

# ENTERPRISING PATHWAYS:

## *TOWARD A NATIONAL PLAN OF ACTION FOR CAREER AND TECHNICAL EDUCATION*

Presented at the Opportunity Nation Summit  
September 2012

By John Bridgeland, Stanley Litow, Tess Mason-Elder, and Grace Suh



IBM

CIVIC  
ENTERPRISES



## TABLE OF CONTENTS

<b>Introduction</b>	<b>I</b>
<b>Making It in America</b>	<b>3</b>
<ul style="list-style-type: none"><li>• Postsecondary Education: The New Economic Imperative</li><li>• Wanted: The New American Worker</li><li>• Where Our Students Stand</li></ul>	
<b>The Promise of Career and Technical Education</b>	<b>7</b>
<ul style="list-style-type: none"><li>• CTE: A Snapshot</li><li>• Quality CTE for All</li><li>• CTE: A History</li><li>• How the U.S. CTE System Compares to Other Countries</li></ul>	
<b>Innovative Models and Promising Policies and Practices</b>	<b>16</b>
<ul style="list-style-type: none"><li>• Effective Legislation and Policies</li><li>• Academic Rigor and Workplace Skills</li><li>• Partnerships among High Schools, Postsecondary Institutions and Employers</li><li>• Teacher Professional Development and Training</li><li>• College and Career Guidance</li><li>• Specific and Measurable Outcomes</li><li>• A Commitment to Making CTE Accessible to Underserved Populations</li></ul>	
<b>Survey of Education Leaders on CTE</b>	<b>25</b>
<b>Paths Forward</b>	<b>26</b>
<ul style="list-style-type: none"><li>• Improve Data Availability to Measure Success and Demonstrate Return on Investment</li><li>• Expand the Role of Employers</li><li>• Improve Federal and State Policies to Strengthen CTE</li><li>• Reform Federal Work Study</li><li>• Invest in Career and Technical Education</li><li>• Elevate the Promise of High-Quality Career and Technical Education</li></ul>	
<b>Conclusion</b>	<b>37</b>
<b>Appendix A</b>	<b>38</b>
<b>Endnotes</b>	<b>39</b>



## INTRODUCTION

The United States once boasted the world's fastest-growing middle class, a signal of our national prosperity and the general well-being of our people. But as other economies have superseded the U.S. in middle-class growth, the strength of our overall economy is in jeopardy. Why? Because motivation and hard work are no longer enough. In order to succeed, our workforce needs preparation and skills. Reinvigorating the American workforce by providing multiple, opportunity-based pathways to the middle class will be critical to revitalizing our economy and strengthening America's global competitiveness.

The evidence is overwhelming: American workers need higher skill levels than at any time in our history. In the heyday of U.S. manufacturing and skilled labor, vocational or career and technical education (CTE) helped provide the critical workplace skills that enabled economic mobility for generations of young adults – without the need for further education to enable career growth. But the clear facts are that today's and tomorrow's knowledge-based jobs require more. To succeed in the 21st Century economy, employees need an integrated approach to postsecondary education and training that is tailored to global market demands – skill sets that include problem-solving, communications, and teamwork, coupled with high-quality traditional academic preparation. Therefore, the task for today's CTE is to illuminate numerous paths to success for American students to ensure that they are both college and career ready. With high-quality preparation for college and career, our graduates will have access to meaningful, long-term career opportunities and a more hopeful future.

The purpose of this report is to inform a national debate among business leaders, educators, policymakers, and the public about the role of CTE in the United States. To that end, this report provides important historical context, advances an argument for why an updated CTE system will strengthen America's global competitiveness, documents the agreement from all quarters about the steps needed, and offers specific solutions for making CTE more relevant and responsive to the needs of the youth and young adults it serves. Finally, this report lays out a roadmap to achieving reforms to strengthen U.S. competitiveness.

A better-designed CTE will meet many national needs, including:

- Connecting education to careers to keep students motivated and enrolled in their secondary and postsecondary education
- Forging partnerships among educational institutions and employers to ensure that education and training are relevant to global markets
- Reducing the costs of postsecondary education by increasing efficiency and shortening time to degree.

Well-executed CTE programs can be powerful engines of 21st Century opportunity. But to serve that transformative role, high-quality CTE programs must become available across the United States – not just in selected markets, and not just for a small

group of hand-picked students. These programs must demonstrate positive labor market outcomes for all students while continuing to serve our most disadvantaged students in their programs of study. In other words, America's CTE paradigm must be replicable and scalable.

As the world continues to get “flatter” and smaller, the United States faces both tremendous challenges and outstanding opportunities. We have faced, and overcome, similar challenges before – revising our educational standards as we evolved from an agrarian nation into an industrial superpower. As the world changed, America made high school universal and opened the doors to higher education on an unprecedented scale. Some of these reforms were fueled by major public policy actions such as the G.I. Bill of Rights. Other reforms were brought about by business and civic leadership. In today's knowledge-based economy, we once again have an opportunity to compete successfully in the global arena. And the key to that success will be our people. Now is the time for business, government, education, and community leaders to rewrite the narrative for American CTE and work together to provide enterprising pathways for our next generation.



## MAKING IT IN AMERICA

Ask the majority of young people, and they will tell you that it is getting harder to make it in America. A 2011 nationwide poll of 18- to 34-year-olds by Dēmos and Young Invincibles found that half of young adults believe that they will be worse off than their parents, and 77 percent believe that the middle class may be disappearing.<sup>1</sup> A survey of older Americans for the 50th anniversary of the AARP showed that 55 percent believed they are leaving the world in worse condition than they inherited it, with only 20 percent believing they are leaving a better world.<sup>2</sup>

Their beliefs are not unfounded. In October 2011, a report by the nonpartisan Congressional Budget Office found that while the top one percent of earners grew their share of the nation's income by 275 percent (9.8 percent per year) from 1979 to 2007, middle-income earners – who represent 60 percent of the population – grew their household income by less than 40 percent (roughly 1.4 percent per year). Meanwhile the household incomes of the bottom 20 percent of earners increased only 18 percent (0.64 percent per year) during the 28-year study period.<sup>3</sup> The top fifth of earners saw their after-tax income grow by 10 percent, while middle income families actually saw their after-tax income decline by two to three percent.<sup>4</sup> Economic mobility for low-income Americans has almost completely stalled, with only four percent of those born into families earning in the lowest quintile making it to the top.<sup>5</sup> By comparison, rates of economic mobility were higher in both Canada and many European countries.<sup>6</sup>

Employment rates for teens and young adults also are sobering. According to the Center for Labor Market Studies, employment rates for the nation's teens (ages 16 to 19) and young adults (ages 20 to 24) have dropped to new post-World War II lows. During the two-year period from late 2007 to late 2009, the number of employed teens in the U.S. declined by nearly 25 percent, while the number of employed young adults fell by nearly 11 percent.<sup>7</sup> These employment rates are more than 18 percent below their year 2000 values and nearly 23 percent below their values in 1989 – the peak of the 1980s labor market boom.<sup>8</sup>

The prospects are particularly bleak for Black and other low-income young males. In late 2009, unemployment among Black male teens topped 86 percent. And with fewer than half of college graduates younger than 25 holding jobs requiring a college degree, less educated young people increasingly find themselves displaced from the job market by their better educated peers.<sup>9</sup> Ironically, teen unemployment reinforces itself in an endless cycle. Employers complain about the lack of workplace skills among young workers, but those workers are unable to develop and master their workplace skills without appropriate job opportunities.

Perhaps a testament to the resilience of Americans or the optimism of youth, despite the difficult situations that many young people face, 77 percent of them – from all racial and ethnic backgrounds – still believe in the American Dream.<sup>10</sup> This finding is underscored by a national survey and research report that showed that 73 percent



of young people ages 16 to 24 who are unemployed, without a college degree and not enrolled in school, are nevertheless confident and hopeful that they will achieve their goals in life.<sup>11</sup>

The essence of the American Dream is that “life should be better and richer and fuller for everyone, with opportunity for each according to ability or achievement” regardless of social class or circumstances of birth.<sup>12</sup> Each successive generation is supposed to build on the progress of the last to create a society of equal opportunity and ensure the dream is within reach for all. But to make it in today’s America – and for America to make it – hard work alone is not enough. Education is essential, and postsecondary education and training are now requisites for success. Indeed, the vast majority of our nation’s youth believe that education is their ticket to success.<sup>13</sup>

### **Postsecondary Education: The New Economic Imperative**

America’s labor market is rapidly changing, demanding that more workers have at least some postsecondary education or training. In 1973, nearly 72 percent of the labor market was made up of people with a high school diploma or less.<sup>14</sup> By 2018, 63 percent of American jobs will require some postsecondary education or training, with nearly one-third of all jobs available to those with an associate’s degree, some college, or a vocational certificate.<sup>15</sup>

This shifting demand is impacting many occupations. Take manufacturing, for example. In 2009, the U.S. had an estimated 18.6 million manufacturing jobs. But with the growth of innovative technologies, these jobs require workers with sophisticated skills. The statistics bear this out. Between 2000 and 2008, the percentage of manufacturing workers with bachelor’s degrees increased from 16 percent to nearly 19 percent, while the percentage of workers with less than a high school diploma decreased from 14 percent to less than 12 percent.<sup>16</sup>

Today, there are more than 29 million middle-education jobs that pay middle-class earnings in the United States. These jobs require more education and training than a high school diploma, but less than a bachelor’s degree, and, on average, pay \$35,000 or more per year. Some of these jobs pay significantly more. Nearly 10 million jobs pay more than \$50,000 annually and 3.6 million pay more than \$75,000 annually.<sup>17</sup> The five major pathways to these jobs – many of which are part of CTE – are employer-based training, industry-based certifications, apprenticeships, postsecondary certificates, and associate’s degrees. Some of these students will also continue their education. For example, 23 percent of students who earn a postsecondary certificate go on to earn an associate’s degree or better.<sup>18</sup>

According to *Help Wanted: Projections of Jobs and Education Requirements Through 2018*, within six years there will be a need for at least 4.7 million new workers with postsecondary credentials.<sup>19</sup> If the country stays on its current path, there will be a shortage of at least 3 million workers with the necessary degrees.<sup>20</sup>



“ *As more emphasis is placed on college and career-ready standards, career and technical education is the link that can align high school with post-secondary education and beyond. It provides context for what students are learning, it can accelerate access to college and it has the potential to reduce time-to-degree, which reduces the cost of college.* ”

- Mike Enzi,  
United States Senator,  
State of Wyoming

### **Wanted: The New American Worker**

In the global information-based economy, a new kind of American worker is needed. Today’s workers must possess deep content knowledge along with comprehensive workplace skills. They must be well-rounded, possessing expertise in their specific fields, along with a comprehensive set of foundational career competencies that enable them to apply their knowledge in an effective and productive way. These workplace skills include critical thinking, problem solving, teamwork, communication, and leadership and creativity. A high regard for ethical behavior and the ability to work cross culturally also are required.

Employers complain that more often than not, young workers are unprepared for the evolving demands of the workforce. In particular, many young workers have demonstrated insufficient basic skills, such as oral and written communication, literacy, professionalism, and critical thinking and problem solving.<sup>21</sup> A national survey of 450 CEOs and 751 postsecondary leaders found that business leaders experience high levels of frustration in hiring. While unemployment was close to 10 percent at the time of the survey, 53 percent of business leaders said that their companies were facing a very or fairly major challenge in recruiting nonmanagerial employees with the skills, training, and education their companies required. The challenge was even greater for the heads of smaller companies, which created more than 50 percent of new jobs in 2007; 67 percent of these leaders said finding the right talent was difficult.<sup>22</sup> At least 3.76 million jobs are available today,<sup>23</sup> and states such as the State of Ohio report that there are more than 100,000 jobs currently available.<sup>24</sup>

Research also shows that employers are in a “buyers’ market,” looking for employees who come “ready-made” and offering jobs at wages that are below the minimum acceptable wages. Some argue that employers have become inflexible, failing to provide necessary training, such as apprenticeships, that would help develop a skilled workforce.<sup>25</sup>

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

### **Where U.S. Students Stand**

America’s young people are woefully unprepared to meet the demands of an increasingly middle- and high-skills labor market. In



2009, just 34 percent of U.S. eighth graders were rated proficient or higher in a national math assessment, and more than one in four scored below the basic level. In the same year, in an international exam given to 15-year-olds, U.S. high school students ranked 13th behind industrialized nations in science and 17th in math.<sup>26</sup> And while progress has been made and good examples exist in schools and states that have significantly boosted high school graduation rates, the U.S. continues to face a drop-out epidemic. Twenty-five percent of all students – and 60 percent of non-white students – leave high school before graduation.<sup>27</sup>

Of those students who did graduate in 2011, only 45 percent were ready for college work in math and 30 percent ready for postsecondary work in science.<sup>28</sup> In 2010, only 24 percent of students who took the ACT met readiness benchmarks in all four subjects (English, reading, math and science).<sup>29</sup> Given these statistics, it's no surprise that 34 percent of all students at four-year public colleges and universities enroll in at least one remedial course, while 43 percent of our nation's community college students require remediation. The U.S. Department of Education reports that only 17 percent of four-year college students enrolled in remedial reading – and 27 percent of students enrolled in remedial math – will earn their degrees. Meanwhile, fewer than 25 percent of community college students earn a certificate or degree within eight years.<sup>30</sup>

Raising the education prospects of all Americans would have a significant impact on the national economy. On average, high school graduates earn \$130,000 more – and college graduates earn up to \$1 million more – over their lifetimes, compared with peers who drop out of school.<sup>31</sup> Transforming just one student from dropout to graduate would yield more than \$200,000 in higher tax revenue and savings for the government over the course of that person's life. If each state had a graduation rate of 90 percent, 580,000 additional students would have graduated in the class of 2011, increasing the GDP by \$6.6 billion and generating \$1.8 billion in additional revenue as a result of increased economic activity.<sup>32</sup>



“ *I think that we are our own worst enemy when we talk about CTE as separate from academic and college aspirations. CTE is not a separate track from the ‘smart’ track of college. It is dangerous to paint it as so.* ”

- Nancy Zimpher,  
Chancellor,  
State University  
of New York

## THE PROMISE OF CAREER AND TECHNICAL EDUCATION

Clearly, high school education has become only a stepping stone on the pathway to individual economic security. We must prepare youth and young adults with a higher level of skills to fill the knowledge-based jobs that require more than a high school degree, but less than a bachelor’s degree.

