs_finalreport.pdf.

62.   Clive Belfield, Henry Levin & Rachel Rosen, op. cit, p. 2. Note: this figure combines the estimated taxpayer burden of $170,740 and a social burden of $529,030.

63.   *Ibid*.

64.   Anne Roder & Mark Elliot (2011). "A Promising Start: Year Up's Initial Impacts on Low-Income Adults' Careers." Retrieved from: http://www.yearup.org/pdf/emc_study.pdf

65.   Gerald Chertavian (2012). "Year Up: Providing a pathway from poverty to a professional career for urban young adults," *Focus*, *29*(2). Retrieved from: http://www.irp.wisc.edu/publications/focus/pdfs/foc292c.pdf.

66.   Jamai Blivin & Merrilea Mayo (2013). "The New World of Work: From Education to Employment," *The Innovation Intake*, p. 5. Retrieved from: http://www.innovateeducate.org/files/uploads/New_World_of_Work_Article.pdf.

67.   *Ibid*.

68.   Daniel P. Mears & Jeremy Travis (2004). "The Dimensions, Pathways, and Consequences of Youth Reentry." Retrieved from: http://www.urban.org/UploadedPDF/410927_youth_reentry.pdf.

69.   At the time of this writing, ISUS had suspended operations.

70. Living Classrooms Foundation (2007). "Project SERVE, Three Year Report: 2005-2007." Retrieved from: http://www.usmayors.org/76thannualmeeting/documents/projectserve.pdf

71. Harry Holzer, Steven Raphael & Michael Stoll (2003). "Employment Barriers Facing Ex-Offenders," p. 11. Retrieved from: http://www.urban.org/Uploaded-PDF/410855_holzer.pdf

72. This partnership between Living Classrooms and UPS is separate from Project SERVE and Fresh Start. It was funded by the Annie E. Casey Foundation.

CONFERENCE PARTICIPANTS

Nata Abbott
GE Healthcare

John Abele
Argosy Foundation

Jonelle Adams
Washington State School Director's Association

R. Stephen Aguirre
High Plains Regional Education Cooperative

Patrick Ainsworth
Patrick Ainsworth Consulting

Bryan Albrecht
Gateway Technical College, Kenosha Campus

Melissa Alpert Anguilla
Bank of America

Debbie Anderson
VanHoose Education Center

Karen Anderson
Illinois Community College Board

Judith Andrews
Connecticut State Department of Education

Arcelio Aponte
New Jersey State Board of Education

Mary Ellen Ardouny
The Corps Network

Dwight Armstrong
National FFA Organization

Chris Arvin
Caterpillar

Terry Ausman
ACT

David Autor
MIT Department of Economics

James Bacchus
Hattiesburg Public School District

Donna Bahorich
State Board of Education

James Bailey
CTE & STEM Initiative

Lauren Baker
WRTP/ BIG STEP

James Baldwin
Questar III

Lyle Balistreri
Milwaukee Building Trades Council

Ann Ballantine
Ballantine & Company

Joan Ballweg
Wisconsin State Assembly

Marie Barry
New Jersey Dept of Education

Sandra Barton
Wyoming BOCES

Tricia Beal
Novus International, Inc.

Mike Bellaman
ABC National

Leslie Beller
New Options, Chicago Public Schools

Mike Bennett
Cianbro Corporation

Michael Bettersworth
Texas State Technical College

LTC Steven Betts
New England Recruiting Battalion

Erin Bibo
Office of the State Superintendent of Education (OSSE)

Rainer Binder
Accenture

Linda Black
Nebraska Department of Economic Development

Dan Blake
Sonoma County Office of Education

Joni Blakeslee
Cisco Systems

Jamai Blivin
Innovate+Educate

Timm Boettcher
Realityworks, Inc.

Shawn Bohen
Year Up

David Bond
Center for Occupational Research and Development

Gene Bottoms
Southern Regional Education Board

Steve Bountress
New Options Project, Living Classrooms Foundation

Ed Bouquillon
Minuteman Regional Vocational Technical HS

Roger Bourgeois
Essex Agricultural School

Jane Bowen
Moore Norman Technology Center

Dave Bozeman
Integrated Manufacturing Operations Division, Caterpillar

Betsy Brand
American Youth Policy Forum

Jan Bray
Bray Strategies

Sheila Briggs Wisconsin
Department of Public Instruction

Nadia Brigham
W.K. Kellogg Foundation

Jean-Claude Brizard
The College Board

Andrew Brower
W.K. Kellogg Foundation

Jeremiah Brown
Achieve Minneapolis

David Brukardt
University of Wisconsin System

Kelly Bucherie
Clark County School District

Earl Buford
WRTP, BIG STEP

Ronald Bullock
The Manufacturing Institute, Bison Gear and
Engineering Corp.

