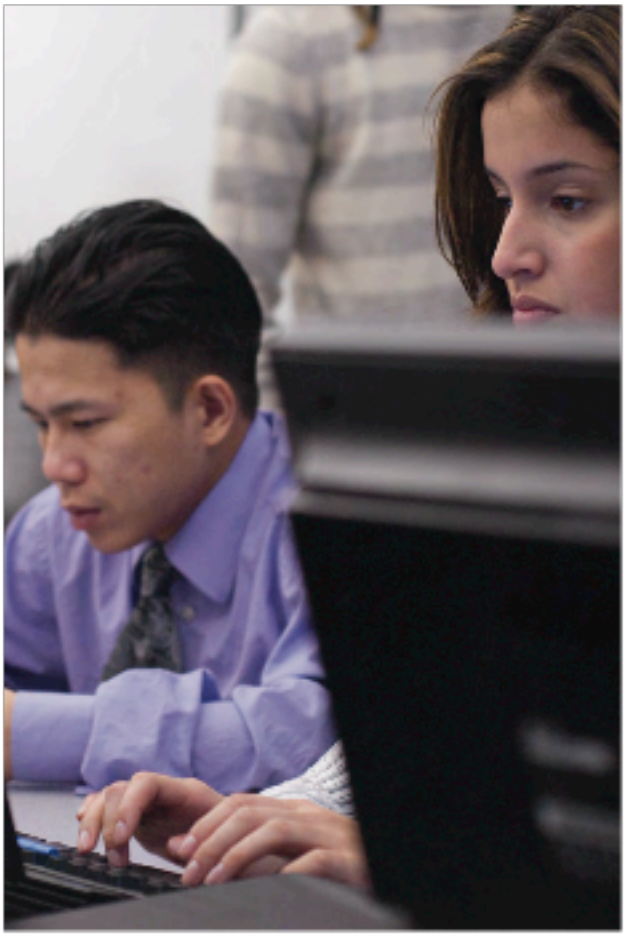

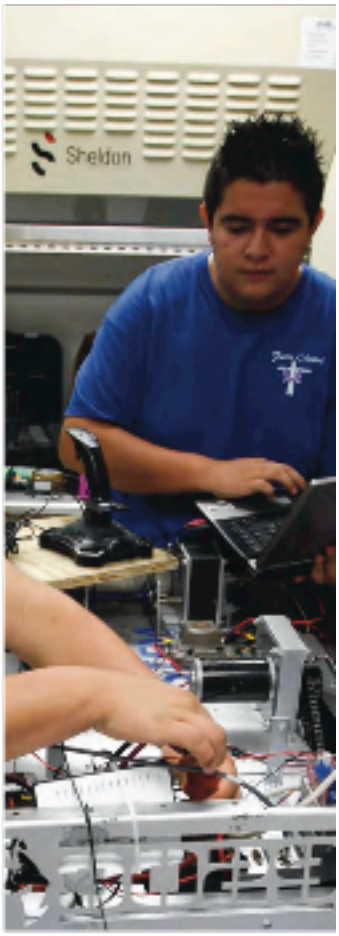

THE EVOLUTION AND POTENTIAL OF CAREER PATHWAYS

April 2015

The Evolution and Potential of Career Pathways

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The Purpose of this Paper

Career Pathways systems provide a framework for organizing and formally aligning the education, workforce, and supportive services needed by a wide range of individuals to attain the credentials required for family-suppoting careers. This paper provides a context for the increased attention that Career Pathways approaches have received in recent years—by examining the evolution and efficacy of pathways strategies for building a skilled workforce. The paper looks back nearly 30 years to examine prior initiatives that over time have contributed to the development of today's Career Pathways framework and initiatives.

Who Should Read the Paper?

The strategies highlighted in this paper, and the knowledge about how Career Pathways approaches have evolved, will be useful to state and local stakeholders (state and local officials, education and training providers, workforce and economic development leaders, employers, community-based organizations (CBOs), and others) who are interested in the establishment of comprehensive education and workforce development systems that help students, jobseekers and workers attain the competencies and credentials that are needed for high demand careers; and that provide employers with the skilled workers needed in high demand industries and occupations.

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Executive Summary

For years, U.S. policymakers and practitioners have expressed the need to equip America's current and future workforce with the education, skills, and credentials required by high-demand businesses and industries—so workers can achieve and maintain economic prosperity, employers can remain competitive, and the U.S. economy can continue to grow. One has only to look at the 8.6 million workers who remain unemployed in March 2015, even as the U.S. economy continues to rebound and employers actively seek skilled workers, to understand the urgency for these efforts.[1] Of equal concern are the 3.4 million young people, aged 16 to 24, who are looking for but cannot find work.[2]

On July 22, 2014, the United States took two game-changing actions that will move the nation toward addressing these concerns and achieving the above-described goals. Congress passed and President Obama signed into law the bipartisan Workforce Innovation and Opportunity Act (WIOA), which calls for cross-system alignment; education and training that is focused on the needs of high-demand industry sectors and occupations; regional collaboration focused on the skill needs of regional economies; and the establishment of Career Pathways systems that make it easier for all Americans to attain the skills and credentials needed for family-supporting jobs and careers.

On the same day, Vice President Biden issued the *Ready to Work: Job-Driven Training and American Opportunity* report, thereby laying out a vision for measuring the effectiveness of job-training programs and announcing an array of actions that can be taken, in combination with the new workforce law, to achieve the skilling of America's workforce.

To help states and local communities organize and carry out this challenging but necessary work, the U.S. Departments of Education (ED), Labor (DOL), and Health and Human Services (HHS) began to collaborate, even before the passage of WIOA and the issuance of the Vice President's report, on ways to align the resources and programs under their jurisdictions that support skills development in the U.S. Examining prior initiatives as well as current innovative practices, the three Departments identified a groundbreaking framework for developing and implementing Career Pathways systems in support of a skilled American workforce.

In April 2012, these same Departments issued a "joint commitment to promote the use of Career Pathways approaches as a promising strategy to help adults acquire marketable skills and industry-recognized credentials through better alignment of education, training and employment, and human and social services among public agencies and with employers."[3] At that time, the three Departments agreed upon a definition and a framework for the development of Career

Pathways, including the identification of Six Key Elements or actions that states and local communities can take to build Career Pathways systems.[4]

This framework and much of the work that is already underway in states and local communities has been built upon lessons learned in carrying out workforce education and training programs over the past 30 years. When looking at what has worked in career-related education and training programs historically, it becomes clear that a comprehensive Career Pathways systems approach holds significant promise for providing Americans with the skills and credentials needed for high-demand jobs and careers.

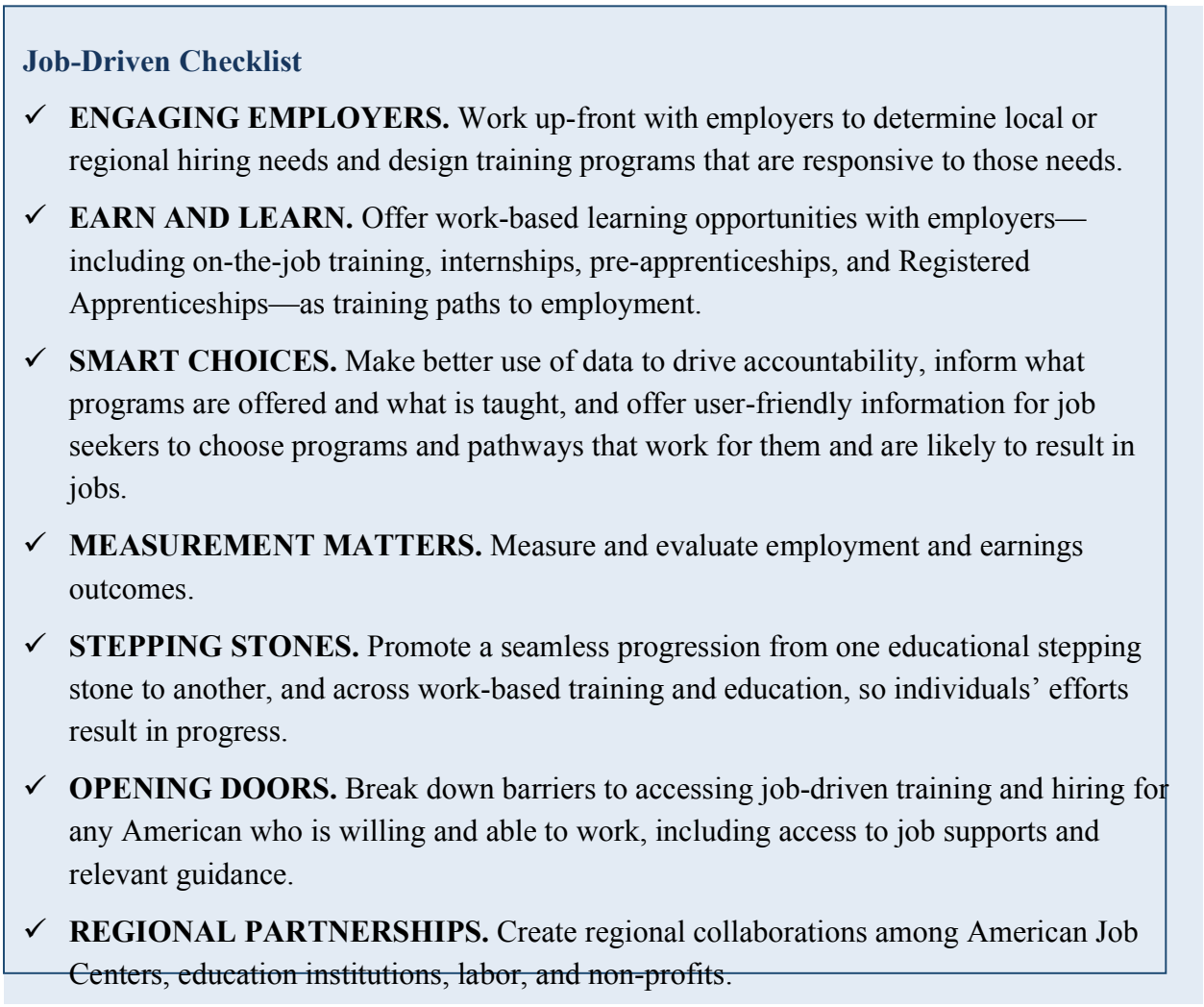
This paper provides context for the increasing emphasis on Career Pathways in recent legislation and in response to America's continuing need for a skilled workforce. It examines the evolution of Career Pathways approaches through a chronology of federal, state, and local workforce education and training efforts upon which today's Career Pathways efforts have been built. Most importantly, this paper identifies strategies and program components that have proven effective in helping individuals to persist in education and training and to attain credentials necessary for obtaining in-demand jobs. The strategies highlighted in this paper, and the knowledge about how Career Pathways approaches have evolved, will be particularly useful to state and local stakeholders as they work to develop and implement Career Pathways systems that move students, jobseekers, and workers most effectively and efficiently to valued credentials and careers.

I. Introduction

The U.S. economy continues to rebound with employment growth averaging 269,000 new jobs per month over the past 12 months.[5] By many accounts, the economic environment is ripe for employment expansion, yet employers continue to have difficulty finding the skilled workers needed for in-demand jobs; far too many Americans do not possess the skills or credentials required for such jobs. Of those Americans who lack the skills required for in-demand occupations, many do not know how or where to access the information, training, and credentials needed for these family-supporting careers.

In his *Ready to Work: Job-Driven Training and American Opportunity* report, Vice President Biden details specific actions that the United States can take to grow the economy and allow the American middle class to fully reap the benefits of the country's new economic opportunities.[6] These recommendations and related strategies are in large part based on evidence documented in an accompanying report on effective practices in the nation's job training programs: *What Works in Job Training: A Synthesis of Evidence*.[7] The findings from *What Works in Job Training* are organized in the Vice President's report as a job-driven checklist for use in determining the effectiveness of over 25 federal discretionary grant programs in the workforce education and training areas (Figure 1).