Even with a higher degree, many young people may fail to find meaningful employment, with some stuck in dead end jobs because they lack marketplace skills or have little understanding of the world of work. The *Pathways to Prosperity* report argues that American schools have been too narrow in their one-size-fits-all approach of preparing students for four-year universities. The report states that preparing for college and preparing for a career should not be mutually exclusive options.<sup>33</sup>

CTE at its best can be an agent of change. Unlike general education, CTE has the unique ability to provide students with three key benefits: academic knowledge, especially as applied to actual occupations; workplace skills such as communication, ethics and teamwork; and technical skills, which are unique to specific occupational areas.<sup>34</sup> By providing students with a variety of academic and workplace skills, CTE can become more relevant by linking academic training and job market requirements more directly.

For CTE to raise the education prospects of more young people and help lift the American economy, its overall quality must be raised. Teachers and administrators have pointed to the fact that in the past many underserved students were pushed into CTE programs because they were considered “hard to teach.” While many CTE programs have moved far beyond this, the perception of CTE as a second-class track – rather than as an alternative pathway – remains a real concern.

### CTE: A Snapshot

Career and Technical Education is a complex and diverse system, designed to prepare both youth and adults for a wide range of careers and further educational opportunities. Because programs serve such a wide range of individuals, they can be found at virtually all levels of the system – from middle school and high school to area career and technical centers, community and technical colleges, and other postsecondary institutions.

Within CTE, occupations and career specialties are grouped into 16 “Career Clusters” with each defined by a common set of knowledge



“ *There really isn't a single U.S. system for CTE. It is more like 50 different state systems. What is in common among the states is that there are many schools and postsecondary institutions that are preparing students really well for college and career success. In almost every state, CTE students are outperforming their counterparts on state performance tests.*

- Kimberly Green,  
Executive Director,  
National Association of  
State Directors of Career  
Technical Education  
Consortium



and skills. These clusters are broken down further into Programs of Study, which combine academic and technical content in a sequence of secondary and postsecondary courses. The link between secondary and postsecondary is purposeful and necessary as a continuum of study that prepares students for college and career. Students graduate from these programs with varying educational attainment, ranging from industry-recognized credentials and postsecondary certificates to two- and four-year college degrees.<sup>35</sup>

CTE is a huge enterprise. As of 2010-11, 12 million students were enrolled in secondary or postsecondary CTE programs. Students' depth of experience with CTE varies significantly. Almost all high school students take at least one CTE course, and one in four students takes three or more courses in a single program area. One-third of college students are involved in CTE programs, and as many as 40 million adults engage in short-term postsecondary occupational training.<sup>36</sup>

Courses fall into three categories: general labor market preparation (keyboarding, introductory technology education, career education, general work experience); family and consumer sciences (courses intended to prepare students for roles outside the paid labor market); and specific labor market preparation (courses that teach skills and knowledge required in specific occupations such as healthcare or business). Most CTE courses provide specific labor market preparation.<sup>37</sup>

At the secondary school level, students have access to CTE in a variety of settings. According to the latest data (2002), 900 of America's 18,000 public high schools were devoted to full-time CTE programs featuring a specific career focus in addition to academic coursework. An additional 8,000 schools were comprehensive high schools that had an academic focus but also provided both onsite and off-site CTE programs.<sup>38</sup> There also were 1,200 area or regional CTE schools (each serving several high schools) that provided CTE to students who also were receiving most or all of their academic instruction at their home high school.<sup>39</sup>

Approximately 5,700 institutions provided postsecondary CTE in 2005.<sup>40</sup> Thirty-six percent of career education programs were provided by public and private institutions offering two- and four-year degrees.<sup>41</sup> Of the 1.9 million postsecondary career credentials awarded in 2005, 44 percent were bachelor's degrees, 21 percent were associate's degrees, and 36 percent were certificates. The highest percentage of degrees were awarded in the healthcare field (26 percent), with business and marketing following close behind (24 percent).<sup>42</sup>



The National Household Education Survey reports that 27 percent of adults participated in work-related education in 2005. The rate was 37 percent for adults already in the labor market.<sup>43</sup> Adults receive work-related instruction primarily from business or industry, followed by professional associations and postsecondary institutions.<sup>44</sup>

### ***Funding***

CTE programs are funded at the federal, state and local levels. At the federal level, CTE is funded through the Carl D. Perkins Career and Technical Education Act (Perkins). Perkins represents one of the largest programmatic federal investments in high schools, and is the largest federal source of institutional support for community colleges. In fiscal year 2011, Perkins received 7.8 percent (\$1.1 billion) of the nation's \$14.5 billion education program spend.<sup>45</sup> Perkins funds represent about six percent of funds for secondary CTE programs, but only about one percent of funds for postsecondary CTE education. The remaining portion of funding is primarily from state and local appropriations. At the postsecondary level, the breakout is roughly 32 percent from state and local appropriations, 31 percent from federal student aid, 16 percent from student tuition and fees, 18 percent from federal tax expenditures for postsecondary education, 2 percent from veterans educational benefits, and less than 1 percent from the Perkins Act.<sup>46</sup>

At a minimum, states are required to match Perkins state administration funds. The amount of funding that states provide above that varies from state-to-state. According to the the National Association of State Directors of Career Technical Education Consortium (NASDCTEc), 48 percent of states reported decreased funding on the secondary level, and 50 percent of states reported decreased funding on the postsecondary level in 2010. Rural states in particular reported minimal state education budgets.<sup>47</sup>

CTE programs also receive funding from local governments and industries. But funding has been on the decline since 2005, with one quarter of states reporting decreases in government and industry support for secondary or postsecondary education.<sup>48</sup>

### ***Governance***

With CTE programs administered at the state level, quality varies widely across the nation. Each state selects one agency to be its Perkins eligible agency. The Department of Education is the eligible agency in 40 states and U.S. territories, but 13 states and one territory identify a department of workforce development or a community college system to serve this role.

State leadership for CTE does not necessarily reside within the eligible agency. While the majority of states administer CTE through their education departments, seven states relied on other governmental or postsecondary agencies in 2010.<sup>49</sup>

State governance at the postsecondary level is more varied, with administrative and programmatic leadership encompassing a range of institutions that include state community college boards and individual campuses.<sup>50</sup> Postsecondary and workforce development agencies can also support programs for adult learners and other nontra-



“ *We have a horrifying tendency in schools across America to track kids – seeking rigor for some, but not for all. If career and technical education doesn’t demand rigor for all and make college a clear focus as well, it could do more damage than good. We need college and career for everyone – not college for some and career for others.* ”

-Kati Haycock,  
President,  
The Education Trust

ditional students.<sup>51</sup>

### Quality CTE for All Students

It’s impossible to discuss CTE – or any system – without discussing outcomes. In the past, CTE has been called out by teachers and administrators as a “dumping ground” for underserved and special needs students.<sup>52</sup> The latest data on students in CTE shows that as a group they are largely disadvantaged, suffering from high levels of poverty. According to a 2005 report from the United States Department of Education, 52 percent of full-time CTE high schools reported moderately high levels of poverty, with 31 to 50 percent of students eligible for the National School Lunch Program (NSLP). This is in contrast to comprehensive high schools, which reported that 19 to 21 percent of students qualified for NSLP.<sup>53</sup>

There also is data suggesting that CTE students may be taking less rigorous coursework, particularly in mathematics. According to data from the United States Department of Education that compared high school graduates from the class of 2005, graduates who took geometry or higher-level mathematics in grade nine took less occupational coursework (90 versus 93 percent), were less likely to complete an occupational concentration (16 versus 22–25 percent), and earned fewer occupational credits on average during high school (2.6 vs. 3.1–3.5 credits) than their peers who took algebra or lower-level mathematics.<sup>54</sup> In addition, graduates who accumulated four or more occupational credits in high school earned 1.2 fewer core academic credits on average than their classmates who took no occupational coursework (14.8 versus 16.0 credits).<sup>55</sup>

Based on findings like these, CTE has garnered a reputation as a second-class education track. Just like the general education system that it is part of, the quality of CTE schools and programs varies significantly. Some existing programs funnel students into second-class tracks, while other well-intentioned programs fail to provide students with high quality educations.

There are, however, numerous CTE programs that have shown promise in reducing high school drop out rates, increasing high school graduation rates, and improving labor market outcomes. According to NASDCTEc, high-risk students are 8 to 10 times less likely to drop out in 11th or 12th grades if enrolled in a CTE program rather than general education. And more important, students with a CTE concentration have a higher graduation rate, with an average rate of 90 percent in school year 2007-2008.<sup>56</sup> This could be attributed to CTE students being more motivated and interested in hands-on, relevant coursework.<sup>57</sup> NASDCTEc also reports that to a much greater extent



than their non-CTE peers, CTE students report developing a range of academic and workplace skills that are critical to college and career success – including problem solving, project completion, research, math, communication, time management, and critical thinking skills.<sup>58</sup>

The effects of CTE on improving outcomes for boys also is strong. Males in the U.S. are trailing females in education. By 12th grade, reading scores for males are below those for females; 11th grade boys write at the same level as eighth-grade girls; and girls have nearly caught up to boys in math and science. Today, men make up 40 percent of the college population, with two million fewer men graduating from college over the past decade than women. Research from the National Research Center for Career and Technical Education shows that boys who take three or more CTE courses have higher high school graduation rates than their non-CTE male peers.<sup>59</sup>

Evidence shows that CTE students also have stronger labor market outcomes. NAS-DCTEc reports that students who earned a CTE-related associate's degree or certificate earn an average of \$9,000 more per year than those with associate's degrees in the humanities or social sciences. Those with credentials in high-demand fields such as healthcare can average earnings of almost \$20,000 more per year.<sup>60</sup>

In addition to improving the quality of CTE programs, we also must update society's perception of them. Many parents and students today still regard CTE as preparation for low-skilled, low-wage jobs, rather than for careers in biomedicine, engineering, business and more. Parents must feel confident that CTE programs provide attractive options for all students who wish to pursue opportunities for further education and careers.

### **CTE: A History**

To understand CTE today, you must first understand its history. This section provides a brief scan of CTE milestones as a way to demonstrate how it has been shaped by the economic needs and social beliefs of the times.