Michael Burke
Milwaukee Area Technical College

Lizzie Burns
Opportunity Nation

Jeanette Capshaw
Moore Norman Technology Center

Barbara Cargill
Wonders of the Woodlands Science Camp

Blouke Carus
Carus Corp.

Lee Anne Caylor
Microsoft

Jenny Ceesay
Berea College

Pearl Chang Esau
Expect More Arizona

Teresa Chasteen
WIN Learning

Gerald Chertavian
Year Up

Troy Christensen
Bridgerland Applied Technology College & Bear
River Regional Pathways Director (UT)

Kelsey Cintolo
Massachusetts Competitive Partnership

Joseph Cirasuolo
Connecticut Association of Public School

Phillip Cleveland
Alabama State Department of Education,
Workforce Development

Angela Cobb
Return on Inspiration Labs, New Options Project

Richard Condit
Sundt Construction Inc.

Chris Conley
New Options Project, Gravity Tank

Crystal Coon
GoodenGroup

Andra Cornelius
Workforce Florida, Inc.

Pam Costain
AchieveMpls

John Costilla
WIN Learning

Bob Couch
District Five of Lexington and Richland Counties, SC

Jim Crabbe
State Board for Community and Technical Colleges

Patrice Cromwell
The Annie E. Casey Foundation

John Curtis
Bridgeport Regional Vocational Aquaculture School

Michael D'Ambrose
Archer Daniels Midland

Kathy D'Antoni
Division of Technical and Adult Education Services

Bill Daggett
International Center for Leadership in Education

Brenda Dann-Messier
U.S. Department of Education

Marianne DeRaps
Sumner Memorial High

Peter Dewar
MA Association of Vocational Administrators
(MAVA)

Jeff Dickert
CESA 7

John Dillow
New Options Project, Living Classrooms Foundation

David Dimmett
Project Lead the Way

Kate Donovan
Manpower Group

Jackie Dowd
Department of Workforce Development

Emily Durso
Office of the State Superintendent for Education
(OSSE)

Jeff Edmondson
STRIVE Network

Mark Edwards
Opportunity Nation

Martha Eldredge Stark
NSERVE

Cory Epler
NE Department of Education

Joan Evans
Department of Workforce Services

Mike Fabishak
Associated General Contractors of Greater
Milwaukee

Connie Fabre
GBRIA

Mary Fallin
State of Oklahoma, Office of Governor Mary Fallin

Rose Fealy
Civic Consulting Alliance

Rich Feller
Colorado State

Ron Ferguson
Harvard Graduate School of Education

Jesus Fernandez
DeVry University

David Ferreira
MA Association of Vocational Administrators
(MAVA)

Leah Fiasca
Greater Milwaukee Committee

Aaron Fichtner
NJ Department of Labor and Workforce
Development

David Fischer
NYC Department of Education

Kirtley Fisher
Harvard Graduate School of Education

Beth Fisher Maine
CTE Region 8

Laura Fisher
Allegheny Conference on Community Development

Michael Fitzpatrick
Blackstone Valley Vocational Regional School
District

Blake Flanders
Kansas Board of Regents

Ray Fleming Dinneen
CLIMB Wyoming

John Foster NOCTI
Morna K. Foy Wisconsin Technical College System

Sybil Francis
The Center for the Future of Arizona

Cindy Friedemann
Metro Technology Centers

Tom Friedemann
Francis Tuttle Technology Center

Jocelyn Friedlander
Achievement Gap Initiative, Harvard Kennedy
School

Jon Furr
Northern Illinois University

Terry Gaalswyk
Western Nebraska Community College

Brenda Gammon
Maine CTE Region 9

Barbara Gantwerk
Division of Student and Field Services, New
Jersey Department of Education

Jason Garman
Campbell County High School

Lynne Garrison
North Carolina New Schools Project

Randall Garton
Shanker Institute

David Garza
Cengage Learning

David Gergen
Harvard Kennedy School

Gail Gershon
Gap Inc.