Figure 1. Job-Driven Checklist from *Ready to Work: Job-Driven Training and American Opportunity* Report.[8]



This checklist and other information on system innovations and evidence-based practices should help states and local communities drive systems change through implementation of WIOA.

WIOA, signed into law on July 22, 2014, encourages states and local communities to implement many of the practices described in *Ready to Work*. The Act requires:

- Cross-system alignment, strategic planning, performance measurement, and data collection/utilization
- A renewed focus on training for in-demand industry sectors and occupations
- Increased emphasis on the use of labor market information (LMI) to identify in-demand industries and occupations

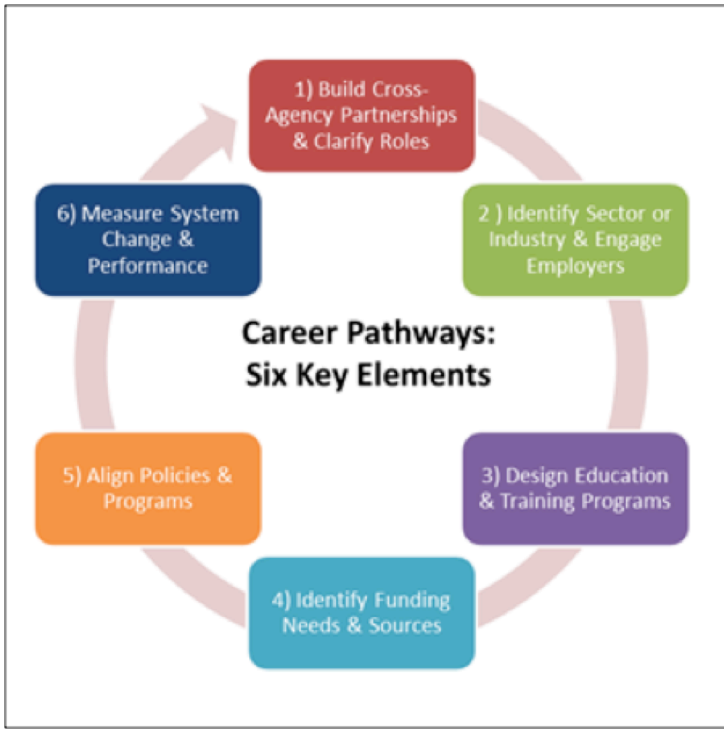
- Regional convening, collaboration, planning, and service delivery
- Local workforce boards to convene, facilitate, and leverage system stakeholders, which may include convening industry partnerships to guide sector-based training initiatives
- State and local workforce systems to connect with adult education, postsecondary education, and other partners—establishing Career Pathways that integrate basic and/or English language education with occupational training
- Increased services to out-of-school youth, requiring that 75 percent of youth funds be dedicated toward serving out-of-school youth, with an emphasis on Career Pathways approaches that provide connections with postsecondary education.

II. Joint Framework for Career Pathways Systems Development

To take full advantage of both the changes enacted in WIOA and the actions outlined in the Vice President's *Ready to Work* report, states and local communities must align the multiple federal, state, and local programs that prepare America's workforce. It will be important to build comprehensive education and training systems where students, jobseekers, and workers can receive: the information needed to pinpoint the careers they want to pursue; assistance to identify the most efficient routes to skills and credentials needed for those careers; and the education and support services needed to persist in and complete their programs of study and attain credentials for high-demand careers.

Career Pathways systems provide a framework for organizing and formally aligning the education, workforce, and supportive services needed to guide a wide range of individuals successfully through the continuum of education and training courses that are necessary for credential attainment and family-supporting careers.

Figure 2. Career Pathways: Six Key Elements.



In their work to provide guidance for the development and implementation of Career Pathways systems, the three Departments issued a joint commitment to the use of Career Pathways as a "promising strategy to help adults acquire marketable skills and industry-recognized credentials." They also agreed upon a framework for developing and implementing Career Pathways systems that included a definition of Career Pathways and the identification of "Six Key Elements" or actions that states and local communities can take to build Career Pathways systems.[9]

As defined in an April 12, 2012 letter from ED, DOL, and HHS, Career Pathways are "[a] series of connected education and training strategies and support services that enable individuals to secure industry-relevant certification

and obtain employment within an occupational area and to advance to higher levels of future education and employment in that area."[10]

The **Six Key Elements** identified in the joint framework are actions that states and local areas can take to develop and implement Career Pathways systems:

1. Build Cross-System Partnerships
2. Engage Employers/Identify Key Industry Sectors
3. Design Education and Training Programs that Meet the Needs of Participants
4. Identify Funding for Sustainability and Scale
5. Align Policies and Programs
6. Align Cross-System Data and Performance Measurement

There are obvious similarities between the Career Pathways Six Key Elements and the elements in the Vice President's Job-Driven Checklist. Both tools are built upon lessons learned over a number of years in carrying out career-related education and training initiatives, and both recognize the potential of a Career Pathways systems approach to meeting the education and training needs of America's workforce.

Figure 3. Comparison of Career Pathways: Six Key Elements and Job-Driven Checklist.

Career Pathways: Six Key Elements	Job-Driven Checklist:
1. Build Cross-System Partnerships 2. Engage Employers/Identifying Key Industry Sectors 3. Design Education and Training Programs that Meet the Needs of Participants 4. Identify Funding for Sustainability and Scale 5. Align Policies and Programs 6. Align Cross-System Data and Performance Measurement	✓ Regional Partnerships. ✓ Engaging Employers. ✓ Opening Doors: break down barriers, provide job supports and guidance. ✓ Earn and Learn: work-based learning, Pre- and Registered Apprenticeships. ✓ Stepping Stones: a seamless progression from one educational level to next. ✓ Smart Choices: better use of data to drive accountability, inform programs and pathways. ✓ Measurement Matters: measure and evaluate employment/earnings outcomes.

III. The Urgent Need for a Skilled Workforce

In a highly competitive global economy, America's economic future, the prosperity of its citizens, and the success of U.S. employers increasingly depend on the education and skills of the workforce. Yet the education and skill levels of American youth and adults are not keeping pace with today's economy or that of the future. And Americans' education and skill rankings have also declined when compared to other countries.

The percentage of U.S. jobs requiring postsecondary education and training is expected to reach a new high in 2020 at 65 percent.[11] The Center on Education and the Workforce (CEW) at Georgetown University projects that the United States will face shortages of three million workers with Associate's degrees or higher and five million workers with technical certificates and credentials by 2020.[12]

These findings are corroborated by three separate surveys carried out over the past three years, to determine if there actually is a skills gap in the U.S. labor market. The Manpower Group conducted a Talent Shortage Survey, finding that 48 percent of U.S. employers are having a hard time filling jobs.[13] In 2011 and 2012, Deloitte surveyed U.S. manufacturers, finding that two-thirds were experiencing a moderate to severe shortage of quality workers—with 600,000 jobs going unfilled—limiting expansion and productivity. Deloitte estimated that closing the skills gap in manufacturing and related industries could result in the employment of 3.85 million workers.[14] The most recent survey conducted by the Business Roundtable (BRT) found that of 126 Chief Executive Officers in the U.S. who participated in the survey: 97 percent report that the skills gap is a problem; 28 percent project that at least half of new entry-level hires lack basic STEM skills; and 62 percent report problems finding qualified applicants for IT jobs. The BRT survey also found that employers will need to hire nearly one million employees with basic STEM knowledge and more than 600,000 employees with advanced STEM knowledge in the next five years.[15]

At a time when "medium to high levels of mathematics and computational knowledge are required in 70 percent of all jobs," the 2013 OECD Programme for the International Assessment of Adult Competencies (PIAAC) study found that the United States ranked third from the bottom in mathematics when compared to other countries.[16] In literacy, the United States ranked below average on the PIAAC and on the National Assessment of Adult Literacy (NAAL), yet for 90 percent of jobs, reading comprehension is "very or extremely important to succeed."[17]

The PIACC study found that the gaps in performance persist from one generation to the next, there are large differences in performance between racial/ethnic groups in the U.S., and young people in the U.S. are not doing much better than older generations of Americans (nor are they keeping up with their peers internationally).[18] In OECD's 2012 Programme for International

Student Assessment (PISA), a study examining 15-year-old students' reading, mathematics, science skills, and cross-curricular competencies such as problem solving, U.S. students scored "in the middle," with scores stagnating over the last 10 years. While U.S. students, did not necessarily score lower than they had in prior years, they were overtaken by other countries in math, reading, and science.

So what impact are these deficits having on American workers, employers, and the U.S. economy? There is no question that skills deficits have an adverse impact on earnings. CEW estimates that postsecondary certificates result in a 27 percent earnings increase for men and a 16 percent earnings increase for women over high school diploma holders (these salary figures increase substantially when people work in their fields of certification). Occupational Associate's degrees yield an $8,000 increase annually for men and a $7,000 increase annually for women over high school diploma holders.[19] Despite the earnings benefits of credentials, approximately 35 percent of Americans over 25 do not have any postsecondary education or training, and U.S. sub-baccalaureate attainment is merely 16th among Organization for Economic Co-operation and Development (OECD) countries.[20]

To address these challenges, the PIAAC study recommended that the U.S. address its skills deficiencies through wide-ranging solutions, including strategies targeted to secondary institutions, community colleges, and employers. The OECD called upon community colleges to address young adults' basic skill needs, recommending improved "quality, coherence, and transparency" in postsecondary career and technical education to improve system efficacy.[21] It recommended the integration of basic skills instruction and career development, citing Washington state's Integrated Basic Education and Skills Training program (I-BEST) and a contextualized General Educational Development (GED) program, to improve learners' employment prospects, with jobs becoming "… springboard[s] for further learning and career development."[22] The OECD also endorsed integrated instruction at the secondary level, specifically citing the Math-in-CTE program[23]—mathematics lessons taught in a career and technical context, with collaboration between mathematics and Career and Technical Education (CTE) instructors—as an exemplar of effective integration. Additionally, the OECD encouraged employer-based basic skills education and training to address incumbent workers' needs.