#### ***Vocational education and its roots in early America***

The first forms of vocational education can be traced back to early colonial times when young people learned specialized trades through apprenticeships. Apprenticeships served as the most important organizing educational system of the time, serving as the primary form of training for employment while also providing basic education and instruction in ethics. For the poor, apprenticeships were the only avenue for receiving access to education.<sup>61</sup>

The birth of the Industrial Revolution in the early nineteenth century largely brought an end to the apprenticeship system. Factories that mass-produced goods required workers who could operate machines. Rather than requiring specialized education learned through masters, workers could learn on the job or from their parents. To provide workers with educational opportunities beyond job skills, charities and societies of mechanics institutes established schools for factory workers. Free public education



also began to develop at this time, but for much of the early 1800s, vocational education did not take place in the public schools.<sup>62</sup>

### ***Land Grant Universities: Vocational and Academic Education Merge***

It was not until the 1860s that more clear links between vocational and academic education developed. At that time, the nation's small but growing postsecondary institutions were not producing graduates who could serve the nation's economic needs, particularly in the areas of agriculture and industry. The vast majority of Americans – 80 percent – lived in rural areas, with the majority relying upon agriculture for their livelihood. At the same time, higher education was becoming more accessible, and many politicians and educators wanted to make it possible for all American to receive an education.<sup>63</sup>

Congress passed the First Morrill Act in 1862. The Act gave every state in the Union a grant of 30,000 acres of public land for every member to its congressional delegation based on the 1860 census. The states were to sell this land and use the proceeds to establish colleges in the areas of agriculture, home economics and mechanical arts and other professions for the current and future needs of the economy.<sup>64</sup>

### ***The Smith-Hughes Act of 1917: Vocational education finds a place in the public schools***

Although the Morrill Act represented the first effort by the federal government to ensure vocational education, the Smith-Hughes Act of 1917 became the first national legislation supporting vocational education in the public schools in the areas of agriculture, trades and industry, and home economics.<sup>65</sup> The legislation was based on a report by the Commission on National Aid to Vocational Education that found that more than 26 million Americans worked in agriculture and manufacturing, but less than one percent had adequate training. The legislation created a Federal Board of Vocational Education to establish and oversee the operation of vocational education, providing funding for vocational programs for Americans from the age of 14 to below baccalaureate level.<sup>66</sup>

The act helped vocational education programs flourish, but at a cost. The number of students in vocational programs grew from 200,000 students and less than \$3 million spent annually prior to 1917, to 3.4 million students with \$176 million spent annually by the end of the 1950s.<sup>67</sup> However, the Act unwittingly served to separate vocational from academic education. Funding was only for the salaries of vocational teachers, not for those of academic teachers, and students receiving instruction from these vocational teachers could receive only up to 50 percent academic instruction.<sup>68</sup> In addition, each state was required to establish a state board for vocational education, which in some states, led to the establishment of a board separate from the State Board of Education.<sup>69</sup>

### ***The Servicemen's Readjustment Act of 1944***

At the end of World War II, the country grappled with how to help the millions of returning veterans assimilate back into civilian life. The Servicemen's Readjustment Act of 1944 (or the GI Bill of Rights) provided this support through education and



training, loan guaranty for homes, farms or businesses, and unemployment pay. The law, signed by President Franklin D. Roosevelt, made college, including technical training, a viable option for many of those that would have sought employment by providing tuition assistance along with living allowances to servicemen and women pursuing study. At its peak in 1947, veterans accounted for 49 percent of college admissions. By the time the original GI Bill ended in 1956, 7.8 million of 16 million World War II veterans had participated in education or training programs.<sup>70</sup>

### ***National Defense Education Act of 1958***

The National Defense Education Act of 1958 was the first federal acknowledgement that vocational education was critical to U.S. national security, and specifically underscored the importance of science, mathematics, and technical skills. The Act passed during the Cold War, following the Soviet launch of the first human-made earth satellite, Sputnik I, into space in 1958. With America in recession and fearing that Soviet technology was superior to its own, the federal government took aggressive steps to reform the U.S. educational system, by focusing on providing vocational training for youth and adults, preparing them for skilled employment in scientific and technical fields.<sup>71</sup>

### ***Vocational Education Act of 1963***

The Vocational Education Act (VEA) was passed in 1963 to authorize spending on the federal, state and local levels to establish new, as well as maintain and improve existing, vocational programs. The VEA set forth multiple features in its legislation, with the goal of providing high-quality vocational training that met the diverse needs, interests and abilities of people of all ages, rather than just addressing the needs of industry. Additionally, the law stipulated that funding be provided to people with disabilities and populations with academic or socioeconomic needs that prevented them from participating in regular vocational education programs.<sup>72</sup>

### ***A Nation at Risk and The Perkins Act***

In 1983, *A Nation at Risk: The Imperative For Educational Reform*, a report of President Ronald Reagan's National Commission on Excellence in Education was published, recommending higher standards and more rigorous academics at the elementary and secondary school levels.<sup>73</sup> As a result, states increased the academic requirements for graduation, which led to declining enrollments in vocational programs over the next two decades.<sup>74</sup>

In 1984, as a result of the educational reforms occurring in the U.S., including creating an equal opportunity for all to pursue education, the first Carl D. Perkins Act was passed. The Perkins Act gave states federal support of CTE programs and prioritized access to populations that had been underserved in the past, including people with disabilities, immigrants, women, people of color, and adult learners, by requiring that they be equally served and represented in enrollment, recruitment, and placement in a full range of programs.<sup>75</sup> The act was later amended – the Carl D. Perkins Vocational and Applied Technology Act of 1990, to require states to develop performance outcomes and standards as a means of improving accountability within programs.<sup>76</sup>



“It’s harmful, even absurd, to suggest that everyone should go to college, if by that is meant traditional four-year liberal-arts style college. We need multiple pathways, including multiple forms of postsecondary education, each with its own coherence and integrity and each with a plausible future attached for those who pursue it.”

- Chester Finn,  
President, Thomas B.  
Fordham Foundation

In 1994, a disturbing report from the U.S. Department of Education’s National Assessment of Vocational Education warned that vocational education was becoming “a dumping ground” for disadvantaged students and students with disabilities. The report cited teachers without adequate formal education, along with courses that lacked academic rigor, pointing to insufficient homework and weak requirements for program completion. The report called for changes that included a focus away from narrow occupational preparation to preparation for broader industry careers and postsecondary education.<sup>77</sup>

The Perkins Act was again amended in 1998 and 2006 in order to continue to strengthen the CTE system. The Carl D. Perkins Career and Technology Act of 1998 sought to further improve CTE through stronger academics and advancing CTE students to higher level CTE careers.<sup>78</sup> The Carl D. Perkins Career and Technical Education Improvement Act of 2006 (Perkins IV) saw the integration of academics and technical standards, creating separate performance indicators for secondary and postsecondary programs and creating specific and separate requirements for areas of CTE studies for secondary and postsecondary programs that did not exist.<sup>79</sup>

The current Administration acknowledges that Perkins IV is in need of significant improvement. In April 2012, the U.S. Department of Education released its blueprint for reforming CTE, stating that changes are required to meet the 21st century educational and economic needs of young people and adults and emphasizing that “postsecondary education and training are prerequisites for jobs of the new economy.”<sup>80</sup> The blueprint calls for a rigorous, relevant and results-driven CTE shaped by four core principles, including alignment, collaboration, accountability and innovation. These principles would help ensure that CTE programs are strengthened through alignment with high-growth labor market needs; collaborations among high schools, postsecondary institutions, and business; accountability systems with clear metrics for improving outcomes associated with academic and workplace skills; and systemic reform of state policies and practices to support implementation of effective practices at the local level.<sup>81</sup>

### How the U.S. CTE System Compares to Other Countries

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



For example, in the Netherlands, Norway, and Switzerland, students, after the completion of ninth or tenth grade, have the option of pursuing an academic education that is paired with workplace learning over the course of three years. While the structure varies from county to country, the end is meant to culminate in a diploma or certificate that carries significant weight in the labor market.

Some countries use a classroom-without-walls apprenticeship approach, where an emphasis is placed on “learning by doing” in real workplace settings. Employers in these countries are highly engaged partners, managing and guiding students to complete productive work like any salaried employee. For example, in Germany, 53 percent of young people participate in a dual system, which guides them from the completion of lower secondary school (grade 10) into the workforce. Through this system, students participate in both school and work through a structured three-year apprenticeship program that culminates in recognized qualification in one of 350 occupations.<sup>82</sup> The German apprenticeship model is a highly structured program, requiring a contract between employer and apprentice. Apprentices spend an average of between three to four days per week in a training firm and 12 hours per week part-time in vocational schools, where one-third of the time is dedicated to general education while the remainder of the time focuses on occupationally specific education.<sup>83</sup>

Germany is one of the few European countries that continue to sort students into academic and vocational tracks as early as middle school, a practice our nation certainly does not want to emulate. In contrast, countries like Denmark and Finland keep all students together in a common untracked curriculum through the first nine or 10 years of schooling and then allows young people and their families to choose among pathways, an approach that is much more consistent with American values.



“*There are islands of excellence, but they are not systemic. We need to make high quality opportunities available to all students.*”

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

## INNOVATIVE MODELS AND PROMISING POLICIES AND PRACTICES

While serious challenges exist, CTE holds great promise for providing young people with high-quality educational opportunities that expand their life choices. Complementing continuing efforts at the federal level, many forward-looking states have moved beyond traditional CTE policies and programs, choosing to invest in a range of innovative models. Some examples are proven. Others are in nascent stages, but show great promise. This section provides a sample of some of the best.

While differing in structure and goals, geography and target groups, these models, policies and programs share a commitment to providing students with the necessary skills to enter the job market or continue their education. These models also share common characteristics and provide foundations for rigorous, relevant, and competitive CTE programs. Among these characteristics:

- Effective legislation and policies
- Academic rigor and workplace skills
- Strong partnerships among high schools, postsecondary institutions and employers
- Professional development and training for teachers
- College and career guidance
- Specific, measurable goals
- A commitment to making CTE accessible to underserved populations

### Effective Legislation and Policies

A number of efforts are under way at the national and state levels to make CTE a more coherent system that provides high quality experiences for students regardless of whether they attend programs in urban or rural areas, in full-time CTE programs or in community colleges. This work is focused on creating better definitions and benchmarks of quality to promote greater rigor and relevance.

#### *10 Component Design Framework*

On the federal level, the U.S. Department of Education’s Office of Vocational and Adult Education (OVAE) – in collaboration with major national associations, organizations, and states – developed a “10 Component Framework” in June 2009 that clearly defines a rigorous program of study (RPOS). The framework builds on a requirement of the Perkins Act, under which local entities must implement single programs of study. Perkins, however, does not provide any detailed guidelines to help ensure quality implementation.<sup>84</sup>



The OVAE framework fills this gap with components designed to work together. States and localities can customize the components to fit specific educational contexts. The components are:

1. effective legislation and policies
2. sustained relationships among education, business, and community
3. professional development
4. accountability and evaluation systems
5. college and career readiness standards
6. sequences of secondary and postsecondary courses that prevent duplication and remediation
7. credit transfer agreements between secondary and postsecondary education systems
8. guidance counseling and academic advisement to help students make informed decisions
9. innovative instructional approaches that integrate academic and technical teaching and learning
10. assessments that inform whether students are achieving the necessary knowledge and skills for postsecondary education and careers.

As part of the recently released blueprint for reforming CTE, the Department has integrated aspects of the RPOS framework into its reauthorization proposal for the Perkins Act.<sup>85</sup>

### ***Common Career Technical Core Standards***

In June 2012, NASDCTEc publicly released the Common Career Technical Core (CCTC), a state-led initiative to develop a shared set of high-quality standards for what students should know at the end of a program of study. Importantly, the CCTC includes an overarching set of Career Ready Practices that outline the knowledge, skills, and dispositions that govern all programs of study.<sup>86</sup>

Forty two states and the District of Columbia have participated in developing the CCTC standards, which have received broad support from business and education leaders and the general public. Over the next year, NASDCTEc will coordinate a state-by-state analysis to compare each state's current standards against the CCTC. Each state then will determine whether to adopt the new benchmarks.<sup>87</sup>

The CCTC is for students enrolled in CTE, but was developed to align with the formation of other standards. Many educators argue that to thoroughly prepare students for college and career, schools must integrate or align technical standards with the Common Core State Standards.

### **Academic Rigor and Workplace Skills**

The most effective CTE programs prepare their students for competitive, in-demand career opportunities with a combination of rigorous academics and relevant workplace skills.



“ *There is a difference between preparing someone for a job and preparing them for a career. Preparing for a career means providing the skills and tools that include a broader set of applied academics so that individuals can be lifelong learners within their professions.* ”

- Dr. Willard R. Daggett,  
Founder and Chairman,  
International Center for  
Leadership in Education,  
Inc.