Ernest Gibble
DeVry

Joann Lorraine Gillen
Carrollton-Farmers Branch ISD

Joseph Goins
WIN Learning

Dan Gordon
D.C. Public Schools

Kimberly Green
NASDCTEC

Byron Green
Clark County School District

Bill Green
Accenture

Diane Greene
NCCER

Steve Greene
NCCER

Mark Greenlaw
Cognizant

Kathleen Greider
Farmington Public Schools

Paul Grogan
The Boston Foundation

Jennifer Grove
The Southern Company

Garrett Groves
National Governors Association

Gaurav Gujral
Accenture Health & Public Service

Robert Gunter
Arkansas Department of Career Education

Sapna Gupta
Morrison Institute

Daphne Hall
EducationQuest Foundation

Mary Agnes Hamilton
Cornell University

Stephen Hamilton
Cornell University

Fenna Hanes
New England Board of Higher Education

Nick Hansen
Tennessee Department of Education

Ron Hanson
Papillon La Vista School District

William Harris
Science Foundation Arizona

Mark Harris
Illinois Science and Technology Coalition

Matt Hastings
Nebraska Department of Education

Ted Hennessy
Questar III

Ray Henson
Arkansas Department of Career Education

Ann Higdon
Improved Solutions for Urban Systems

Richard Hinckley
Center for Occupational Research and Development

Gary Hoachlander
ConnectEd

Kathrin Hoeckel
OECD Directorate of Education

Donna Hoffman
NE Department of Education

Kevin Hollenbeck
W.E. Upjohn Institute

Tammy Holloway
Napa County Office of Education

Tom Holm
Campbell County High School

Robert Holm
On-Ramps to Careers

Harry Holzer
Georgetown University

John Hoops
FutureWorks

Kathy Howell
Saint Luke's Health System

Phyllis Hudecki
Office of the Governor

William Hunter
Illinois State University

John Huppenthal
Arizona Department of Education

Todd Hurst
Center of Excellence in Leadership of Learning

Marc Hussey
Connecticut Technical High School System

Dwight Hutchins
Accenture

Adam Hutchison
Texas State Technical College

Alisha Hyslop
Association for Career and Technical Education

Eileen Illuzzi
North Country Career Center

Stephanie Itano
Frequency540

Scott Jansen
Greater Milwaukee Committee

Phil Jarvis
Career Cruising

Linda Jennings
Campbell County School District

Stephen Joel
Lincoln Public Schools

Jeannie Johnson
Bridgerland Applied Technology College

Jennifer Johnson
Arizona Department of Education

Susan Johnson
Idaho Professional-Technical Education

Sharon Johnson
Shirley Lake Ridge Schools

Lowell Kalapa
Tax Foundation of Hawaii

John Kania
FSG

Lori Kaplan
Latin America Youth Center

Richard Katt
Nebraska Department of Education

Daniel Katz
Harvard Kennedy School

Richard Kazis
Jobs for the Future

Suzanne Kelley
Waukesha County Business Alliance

James Kemple
The Research Alliance of New York City Schools,
New York University

Mike Kent
Harvard Graduate School of Education

Mark Kessenich
WRTP, BIG STEP

Tania Kilpatrick
CESA 6

Jonna Kirschner
Oklahoma Department of Commerce

Betty Klattenhoff
Office of Superintendent of Public Instruction

Gretchen Koch
CompTIA

Carol Kramer
Indiana Education and Innovation Network

Robin Kroyer Kubicek
CESA6 for WI DWD-YA

Michele Kupersmith
Vermont Legislature

Sara Lamback
Achievement Gap Initiative, Harvard Kennedy
School

Marv Lamer
Highly Effective Schools Division, Arizona
Department of Education

Erin Lane
Illinois Science and Technology Coalition

Richard Lapan
University of Massachusetts, Amherst

Chris Larson
Wisconsin

Myron Laurent
Alabama Department of Education

Timothy W. Lawrence
SkillsUSA

Chris Leake
NY State Department of Education

Doug Leavens
BOCES (wswheboces.org)

Pete Lee
Metro Technology Centers

Brenda Leggiadro
Lincoln Public Schools

Robert Lerman
Urban Institute

Mike Lindstrom
Independent Contractor

Dane Linn
Business Roundtable

Thalea Longhurst
Utah State Office of Education

Dave Lopez
Oklahoma Department of Commerce

John Lowry
Harley-Davidson Motor Company

Amy Loyd
Jobs for the Future

Paul Luna
Helios Education Foundation

Bernie Lynch
Strategic Development Solutions

Alyssa Lynch
Santa Clara County Office of Education

Jocelyn Mackey
Connecticut State Department of Education

Dave MacLeod
Thoughtstream

Doug Major
Meridian Technology Center &
Association for Career and Technical Education