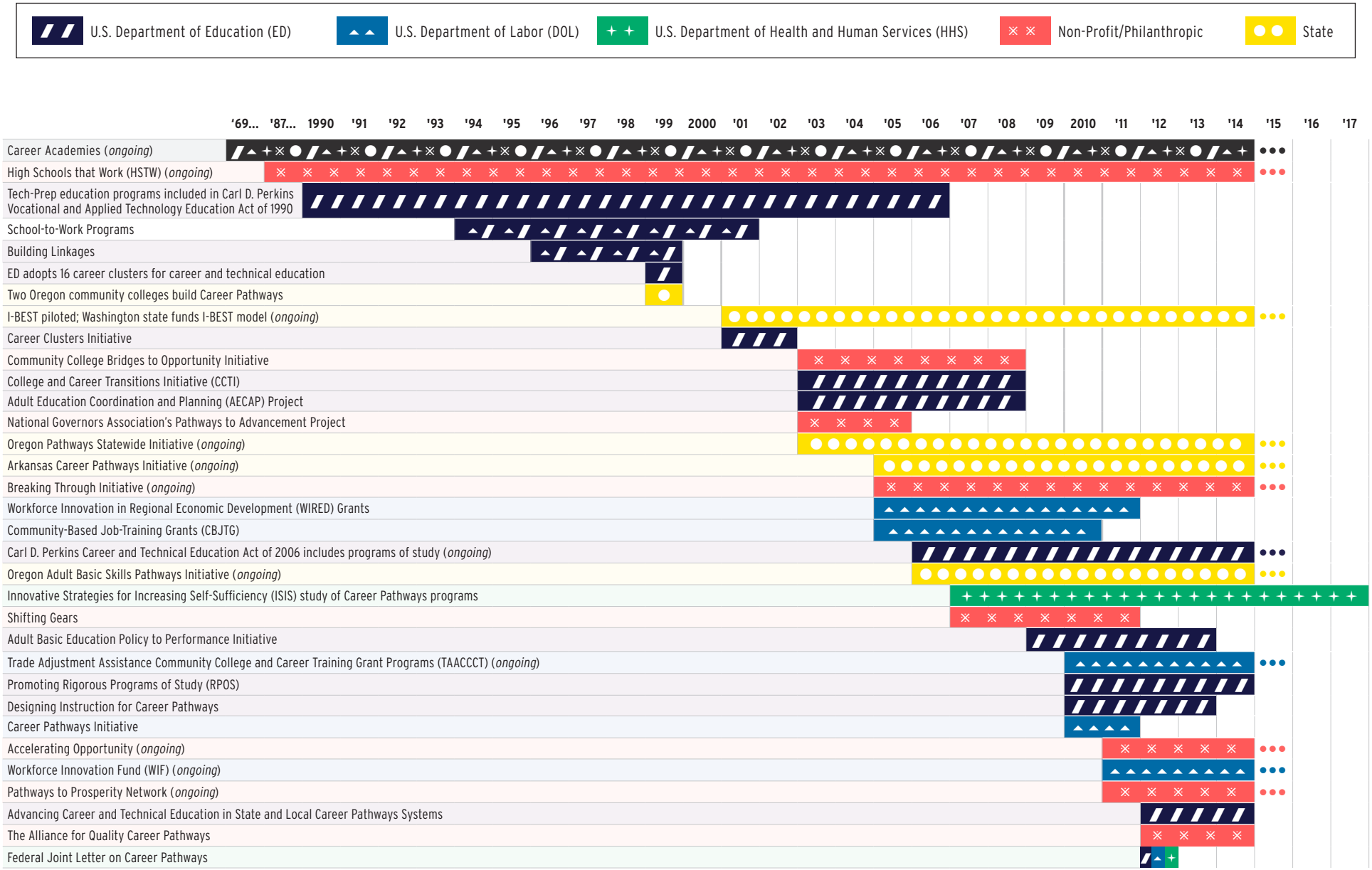
In response to concerns raised in the PISA and PIAAC studies and as the result of independent research and observations about the education and skills of America's current and future workforce, efforts are underway to identify and implement the systemic changes necessary to ensure that U.S. students, jobseekers, and workers will again rise to the top of the world's rankings for education, skills, and postsecondary credential attainment. The Career Pathways approach and its strategies for aligning and reforming education and training systems have been shown over time to be effective in helping a wide range of individuals attain the educational milestones, skills, and credentials required by employers in high-demand occupations.

IV. The Evolution of Career Pathways Systems

Today's Career Pathways initiatives are built upon lessons learned in carrying out workforce-related education and training programs over the past 30-plus years. In examining these programs, it is clear that the strategies that constitute today's Career Pathways approaches have evolved over time.

The timeline in Figure 4 presents many of the initiatives that have contributed to the development of Career Pathways systems in states and local communities and to the development of the joint framework. The earliest programs tested strategies for helping youth make successful transitions from secondary education to postsecondary education/training and employment (e.g., Career Academies, High Schools That Work, Tech-Prep, and School-to-Work). They aligned academic and occupational learning and worked closely with employers. Later programs focused on similar strategies for helping low-skilled adults attain postsecondary credentials and family-supporting employment (e.g., Breaking Through, Shifting Gears, Policy to Performance, and Accelerating Opportunity). These initiatives and more, which are described in greater detail in Appendix A, range in size, scope, and funding sources—leading the way for further state and local Career Pathways development.

Figure 4. Timeline of Milestones Leading to Current Career Pathways Systems.



To further show how initiatives in the timeline have evolved over time, Figure 5 summarizes major strategies carried out under these programs, leading to many of today's Career Pathways key elements and components. Many of these programs were the focus of evaluations that, while varying in type and rigor, have provided important information on participant outcomes. A number of these studies examined individual strategies to determine their impact on participants' success. Over time these efforts have informed the design of subsequent programs and helped federal agencies, states, and local areas to determine which portfolio of program options offer the most compelling outcomes.

Findings from the majority of these initiatives have shown that the most impressive gains were achieved by comprehensive, holistic approaches rather than stand-alone interventions. This has resulted in a call for systemic changes that would bring the resources and expertise of the education, workforce, human services, and economic development systems together, as well as the resources and expertise of system stakeholders (including employers), to improve U.S. students', jobseekers', and workers' labor market skills and educational attainment. Many of the individual strategies that were employed in earlier programs comprise the portfolio of strategies and services that constitute a Career Pathways systems approach to career-related education and training. These earlier lessons informed development of the joint framework for Career Pathways system development—most notably, the Six Key Elements. Lessons learned from this prior work, and from the strategies carried out and evaluated as shown in Figure 5, are summarized in the following Section V, which is organized around the Six Key Elements.

Figure 5. Strategies of Career-Related Education and Training Programs Over the Past 30-Plus Years.

V. Lessons Learned

Important lessons emerged from experiences on the ground and from evaluations of past programs. They have contributed significantly to the knowledge base regarding effective career-related education and training programs, and informed the development of the Career Pathways approach and Six Key Elements (as described below).

Holistic Approaches ⇒ Cross-System Partnerships

Siloed programs with different funding streams, governance, rules, and cultures are inefficient. Such incoherence decreases the likelihood that students will complete training, slows credential attainment, increases foregone earnings, increases program and student costs, and reduces the availability of quality workers for the labor market.[24] Collaboration among system partners has been a key strategy in most of the initiatives that have preceded today's Career Pathways efforts, though the degree of collaboration has varied across programs.

Building comprehensive Career Pathways systems in states and regions requires aligning multiple federal, state, and local programs and committing to systems change from public and private stakeholders (including employers, representatives of workers, and other key stakeholders). To succeed, states, localities/regions, and public and private partners must agree upon a common vision and goals for the system and identify the value-add that each partner brings to the table and receives from the partnership.

Systems-building strategies such as collaboration, system alignment, and course sequencing/articulation agreements were highlighted in a number of studies as important to program success. For example, the final report of the national Tech-Prep evaluation indicated that consortia improved educator collaboration and employer engagement. The evaluation highlighted a problem, however: despite 96 percent of Tech-Prep consortia having articulation agreements, merely 15 percent of students received articulated credit—in part due to the "diffuse and unstructured" implementation of Tech-Prep, which made a "seamless transition" to postsecondary education difficult.[25] This data informed recommendations for using programs of study that combine all the elements of Tech-Prep into a "structured" and "comprehensive" approach that could facilitate postsecondary transitions and be used for "whole school change."[26]

There were similar threads about the importance of comprehensive models in the national evaluation on School-to-Work (STW), supporting Programs of Study and Career Pathways.[27] Additionally, the STW report indicated that regional cooperation supported STW

implementation—especially related to employer communication, professional development, and developing common practices—and would support future "system-building efforts."[28]

The importance of regional collaboration has also been examined in evaluations of sector-based strategies,[29] as well as in the earlier implemented Workforce Innovation in Regional Economic Development (WIRED) initiative to advance regional labor market preparation where 80 percent of respondents collaborated regionally, though the degree varied across regions.[30] Regional collaboration is particularly important to meeting the skill needs of high-demand industry sectors and regional economies.

Employer Engagement and Responsiveness to Labor Market Needs/Sector Strategies

As much as collaborative partnerships have become critical to Career Pathways efforts, employer engagement is also recognized as essential to developing and implementing effective Career Pathways systems. Employers have played increasingly important roles in career-related education and training initiatives over time. Even before School-to-Work stressed partnering with employers in the mid-1990s, business and industry were recognized as important advisors for carrying out CTE and workforce programs. By 1998, the Workforce Investment Act viewed employers, for the first time, as customers of the nation's workforce system and equal in importance to system participants. In many of DOL's and ED's subsequent formula and discretionary grant initiatives, employers have been viewed as partners and customers of education and training programs.

Comprehensive Career Pathways systems are intended to encourage and expand the number of students, jobseekers, and workers who earn industry-recognized, postsecondary credentials that correspond to the skill needs of employers in high-demand industry sectors. As a result, Career Pathways systems involve employers and other stakeholders in: identifying the skills that are needed by high-demand employers; determining how students are deemed proficient in these skills; identifying the credentials that employers value in making labor market decisions; providing work-based learning opportunities for students; and identifying how to validate curricula and credentials. Employers should also be involved in the design of programs to ensure that curricula and instructional strategies are relevant and meet the needs of high-demand industries and occupations.

With funding from the Charles Stewart Mott Foundation, a rigorous study—the *Sectoral Employment Impact Study*—of sector-based training initiatives by Public Private Ventures (PPV) found in 2003 that participation in sector training initiatives resulted in improved consistency of employment, higher wages and hours worked, and greater attainment of jobs with benefits.[31]

Although some aspects of the programs varied, shared characteristics included targeting high-demand industry sectors; integrating technical, job readiness, and basic skills education; significant support services; and being nimble, modifying programs or curricula in response to changes in industry needs, funding, or partners' service availability.[32]

Program Design ⇒ Redesign

Program design in career-related education and training programs should promote student success and timely progress to completion, credential attainment, and entry into or progress within careers in high-demand, family-supporting occupations. Career Pathways should be flexible, non-duplicative, and accelerated—i.e., structured to accommodate the unique needs of youth and adults. Each educational level should be carefully articulated to the next, without duplication, and with effective academic supports, career supports, and counseling, particularly at points of entry and transition.

According to research conducted by the Community College Research Center (CCRC) at Columbia University, a "guided pathways approach"[33] improves student outcomes. This approach includes the following features:

- Create clear roadmaps to success that simplify students' choices
- Clearly define program learning outcomes that align with end goals
- Monitor student progress, providing frequent feedback and integrated supports [34]

These findings point to the need for well-defined pathways with sequenced courses that students select soon after enrollment.[35] And these recommendations are consistent with lessons learned in the programs and initiatives that have laid the groundwork for today's Career Pathways work.

Numerous state and local Career Pathways efforts—such as I-BEST; programs that were part of the Breaking Through and Shifting Gears initiatives; Accelerating Opportunity (AO); and a number of state CTE Programs—not only employ these strategies through a comprehensive approach to service delivery but have also been the focus of evaluations demonstrating the positive results of combined redesign strategies. The Breaking Through evaluation, for example, showed positive employment, credential attainment, and program completion outcomes as the result of accelerated learning, comprehensive supports for students, labor market payoffs, and aligned programs for low-skilled adults.[36] Similarly, the I-BEST evaluations demonstrated that participants had higher credit attainment, credential attainment, and greater earnings than other comparable, non-I-BEST students.[37] These findings support the I-BEST approach of integrating basic and occupational skills training, awarding college credit, team teaching (basic

skills and CTE), contextualized instruction, acceleration, and student supports—including courses that provide additional instruction and study skill development.[38]

These redesign strategies, along with participant-centered services and structural changes to programs (e.g., on- and off-ramps along pathways, modularized curricula, convenient class-times and locations, non-semester-based scheduling, and training in cohorts) have shown positive outcomes, especially when provided in combination.

Pursuit of Needed Funding, Sustainability, and Scale

The Career Pathways evolution demonstrates a move from discrete pilot programs to scaled impact, which is necessary over time for systemic change. For example, beginning in Washington as a pilot, I-BEST now operates across the state in every community college, providing on-ramps to employment-focused academic programs. In Oregon, Career Pathways also began as pilots in two community colleges, and now Career Pathways roadmaps exist in all Oregon community colleges. Similarly, the Breaking Through initiative funded program innovations at leadership colleges, then disseminated and implemented lessons learned through a broader set of learning colleges. The subsequent Accelerating Opportunity initiative built upon these approaches, aiming to serve 40,000 students in pathways with marketable, stackable credentials, and yielding 18,000 students with a credential and one-term of college credit.[39]

To sustain Career Pathways efforts and to take these initiatives to scale over time requires pursuing, leveraging, "braiding," and wisely using public and private funding. Because of declining federal, state, and local education and training investments, it is important that states and local communities become adept at seeking out nontraditional sources of funding—whether from private philanthropies, businesses, or resource contributions like increased full-time equivalent (FTE) and tiered funding strategies—and using those resources as the foundation for sustaining and scaling Career Pathways systems for youth and adults. However, even in these times of fiscal constraint, there are examples of states that have appropriated new funding for innovative CTE and Career Pathways efforts.