### ***Career Academies***

Career Academies are small schools within schools that feature one or more career themes and provide students with a blended academic and CTE curriculum. Career Academies were developed in 1982. By 2004, 21 percent of public high schools offered career academies.<sup>88</sup> Generally small in size, most Career Academies serve 150 to 200 secondary school students. Important benefits of the model include work-based learning opportunities enabled by partnerships with local employers.<sup>89</sup>

An eight-year evaluation of the Career Academy approach by MDRC included results on the experiences of more than 1,400 young people – about 85 percent of whom were Hispanic or African-American. The evaluation found that Career Academies improved labor market preparation without compromising academics and college preparation, and that the model produced sustained average earnings gains of 11 percent (or \$2,088) more per year for Academy group members than for individuals in the non-Academy group. It is important to note that these benefits were concentrated among young men, a group that has experienced a severe decline in real earnings in recent years. Earnings for young men in the Academy group increased by 17 percent (or \$3,731) per year. The study also found that young people attending Career Academies had the same educational outcomes as their non-attending peers, with more than 90 percent of both groups graduating from high school or receiving their General Educational Development (GED) certificate, and half completing a postsecondary credential.<sup>90</sup>

### ***Minnesota***

In Minnesota, all CTE programs must span at least grades 11 through 14 and align with a curriculum that provides a sequential pathway to a postsecondary certificate or degree. Structurally, CTE programs begin with “foundation knowledge and skill” programs before focusing on career fields, and ultimately career clusters and pathways. As a result, all students are exposed to a broad selection of academic and technical literacy skills that can be applied in any field. Secondary and postsecondary institutions set high standards, have strong data-based assessment efforts and sequential coursework.<sup>91</sup>

### ***Pathways in Technology Early College High School (P-TECH)***

One particularly innovative way to ensure that students are prepared for both college and career is through skills mapping. Mapping curricula to labor market demands and college criteria allows programs to prepare students for evolving industry needs and also provides students with content expertise in their particular field of study. Skills mapping is informed by actual job requirements to ensure that pro-



grams are preparing students with the credentials, knowledge, and clear understanding of workplace expectations needed for real jobs. This complex process involves identifying foundational workplace competencies and technical skills in key job growth areas. After these skills are identified, they inform decisions about constructing curricula that are relevant to current and anticipated job market demands. Skills must also be verified and updated annually as job requirements evolve.

P-TECH – a unique collaboration among the New York City Department of Education, The City University of New York, New York City College of Technology (City Tech), and IBM – is a grades 9 through 14 program focusing on skills-based career preparation. The school integrates grades 9 through 14 and adds the powerful component of industry involvement. The collaborators' intent was to create an innovative, replicable model for education.<sup>92</sup>

At P-TECH, minimum requirements for entry-level IT jobs have been mapped to the curriculum and are serving as academic benchmarks and targets. A coalition of industry advisors also is assuring that P-TECH's programs align with industry needs as the IT field evolves. P-TECH students participate in an ongoing, sequenced Workplace Learning curriculum informed by current and future industry standards. This curriculum includes work-based competencies, mentoring, guest speakers, workplace visits, internships and apprenticeships. To serve as an added incentive to students, IBM also is making graduates first in line for entry-level jobs – thereby strengthening the continuum from school to college and career.<sup>93</sup>

In addition to career preparation and skills mapping, P-TECH also focuses on college readiness – mapping its curriculum to correspond with college admissions criteria, and creating a college culture within the school. P-TECH student learning is focused on a six-year scope and sequence of blended high school and college coursework to ensure that students will earn an Associate in Applied Science degree in either Computer Information Systems or Electromechanical Engineering Technology. City Tech, the school's lead college partner, will award the degrees.

P-TECH's curriculum is also aligned with the Common Core standards as the foundation for learning in college – particularly higher education institutions with strong math, science and engineering programs. As part of creating the early college culture, students immediately participate in other aspects of college life and engage with college faculty and students. This kind of experience provides students with first-hand knowledge of the expectations of postsecondary college and career environments.<sup>94</sup>

### **Partnerships among High Schools, Postsecondary Institutions and Employers**

Young people are educated in silos – from K-12 to higher education to career learning. Innovative CTE programs feature strong partnerships that break down these silos. These partnerships are well-structured, with clear and formal commitments across the multiple partnerships formed. There are numerous ways in which CTE programs collaborate with their partners to strengthen their delivery. Through the best of these, each partner delivers its specific expertise, which can be contributed



“ *Elementary and secondary schools, colleges and businesses must work together to ensure that our students are prepared for on-going study without remediation and for both college and career. It is important to stress that businesses have a range of innovative, meaningful ways to help propel this work forward – not only mapping skills to curriculum, but also providing mentors and concrete opportunities for workplace learning so graduates are fully prepared to succeed in the workplace.* ”

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

through specific services or in-kind resources. Partnerships can vary, but the strongest include those among schools, businesses and higher education institutions, along with nonprofits and community organizations.

Business partnerships in particular can play an integral role in helping align a CTE curriculum with the specific needs of employers. Businesses should have a seat on steering and planning committees, weighing in appropriately on a school’s or program’s development – identifying state, national, and international job market demands; providing workplace experiences such as teacher externships, student worksite visits, mentors, job shadowing, internships, and apprenticeships; and sharing technical and behavioral workplace skills to map curriculum to real jobs.

All partnerships yield reciprocal benefits. By aligning curriculum and providing high school students with opportunities to engage early in college learning, colleges help nurture students who are more likely to enroll in their postsecondary programs – with the necessary preparation. Similarly, businesses are able to increase their recruitment pool with candidates who are equipped to meet the needs and standards of the 21st Century job market.

#### ***Year Up***

Year Up is a supplemental after school program that provides one year of intensive training in workplace skills. A partnership between schools and businesses, Year Up not only gives students the skills needed to succeed in the job market, but also provides them with opportunities to exercise their newly learned skills through internships with corporate partners. Students spend the first six months of their program learning workplace and technical skills. The second half of the program consists of six-month internships with one of Year Up’s corporate partners – Bank of America, General Electric, or Wells Fargo. Corporate partners manage Year Up interns and provide them with ongoing skills training. This kind of partnership provides the hands-on training students need to excel once they enter the job market, and provides corporations with skilled candidates who already are familiar with their organizations and work expectations.<sup>95</sup>

#### ***Cristo Rey Network***

The Cristo Rey Network is a Catholic college preparatory education school model in urban communities with limited educational access.<sup>96</sup> The network encompasses 24 schools, nearly 7,000 students, and 1,500 corporate work study jobs. Cristo Rey schools provide partnerships with corporations and institutions of higher learning, professional development for principals and teachers, data driven decisions



through assessments, and a connection between classroom and workplace learning. Cristo Rey students take a full four-year college preparatory course load and participate in work share groups. To facilitate this activity, the network collaborates with 21 national university partners and 19 supporting university partners.<sup>97</sup> Through work share groups, each student is responsible for working one day per week with one of the network's corporate partners. Students gain work experience and also receive pay for 70 percent of their education. Partners include the American Red Cross, Blue Cross/Blue Shield, Ernst & Young, JP Morgan Chase, United Way, and YMCA. To date, 100 percent of Cristo Rey students have been accepted to a two- or four-year college.<sup>98</sup>

### ***Project Lead the Way***

Established in 1997, Project Lead the Way (PLTW) is designed to prepare students for the global economy through a collaborative and comprehensive curriculum and professional development for the more than 4,200 schools that they serve in 50 states and the District of Columbia.<sup>99</sup> PLTW has established a coalition of over 40 affiliate colleges and universities, a national staff, masters teachers, state leaders (representing the various state Departments of Education), and corporate and philanthropic sponsors – each contributing their leading offerings. For example, university partners provide educators with high-quality professional development and offer and teach PLTW courses. Other partners, such as STEM associations and organizations and businesses provide valuable resources such as mentors and internship opportunities, as well as in-kind support such as technology.

Another example is Project Lead the Way's comprehensive curriculum for their three foundational programs, which was designed by teachers, university faculty, school administrators, and career professionals, all of whom comprise the coalition stakeholders. This kind of collaborative curriculum model is a way to expose students to the skills they will need across industries and postsecondary training and education.<sup>100</sup> Studies of PLTW found that participating students outperform their peers in school and are more focused on attending college than non-PLTW students. In Wisconsin, PLTW seniors were significantly more likely to achieve both a higher ACT composite score and ACT math and science scores and attended school more days during their senior year.<sup>101</sup> In the Minneapolis Public School District, PLTW CTE students outperformed non-CTE students on state exams in reading, math and science and had higher graduation rates compared to non-CTE students.<sup>102</sup>

### **Teacher Professional Development and Training**

There is arguably nothing more important to student learning than teachers. For CTE to meet evolving educational and workplace demands, teachers must grow as well. High qualification requirements for CTE teachers is a must, and providing teachers with ongoing opportunities to learn and excel is critical.

### ***Math-in-CTE***

Educators know that mathematical concepts are best understood when learned in a real world context. In 2006, the National Research Center for Career and Technical



Education launched Math-in-CTE, a model designed to help teachers improve CTE students' mathematical understanding. The study included nearly 3,000 students and 200 teachers in nine states. Each of the participating CTE teachers was paired with a math teacher, and these teams received comprehensive, long-term professional development that included teams creating math-enhanced CTE lessons to strengthen the occupational curricula. After one year of instruction with these lessons, students maintained their technical skills while performing significantly better on standardized math tests and community college math placement tests than their peers receiving the regular CTE curriculum. The model is now a nationwide program and has provided professional development to almost 700 CTE teachers, along with their math teacher partners, in nearly 30 states or large districts. Over 17,000 CTE students are estimated to have benefited.<sup>103</sup>

### ***Expeditionary Learning***

Born out of Harvard Graduate School of Education's Outward Bound program, Expeditionary Learning (EL) is an educational school network that partners with schools, districts, and charter boards to open or improve existing schools. Their current network consists of 165 schools in 30 states, as well as the District of Columbia.<sup>104</sup> While EL has garnered national attention for its model as a whole, professional development is their primary driver for improving education.<sup>105</sup>

EL's professional development is designed to implement the same learning pedagogy used for its students, which engages the student in real-world skills and experiences in reading, writing, math, science, and other core curricular topics. Teachers are engaged as adult learners so that they learn, as well as experience, effective curriculum design and implementation and instructional best practices across grade levels. EL facilitators spend nearly 30 days within school environments providing school-based professional development, aligned with the Common Core Standards, in addition to more intensive institutes and seminars that provide in-depth content knowledge.

### ***Idaho***

Idaho's dual certification program is designed to increase the number of high quality CTE teachers preparing students for college and career. The state's Department of Education in partnership with the Professional-Technical Education Teacher Certification Department has created two pathways in which teachers can obtain teacher certification. The first is a degree-based education program that provides the same secondary certificate that the state issues for academic endorsements and enables teachers to teach all courses in a specific program area. The second provides teachers with an industry-based certificate that requires teachers to meet established work experience and industry certifications.<sup>106</sup>

### **College and Career Guidance**

All students need college and career guidance, and many CTE programs are demonstrating effective ways to provide students with the support that they need to understand the direct relationship between what they study and their future education and career opportunities.



“ *The metrics are generally about how many courses students take and which ones rather than assessments of the quality of CTE courses. There are very few data systems that actually follow students from secondary or post-secondary CTE into the labor market.* ”

- Nancy Hoffman,  
Vice President and  
Senior Advisor,  
Jobs for the Future

*Pathways to Prosperity* cites career and college guidance as a CTE best practice.<sup>107</sup> Career and college guidance begins with awareness in the elementary school years, building the foundational knowledge for students to begin differentiating between different jobs and roles of the adults in their lives. It then extends to career exploration in the middle school years, providing students the ability to explore fields that align with their career or academic interests. Finally, in the high school years, career preparation gives students a deeper level of discovery of a particular career pathway by linking workplace skills directly to academic learning by inviting students to explore real workplace environments where they can apply their learned skills.

### ***South Carolina***

The South Carolina Education and Economic Act Guidelines define standards for Career Development within the state curriculum requirements.<sup>108</sup> Career Development is required to align with state curriculum content standards and focus on a career cluster system that combines strong academics and real-world skills.

At the elementary level, students participate in career awareness activities. In the middle grades, students, with their parents' involvement, identify their career interests and abilities by grade six, with all students having individual graduation plans by grade eight. In high school, students receive counseling during grades nine and ten to define their career interests and goals, and by the end of grade ten, have declared an academic focus within a career cluster. Career preparation includes internships, service-learning, apprenticeships by eleventh grade, community and job shadowing, and school opportunities, such as student-run stores, that allow students to apply skills and theory to practice. High school students also must have individual graduation plans designed to prepare them for the best possible transitions to careers or other postsecondary opportunities.<sup>109</sup>

### **Specific and Measurable Outcomes**

Given CTE's history, measuring outcomes is critical to ensuring that all programs are providing high quality, equitable opportunities across the board. The best programs meet external accountability targets but also identify internal benchmarks to ensure that their programs are both rigorous and relevant, leading to positive postsecondary and labor market outcomes.

### ***Linked Learning***

For schools in the eligible California areas to achieve a Linked Learning Pathway Certification and Continuous Improvement, they have to follow a rubric developed by Linked Learning that includes 40 quality criteria for schools and districts to ensure that they are devel-



oping, improving, and sustaining high-quality pathways for its students.<sup>110</sup> The rubric is divided into four criteria: Pathway Design, Engaged Learning, System Support, and Evaluation and Accountability. The criteria are then broken down further into sub-categories, including design structure, student data, district policies and more, so that the rubric can address the school's specific needs while also ensuring the successful implementation of Linked Learning's curriculum. The criteria outlined in the rubric serve as a foundation for reviewers who make site visits and for outside audiences to understand what elements are required to develop, maintain, and continuously improve on a high-quality program.<sup>111</sup>

### **Commitment to Accessibility**

Many of the best CTE programs strive to close the equity gap in education by preparing traditionally underserved students with the rigorous career and academic foundation they need to enter the workforce. These programs hold all of their students to high academic and workplace learning standards coupled with assessment systems that track student progress and needs.