Amy Malingowski
Caterpillar

Kathryn Jo Mannes
American Association of Community Colleges

Philomena Mantella
Northeastern University

Breck Marshall
Accenture

Jean Massey
Mississippi Department of Education

Mark Mattke
Spokane Area Workforce Development Council

Anne Matula
Craft Training Center of the Coastal Bend

Lori Matyjas
Connecticut State Department of Education

Merrilea Mayo
Mayo Enterprises

Jeff Mays
Illinois Business Roundtable

Pete McBride
Successful Practices Network

Ronald McCage
CTECS

Belinda McCharen Cole
Oklahoma State University

Annie McMillan
Area Development Partnership

Raymond McNulty
Southern New Hampshire University

Jim Means
USD 259 Wichita Public Schools

Hans Meeder
National Center for College and Career Transitions

Nina Menis
Advancement Management Services

Salvatore Menzo
Wallingford Public Schools

Joe Meyer
Kentucky Education and Workforce Development Cabinet

Patricia Milka
Fox Cities Chamber of Commerce and Industry

Deb Miller
Kalamazoo Regional Educational Service Agency

Sharon Miller
U.S. Department of Education

John Mills
Paul Smith's College

Antoinette Mitchell
OSSE

Joan Modrell
Nebraska Department of Labor

David Moore
National Academy Foundation

Yazeed Moore
C.S. Mott Foundation

Wendi Morton
Utah State Office of Education

Eileen Moynihan
Accenture

John Mulcahy
WestMEC

Dan Murphy
Ohio Career and Technical Administrators

Anita Murphy
Rochester City School District

Deidre Myers
Oklahoma Department of Commerce

Avis Nanbu
Office of Curriculum, Instruction and Student Support (OCISS)

Sherri Nash
West Virginia Department of Education

Bruce Neimeyer
University of Illinois at Chicago

Richard Nelson
Paul Smith's College

Jim Nelson
Illinois Manufacturers' Association

Felicia Noel
Nemcek Southwest Career and Technical Academy

Barbara Nemko
Napa County Office of Education

Katie Newman
Frequency540

Reggie Newson
WI Department of Workforce Development

Spencer Niles
Penn State College of Education

Jonathan Njus
WK Kellogg Foundation

Annie Noonan
Vermont Department of Labor

Jackie Norton
Rodel Foundation

Ellin O'Leary
Youth Radio

David O'Neill
New England Recruiting Battalion

Jane Oates
U.S. Department of Labor

Todd Oldham
Monroe Community College

Felix Ortiz
Viridis Learning

Aaron Orzech
Harvard Graduate School of Education

Tim Ott
Successful Practices Network

Arnold Packer
Johns Hopkins University

Robin Painovich
Career & Technology Association of Texas

Colleen Palmer
Weston Public Schools

Eleni Papadakis
Workforce Training and Education Coordinating Board

Tom Pappas
Advanced Leadership Initiative, Harvard University

Sharon Thomas Parrott
DeVry University

Peter Peltz
VT State Rep

Jillyn Pendleton
Clark High School Academy of Math, Science, and Technology, Academy of Finance, and TEACH

Michael Pennella
Essex County Vocational Technical School District

Hilary Pennington
The Generations Initiative

Mark Perna
Tools for Schools

Nick Pinchuk
Snap-On

Karen J. Pittman
Forum for Youth Investment

Arthur Poole
Board of Regents for Higher Education

Christopher Prado
#ReinventStockton

Laurie Preece
Alignment Rockford

Jonas Prising
ManpowerGroup

Becky Pruitt
JD Pruitt & Associates LLC

Doug Pruitt
Greater Phoenix Leadership, and (retired)
Sundt Construction Inc.

Eric Radomski
Milwaukee Public Schools

Michael Ragan
Washington Education Association

Richard Raya
Youth Radio

Eric Regelin
Granix, LLC

Volker Rein
Federal Institute for Vocational Education and
Training (BIBB), Germany

Ursula Renold
Harvard Graduate School of Education

Judy Resnick
Connecticut Business and Industry Association

Paul Reville
Harvard University Graduate School of Education

Lorenzo Reyes
Workforce Solutions Upper Rio Grande

John Richards
Harvard Graduate School of Education

Alyson Richards
VT Governor's Office

John Rico
Rico Computer Enterprises

Lourdes Rivera
Queens College

Jan Rivkin
Harvard Business School

Dianna Roberge-Wentzell
Connecticut State Department of Education

Sterling Roberson
United Federation of Teachers

Jerry Roberts
Helen Bader Foundation, Inc.