In 2012, Kansas initiated its *Excel in Career Technical Education Initiative* with the enactment of Senate Bill 155, providing free college tuition for high school students taking postsecondary technical education courses that lead to credentials in high-demand occupations in the state. The initiative also provides an incentive to school districts, a $1000 award for each student earning an industry-recognized credential in a high-demand occupation within six months of graduation. In the first full year of its implementation, Kansas experienced significant enrollment growth in postsecondary career technical education: a 58 percent increase in headcount and a 57 percent

increase in college credit hours earned over the previous year. Following graduation in May 2013, the program awarded 711 secondary students with industry-recognized credentials.[40] Kansas followed implementation of Senate Bill 155 with a similar initiative for adult students in designated Career Pathways programs.

Policy Change and Alignment

Each state and local area that is developing a comprehensive Career Pathways system has a unique set of statutory and administrative policies that affect their ability to align programs and achieve cross-system goals. Similarly, each participating state and local agency sets and/or oversees statutory requirements, rules, regulations, goals, performance measures, and policies that affect program funding.

There are numerous examples of states and individual initiatives that have pursued and adopted policy changes, enabling them to develop and expand Career Pathways systems. Some of the policy changes that have been pursued include: encouragement for dual and co-enrollment of students (providing college credit for students while they are still in high school or in adult education programs, respectively); articulation agreements that prearrange the acceptance of credit from one educational institution to the next (e.g., high school CTE coursework that counts toward college acceptance or for credit on a college transcript); increased flexibility in determining eligibility for state student aid to increase the availability of financial aid for postsecondary occupational coursework; and eliminating barriers to cross-system alignment.

Several initiatives have outlined processes for collecting and analyzing policy-related data to undergird large-scale system planning, including the Accelerating Opportunity and Policy to Performance[41] initiatives and the Career Pathways Technical Assistance Toolkit.[42]

Identifying and Implementing Cross-System Data and Accountability Systems

To measure the impact and ensure the quality and coherence of comprehensive Career Pathways systems, states must find ways to: collect, share, and utilize cross-system data; and measure performance for participants and for programs system-wide. Identifying appropriate cross-system outcome measures and holding partner programs accountable for making progress based on those measures will require developing structures and strategies for gathering and sharing quantitative and qualitative data across agencies and partners. Individual programs authorized under WIOA are required to use common measures for performance measurement going forward, but are not required to measure performance as a single system.

The Shifting Gears initiative focused not only on spurring systemic change through collaboration and new ways of thinking among its six participating states but also on the use of data to inform the states' work. All six states participating in the initiative gained a better understanding about the role that data plays in supporting program improvement and performance outcomes, but also recognized the complexities of building comprehensive State Longitudinal Data Systems.

All six states also learned about the infrastructure challenges and limitations in their capacity to analyze data once collected on transitions between adult basic education, workforce development programs, and community and technical college systems. The Shifting Gears initiative asked states to use data to improve completion rates for low skilled adults who were working to earn industry-recognized postsecondary credentials. The initiative recognized that wise use of data is critical for identifying and improving student outcomes, but also for correcting problems within education and training systems, especially at points of student transition.

To achieve greater data and performance measurement goals, Shifting Gears states worked to link and track the progress of participants in Adult Education, Postsecondary Education, and Workforce Development systems. Some states built their capacity to use Unemployment Wage (UI) record systems to track the employment and earnings of participating students and determine their longer-term employment and earnings outcomes. The states analyzed data, particularly at transition points, to determine strategies and benchmarks for helping students persist in and complete programs of study. They carried out "gap analysis"— better enabling them to better focus their education and training efforts on high-wage, high-demand industries that offer a better chance of providing jobs for low-skilled adults after completion of their education.[43]

The Shifting Gears initiative serves as a model for other Career Pathways systems about the importance of shared data and performance measurement while also providing examples of the challenges in this work.

VI. Going Forward

Today, the U.S. continues to explore new opportunities for augmenting and expanding career-focused learning, including expanded and better uses of technology for delivering course offerings, competency-based learning, awarding credit for prior learning, providing credit for non-credit coursework, and moving more training to the credit side of colleges so all coursework can be transcripted and counted toward higher credentials over time.

Public and private efforts are also underway to ensure that education and training programs fully meet the skill needs of employers in high-demand industries. A growing number of employers and industry associations are working with education and training stakeholders to identify the competencies and credentials that are needed in high-demand industry sectors. Toward these ends, DOL has worked in recent years to develop competency models for major industries and occupations that are aligned with its efforts to encourage sector-based education and training initiatives.[44] DOL has also aligned this work with ED's efforts to identify and build out career clusters, Programs of Study in CTE, as well as organize and codify the employability skills necessary for success in the labor market at all employment levels and in all sectors.[45] This promising work continues today and provides rich content for developing curricula and designing programs for Career Pathways systems.

Since the joint framework was developed in 2012, the interagency work group comprised of staff from ED, DOL and HHS has continued to work to provide guidance on the development of Career Pathways systems. In April 2014, the three Departments identified essential components of Career Pathways systems (Figure 6); and issued a *Request for Information on Adoption of Career Pathways Approaches*, generating public comments from a wide ranges of stakeholders who offered: descriptions of existing career pathways systems; information about the roles and responsibilities of career pathways partners; information about connections to economic development strategies; information about how pathways systems are funded; input on how participant outcomes are measured; and feedback about how providers ensure that pathways stay current with labor market trends, among other issues. This feedback can be found in the summary of responses to the Request for Information.[46]

Today, ED, DOL, and HHS are implementing new technical assistance and grant initiatives focused on helping states and local communities to build Career Pathways systems. These efforts test new ideas and innovations through pilot programs, encourage system alignment and policy changes, and build on evidence-based practices. DOL is in the process of revising its Career Pathways toolkit, originally published in September 2011. Career Pathways system development efforts are also expanding far beyond the work of the three Departments.

Across the country, states and local communities are trying to respond to employers' increased demands for academic, employability, and technical skills from the current and future workforce. But this is occurring at a time of limited public resources, constraining the expansion of programs and service offerings.

The newly enacted WIOA emphasizes program alignment, business engagement, training for in-demand industry sectors and occupations, establishing Career Pathways systems, and developing cross-system data and performance measurement systems. The Vice President's *Ready to Work* report

Figure 6. Career Pathways: Essential Components

In April 2014, the U.S. Departments of Education, Labor, and Health and Human Services, through an interagency working group, identified the components that Career Pathways systems should include:

- Aligning systems: secondary, postsecondary, and workforce development
- Rigorous, sequential, connected, and efficient coursework that connects basic education and skills training and integrates education and training
- Multiple entry and exit points
- Comprehensive support services, such as career counseling, childcare, and transportation
- Financial supports or flexibility to accommodate the demands of the labor market in order to allow individuals to meet their ongoing financial needs and obligations
- Active engagement of business in targeted industry sectors that aligns with the skill needs of industries important to the local, regional, and/or state economies
- Appropriate curriculum and instructional strategies that make work a central context for learning and work-readiness skills
- Credit for prior learning and adopting other strategies that accelerate the educational and career advancement of the participant
- Organized services to meet the particular needs of adults, including accommodating work schedules with flexible and non-semester-based scheduling, alternative class times and locations, and the innovative use of technology
- A focus on secondary and postsecondary industry recognized credentials, sector-specific employment, and advancement over time in education and employment within that sector
- A collaborative partnership among workforce, education, human service agencies, business, and other community stakeholders to manage the system

provides an action plan for making America's workforce and training system more job-driven, integrated, and effective. Both call on states and local communities to "fundamentally rethink the pathways to well-paying, middle-class jobs, and open those pathways to all Americans"[47] while recognizing that there are many successful efforts and programs already underway across the country on which we can and should build. When looking at what has worked in career-related education and training programs over the years, it becomes clear that a comprehensive Career Pathways systems approach holds significant promise for providing Americans with the skills and credentials needed for high-demand jobs and careers.

Appendix A: Snapshots of Career-Related Education & Training Programs

The following are examples of federal, state, and local workforce education and training efforts around which today's Career Pathways efforts have been built.

Career Academies

Summary Table

Name of Program (timeline)	Career Academies (1969–Present)
Targeted Population	High school students
Major Purpose of Program	The program stresses small learning communities that combine academic and technical curricula around a career theme.
Partners	Secondary and postsecondary education systems and employers
Funding Source(s)	Existing state and local funding Nonprofit/philanthropy
Notable Achievements/Outcomes	Evaluation showed a substantial earnings advantage for male students in Career Academies; Career Academies can meet students' dual needs for academic and labor market preparation.[48]
For Further Information (website or publication)	http://www.mdrc.org/project/career-academies-exploring-college-and-career-options-ecco#featured_content

The high school reform model known as Career Academies began with establishment of the first academy in Philadelphia in 1969, and has expanded since that time to over 2,500 Career Academies across the United States today. This high school reform strategy stresses small learning communities that combine academic and technical curricula around a career theme. The

Manpower Demonstration Research Corporation (MDRC) began a rigorous, scientific evaluation of the initiative in 1993 that has informed the field and later program development.

In its evaluation, MDRC noted that Career Academies feature: small learning communities, combining academic skills and technical curricula associated with a career; employer partnerships; and an objective of improving students' active participation in learning and transitions to the workforce and/or postsecondary education.[49] Lessons learned through Career Academies can be seen throughout the later development of CTE's Tech-Prep, School-to-Work, High Schools That Work, and other later CTE initiatives—all linking secondary and postsecondary programming, aligning academic and occupational learning, and working closely with employers.

MDRC's evaluation of Career Academies was a 15-year random assignment study, tracking approximately 1,400 students. The study found that Career Academies substantially increased earnings—to a statistically significant degree for men but not women—with a nearly $17,000 earnings advantage for Career Academies students over eight years, as compared with students not enrolled in Career Academies. Men posted an even greater "real earnings" advantage—a staggering $30,000 over eight years (incorporating wage, hours, and employment stability). The study noted that Career Academies were a "viable pathway to a range of postsecondary education opportunities," and were equivalent to other non-academy alternatives. The study also found that Career Academies can prepare students with labor market skills leading to earnings gains while simultaneously meeting colleges' academic entry demands. The study recognized, however, the difficulty of implementing Career Academies "on a large scale with high levels of fidelity [to the program model]."[50]

Southern Regional Education Board, High Schools That Work

Summary Table

Name of Program (timeline)	Southern Regional Education Board, High Schools That Work (HSTW) (1987–Present)
Targeted Population	High school and postsecondary students
Major Purpose of Program	HSTW is designed to enhance students' college and career preparation through a rigorous academic and technical course of study.
Partners	State and local K-12 and postsecondary education systems; employers
Funding Source(s)	Nonprofit/philanthropy
Notable Achievements/Outcomes	Correlation between academic achievement and extensive HSTW model implementation, completion of rigorous courses, and students' perceptions of teacher collaboration.[51]
For Further Information (website or publication)	http://www.sreb.org/page/1078/high_schools_that_work.html

HSTW, while not federally sponsored, is closely aligned with Career Academies, School-to-Work and other secondary education reform efforts that focus on enhancing secondary students' transition to college and careers. HSTW provides a rigorous academic and technical course of study (reducing the need for postsecondary remediation) along with comprehensive program design elements (e.g., high expectations, dual enrollment, work-based learning, active learning, student supports, exposure to careers, teacher collaboration, and a continuous improvement approach).[52] Students choose a concentration, academic or career/technical, the latter consisting of at least four courses that integrate literacy and math and are linked to employer certifications or postsecondary credentials. HSTW encourages schools to use the senior year for an intensive focus on postsecondary preparation—coursework that reflects postsecondary standards, enables students to earn postsecondary credits through dual enrollment and other approaches, or career preparation that allows students to enroll in industry-approved programs in which they can earn postsecondary credentials.[53]

A study of HSTW found a correlation between academic achievement and: 1) completion of rigorous English/language arts and mathematics courses, 2) more frequent discussions with a counselor/teacher about high school courses, and 3) students' perceptions that academic/CTE teachers collaborated. [54] Additionally, students at high-implementation HSTW schools (those with the highest presence of HSTW model elements based on student reports) have greater academic achievement in core subjects, as compared with students in low-implementation HSTW schools.[55] The HSTW school improvement framework is based on the belief that most students can master complex academic and technical concepts if schools create an environment that encourages them to make the effort to succeed.