### ***Accelerating Opportunity***

Accelerating Opportunity, a Community College and Adult Basic Education (ABE) initiative that exists in Illinois, Kansas, Kentucky, Louisiana and North Carolina, provides low-skilled adult learners with general and career education at an accelerated pace to enable them to move into quality occupations. The curriculum is aligned with workforce skills needed in the labor market and with the standards and curricula of precollege programs and college readiness. This is important because traditionally ABE programs in community colleges exist in less than 30 percent of the states and are often displaced from a college-credit track.<sup>112</sup>

### ***I-BEST***

I-BEST, a certificate program launched in 2006 that serves 34 community and technical colleges in Washington, pairs Adult Basic Education (ABE) and English as Second Language (ESL) students with workforce training in career fields such as healthcare, automotive/engine repair, manufacturing and trade, and other clusters. Students learn academic and workplace skills simultaneously, with instructors coordinating with one another to develop and implement an integrated academic vocational curriculum. I-BEST is a pipeline for ABE and ESL students into higher education and the workforce by providing its students with 45 college-level credits, as well as a vocational certificate.<sup>113</sup>



## SURVEY OF EDUCATION LEADERS ON CTE

CTE provokes a vocal and often emotional response among teachers, administrators, education leaders and policymakers. As part of this report, IBM and Civic Enterprises conducted an informal survey with more than a dozen leaders in education, who have distinct and differing opinions about education and CTE.<sup>114</sup> These leaders included three U.S. Secretaries of Education from democratic and republican administrations, as well as leaders from CTE and higher education, education advocacy, labor, and business. The questions covered the current state of CTE, including its challenges and recommendations for reform.

While there remained some disagreements among individuals, the differences in CTE were not as profound as perhaps some would believe. There was unanimous agreement that if CTE provided strong work-based learning opportunities and links to higher education and careers, these opportunities should be made available to all students. Similarly, respondents agreed that if the system made stronger linkages between high schools, postsecondary institutions, and employers, there would be more demand for CTE among students, and it could become a prestigious path of choice, as it has become in some other countries. A number of leaders stated that hands-on workplace experiences would engage and entice students while providing, especially the most disadvantaged, with opportunities to see the link between academics and careers, as well as experiences they need to be successful in the labor market. A consistent comment among all the respondents was the importance of preparing students for careers, not jobs, and providing them with comprehensive workplace skills, including problem solving, critical thinking, communication, collaboration, leadership and more.

Very importantly, there also was overwhelming agreement, with one exception, that CTE (while also key in preparing youth and adult students for further education, training, and apprenticeships) is as important a pathway to careers as it is to a 4-year or other advanced degree – though most added the important caveat “if done well.”

That caveat was an important one for those surveyed. A major agreement among the group was that CTE lacked a coherent system, leading to great variance in the quality of programs. Not surprisingly, when asked if the current system provided students with the education and preparation they need for either further education or careers, the majority of respondents said that it depended, with examples of CTE working well in some places, while weak in others. Similarly, about half the respondents said that while some CTE programs were doing a good job linking to labor market trends, business and higher education, others were not; the remainder said that CTE was not doing a good job with these linkages.

Respondents outlined a number of ways to improve CTE, covering curriculum, governance, citizen support, assessment, financing and teacher quality. Many of their recommendations helped inform this report’s plan for reform.



“ *Well-designed CTE pathways keep more students on track to graduate high school and college because students see the relevance of education to their career dreams, lower the costs of college by accelerating the time it takes to get a postsecondary credential with currency in the labor market, and reduce training and remediation costs for employers who have worked with secondary and postsecondary institutions on curriculum and skills development. We need to strengthen CTE to be the prestigious, enterprising pathway that our students and our nation deserve.* ”

- John M. Bridgeland,  
CEO, Civic Enterprises  
& Former Director,  
White House Domestic  
Policy Council

## PATHS FORWARD

We must ensure that America’s education and workforce training systems meet the demands of our students, employees and employers. Too much is at stake: individual opportunity and economic mobility; a productive workforce and robust economy; and a country that can compete in the global economy. Accomplishing these goals will require leadership from all levels of government, and from business, philanthropy, and educators.

Many reforms can be instituted that will accelerate career and technical education as an attractive, prestigious path for many American students. Below we outline core actions to begin a conversation to accelerate the focus on career and technical education, advance a plan to create more effective systems and policies, and foster a spirit to work across sector and party to fulfill the promise of more enterprising pathways. By elevating the quality and access of career and technical education, it can be transformed into an attractive pathway for students in this country to complete high school and attain a postsecondary degree or industry recognized credential. This plan is dynamic and will continue to be informed by leaders at all levels.

### **I. IMPROVE DATA AVAILABILITY TO MEASURE SUCCESS AND DEMONSTRATE RETURN ON INVESTMENT**

**Tie College Programs to Career Pathways.** The federal government has the power to promote stronger alignment between secondary and postsecondary programs of study and labor markets. Student loans and grants allotted under Title IV of the Higher Education Act can serve as leverage for the federal government to promote systematic reform. It should use this leverage to link postsecondary education data with employment outcomes. Such a move would promote greater accountability throughout the nation’s higher education system. The rationale for doing so is not greater government control, but transparency and the provision of essential information that promotes employment opportunities, efficiency, and productivity in postsecondary education and training institutions.

In order to ensure the success of these efforts, information systems should help:

- (1) Students understand the economic demand for specific kinds of education and training;
- (2) Educators reform their programs to better serve their students,
- (3) And employers find the workers they need to fill their occupational needs.



**Leverage Existing Transcript and Earnings Data to Create a Transparent Matching System Between CTE Programs and Career Pathways.** At the state and federal level, policymakers should promote a education-employment matching system. Such a system would tie job exchanges (online job-search engines) with learning exchanges that match job openings and career pathways with available courses offered at postsecondary institutions. These systems will minimize the need for additional oversight or state regulation.

Currently, the majority of states have developed the capability to connect wage records reported to state agencies that administer unemployment insurance and transcript records at secondary and postsecondary institutions. Connecting these data would allow us to discover the effectiveness of specific programs of study in promoting positive employment outcomes, such as employment in field, wages, hours worked, and duration of employment. Additionally, using this data we could inform students of the cost (in dollars) of dropping out of school or pursuing other courses of action.

Although many states have made the connection between wage and transcript data, most states have only just begun to use the data effectively to inform youth or encourage program accountability. The federal government is already distributing money to states to improve education data systems, but states limit access to the data for purpose of connecting secondary and postsecondary programs to employment and earnings. Because of the lack of transparency, individuals and institutions are as yet unable to utilize the data to improve program delivery and placement services.

By encouraging more informed decisions, transparent information systems that link wage and transcript data would likely increase graduation rates, reduce student loan defaults, lower the cost of unemployment insurance, and lower the cost of other government programs that support education and training.

Several pieces of legislation have been introduced in Congress to encourage these efforts, including the Student Right to Know Before You Go Act by Senators Ron Wyden and Marco Rubio and Representatives Duncan Hunter and Robert Andrews, which prompts and awards grants for state data systems to include information on students related to postsecondary completion, remedial enrollment, and credit accumulation, together with earnings data disaggregated by educational program, institution, degree, and employment sector to create an “interoperable employment and learning exchange.”

## **2. EXPAND THE ROLE OF EMPLOYERS**

The changing economy demands a highly trained workforce. Employers – private, public, and nonprofit sectors – must be fully engaged in the development of programs and curriculum, training teachers and workers, and providing work-based learning and on-the-job training opportunities for students. Given the wide range of employers, by size, location, and industry, the opportunities for meaningfully engaging employers



will need to be equally diverse. Policies should be developed to provide incentives to employers and educators to work more closely together.

**Create Tax Incentives for Employer Engagement.** Employers have recognized the need for a highly trained and well-educated workforce to help their businesses and our economy compete in the global marketplace. To ensure employers are actively engaged in the development of curriculum, training of teachers and staff, and engagement of students in work-based and on-the-job training, federal policymakers should establish a tax credit for business and industry employers who directly engage with high schools and postsecondary institutions to create or strengthen enterprising pathways. This credit should also encourage employers to provide work-based learning opportunities for students and externships for teachers as part of a career pathway or program of study.

**Engage Intermediaries to Link Employers and Schools.** Strong connections between schools and employers can help students apply academic skills to real-work settings and learn about the postsecondary education and training needed for possible careers. Through the Commonwealth of Massachusetts' innovative Connecting Activities programs, the Department of Elementary and Secondary Education, the Executive Office of Labor and Workforce Development and local workforce investment boards support work-based learning programs and expose students to the world of work and help them see the relationship between what they are learning in school and their career aspirations.

Local and state intermediary organizations should support the development of the infrastructure to link secondary and postsecondary schools with local employers to expand existing work-based learning opportunities for students and externships for teachers. Intermediary organizations are uniquely positioned to leverage existing relationships and serve as support organizations for both the employers and school systems.

### **3. IMPROVE FEDERAL AND STATE POLICIES TO STRENGTHEN CTE**

Federal and state policymakers can significantly accelerate the quality and availability of rigorous, high-quality career and technical education pathways through legislative and policy reforms in the next few years. At the federal level, Congress will begin to reauthorize several pieces of legislation with strong implications for the future of career and technical education: Carl D. Perkins Career and Technical Education Act; Workforce Investment Act; Higher Education Act; and Elementary and Secondary Education Act. Federal policymakers should use this opportunity to not only reauthorize these laws, but to integrate CTE in the larger education system to meet the demands of an ever-changing economy. While federal reform is necessary, state policymakers can and should continue to develop policies and legislation to improve CTE programs in their states. Although federal funding is a relatively small percentage of the total funding for CTE, such resources should be used to leverage significant changes in the system. Given this unique opportunity for reform, and the clear economic imperative



for action, we offer specific policy recommendations and strategies to accelerate the progress of CTE programs around the country, at the federal and state levels.

**Collaboration and Coordination between Secondary, Postsecondary, and Industry.** As discussed throughout this report, the changing economy will demand that more employees have some postsecondary degree or industry-recognized credential. The current silos of secondary and postsecondary education systems – and the funding streams that perpetuate their separation – will not prepare enough students to meet the demand for middle- and high-skilled employees. There must be increased coordination among secondary and postsecondary institutions and the workforce to ensure smooth transitions for students between systems and to improve successful postsecondary completion and employment. Models of this type of coordination and collaboration can be found in many of the rigorous, high-quality programs discussed throughout this report, including P-TECH in New York City, career academies, other dual enrollment and bridge programs.

Federal policymakers should require the creation of career pathways, including programs of study, that directly link secondary and postsecondary programs to ensure students graduate from high school and complete a postsecondary degree. Federal funding for CTE should be devoted to supporting the development and implementation of these career pathway programs. These pathways should formalize articulation agreements between secondary, postsecondary, adult education, community organizations, and employers. Additionally, they should provide students with the ability to earn “staging” or “stackable” credentials that can help them move from high school to a postsecondary program and a career.

State policymakers should support these efforts by setting standards for what is a high-quality CTE program. Additionally, states should create incentives for community colleges and other public colleges and universities to work with secondary schools to assess which CTE courses meet postsecondary admissions requirements and improve courses and curriculum that do not meet those standards.

**Expand Career and Technical Education Programs of Study that Link High School CTE with Postsecondary Programs.** Career and technical programs of study form connections between secondary and postsecondary institutions. They are intentional and designed with the goal of an industry-based certification, certificate, or college degree. Because they plan secondary and postsecondary activities, they discourage waste and curriculum duplication and unnecessary remediation, which often bog down students and encourage dropouts. They offer dual-enrollment activities, which have been shown to promote postsecondary enrollment and completion. Apprenticeships and other programs geared toward working learners allow students to mitigate financial barriers by earning an income while earning credit or mastering skills toward a career pathway.

**Alignment of Programs with Regional and State Workforce Needs.** Career and technical education offers a pathway for all students to obtain a high-quality educa-



tion that can connect them to a career with family sustaining wages. However, if these pathways are not linked or aligned to workforce needs and students graduate with a credential that does not have value in their local labor market, the true promise of high-quality career and technical education will not be realized.

Federal and state policies should require career pathways programs, including programs of study, work with workforce development agencies, business leaders, and industry representatives to identify high-demand, high-skill and high-growth occupations in the region and state. This alignment should not be limited to just the development of programs, but should also ensure programs and curriculum are updated to address changes in technology and other workforce changes.