Cindy Robillard
VT Department of Labor

Sharon Robinson
American Association of Colleges for Teacher
Education

Tim Rogers
Accenture

Jim Rosenbaum
Northwestern University

Elyse Rosenblum
Public Private Possibilities

Andy Rothstein
National Academy Foundation

June Sanford
Connecticut State Department of Education

Clay Sapp
National FFA Organization

Alicia Sasser Modestino
Federal Reserve Bank of Boston

Jimmy Sawtelle
LCTCS

Martin Scaglione
Viridis Learning

Susana Schowen
LED FastStart

Jay Scott
Kansas State Department of Education

Kent Scribner
Phoenix Union High School District

Steve Seleznow
Arizona Community Foundation

Bob Sheets
Business Innovation Services, University of Illinois
at Urbana-Champaign

Scott Shelar
CEFGA

Carol Short
NC Department of Public Instruction

Robert Shumer
University of Minnesota

Meg Siegal
Arnold Worldwide

Andrew Silvestri
Office of the Governor

Ken Simon
Minneapolis Public Schools

Thad Simons
Novus International

John Simpson
Hattiesburg Public Schools

Kevin Skelcher
Thoughtstream

Tony Small
National FFA

David Smith
Accenture

Jonathan Spector
The Conference Board

Ron Stefanski
Ed2Go, Cengage Learning

Molly Steffen
Caterpillar Human Services

Rick Stephens
The Boeing Company

Elaine Stith
Metro Technology Centers

James Stone
National Research Center for Career and Technical
Education (NRCCTE)

Dorothy Stoneman
YouthBuild USA

Jim Stopa
Sanford Regional Technical Center

Grace Suh
IBM

Eric Suhr
New York State Department of Education

Andy Sum
Northeastern University

Dan Swinney
Center for Labor and Community Research

Bill Symonds
Harvard Graduate School of Education

Charles A. Szuberla
New York State Education Department

Roger Tadajewski
National Coalition of Certification Centers

Tammy Tai
MENTOR: National Mentoring Partnership

Bill Taylor
National Academy Foundation

Dineen Tetreault
Blackstone Valley Vocational Regional
School District

Mala Thakur
National Youth Employment Coalition

Gillian Thorne
Office of Early College Programs Director,
UConn Early College Experience Program

Dr. Steve Tiger
Tulsa Technology Center

Sara Toland
Corporate Voices for Working Families

Paul Toner
MTA Teachers Association

Dennis Torbett
Home Builders Institute

Elizabeth Tran
National Alliance for Partnerships in Equity

Robert Trefry
CT Technical High School System Board

Vanessa Tribastone
U.S. Department of Education

David Uchiyama
Hawaii Tourism Authority

Teo Ugalde
Workforce Solutions Upper Rio Grande

Moorthy Uppaluri
Microsoft Corporation

Michael Van der Cammen
German Public Employment Services

Bolgen Vargas
Rochester City School District

Gina Vassallo
Caterpillar Production System

Lyn Velle
Campbell County BOCHES

Tina Walha
Accenture

Ayesha Walker
New Options Project

Eileen Walter
Rockwell Automation

Merl Waschler
Valley of the Sun United Way

Randy Watson
McPherson USD 418

Andrew Weaver
MIT Sloan School

Russell Weikle
California Department of Education

Alex Weintz
Office of the Governor Mary Fallin

Edith Westfall
Center for Workforce Strategies Workforce
Development & Lifelong Learning

Barbara White
University of Hawaii Career and Technical
Education Center

Christine White
National FFA Organization

Jon Whitmore
ACT

Don Whyte
NCCER

Teri Wigert
Wyoming Dept of Education

Mike Wiggins
Southwire Co.

Debra Wilcox Hsu
MN State Colleges and Universities

Lowell Wiles
Jacobs Field Services

Jennifer Wilkerson
NCCER

Derek Williams
New Options Project

Greg Williams
Lawrence Chamber of Commerce

Melanie Willoughby
New Jersey Business & Industry Association

Bryan Wilson
Workforce Training & Education
Coordinating Board

Bob Wise
Alliance for Excellent Education

Gomah Wonleh
Building Futures

Lauren Woodman
Microsoft

Laila Worrell
Accenture

Boyd Worsham
Haskell

Karen Woszczyna-Birch
Center for Next Generation Manufacturing

Daryl Wright
YouthBuild USA

Jim Zaharis
Greater Phoenix Leadership

Lutz Ziob
Microsoft Learning

Mohamed Zire
BNY Mellon/Year Up

Ken Zolot
MIT School of Engineering