A major focus of HSTW is high-quality CTE, including a new initiative called Advanced Career (AC), focused on mastery of the Common Core State Standards as part of authentic projects that are meaningful to students. As part of this initiative, HSTW is partnering with a 12-state consortium where each state is developing a four-course sequence of study around a career area(s) it has identified as important to its economic development and for which there is a growing demand. Key elements of the initiative include: application-based learning of essential academics in reading, writing, mathematics, and science, and of rigorous technical content; contextual curriculum mapped to college- and career-readiness standards; authentic, project-based scenarios that ground students in the real-world use of technical and academic knowledge; teacher training designed to prepare teachers to implement rigorous CTE courses with embedded academics; curricula that incorporates engaging instruction, guidance, and advisement; and summative assessment of academic and technical knowledge and skills.[56]

Tech-Prep

Summary Table

Name of Program (timeline)	Tech-Prep (1990–2006)
Targeted Population	High school and postsecondary students
Major Purpose of Program	Tech-Prep was intended to link secondary and postsecondary education through a "sequential course of study" that aligned technical skills attainment with core academic subjects, resulting in Associate's degrees, certificates or four-year degrees.
Partners	State and local secondary and postsecondary CTE systems
Funding Source(s)	U.S. Department of Education
Notable Achievements/Outcomes	The national Tech-Prep evaluation found that: 19 percent of Tech-Prep high school graduates continued into an articulated community college program; curriculum improvements were made; and articulation agreements were developed in 96 percent of consortia.[57]
For Further Information (website or publication)	http://www2.ed.gov/programs/techprep/index.html

The Tech-Prep Education Act first appeared in the Carl D. Perkins Vocational and Applied Technology Education Act of 1990. It provided funding to consortia of local educational agencies and postsecondary educational institutions to develop and operate Tech-Prep programs. Tech-Prep was intended to link secondary and postsecondary education through a "sequential course of study" that aligned technical skills attainment with core academic subjects, resulting in Associate's degrees, certificates, or four-year degrees.[58] Secondary and postsecondary articulation agreements, institutional linkages, sequencing, and dual credit (where high school students take postsecondary classes for college credit) began in Tech-Prep.

The final report of the national Tech-Prep evaluation in 1998 found that Tech-Prep yielded important benefits in many communities including: increased emphasis on counseling and career guidance, curriculum improvement, and articulation between secondary and postsecondary CTE.

The evaluation further noted that Tech-Prep: opened new lines of communication and opportunities for professional development for teachers on successful practices; focused academic classes more on problem solving and applied contextual learning; increased employer contact with schools; and brought attention to the need for an increased focus on math and science for CTE students. The evaluation found, however, that the flexibility Congress afforded to local consortia on how to implement Tech-Prep programs resulted in many local areas implementing individual elements of Tech-Prep rather than the intended combination of elements. A primary recommendation from the final report was that Tech-Prep should be implemented as a structured program of study that would include the combination of elements.[59]

Tech-Prep Definition

Section 203(c) of Perkins IV states that a "tech-prep program" includes a program of study carried out under an articulation agreement between the participants in the consortium that:

- Combines a minimum of two years of secondary education (as determined under state law) with a minimum of two years of postsecondary education in a non-duplicative, sequential course of study, or an apprenticeship program of not less than two years following secondary education instruction
- Integrates academic and career and technical education instruction, and utilizes work-based and worksite learning experiences where appropriate and available
- Provides technical preparation in a career field, including high-skill, high-wage, or high-demand occupations
- Builds student competence in technical skills and in core academic subjects (as defined in section 9101 of the Elementary and Secondary Education Act of 1965), as appropriate, through applied, contextual, and integrated instruction, in a coherent sequence of courses
- Leads to technical skill proficiency, an industry-recognized credential, a certificate, or a degree, in a specific career field
- Leads to placement in high-skill or high-wage employment, or to further education
- Utilizes career and technical education programs of study, to the extent practicable

School-To-Work

Summary Table

Name of Program (timeline)	School-to-Work (STW) (1994–2001)
Targeted Population	High school students
Major Purpose of Program	Integrating academic and technical education and work-based learning; engaging employers as partners; sequenced coursework linking secondary and postsecondary studies; expanding students' career knowledge; improving students' preparation for "high-skill, high-wage" jobs; and supporting states to develop school-to-work transition systems rather than discrete programs.
Partners	State and local secondary and postsecondary education systems, workforce systems, and employers
Funding Source(s)	U.S. Department of Education U.S. Department of Labor
Notable Achievements/Outcomes	School-to-Work students were found to have multiple measures of positive academic, persistence, and career outcomes.[60] The *Report to Congress on the National Evaluation of School-to-Work Implementation,* issued in 1999, indicated that some STW programs used "career pathways guidance tools" or charts: STW partnerships listed clusters of careers with pathways, relevant courses, and postsecondary programs/majors, thereby increasing students' awareness of careers and the requisite steps to pursue career interests. Multi-district partnerships increased employer engagement and communication. Additionally, regional cooperation through Tech-Prep consortia (one-quarter of STW partnerships overlapped with Tech-Prep consortia) or Workforce Investment Boards was a suggestion for supporting "system-building efforts."[61]

For Further Information (website or publication)	http://www2.ed.gov/pubs/Biennial/95-96/eval/410-97.pdf http://files.eric.ed.gov/fulltext/ED430094.pdf

Like Tech-Prep, the School-to-Work Opportunities Act of 1994 sought to link secondary students to careers and postsecondary education. The U.S. Departments of Education and Labor administered this initiative jointly.

Select goals of School-to-Work included: integrating academic and technical education and work-based learning; engaging employers as partners; sequenced coursework linking secondary and postsecondary studies; expanding students' career knowledge; improving students' preparation for "high-skill, high-wage" jobs; and supporting states to develop school-to-work transition *systems* rather than discrete programs.[62,63]

A 2001 research report commissioned by the National School-to-Work Office summarized evaluation and study findings on School-to-Work. Students were found to: maintain good grades; take challenging courses; have better attendance than comparable students; stay in and complete high school (including those who were thought to be "at risk" of dropping out of school or having other negative consequences); be just as likely if not more so to attend college; choose majors early in their college careers; define their career interests and goals; participate in higher quality work-based learning experiences; and have better long-term labor market outcomes than comparable students.[64] The 1999 report to Congress indicated that some STW consortia were involved in developing and offering students career cluster tools to inform course taking and career choices.[65]

School-to-Work Transition System Requirements

"School-based learning, including a coherent multiyear sequence of integrated academic and vocational instruction—involving at least two years of secondary education and one or two years of postsecondary education—tied to occupational skill standards and challenging academic standards.

Work-based learning, providing students with workplace mentoring and a planned program of work experience linked to schooling.

Connecting activities, to ensure coordination of work- and school-based learning components by involving employers, improving secondary-postsecondary linkages, and providing technical assistance."

(http://www2.ed.gov/pubs/Biennial/95-96/eval/410-97.pdf)

Building Linkages

Summary Table

Name of Program (timeline)	Building Linkages (1996–1999)
Targeted Population	High School and Postsecondary Students/Employers
Major Purpose of Program	Connected state academic standards with industry skill standards for occupations, preparing students for postsecondary education and employer expectations, and furthering "industry-endorsed portable certificates."
Partners	Secondary and postsecondary education and employer groups in manufacturing and health
Funding Source(s)	U.S. Department of Education U.S. Department of Labor
Notable Achievements/Outcomes	Creation of model career cluster standards and pathways that formed the foundation for the Career Clusters Initiative.
For Further Information (website or publication)	www.league.org/league/projects/ccti/files/CCTI_Pathway_Book.pdf

The Building Linkages project, funded by the Departments of Education and Labor, connected state academic standards with industry skill standards for occupations, preparing students for postsecondary education and employer expectations, and furthering "industry-endorsed portable certificates."[66,67] Additionally, the Building Linkages project "used career pathways as an organizational tool to connect skill standards [and] as an educational tool . . . to increase the integration of standards, for both academics and industry, and provide a base to organize curricula, instruction, and assessments."[68] Building Linkages developed model career cluster standards and pathways—through collaboration among secondary/postsecondary education and employer groups—for manufacturing and health.[69,70]

Career Clusters Initiative

Summary Table

Name of Program (timeline)	Career Clusters Initiative (2001–2002)
Targeted Population	CTE Students/Employers
Major Purpose of Program	The Office of Career, Technical, and Adult Education (OCTAE) funded Oklahoma and the National Association of State Directors of Career and Technical Education Consortium (NASDCTEc) to compile all occupations into the 16 career cluster framework and create employer- and postsecondary-validated standards for the clusters.[71]
Partners	State CTE systems, NASDCTEc
Funding Source(s)	U.S. Department of Education
Notable Achievements/Outcomes	Identifying 16 career clusters used for developing programs of study in CTE and for developing employer- and postsecondary-validated standards for those clusters.
For Further Information (website or publication)	http://www.careerclusters.org

In 1999, OCTAE recognized the 16 career clusters, some of which were developed through Building Linkages.[72] Subsequently, it sought a framework for skills development and academic/technical content within the career clusters.[73] Accordingly, OCTAE funded Oklahoma and the National Association of State Directors of Career and Technical Education Consortium (NASDCTEc) to compile all occupations into the 16-career cluster framework and create employer- and postsecondary-validated standards for the clusters.[74] The knowledge and skills were organized into "foundation standards": the shared knowledge and skills for all occupations in a career cluster and more specific "pathway standards" for particular careers within the cluster.[75] In many states and localities, these standards continue to drive the instructional content and course sequencing of modern CTE programs. NASDCTEc has reorganized the foundation skills standards from the 16 clusters and 79 pathways into the new Common Career Technical Core, a framework that includes "Career Ready Practices" for clusters and pathways.[76]

Pathways to Advancement Project

Summary Table

Name of Program (timeline)	Pathways to Advancement Project (2003–2005)
Targeted Population	Low-skilled, working adults
Major Purpose of Program	Increase low-skilled working adults' attainment of postsecondary credentials.
Partners	Adult and postsecondary education (and to varying degrees workforce and human services) systems in Arkansas, Hawaii, Kansas, Maine, Massachusetts, Michigan, Ohio, and Oregon
Funding Source(s)	Lumina Foundation
Notable Achievements/Outcomes	Policy changes in the states included developing Career Pathways, aligning workforce education and economic development policy, linking adult and postsecondary education, and using LMI to drive policy and program changes.[77]
For Further Information (website or publication)	http://www.nga.org/cms/home/nga-center-for-best-practices/center-publications/page-edu-publications/col2-content/main-content-list/the-pathways-to-advancement-proj.html

The mission of the National Governors Association's (NGA) Pathways to Advancement project, supported by the Lumina Foundation for Education, was to increase low-skilled working adults' attainment of postsecondary credentials. States conducted data and policy analyses, and used this information to drive decisions on policy and program changes.[78] States received technical assistance from NGA and experts in the field.