**Integrate Academic and Technical Education, Curriculum, and Instruction.**

High-quality CTE programs provide students with opportunities to gain academic and technical skills by integrating core academic courses and concepts with the principles of CTE through relevant, project-based learning. By integrating these two concepts that often operate in silos, the lessons can be more relevant and reinforced by the other.

Federal and state policies should encourage and support efforts to integrate CTE and academic courses to ensure that all students in all schools are provided with a comprehensive education program that will help them be college- and career-ready. This should include reforming curriculum to integrate rigorous academics with real-world, project-based content, supporting professional development for CTE and academic teachers to understand how integration can and should occur, and developing evaluations to more effectively measure student mastery of academic and technical skills.

**Ensure Students Attain College and Career Readiness Skills.** As programs integrate academic and technical education, it is important to evaluate a student's level of proficiency in both college- and career-readiness. The National Academy Foundation's student assessment offers one example of how schools can evaluate student success. The NAF Student Certification Assessment System was designed to be a strong measure of (a) career readiness in a broadly defined career field, and (b) a broad range of core competencies needed to successfully pursue a postsecondary credential and a career with a future in any field. It complements core academic assessments and specifically evaluates career knowledge, foundational skills, interpersonal skills, and self-management.

Federal and state policies should encourage programs to develop methods of evaluating students on a wider range of college and career readiness standards to ensure assessments more fully capture the skills gained in CTE classes. These policies should also create more flexibility for programs to measure student success through competency, rather than focusing on time in school.

**Provide Students with Early Exposure to Career Opportunities and Counseling.** Counselors are a vital component of a student's education experience. A recent



national survey of school counselors found that nearly three in four (72 percent) are extremely interested in helping their students connect college and career to academic preparation and aspirations.

States and school districts should support efforts to ensure that all students, starting as early as elementary and middle school, have access to a system of employer involvement and assistance. This should include career counseling, job shadowing, and opportunities to work on work-linked learning projects to expose them to possible career paths.

**Professional Development of Teachers, School Leadership and Counselors.**

High-quality CTE requires that teachers, school leadership, and counselors are well-prepared to support the students moving through the system. When teachers collaborate to integrate content across academic and technical disciplines, it can result in strong positive student outcomes. School counselors are a critical link in the process of helping students identify and enroll in programs of study that cultivate their interests and aspirations. A recent study of school counselors found counselors are eager to receive additional professional development, particularly around college and career readiness.

Federal and state policies should support professional development opportunities for teachers, school leaders, and counselors and provide flexibility to schools to target the funds as they see fit. Policymakers should also encourage employers to provide current CTE teachers with externship and continuing learning opportunities to ensure teacher training remains relevant to changing technology and workforce needs.

**Rural Programs.** Like all students, those in rural areas should have access to high-quality career and technical education programs regardless of the proximity of postsecondary institutions or workforce partners. In Massachusetts, a consortium of rural high schools have formed one larger career and technical high school, which has allowed students to have access to greater resources, greater variety, and a larger number of industry partners. While this example involves a geographical consortium, other rural partnerships can utilize technology to connect students and industry to ensure relevance and rigor.

Federal and state policies should provide opportunities for rural students to connect to postsecondary institutions through expanded use of distance learning. In order to ensure rural programs are equally competitive in gaining funding, either through traditional streams or competitive grants, federal and state policies should guarantee a proportion of funds are made available to rural programs or reward rural programs in competitive funding streams. Private partners should explore opportunities to develop tools and technology to bridge access to high-quality CTE programming.

**Work-Based Learning.** One best practice in the field of career and technical education is work-based learning. Combining rigorous classroom learning with substantial on-the-job training opportunities, students learn both the hard- and soft-skills neces-



sary for long-term employability in high-growth, high-demand sectors. Work-based learning also leads to the opportunity for work-and-earn opportunities, in which students can earn wages while also gaining high school or postsecondary credits. Limited finances is often cited as one of the greatest barriers to continuing education, and work-based learning in career and technical education improves the ability of students to equip themselves with the skills to become competitive members of the labor market.

Federal and state policies should require that career pathways, or programs of study, include opportunities for student work-based and work-linked learning. This could include exposing students to internships, job shadowing, apprenticeships, or other programs designed in partnership with employers and unions. At a minimum, programs should provide students with project-based, work-linked learning opportunities that replicate work experiences. Private partners, including employers, unions, and community-based organizations can also engage students through extracurricular and co-curricular job opportunities, and apprenticeships or internships that happen over the summer.

#### **4. REFORM FEDERAL WORK STUDY**

Research has shown that work-based learning opportunities can help students gain the soft and technical skills needed to succeed in the workforce. Federal Work Study (FWS) provides nearly 800,000 undergraduates at 3,400 postsecondary institutions the opportunity to gain work experience while earning critical financial aid. The federal government invests nearly \$1 billion in this program every year, approximately the same level of funding as the entire Perkins program. Through FWS, students can work on campus or at a public, nonprofit, or for-profit organization, with federal funding covering 75 percent of student wages. Despite large participation, the majority of students work in on-campus positions, and only 7 percent of all students engage in ‘study-serve’ opportunities that allow them to collect wages while performing community service or working in the offices of private nonprofits. Moving forward, the FWS program should be reformed to (1) ensure work opportunities are linked to career aspirations and skill development, (2) increase the number of study-serve opportunities, and (3) make comprehensive changes to the allocation of aid to ensure the students who need help the most are given preference.

Reauthorization of the Higher Education Act must tie Federal Work Study dollars directly to opportunities that make postsecondary education and work opportunities more efficient, rigorous and relevant. Students participating in FWS should have the opportunity to earn independent study credits for the work experience and knowledge they gain in private-sector jobs. This will allow some students to progress through credit attainment at a quicker rate, and minimize the amount of time they must spend earning a postsecondary degree or credential. Universities, students and employers must collaborate to develop individualized plans to ensure that students’ work is related to their academic course of study, that students are challenged in their work, and that there is measured progress in hard and soft skills that lead to long-term em-



“ *As a nation, we have created and perpetuate a dichotomy between education and workforce development, with policies, programs, and investments that rarely intersect. That ‘great divide’ must be bridged. An important first step is defining and implementing a national agenda to create and sustain ‘Enterprising Pathways’ in our nation’s secondary and postsecondary schools to build the pipeline of qualified workers for current and new jobs.* ”

- Emily DeRocco,  
Principal, E3 Engage  
Educate Employ

ployment. To maximize the potential of FWS, we cannot view it only through the lens of college affordability, but also as a way to prepare students to be successful in career and community after college.

The Federal Work Study program provides tremendous opportunity to improve civic engagement by allowing students to earn wages while working with private nonprofits or in other volunteer capacities. While these service positions may not be directly related to a student’s career aspirations, opportunities to work with organizations that improve local communities can provide students a sense of purpose, improve soft skills that can be transferred to a variety of careers, and reinforce many of the values instilled in the classroom. FWS reform should require at least 25 percent of work-study positions support community service opportunities, as presidents on a bipartisan basis have endorsed. Many schools recognize the power of community service in enriching the lives of their students, and have made these opportunities a focal point in models for personal growth. Over the past few years, leading college-rating organizations have included community service and engagement in their reviews. The next logical step is for federal investment in financial aid to encourage community service as well.

Currently, the Higher Education Act that authorizes the FWS program specifies all federal investment be allocated to universities based on ‘prior allocation.’ While individual award is determined using the FASFA, many more recipients are eligible for FWS grants than Pell grants, meaning the aid is not used to efficiently target the students who need it most. In reforming FWS, funding should be allocated to universities based on proportion of student need, and allocated to students with those having the greatest need.

## **5. INVEST IN CAREER AND TECHNICAL EDUCATION**

As noted in the report, financial support systems for CTE programs vary around the country, with funding from federal, state, and local governments, along with private contributions from foundations and businesses. New funding programs can encourage the development of innovative, high-quality, and evidence-based CTE programs that can contribute to the field’s understanding of what works for students.

**Establish an Enterprising Pathways Program for Career and Technical Education.** Federal policymakers have incentivized innovation in education, social services, health programs and other policy areas by developing competitive grant programs that reward innovative, evidence-based program designs, such as the Investing in Innovation (i3) Fund at the Department of Education to the Workforce



Innovation Fund at the Department of Labor. Federal policymakers should create an Enterprising Pathways Program for Career and Technical Education that can build on existing funding sources. Funding should encourage collaboration between secondary and postsecondary institutions and industry, reward evidence-based promising practices, provide the seed funding necessary to develop and launch programs, focus on programs that can be scaled and replicated by others, and leverage more support from the private sector for such models.

These grants will allow the government to reward successful career and technical education programs while providing extra assistance to the programs that need the most help or serve the most disadvantaged populations. Competitive grants have the ability to provide a substantial financial injection for proven career and technical education models, or programs that need to be elevated in their ability to provide comprehensive, rigorous and relevant skills and knowledge.

**Pilot Pay for Success for Career and Technical Education.** Governments around the country are looking for innovative ways to develop public-private partnerships that can increase the impact of limited taxpayer money to invest in success. One such method is the Pay for Success model that is currently underway in several federal departments, including in agencies that address homelessness, adult and juvenile re-offending, drug addiction and unemployment. Under the Pay for Success model, private foundations and organizations invest in initiatives that make strides in alleviating social ills within an agreed upon time frame. If the initiative meets or exceeds the achievement benchmarks, the federal, state or local government reimburses these investors. The unique aspect of this model is that the government is not paying for actual program costs, but for results. Even if the program exceeds the estimated cost, the government is only required to pay the amount initially negotiated. Additionally, if the program fails, the government has no responsibility, and the investors must bear the costs as a donation to the organization.

Career and technical education is uniquely positioned to show promise for a similar Pay for Success model, given the strong desire of business and industry to ensure they can find employees with the skills needed to meet workforce demands. Congress should give the Secretary of Education the authority to use discretionary or innovation funds to develop a CTE Pay for Success pilot. Through this model, the Secretary could make awards to private nonprofit or for-profit entities to implement programs to achieve cost-effective outcomes in CTE and receive payment based on meeting those agreed upon outcomes. Some possible Pay for Success models could include increasing the amount of students participating in CTE programs and the number of reconnected youth or adult learners, or creating new pathways to postsecondary or careers.

**Create a Privately Supported Innovation Program for Career and Technical Education.** While public investment in developing a strong career pathways system is critical, private sector support – from foundations to businesses – can seed the development and expansion of innovative program designs. To support this effort, an Innovation Program should be established – a multi-year effort to support students in



grades 9-14 enrolled in career pathways that link school to career to address America's dropout epidemic and skills gap. The initiative should create a competitive grant program that provides incentives to regions and states to develop model 9-14 career pathway systems linking employers, postsecondary and secondary institutions. Such pathways must meet three key criteria: 1) the pathway integrates rigorous academic preparation in core subject areas, including English, math and science, with relevant career and technical education; 2) the pathway is designed to propel students into a postsecondary program that leads to a certificate or degree with currency in the labor market; and 3) the pathway needs to be designed in collaboration with businesses to ensure the skills and knowledge are well-aligned with workplace needs.

## **6. ELEVATE THE PROMISE OF HIGH-QUALITY CAREER AND TECHNICAL EDUCATION**

### **Reframe and Market the Value and Impact of Career and Technical Education.**

As noted earlier, research shows that students participating in high quality CTE programs perform better than their peers, are more likely to complete high school, and earn more money in the labor market. Despite this research, too often, the true value and potential of rigorous, high-quality CTE is not recognized, or is even disparaged, across the country. This apparent negative public perception – from parents, teachers, counselors, and even policymakers – can limit the ability of CTE to reach its full potential as a promising pathway to good quality education and careers for our nation's students.

The National Association of State Career Technical Education Directors Consortium has developed a national marketing strategy – CTE: Learning that works for America – to better inform the public about the value of CTE. National organizations should support and continue this effort through a coordinated marketing effort, focusing particular attention on parents, teachers, counselors, and other individuals who influence a young person's education and career decisions. To support this effort, further research is needed to better understand current public perception.

**Call for National Convening to Accelerate Career and Technical Education.** Accelerating career and technical education to meet the demands of our students and the economy will take a concerted effort by education leaders, employers, and local, state and federal policymakers. Recent attention to the issue, including the groundbreaking *Pathways to Prosperity* and *Learning for Jobs* reports; two years of listening sessions by the U.S. Department of Education that culminated in a blueprint for career and technical education reform; innovative models that are emerging among employers, postsecondary and secondary institutions; and the work of the Opportunity Nation Summit to marshal the latest labor market data, highlight innovative pathways, and launch a national plan of action, show the momentum that is building behind career and technical education. This report and the most recent labor market data on jobs requiring sub-baccalaureate degrees will be released at the Opportunity Nation Summit. Following this Summit in the Fall of 2012, employers should be convened with educators at the secondary and postsecondary levels, policymakers and leading research-



ers to further examine the needs of the economy, highlight innovative models from around the country, discuss the path to reform at a local, state and national levels, and accelerate progress on the national plan of action.