Policy changes in the states included developing Career Pathways, aligning workforce education and economic development policy, linking adult and postsecondary education, and using LMI to drive policy and program changes.[79] For example, Arkansas developed its Career Pathways program using TANF funds, and Oregon (see: Career Pathways Efforts in Oregon) established a Statewide Pathways Initiative to expand its Career Pathways offerings.[80] The project modeled

the type of state-level analysis of data and policies that provide the foundation for creating Career Pathways systems.

The Community College Bridges to Opportunity Initiative

Summary Table

Name of Program (timeline)	The Community College Bridges to Opportunity Initiative (2003–2008)
Targeted Population	Low-skilled adults
Major Purpose of Program	To improve the education and training of low-skilled adults by addressing the policy and systemic barriers to alignment.
Partners	Adult and postsecondary education systems in Colorado, Kentucky, Louisiana, New Mexico, Ohio, and Washington
Funding Source(s)	Ford Foundation
Notable Achievements/Outcomes	The initiative led to several outcomes, including I-BEST, regional Career Pathways, and significant legislative action in three states to improve system alignment.[81]
For Further Information (website or publication)	http://www.fordfoundation.org/pdfs/library/Bridges_to_Opportunity_for_Underprepared_Adults.pdf

The Ford Foundation funded Bridges to Opportunity to improve education and training for "underprepared adults," including the current workforce, and to improve employment opportunities by removing "systemic barriers to success."[82] The initiative's model elements included: implementing policy changes that encouraged community colleges to align Adult Basic Education, occupational, and college-level programs, and offer requisite support services; using data on student outcomes to drive policy and program changes; and advancing strong leaders to drive policy innovation.[83]

The initiative led to several significant outcomes, including the development of: I-BEST in Washington; Kentucky's regional Career Pathways, forged by partnerships with education, Workforce Investment Boards, social services and employers; and significant legislative action in Ohio, Louisiana, and Washington that "improved alignment within and across programs, services, and education levels in order to break down barriers to advancement and create clearer paths to educational and economic advancement for students and a pipeline of qualified workers for employers."[84] Like the Pathways to Advancement project, Bridges to Opportunity helped

participating states forge the policy frameworks necessary to build and implement Career Pathways systems that aligned programs and services.

Career Pathways Efforts in Oregon

Summary Table

Name of Program (timeline)	Oregon's Career Pathways Efforts (1999–Present)
Targeted Population	Low-skilled working adults
Major Purpose of Program	Increase low-skilled working adults' attainment of postsecondary credentials and employment in high-demand industry sectors.
Partners	Adult and postsecondary education and workforce systems
Funding Source(s)	Private philanthropy NGA Pathways to Advancement project Combined federal and state WIA and Perkins resources
Notable Achievements/Outcomes	Oregon developed Career Pathways programs in every community college, with "chunked" stackable credentials (with labor market value); roadmaps showing pathways in every college; and pathways for low-skilled adults leading from Adult Education to Postsecondary credential attainment.[85]
For Further Information (website or publication)	www.MyPathCareers.org/cp

Following the initial efforts of three community colleges and spurred on by the state's involvement in the Pathways to Advancement project, Oregon founded the Oregon Pathways Statewide Initiative in 2003, focusing on degree and certificate attainment in high-demand occupations. In 2005, all colleges developed "pathways action plans" to implement the Career Pathways approach in their institutions. In 2006, Oregon began a similar approach specifically aimed at low-skilled adults (rather than community college students more generally), founding the Oregon Pathways for Adult Basic Skills Transition to Education and Work Initiative. OPABS aimed to improve the transition to postsecondary education and training, offering accelerated, contextualized basic skills courses, and individual learner "courses of study."[86]

Between 2004 and 2012, Oregon built an extensive infrastructure of more than 350 web-based career pathway “roadmaps” showing students and jobseekers how to access and pursue pathways that lead to postsecondary credentials and high-demand employment.

Career Pathways Efforts in Washington (I-BEST)

Summary Table

Name of Program (timeline)	Integrated Basic Education and Skills Training Program (I-BEST) (2001–Present)
Targeted Population	Low-skilled adults
Major Purpose of Program	Increase low-skilled adults' attainment of postsecondary credentials and high-demand industry employment.
Partners	State and local adult and postsecondary education systems (and to varying degrees, workforce systems)
Funding Source(s)	Private philanthropy (e.g., Bridges to Opportunity initiative) Combined federal and state Perkins, WIA, and other resources
Notable Achievements/Outcomes	Integrating ABE/ESL instruction and occupational skills training linked to college credit and credentials; resulting in significant participant credential attainment and wage increases. Replication of I-BEST model is on-going around the country
For Further Information (website or publication)	http://www.sbctc.ctc.edu/college/e_integratedbasiceducationanddskillstraining.aspx

Washington's Career Pathways development work began in 2001 in response to: enrollment projections that showed a significant increase the number of students who needed Adult Basic Education (ABE) and English as a Second Language (ESL) services in the state and a recognition that these individuals would need postsecondary education to obtain good jobs.[87]

Through its involvement in the previously described Bridges to Opportunity initiative, Washington: identified systemic barriers to low-skilled adults' entry into and completion of programs linked to credentials and employment; urged community colleges to develop programs to tackle these obstacles; and promoted systemic improvement through policy change.[88] A study of Washington's adult basic skills students showed that those who earned one year of college credit and a credential (the "tipping point") saw substantial wage increases. These findings spurred the creation of a pilot of Integrated Basic Education and Skills Training (I-BEST).[89]

I-BEST offered integrated ABE/ESL instruction and occupational skills linked to college credit and certificates. The 2004-2005 I-BEST pilot demonstrated positive impacts on credit receipt and completion of workforce training programs, leading the Washington legislature to approve nearly $5 million to expand I-BEST in 2007.[90] Washington's Career Pathways approach began with program changes to address obstacles for low-skilled adults; created pilots to test for outcomes; and shared outcomes information statewide and with policymakers in order to scale and build policy support for the program.

Today, the I-BEST program is operating in all of Washington's 34 community and technical colleges, serving more than 3,000 students each year. There are more than 170 approved programs, expanding each year since the 2006 launch of the statewide I-BEST program. State Board staff members provide colleges with technical assistance and information on best practices to ensure low-income students successfully complete integrated programs and find careers with a family-supporting wage.

Research conducted by the Community College Research Center (CCRC) and the Workforce Training and Education Coordinating Board found that I-BEST students outperform similar students enrolled in traditional basic skills programs. They found that I-BEST students are:

- Three times more likely to earn college credits
- Nine times more likely to earn a workforce credential
- Employed at double the hours per week (35 hours versus 15 hours)
- Earning an average of $2,310 more per year than similar adults not in I-BEST[91]

In January 2013, the Washington State Board for Community and Technical Colleges conducted a return on investment analysis of I-BEST, finding that "I-BEST Tipping Point Completers gain an annual ROI of 12.4 percent per year, more than three times greater than a traditional investment, reflecting substantial increases in students' earnings."[92]

College and Career Transitions Initiative

Summary Table

Name of Program (timeline)	College and Career Transitions Initiative (CCTI) (2003–2008)
Targeted Population	Community colleges
Major Purpose of Program	Programs provided templates outlining academic and CTE course sequences in Career Pathways including details for dual-enrollment.
Partners	Secondary and postsecondary CTE systems in Anne Arundel Community College (MD), Central Piedmont Community College (NC), Corning Community College (NY), Fox Valley Technical College (WI), Ivy Tech Community College of Indiana (IN), Lehigh Carbon Community College (PA), Lorain County Community College (OH), Maricopa Community College (AZ), Miami Dade College (FL), Northern Virginia Community College (VA), Prince George's Community College (MD), San Diego Miramar College (CA), Sinclair Community College (OH), Southwestern Oregon Community College (OR), St. Louis Community College (MO)
Funding Source(s)	U.S. Department of Education
Notable Achievements/Outcomes	Fifteen community college partner sites saw decreased remediation rates and increased postsecondary entrance and persistence rates.[93] The fifteen colleges expanded to include hundreds of colleges in the CCTI Network, focused on high school-to-college transitions.
For Further Information (website or publication)	http://www.league.org/league/projects/ccti/network/index.htm

In 2003, OCTAE and the League for Innovation in the Community College began CCTI with 15 community colleges partnering with high schools, employers, and some four-year colleges to develop model pathways from secondary through postsecondary education.[94] CCTI sites created Career Pathways program of study plans, with courses sequenced from ninth grade through two

years of postsecondary education and focused on a particular career cluster and aligned with cluster standards, high school graduation and college entrance requirements.[95, 96] Students appeared to have lower remediation rates than a national sample of students and persist in CCTI pathways.[97] The League believed an important indicator of CCTI's success was "integration of the pathway model into the mission statements and strategic plans of the CCTI colleges."[98]

Adult Education Coordination and Planning Project

Summary Table

Name of Program (timeline)	Adult Education Coordination and Planning (AECAP) Project (2003–2008)
Targeted Population	Low-skilled adults
Major Purpose of Program	To develop and test processes for state and local planning and interagency coordination and to facilitate the expansion and quality of adult education and workforce services.
Partners	Arizona, Florida, Georgia, Maryland, Missouri, and Washington
Funding Source(s)	U.S. Department of Education
Notable Achievements/Outcomes	The AECAP project provided lessons for implementing a national demonstration project in Adult Basic Education pertaining to: the application process; selection of local pilot sites; project model; and planning, orientation of staff, and provision of technical assistance.
For Further Information (website or publication)	http://www.abtassociates.com/reports/Alamprese_Shared_Goals_Common_Ground_June_2009.pdf

AECAP was designed to develop and test processes for state and local planning and interagency coordination to facilitate expansion of adult education and workforce services. The state partners were adult education (ABE), labor, human services, K-12 education, and juvenile justice.

The state ABE staff and their partners used the AIDDE© planning process[99]—that begins with analysis of a challenge, followed by the design of a plan to address the problem, and collection of data to determine the impact of the approach.[100] AECAP assisted states with identifying areas of service that could benefit from coordinated activities, resulting in: a database with data elements for WIA Titles I and II outcomes that ABE and One-Stop providers could use to track clients' referrals and use of each others' services; an ESOL curriculum in customer service training that could be used nationally in ABE programs and One-Stop Centers integrating ESOL and occupational training; and a statewide professional development system for ABE program improvement. Work at local pilot sites resulted in coordinated service models that provided

targeted instructional services for specific ABE populations and integrated ABE/ESL and occupational courses leading to employment or postsecondary training.

Department of Labor Sector-Based Initiatives

Summary Table

Name of Program (timeline)	Department of Labor Sector-Based Initiatives (2005–Present)
Targeted Population	Traditionally Adults (increasingly Youth and CTE Students)
Major Purpose of Program	Sector initiatives are built around the needs of employers and businesses in a specific high-demand industry.
Partners	Employers from a targeted industry sector, education and training providers, economic development partners
Funding Source(s)	U.S. Department of Labor
Notable Achievements/Outcomes	Participation in comprehensive sector training initiatives results in improved consistency of employment, higher wages and hours worked, and greater attainment of jobs with benefits.
For Further Information (website or publication)	Maguire, Sheila, Joshua Freely, Carol Clymer, & Maureen Conway. "Job Training That Works: Findings from the Sectoral Employment Impact Study." Issue 7. May 2009. New York, NY: Public/Private Ventures.

In addition to Career Pathways, sector-based initiatives are supported by a growing body of evidence, and are the focus of many federal and philanthropic workforce investments. Sector-based training initiatives have tended to target high-demand industry sectors; integrate technical, job-readiness, and basic skills education (where necessary); and provide significant support services.[101] While sector initiatives have broader goals that extend beyond skills development, the most successful sector initiatives provide sector-based education and training through some form of Career Pathways approach to training that offers individuals, including those who are low-skilled, the opportunity to earn stackable credentials with value in the labor market that lead to high-demand employment and careers.

For years, the U.S. Department of Labor has encouraged the development of sector-based job training initiatives that are built around the needs of employers and businesses in specific high-demand industries. Sector initiatives have existed for at least 25 years, but have gained significant popularity in building regional economies and related workforce development efforts.

Several high-leverage DOL grant programs have marshaled sector strategies to meet employers' and individuals' skill needs. Two of these discretionary grant programs include the Community-Based Job Training Grants and the Workforce Innovation in Regional Economic Development grants. A rigorous study found that participation in sector training initiatives resulted in improved consistency of employment, higher wages and hours worked, and greater attainment of jobs with benefits.[102]

The Community-Based Job Training Grants

Summary Table

Name of Program (timeline)	The Community-Based Job Training Grants (CBJTG) (2005–2010)
Targeted Population	The current and future workforce
Major Purpose of Program	To train workers and build the capacity of community colleges to meet the skill needs of industry in high-demand occupations.
Partners	Employers, workforce systems, school districts, community colleges, and other stakeholders
Funding Source(s)	U.S. Department of Labor
Notable Achievements/Outcomes	Development of career ladders or occupational pathways that required articulation arrangements.[103] Formation of strong local partnerships.
For Further Information (website or publication)	http://wdr.doleta.gov/research/FullText_Documents/ETAOP_2013_18.pdf

Community-Based Job Training Grant (CBJTG) grantees partnered with employers, workforce investment boards, school districts, and other stakeholders to build the capacity of community and technical colleges for training workers in high-growth occupations. The DOL provided funding to 279 initiatives in 49 states between 2005 and 2009.

A broad range of industries were served by the grant-funded initiatives, including healthcare, advanced manufacturing, aerospace/aviation, construction, energy, and transportation. Nearly 90 percent of grantees provided for-credit courses that would lead to a degree or certificate, but many participants indicated that it was important to have a mix of short- and long-term training programs so that students could experience success quickly. Many grant recipients also developed and employed distance learning, online programs, and work-based learning, including simulation labs, internships, work-study, on-the-job training, and apprenticeships. A key strategy was to integrate industry-recognized credentials into academic degrees or CTE certificates.

In the project evaluation, the Urban Institute found that many grantees developed career ladders that articulated dual enrollment for high school students as well as credit between community and technical colleges and four-year colleges and experience-based articulations that allowed

students to earn credit for skills mastered on-the-job."[104] Other findings from the program evaluation included: the importance of industry partnerships; the importance of peer-to-peer partnerships; the need for longer startup time for sector-based training programs; and the importance of supports for low-income, low-skilled participants.

The Workforce Innovation in Regional Economic Development (WIRED) Initiative

Summary Table

Name of Program (timeline)	The Workforce Innovation in Regional Economic Development (WIRED) Initiative (2006–2010)
Targeted Population	K-12, Community colleges, universities
Major Purpose of Program	The initiative reinforced the economic development strategies of clusters, partnerships, regional competitiveness, and asset mapping.
Partners	Employers from high-demand industry sectors, economic development, workforce systems, K-12 and postsecondary education systems, private sector funders
Funding Source(s)	U.S. Department of Labor
Notable Achievements/Outcomes	Grantees engaged regional stakeholders from multiple sectors to address the challenges associated with building a globally competitive workforce.
For Further Information (website or publication)	http://www.doleta.gov/pdf/wired%20fact%20sheet.pdf http://wdr.doleta.gov/research/FullText_Documents/ETAOP_2013_22_Interim_Report.pdf

The WIRED initiative, launched in November 2005, stressed the critical role that talent development plays in creating effective regional economic development strategies. Three rounds of grants were awarded to 39 grantees across the country. Grantees engaged regional collaboratives featuring broad representation with members of business, workforce development, economic development, education, and government.[105]

The WIRED initiative reinforced the economic development strategies of clusters, partnerships, regional competitiveness, and asset mapping (identifying state and/or regional resources and their capacity).[106] A summary of early evaluations states that WIRED "paint[s] a picture of engaged and effective regional partnerships that are facilitating training (including entrepreneurial activities) and educational pipeline investment, especially in STEM areas."[107] The second interim report for WIRED's Generations II and III grantees indicated that regional

collaboratives had broad representation with members of business, workforce development, economic development, education, and government. Additionally, 90 percent of grantee survey responses indicated: “I feel optimistic about our ability to improve the job skills of our regional workforce” and “The collaborative group includes a diverse range of stakeholders involved in many different aspects of regional transformation.” Finally, participants believed that the work was beginning to yield “positive outcomes” and generally rated their regional collaborative as “midway on a continuum between coordination and cooperation.”[108]

Anecdotal information indicates that the WIRED initiative made many contributions to today’s regional sector-based work.

Breaking Through Initiative

Summary Table

Name of Program (timeline)	Breaking Through Initiative (2005–2009)
Targeted Population	Low-skilled adults
Major Purpose of Program	Prescribed specific "high-leverage" strategies for institutions to improve low-skilled adults' entry into and completion of occupational and technical programs.
Partners	Community colleges including: Central New Mexico Community College; Community College of Denver; Cuyahoga Community College; Owensboro Community and Technical College; Portland Community College; and Southeast Arkansas College, Arkansas Ten participating learning colleges including: Cerritos College; Community College of Southern Nevada; Houston Community College; LaGuardia Community College; Mott Community College; Northampton Community College; North Shore Community College; Piedmont Community College; Tallahassee Community College; and York County Community College.
Funding Source(s)	The Charles Stewart Mott Foundation; The North Carolina GlaxoSmithKline Foundation; The Ford Foundation; The Bill & Melinda Gates Foundation; The Walmart Foundation
Notable Achievements/Outcomes	Evaluation results demonstrate high rates of certificate attainment, entry into credit pathways, and positive employment outcomes.[109]
For Further Information (website or publication)	http://www.jff.org/initiatives/breaking-through http://occrl.illinois.edu/sites/default/files/BT_Final_Report_12-20-08(2)[1]_0.pdf

The Breaking Through initiative prescribed specific "high-leverage" strategies for institutions to improve low-skilled adults' entry into and completion of occupational and technical programs, thus leading to credentials and improved employment outcomes. The four "high-leverage"

strategies were: accelerating learning; comprehensive supports for students; labor market payoffs (e.g., connecting skills with labor market needs, career awareness, and "chunking" training into shorter segments with "stackable" credentials); and aligning programs for low-skilled adults.[110] The models present in Breaking Through colleges included developmental bridge programs (linking developmental education to credit-bearing courses), Career Pathways, and professional-technical bridge programs (linking developmental education to technical training programs).[111] While the initial phase of Breaking Through centered on institutional practices and programs, later work has focused on policy changes, scale, and evaluation of practices.

The program evaluation of Breaking Through reported the following results from 2006 to 2009:

- 78 percent of participants completed their Breaking Through programs and entered credit pathways in construction, nursing, nurse assistant certification, and manufacturing.
- 78 percent of students who were unemployed before starting a Breaking Through career pathway program were employed—72 percent in their career pathway field.
- 47 percent of the students who started in 2006 earned at least one certificate; 14 percent earned an Associate's degree in a high-demand field.
- 87 percent of the initial group of students were employed; 97 percent of those employed were working in the field of their pathway program. [112]

Programs of Study

Summary Table

Name of Program (timeline)	Programs of Study (POS) (2006–Present)
Targeted Population	Secondary and postsecondary CTE students
Major Purpose of Program	Legislative requirement to establish POS as defined in Perkins IV
Partners	Secondary and postsecondary CTE systems
Funding Source(s)	U.S. Department of Education
Notable Achievements/Outcomes	Offering guidance to the field regarding the legislative definition of programs of study; providing new grant opportunities in rigorous programs of study.
For Further Information (website or publication)	http://cte.ed.gov/initiatives/programs-of-study

The 2006 reauthorization of the Carl D. Perkins Career and Technical Education Act (Perkins IV) emphasized the importance of aligning secondary and postsecondary CTE programs by requiring states and local recipients of funds to create career and technical Programs of Study (POS), as defined in the "Perkins IV Programs of Study Requirements" box.

Perkins IV Programs of Study Requirements, section 122(c)(1)(A):

- Incorporate secondary and postsecondary elements
- Include coherent and rigorous content aligned with challenging academic standards and relevant career and technical content in a coordinated, non-duplicative progression of courses that align secondary to postsecondary education
- May include dual or concurrent enrollment programs or other ways to acquire postsecondary education credit
- Lead to an industry-recognized credential or certificate at the postsecondary level, or an Associate's or Baccalaureate degree

Rigorous Programs of Study Through Statewide Articulation Agreements

Summary Table

Name of Program (timeline)	Promoting Rigorous Programs of Study through Statewide Articulation Agreements (RPOS1) (2008–2009)
Targeted Population	CTE secondary and postsecondary students
Major Purpose of Program	OCTAE awarded two-year competitive grants to six states to develop rigorous POS and then to institutionalize those POS models through statewide articulation agreements.
Partners	Secondary and postsecondary CTE systems in Florida, Hawaii, Indiana, Nebraska, New Hampshire, and South Carolina
Funding Source(s)	U.S. Department of Education
Notable Achievements/Outcomes	The RPOS1 project emphasized four POS components that later became part of the POS Design Framework released by OCTAE in 2010: partnerships; policies and procedures; college and career readiness standards; and course sequences.
For Further Information (website or publication)	http://cte.ed.gov/nationalinitiatives/rposdesignframework.cfm

OCTAE made the expansion of high-quality POS a focus of its technical assistance efforts. The 2008 Promoting Rigorous Programs of Study through Statewide Articulation Agreements (RPOS1) initiative was among the first of these national efforts. This two-year competitive grant program funded six states to develop a new or existing CTE program into a rigorous POS that included the opportunity for students to earn postsecondary credits in high school. The funded states were required to establish a partnership to guide development of the POS.

At a minimum, the Partnerships included: the state agencies responsible for the administration of CTE, secondary education, and postsecondary education; at least one state workforce agency; and representatives of employers and of faculty and administrators from the state's secondary and postsecondary education institutions who were familiar with the CTE courses, industry-recognized standards, or technical skill proficiencies that were to be embedded in the POS.

Grantees focused on POS development in the following areas:

- **Florida:** health sciences and manufacturing (biotechnology)
- **Hawaii:** marketing, entrepreneurship, and retail
- **Indiana:** transportation, distribution, and logistics
- **Nebraska:** transportation, distribution, and logistics
- **New Hampshire:** finance and health sciences
- **South Carolina:** engineering technology and mechatronics

Following the RPOS1 grant program, OCTAE worked with states, national associations, and other partners to develop a "Programs of Study Design Framework." Through this work, 10 essential components and subcomponents were established for the development of high-quality POS that lead to postsecondary education and careers in high-demand occupations.