**Develop 10-Year National Implementation Plan with Key Benchmarks.** Transforming America's career and technical education system cannot and will not occur overnight. It will require a long-term commitment to improving the education system for all of our students through policy reform, sustained funding, and strong public-private partnerships. As we continue the conversation around how to improve CTE, we must develop a national implementation plan with key benchmarks to measure success and hold the effort accountable for results. These benchmarks should include: number of students enrolled in CTE courses; number of CTE secondary schools and comprehensive secondary schools offering CTE courses; ways to assess the integration of CTE programs into rigorous academic curriculum; high school graduation rates, college completion rates, and attainment of postsecondary degree or industry recognized credentials.

## CONCLUSION

America's economy is demanding a more skilled workforce. In turn, the education to workforce equation has completely flipped within a generation – with most jobs in the 1970s requiring a high school diploma or less, and today and in the future the majority of jobs requiring some college. The labor market pull for occupational certificates and associate's degrees is strong – with more than 20 million jobs through 2018 requiring workers with these sub-baccalaureate credentials.

Re-envisioning a prestigious path that marries academic rigor with skills and training in high-growth sectors of our economy will have multiple benefits. Students who might question the relevance of high school and college to their career dreams will be able to link learning with career; students worried about the affordability of college can choose paths that accelerate the time to degree and lower the cost of a college credential; students graduating with occupational certificates, associate's degrees or more will have stronger currency in the labor market; employers that have worked with secondary and postsecondary institutions on curriculum and the skills they need in the workforce will experience lower training and remediation costs; and America can be on a better path to close its skills gap to draw on more talent here at home. This is the promise and hope of enterprising pathways. Our nation should seize this moment to redesign pathways that include career and technical education in ways that engage students, strengthen their learning and skills, and meet the growing demand of our economy.

## APPENDIX A: Survey Respondents

- **Jan Bray**, Executive Director, Association for Career and Technical Education
- **Michael Cohen**, Executive Director, Achieve, Inc.
- **Willard R. Daggett**, Founder and Chairman, International Center for Leadership in Education, Inc.
- **Arnold Duncan**, U.S. Secretary of Education, U.S. Department of Education
- **Brenda Dann-Messier**, Assistant U.S. Secretary of Education, U.S. Department of Education
- **Chester Finn**, President, Thomas B. Fordham Foundation
- **Kim Green**, Executive Director, National Association of State Directors of Career and Technical Education Consortium
- **Kati Haycock**, President, The Education Trust
- **Nancy Hoffman**, Vice President and Senior Advisor, Jobs for the Future
- **Scott Norton**, Strategic Initiative Director, The Council of Chief State School Officers
- **Richard Riley**, Former Secretary of Education, U.S. Department of Education; Partner, Nelson Mullins Riley & Scarborough LLP
- **Andrew J. Rotherham**, Co-Founder and Partner, Bellwether Education
- **Margaret Spellings**, Former U.S. Secretary of Education, U.S. Department of Education; Senior Advisor, U.S. Chamber of Commerce and President, Forum for Policy Innovation
- **Randi Weingarten**, President, American Federation of Teachers
- **Amy Wilkins**, Vice President for Government Affairs and Communications, Education Trust
- **Nancy Zimpher**, Chancellor, State University of New York

## ENDNOTES

- <sup>1</sup> Robert Hiltonsmith, Catherine Ruetschlin, Aaron Smith, Jennifer Mishory, Rory O’Sullivan, *The State of Young America: Economic Barriers to the American Dream* (Dēmos and Young Invincibles, November 2, 2011), 3.
- <sup>2</sup> John Bridgeland, Robert Putnam and Harris Wofford, *More to Give: Tapping the Talents of the Baby Boomer, Silent and Greatest Generations* (Civic Enterprises in association with Peter D. Hart Research & Associates, September 2008), 4.
- <sup>3</sup> Congressional Budget Office, *Trends in the Distribution of Household Income from 1979-2007* (October 2011), ix.
- <sup>4</sup> *Trends in the Distribution of Household Income*, XIII.
- <sup>5</sup> Pew Charitable Trusts, *Pursuing the American Dream: Economic Mobility Across Generations*, <http://www.pewstates.org/research/reports/pursuing-the-american-dream-85899403228> (July 2012).
- <sup>6</sup> OECD, *Economic Policy Reforms 2010: Going for Growth*, [http://www.keepeek.com/Digital-Asset-Management/oecd/economics/economic-policy-reforms-2010\\_growth-2010-en](http://www.keepeek.com/Digital-Asset-Management/oecd/economics/economic-policy-reforms-2010_growth-2010-en) (2010).
- <sup>7</sup> Andrew Sum and Ishwar Khatiwada, with Sheila Palma, *Dire Straits in the Nation’s Teen Labor Market: The Outlook for the Summer 2010 Teen Job Market and the Case for A Comprehensive Youth Jobs Creation Strategy* (Boston, MA: Center for Labor Market Studies, Northeastern University, April 2010), 2.
- <sup>8</sup> Andrew Sum, Ishwar Khatiwada, Joseph McLaughlin, *Describing the Dimensions of the Current Labor Market Crisis in the U.S.* (Boston, MA: Center for Labor Market Studies, Northeastern University, December 2009), 3.
- <sup>9</sup> Sum, Khatiwada, McLaughlin, 3.
- <sup>10</sup> Hiltonsmith, Ruetschlin, Smith, Mishory, O’Sullivan, 7.
- <sup>11</sup> John M. Bridgeland, Jessica A. Milano, *Opportunity Road: The Promise and Challenge of America’s Forgotten Youth* (Civic Enterprises & America’s Promise Alliance in association with Peter D. Hart Research Associates), 4.
- <sup>12</sup> Wikipedia, *James Truslow Adams*, [http://en.wikipedia.org/wiki/James\\_Truslow\\_Adams](http://en.wikipedia.org/wiki/James_Truslow_Adams) (August 2012).
- <sup>13</sup> Hiltonsmith, Ruetschlin, Smith, Mishory, O’Sullivan, 7.
- <sup>14</sup> William C. Symonds, Robert B. Schwartz and Ronald Ferguson, *Pathways to Prosperity: Meeting the Challenge of Preparing Young Americans for the 21st Century* (Pathways to Prosperity Project, Harvard Graduate School of Education, February 2011), 2.
- <sup>15</sup> Anthony J. Carnevale, Nicole Smith, Jeff Strohl, *Help Wanted: Projections of Jobs and Education Requirements Through 2018: Executive Summary* (Washington, DC: Center for Education and the Workforce, June 15, 2010), 1.
- <sup>16</sup> *The Facts About Modern Manufacturing, 8th Edition* (Washington, DC: The Manufacturing Institute, 2009), 36.
- <sup>17</sup> Anthony Carenvale, Andrew Hanson, and Tamara Jayasundera, *Career and Technical Education: Five Ways that Pay Along the Way to the B.A.* (Washington, D.C.:

Georgetown University Center on Education and the Workforce, 2012).

<sup>18</sup> Carnevale, Hanson, Jayasundera.

<sup>19</sup> Carnevale, Smith, Strohl, 1.

<sup>20</sup> Carnevale, Smith, Strohl, 1.

<sup>21</sup> Symonds, Schwartz and Ferguson, 4.

<sup>22</sup> John Bridgeland, Jessica Milano, Elyse Rosenblum, *Across the Great Divide: Perspectives of CEOs and College Presidents on America's Higher Education and Skills Gap* (Civic Enterprises, Corporate Voices for Working Families, in association with The Institute for a Competitive Workforce, U.S. Chamber of Commerce and Peter D. Hart Research Associates, March 2011).

<sup>23</sup> Bloomberg. "US Job Openings By Industry Total SA," <http://www.bloomberg.com/quote/JOLTTOTL:IND> (2012).

<sup>24</sup> Ohio Department of Jobs and Family Services, *Ohio Means Jobs*, [www.ohio-meansjobs.com](http://www.ohio-meansjobs.com) (September 1, 2012).

<sup>25</sup> Peter Cappelli, "Why Companies Aren't Getting the Employees They Need," *The Wall Street Journal*, October 24, 2011.

<sup>26</sup> Change the Equation, *Why STEM?*, <http://changetheequation.org/why-stem> (August 2012).

<sup>27</sup> Robert Balfanz, John Bridgeland, Mary Bruce, Joanna Hornig Fox, *Building a Grad Nation: Progress and Challenge in Ending the High School Dropout Epidemic* (Alliance for Excellent Education, America's Promise Alliance, Civic Enterprises, and the Everyone Graduates Center at Johns Hopkins University, released March 19, 2012), 5.

<sup>28</sup> Change the Equation, *Why STEM?*: <http://changetheequation.org/why-stem>

<sup>29</sup> National Conference of State Legislatures, *Improving College Completion – Reforming Remedial Education*, <http://www.ncsl.org/issues-research/educ/improving-college-completion-reforming-remedial.aspx> (August 2012).

<sup>30</sup> National Conference of State Legislatures, *Improving College Completion - Reforming Remedial Education*, <http://www.ncsl.org/issues-research/educ/improving-college-completion-reforming-remedial.aspx> (August 2012).

<sup>31</sup> Balfanz, Bridgeland, Bruce, Fox, 16.

<sup>32</sup> Balfanz, Bridgeland, Bruce, Fox, 6.

<sup>33</sup> Symonds, Schwartz and Ferguson, 24.

<sup>34</sup> Education Resource Information Center, *College and Career Ready in the 21st Century: Making High Schools Matter*, [http://www.eric.ed.gov/ERICWebPortal/search/detailmini.jsp?\\_nfpb=true&\\_ERICExtSearch\\_SearchValue\\_0=ED530690&ERICExtSearch\\_SearchType\\_0=no&accno=ED530690](http://www.eric.ed.gov/ERICWebPortal/search/detailmini.jsp?_nfpb=true&_ERICExtSearch_SearchValue_0=ED530690&ERICExtSearch_SearchType_0=no&accno=ED530690) (August 2012).

<sup>35</sup> ACTE, *What is Career and Technical Education?*, [https://www.acteonline.org/uploadedFiles/About\\_CTE/files/What\\_is\\_CTE.pdf](https://www.acteonline.org/uploadedFiles/About_CTE/files/What_is_CTE.pdf) (August 2012).

<sup>36</sup> [https://www.acteonline.org/uploadedFiles/About\\_CTE/files/What\\_is\\_CTE.pdf](https://www.acteonline.org/uploadedFiles/About_CTE/files/What_is_CTE.pdf)

<sup>37</sup> Office of Vocational and Technical Education, e-mail, August 14, 2012.

<sup>38</sup> National Center for Education Statistics, *Career and Technical Education in the United States: 1990-2005*, <http://nces.ed.gov/pubs2008/2008035.pdf> (July 2008), 8.

- <sup>39</sup> <http://nces.ed.gov/pubs2008/2008035.pdf> (July 2008), 13.
- <sup>40</sup> <http://nces.ed.gov/pubs2008/2008035.pdf> (July 2008), 76.
- <sup>41</sup> <http://nces.ed.gov/pubs2008/2008035.pdf> (July 2008), 78.
- <sup>42</sup> <http://nces.ed.gov/pubs2008/2008035.pdf> (July 2008), 161.
- <sup>43</sup> <http://nces.ed.gov/pubs2008/2008035.pdf> (July 2008), 194.
- <sup>44</sup> <http://nces.ed.gov/pubs2008/2008035.pdf> (July 2008), 204.
- <sup>45</sup> United States Department of Education, *Education Department Budget History Table*, <http://www2.ed.gov/about/overview/budget/history/edhistory.pdf> (August 5, 2011).
- <sup>46</sup> Office of Vocational and Technical Education, e-mail, August 14, 2012.
- <sup>47</sup> National Association of State Directors of Career Technical Education Consortium, *A Synopsis of CTE Trends: Funding*, <http://www.careertech.org/legislation/briefs-papers.html> (November 2010).
- <sup>48</sup> *A Synopsis of CTE Trends: Funding*, <http://www.careertech.org/legislation/briefs-papers.html>
- <sup>49</sup> National Association of State Directors of Career Technical Education Consortium, *A Synopsis of CTE Trends: Governance*, <http://www.careertech.org/legislation/briefs-papers.html> (November 2010).
- <sup>50</sup> *A Synopsis of CTE Trends: Governance*, <http://www.careertech.org/legislation/briefs-papers.html>
- <sup>51</sup> *A Synopsis of CTE Trends: Governance*, <http://www.careertech.org/legislation/briefs-papers.html>
- <sup>52</sup> National Association of State Directors of Career Technical Education Consortium, *Already At the Top: CTE Programs Show Positive Impact on Student Achievement, Focus: Suburban school (three part series)*, [http://nrccte.org/sites/default/files/idea-center-files/suburban\\_final.pdf](http://nrccte.org/sites/default/files/idea-center-files/suburban_final.pdf) (May 2010).
- <sup>53</sup> <http://nces.ed.gov/pubs2008/2008035.pdf>, 10.
- <sup>54</sup> <http://nces.ed.gov/pubs2008/2008035.pdf>, 40.
- <sup>55</sup> <http://nces.ed.gov/pubs2008/2008035.pdf>, 44.
- <sup>56</sup> National Association of State Directors of Career Technical Education Consortium, *CTE Fact Sheet: Enrollment*, <http://www.careertech.org/resources/advocacy-tools.html> (August 2012).
- <sup>57</sup> National Association of State Directors of Career Technical Education Consortium, *CTE Fact Sheet: High Expectations, High Outcomes*, <http://www.careertech.org/resources/advocacy-tools.html> (August 2012).
- <sup>58</sup> *CTE Fact Sheet: High Expectations, High Outcomes*, <http://www.careertech.org/resources/advocacy-tools.html>
- <sup>59</sup> James R. Stone, *CTE Practices, Policies and Outcomes: Current Evidence & Future Research Needs*, PowerPoint presentation provided for the Brookings Institution Policy Roundtable of August 2, 2012.
- <sup>60</sup> *CTE Fact Sheet: High Expectations, High Outcomes*, <http://www.careertech.org/resources/advocacy-tools.html>

- <sup>61</sup> Howard Gordon, *The History and Growth of Career and Technical Education in America* (Illinois: Waveland Press), 4.
- <sup>62</sup> Gordon, 9.
- <sup>63</sup> Charlene Clark, Morrill Act of 1890, <http://jschell.myweb.uga.edu/history/legis/morrill.htm> (August 2012).
- <sup>64</sup> Gordon, 43.
- <sup>65</sup> Gordon, 66.
- <sup>66</sup> Shannon Patterson, *Smith-Hughes Act of 1917 (PL 347)*, <http://jschell.myweb.uga.edu/history/legis/smithhughes.htm> (August 2012).
- <sup>7</sup> <http://jschell.myweb.uga.edu/history/legis/smithhughes.htm>
- <sup>68</sup> <http://jschell.myweb.uga.edu/history/legis/smithhughes.htm>
- <sup>69</sup> Gordon, 88.
- <sup>70</sup> United States Department of Veterans Affairs, *The GI Bill's History*, [http://www.gibill.va.gov/benefits/history\\_timeline/index.html](http://www.gibill.va.gov/benefits/history_timeline/index.html) (August 2012).
- <sup>71</sup> Gordon, 90.
- <sup>72</sup> Gordon, 92.
- <sup>73</sup> U.S. Department of Education – The National Commission on Excellence in Education, *A Nation at Risk: The Imperative For Educational Reform*, [http://datacenter.spps.org/uploads/SOTW\\_A\\_Nation\\_at\\_Risk\\_1983.pdf](http://datacenter.spps.org/uploads/SOTW_A_Nation_at_Risk_1983.pdf) (April 1983).
- <sup>74</sup> Marie Cohen and Douglas J. Besharov, *The Role of Career and Technical Education: Implications for the Federal Government*, <http://www.gpo.gov/fdsys/pkg/ERIC-ED466939/pdf/ERIC-ED466939.pdf> (March 21, 2002).
- <sup>75</sup> GovTrack.us, *S. 2341 – 98th Congress: Vocational Education Act of 1984*, <http://www.govtrack.us/congress/bills/98/s2341> (August 2012).
- <sup>76</sup> U.S. Department of Education, *Perkins III Accountability Primer*, <http://cte.ed.gov/docs/DQI/Primer%206-30-05.pdf> (Revised April 2005).
- <sup>77</sup> <http://www.gpo.gov/fdsys/pkg/ERIC-ED466939/pdf/ERIC-ED466939.pdf>
- <sup>78</sup> U.S. Department of Education, *The Carl D. Perkins Vocational and Technical Education Act, Public Law 105-332*, <http://www2.ed.gov/offices/OVAE/CTE/perkins.html> (August 2012).
- <sup>79</sup> U.S. Department of Education: Office of Vocational and Adult Education, *Perkins IV – Frequently Asked Questions*, <http://www2.ed.gov/about/offices/list/ovae/pi/cte/factsh/faq-080528.pdf> (August 2012).
- <sup>80</sup> United States Department of Education, *Investing in America's Future: A Blueprint for Transforming Career and Technical Education*, <http://www2.ed.gov/about/offices/list/ovae/pi/cte/transforming-career-technical-education.pdf> (April 2012).
- <sup>81</sup> <http://www2.ed.gov/about/offices/list/ovae/pi/cte/transforming-career-technical-education.pdf>
- <sup>82</sup> Robert B. Schwartz, “The German Dual System: A U.S. Observer Reflects on a Strong VET System,” in Nancy Hoffman, ed., *Schooling in the Workplace* (Cambridge, MA: Harvard Education Press, 2011), 99.
- <sup>83</sup> Kathrin Hoeckel and Robert Schwartz, *Learning for Jobs OECD Reviews of Voca-*

*tional Education and Training*, (Germany: Organisation for Economic Co-Operation and Development, 2010), 10.

<sup>84</sup> National Association of State Directors of Career Technical Education Consortium, *Building Comprehensive Programs of Study through Progressive State Career Technical Education Legislation*, <http://www.careertech.org/legislation/briefs-papers.html> (August 2012).

<sup>85</sup> National Association of State Directors of Career Technical Education, *Components and Subcomponents of the POS Design Framework*, [http://cte.ed.gov/nationalinitiatives/POS\\_Framework\\_Components\\_and\\_Subcomponents2-24-10.doc](http://cte.ed.gov/nationalinitiatives/POS_Framework_Components_and_Subcomponents2-24-10.doc) (February 2010).

<sup>86</sup> National Association of State Directors of Career Technical Education, *Common Career Technical Core*, <http://www.careertech.org/career-technical-education/cctc/info.html> (August 2012).

<sup>87</sup> National Association of State Directors of Career Technical Education, *Common Career Technical Core FAQs*, <http://www.careertech.org/career-technical-education/cctc/info.html> (August 2012).

<sup>88</sup> <http://nces.ed.gov/pubs2008/2008035.pdf> (July 2008), 23.

<sup>89</sup> James J. Kemple and Cynthia J. Willner, *Career Academies: Long-Term Impacts on Labor Market Outcomes, Educational Attainment, and Transitions to Adulthood*, <http://www.mdrc.org/publications/482/overview.html> (August 2012).

<sup>90</sup> <http://www.mdrc.org/publications/482/overview.html>

<sup>91</sup> Minnesota Career and Technical Education, *Minnesota's New Direction*, [http://www.cte.mnscu.edu/MN\\_State\\_Plan/perkinsIV/MN\\_New\\_Direction.html#MN%20New%20Direction](http://www.cte.mnscu.edu/MN_State_Plan/perkinsIV/MN_New_Direction.html#MN%20New%20Direction) (August 2012).

<sup>92</sup> Center for Children & Technology, *STEM Pathways to College and Careers Schools: A Development Guide*, [http://citizenibm.com/wp-content/uploads/STEM-Pathways-Playbook\\_Feb-2012.pdf](http://citizenibm.com/wp-content/uploads/STEM-Pathways-Playbook_Feb-2012.pdf) (February 2012).

<sup>93</sup> [http://citizenibm.com/wp-content/uploads/STEM-Pathways-Playbook\\_Feb-2012.pdf](http://citizenibm.com/wp-content/uploads/STEM-Pathways-Playbook_Feb-2012.pdf)

<sup>94</sup> [http://citizenibm.com/wp-content/uploads/STEM-Pathways-Playbook\\_Feb-2012.pdf](http://citizenibm.com/wp-content/uploads/STEM-Pathways-Playbook_Feb-2012.pdf)

<sup>95</sup> Year Up, *About Year Up*, <http://www.yearup.org/about/main.php?page=aboutus> (August 2012).

<sup>96</sup> Cristo Rey Network, *Schools*, <http://www.cristoreynetwork.org/page.cfm?p=353> (August 2012).

<sup>97</sup> Cristo Rey Network, *University Partners*, <http://www.cristoreynetwork.org/page.cfm?p=366> (August 2012).

<sup>98</sup> Cristo Rey Network, *Work Study Program*, <http://www.cristoreynetwork.org/page.cfm?p=372> (August 2012).

<sup>99</sup> Project Lead the Way, *Our History*, <http://www.pltw.org/about-us/our-history> (August 2012).

<sup>100</sup> Project Lead the Way, *Our Programs*, <http://www.pltw.org/our-programs/our-programs> (August 2012).

- <sup>101</sup> Center on Education and Work, *Research Brief: Engineering the Math Performance Gap*, [http://www.cew.wisc.edu/docs/resource\\_collections/CEW\\_PTLW\\_Brief\\_UWMadison.pdf](http://www.cew.wisc.edu/docs/resource_collections/CEW_PTLW_Brief_UWMadison.pdf) (June 2009).
- <sup>102</sup> Project Lead the Way, *Fact Sheet*, <http://www.pltw.org/about-us/impact> (August 2012).
- <sup>103</sup> National Research Center for Career and Technical Education, *Math-in-CTE Research Study: Building Academic Skills in Context - Testing the Value of Enhanced Math Learning in CTE*, <http://www.nrccte.org/resources/studies/math-cte-research-study-building-academic-skills-context-testing-value-enhanced> (August 17, 2012).
- <sup>104</sup> Expeditionary Learning, *History*, <http://elschools.org/about-us/history> (August 2012).
- <sup>105</sup> Expeditionary Learning, *How We Work with Teachers and School Leaders*, <http://elschools.org/our-approach/teachers-school-leaders> (August 2012).
- <sup>106</sup> National Association of State Directors of Career Technical Education, *A Look Inside: A Synopsis of CTE Trends: A Four-Part Series Analyzing State CTE Data and Initiatives, Focus: Teacher and Faculty Shortage*, <http://www.careertech.org/legislation/briefs-papers.html> (November 2010).
- <sup>107</sup> Symonds, Schwartz and Ferguson, 26.
- <sup>108</sup> South Carolina Department of Education, *South Carolina Education and Economic Development Act Guidelines*, <http://ed.sc.gov/agency/ac/Career-and-Technology-Education/documents/EEDAGuidelines.pdf> (June 2006).
- <sup>109</sup> Personal Pathways to Success, *How It Works*, <http://www2.scpayways.org/howit-works.html#clusters> (August 2012).
- <sup>110</sup> ConnectEd: The California Center for College and Career, *Linked Learning Rubric*, [http://www.connectedcalifornia.org/linked\\_learning](http://www.connectedcalifornia.org/linked_learning) (August 2012).
- <sup>111</sup> ConnectEd California, *Rubric for Linked Learning Pathway Certification and Continuous Improvement*, <http://www.connectedcalifornia.org/app/webroot/uploads/files/certification/Certification%20Rubric.pdf> (October 2011).
- <sup>112</sup> Jobs for the Future, *Accelerating Opportunity: A Breaking Through Initiative*, <http://www.jff.org/projects/current/education/accelerating-opportunity/1251> (August 2012).
- <sup>113</sup> Washington State Board for Community & Technical Colleges, *Integrated Basic Education and Skills Training (I-BEST)*, [http://www.sbctc.ctc.edu/college/e\\_integratedbasiceducationandskillstraining.aspx](http://www.sbctc.ctc.edu/college/e_integratedbasiceducationandskillstraining.aspx) (August 2012).
- <sup>114</sup> Please see Appendix A for survey respondents.

## ACKNOWLEDGEMENTS

Civic Enterprises and IBM Corporation would like to thank Naima McQueen for her research assistance in the development of this report, Temeca Simpson for her assistance in this report's survey, Ronald Gordon for the editing of this work, and Kristie Swift for designing this report.

We are grateful to Opportunity Nation and also would like to thank the many individuals who generously gave their time to provide their insights, comments, and reflections on this report. They include Melody Barnes, Betsy Brand, Anthony Carnevale, Brenda Dann-Messier, Dr. Willard Daggett, Emily DeRocco, Senator Mike Enzi, Chester Finn, Domenic Giandomenico, Kimberly Green, Kati Haycock, Nancy Hoffman, JD Hoyer, Dane Linn, Cheryl Oldham, Hilary Pennington, Jane Polin, Sheri Ranis, Robert Schwartz, Anne Stanton, Bob Wise, and Nancy Zimpher.





IBM

CIVIC  
ENTERPRISES