Programs of Study–10 Essential Components:

- Legislation and policies
- Partnerships
- Professional development
- Accountability and evaluation systems
- College and career readiness standards
- Course sequences
- Credit transfer agreements
- Guidance, counseling, and academic advisement
- Teaching and learning strategies
- Technical skills assessment

Promoting Rigorous Programs of Study

Summary Table

Name of Program (timeline)	Promoting Rigorous Programs of Study (RPOS2) (2010–2014)
Targeted Population	CTE secondary and postsecondary students
Major Purpose of Program	The funded states were required to develop rigorous programs of study (RPOS) that incorporated the 10 key components of effective programs identified in the POS Design Framework.
Partners	Arizona, Kansas, Maryland, Montana, Utah, and Wisconsin
Funding Source(s)	U.S. Department of Education
Notable Achievements/Outcomes	Project states are working with state and local partners to further students' transitions from secondary to postsecondary education or employment. States and localities have policies to incentivize implementation of the POS Design Framework. Partnerships among academic and CTE teachers at secondary and postsecondary levels, and business and industry partners are stronger and sustainable. Career guidance initiatives were launched. Participating states' capacity for effective use of data has expanded, but challenges remain to fully operationalize state longitudinal data systems. [113]
For Further Information (website or publication)	http://cte.ed.gov/docs/RPOS_Y3_Rpt_10022013_Final.pdf http://cte.ed.gov/nationalinitiatives/rpos_grants_overview.cfm

OCTAE launched RPOS2 in 2010 to assess the contribution of CTE Programs of Study on secondary students' educational outcomes at the secondary and postsecondary levels. Participating states were tasked with implementing rigorous programs of study (RPOS) in accordance with OCTAE's Programs of Study Design Framework.[114] State-level CTE staff in each state worked with three or more secondary local education agencies (LEAs) in urban, suburban, and rural locations, and one or more partnering postsecondary institutions, to implement a POS in a targeted CTE program.

Grantees focused on POS development in the following areas:

- **Arizona:** education and training
- **Kansas:** advanced manufacturing
- **Maryland:** transportation, distribution, and logistics
- **Montana:** architecture and construction
- **Utah:** health sciences
- **Wisconsin:** advanced manufacturing[115]

The implementation efforts embedded in the project enabled states to design, implement, and evaluate their CTE programs through data collection and analysis. Project activities included teacher professional development and coaching to integrate literacy and math skills into CTE coursework, opportunities for CTE students to earn postsecondary credits in high school, and the development of new technical skill assessments. Increased emphasis was placed on career guidance by creating personalized plans of study for CTE students. Technical assistance to participating states focused on performance measurement and how to collect and analyze state longitudinal data on program outcomes for program improvement.

Shifting Gears

Summary Table

Name of Program (timeline)	Shifting Gears (2007–2011)
Targeted Population	Low-skilled workers
Major Purpose of Program	To aid participating states in adopting innovative strategies and changing policies to better serve low-skilled workers in the Adult Basic Education, workforce development, and community and technical college systems.
Partners	Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin
Funding Source(s)	The Joyce Foundation
Notable Achievements/Outcomes	By the end of the five-year period, four of the six Shifting Gears states had implemented innovative Career Pathways and bridge programs to serve low-skilled adults.[116]
For Further Information (website or publication)	http://www.joycefdn.org/shifting-gears/shifting-gears-overview/

Shifting Gears, funded by The Joyce Foundation, supported six Great Lakes states to implement a systems change agenda, aligning Adult Basic Education, workforce development, and community/technical colleges in order to improve low-skilled adults' postsecondary credential attainment. Through the initiative, four of the states: served 4,000 low-skilled adults; adopted Career Pathways approaches—with "bridges" linking Adult Basic Education programs with postsecondary education and training; and had substantial "system penetration" of innovation, rather than discrete institutional innovations.[117]

Illinois developed an Adult Basic Education bridge that integrates and connects basic skills with postsecondary occupational education in key industry sectors, and involves customized instruction, career development, and student transition services. Indiana created a career pathway strategy, known as WorkINdiana, which provides Adult Basic Education students with access to targeted pre-postsecondary occupational training, leading to certifications valued in the labor market and that apply for credit at Ivy Tech Community College. Wisconsin implemented a career pathway and bridge program, known as RISE (Regional Industry Skills Education), which

integrates basic skills and occupational instruction at the community college for adult education participants.[118]

Policy to Performance

Summary Table

Name of Program (timeline)	Policy to Performance (2009–2012)
Targeted Population	Low-skilled adults
Major Purpose of Program	To expand the capacity of states to develop, implement, and evaluate data-based policies that support adult learners' transitions.
Partners	Alabama, California, Louisiana, Massachusetts, New York, Texas, Virginia, and Wisconsin
Funding Source(s)	U.S. Department of Education
Notable Achievements/Outcomes	All of the project states enhanced ABE transitions to postsecondary education or employment, identified transition practices that can assist ABE learners in moving to a next step, and specified policies or guidelines to direct and guide transition activities.[119]
For Further Information (website or publication)	http://www2.ed.gov/rschstat/eval/sectech/factsheet/supporting-states-development.html

OCTAE's Policy to Performance project was designed to advance states' systems change and policy development efforts to help adults make transitions from ABE to postsecondary education, training, and employment. Policy to Performance provided state ABE agencies with strategies and tools to work with other agency partners, such as higher education and workforce development partners, to align services and policies toward a coherent set of activities comprising state ABE transition systems.

The findings from a Policy to Performance evaluation indicated that partnership development was "a critical process for ABE state leaders to increase coordination in the delivery of local transition services, expand resources, and position adult education as a significant component of a comprehensive state education and training system."[120] Challenges identified in the report included the availability of evidence-based practices regarding ABE transition approaches, as

well as variability in the approaches used in pilot tests within a state, making larger scale conclusions difficult.[121]

The Trade Adjustment Assistance Community College and Career Training (TAACCCT)

Summary Table

Name of Program (timeline)	The Trade Adjustment Assistance Community College and Career Training (TAACCCT) Grant Program (2010–Present)
Targeted Population	Trade-impacted dislocated workers
Major Purpose of Program	Provides community colleges and other eligible institutions of higher education with multi-year grants to expand and improve their ability to deliver education and training that meets the skill needs of high-demand employers for trade-impacted dislocated workers.
Partners	Community colleges, employers, and other partners
Funding Source(s)	U.S. Department of Labor
Notable Achievements/Outcomes	The first three rounds of TAACCCT grants have served more than 800 colleges to build their capacity (through innovation and evidence-based strategies) to prepare participants for employment in high-skill, in-demand occupations.
For Further Information (website or publication)	http://www.doleta.gov/taaccct/

In 2010, Congress authorized $2 billion over four years to fund the TAACCCT program. TAACCCT provides community colleges and other eligible institutions of higher education with multi-year grants to expand and improve their ability to deliver education and career training programs that: a) can be completed in two years or less; b) are suited for workers who are eligible for training under the TAA for Workers program; and c) prepare program participants for employment in high-wage, high-skill occupations. The Department of Labor is implementing the TAACCCT program in partnership with ED.

The first three rounds of TAACCCT grants have served more than 800 colleges. Key goals identified in the early rounds were to: accelerate progress for low-skilled workers, improve retention and achievement rates and/or reduce time to completion, build programs that meet industry needs, and strengthen online and technology-enabled learning. The final round was

designed to scale Career Pathways, sector-based initiatives, work-based learning offerings and improve the way data is used in assessing programs throughout the country.

Career Pathways Technical Assistance Initiative

Summary Table

Name of Program (timeline)	Career Pathways Technical Assistance Initiative (2010–2011)
Targeted Population	Low-skilled adults
Major Purpose of Program	To assist states in developing Career Pathways systems.
Partners	Kansas, Kentucky, Maryland, Minnesota, Montana, New Mexico, Ohio, Pennsylvania, Virginia, Gila River Indian Community (Arizona), and Tucson Indian Center (Arizona)
Funding Source(s)	U.S. Department of Labor
Notable Achievements/Outcomes	Carried out two institutes, a web-based community of practice, and built a Career Pathways toolkit (including a readiness assessment) to provide technical assistance to states and local communities in developing Career Pathways systems.[122]
For Further Information (website or publication)	https://learnwork.workforce3one.org/

In 2010 and 2011, DOL carried out a technical assistance initiative, in collaboration with ED and HHS, that assisted nine states and two Native American entities in developing Career Pathways programs and systems. As part of this project, the departments used the "Career Pathways: Six Key Elements" as a centerpiece of its technical assistance strategy. The Career Pathways Toolkit was originally developed through this initiative and is still used today. The initiative informed the joint letter providing a common definition and framework for Career Pathways systems that was later developed and signed by DOL, ED, and HHS in April of 2012.[123]

The Workforce Innovation Fund (WIF)

Summary Table

Name of Program (timeline)	The Workforce Innovation Fund (WIF) (2011–Present)
Targeted Population	Participants in programs administered by the Employment and Training Administration (ETA), US DOL
Major Purpose of Program	Evidence-based workforce practices.
Partners	ETA eligible formula and discretionary grant recipients
Funding Source(s)	U.S. Department of Labor
Notable Achievements/Outcomes	The 26 grantees are responsible for their own program evaluations. A national evaluation coordinator is in place to ensure high-quality evaluations by assisting evaluators with the evaluation design and tools, facilitating communication among evaluators, and conducting analyses across studies.[124]
For Further Information	http://innovation.workforce3one.org

The Workforce Innovation Fund (WIF) is the DOL's grant program focused on promoting evidence-based and innovative strategies for improving services and programming in the nation's workforce investment system. This grant program for states and local WIA funding recipients encourages the development and implementation of proven and innovative strategies similar to those in the TAACCCT grants, such as Career Pathways, sector-based initiatives, work-based learning, creative uses of technology, and Pay for Success. These grants also stress the importance of collecting and sharing data to increase system performance and management. The end goals are improved outcomes and reduced costs for workforce organizations, as well as system innovation and improvement. Through these grants, DOL is providing additional and more flexible resources, but also trying to "remove administrative, statutory, and regulatory barriers to support greater coordination in the delivery of services, particularly among agencies and programs with overlapping missions and clients."[125]

Evaluation efforts are ongoing; data is not yet available.

Pathways to Prosperity Network

Summary Table

Name of Program (timeline)	Pathways to Prosperity Network (2011–Present) [Nonprofit/Philanthropy]
Targeted Population	High school students
Major Purpose of Program	To create statewide 9-14 systems of Career Pathways that ensure more youth complete high school, attain postsecondary credentials aligned with LMI, and enter into careers.
Partners	State and local secondary and postsecondary education systems in: Arizona, California, Delaware, Georgia, Illinois, Massachusetts, Missouri, New York, Ohio, and Tennessee
Funding Source(s)	The Carnegie Corporation of New York, The James Irvine Foundation, The Joyce Foundation, SAP, U.S. Department of Labor
Notable Achievements/Outcomes	Recent publication detailing states' practices and recommended policies to support 9-14 systems.
For Further Information (website or publication)	http://www.jff.org/initiatives/pathways-prosperity-network

In 2011, the Harvard Graduate School of Education released a report, *Pathways to Prosperity: Meeting the Challenge of Preparing Young Americans for the 21st Century*, that called for an intensive effort on the part of employers, educators, and government leaders to build statewide 9-14 systems that link work and learning, are aligned with regional labor market demand, and help ensure that young people have the skills and credentials they need to succeed. Support for the report evolved into the Pathways to Prosperity Network, through which ten states are launching or dramatically expanding Pathways initiatives that combine rigorous academics with technical education and work-based learning. Key sectors identified for building Career Pathways include STEM fields including information technology, health care, and advanced manufacturing.

Pathways to Prosperity recently identified lessons from its work in 2012 to 2014, finding that: "Effective programs" offer real-world application of skills that employers value; community colleges may help build pathways beginning as early as ninth grade; employer participation by

sector is key; system and resource alignment is critical; academic and CTE programs must be integrated; and workforce-based learning is critical.[126]

Accelerating Opportunity

Summary Table

Name of Program (timeline)	Accelerating Opportunity (2012–Present) [Nonprofit/Philanthropy]
Targeted Population	Low-skilled adults
Major Purpose of Program	Multi-state reform effort that uses Career Pathways to change the way adult education and other education and workforce services are provided to low-skilled individuals.
Partners	State adult and postsecondary education systems in: *Design Phase*—Alabama, Georgia, Illinois, Kansas, Kentucky, Louisiana, Mississippi, New Mexico, North Carolina, Oregon, and Wisconsin *Implementation Phase*—Arkansas, Georgia, Illinois, Kansas, Kentucky, Louisiana, and Mississippi
Funding Source(s)	Bill & Melinda Gates Foundation, The Joyce Foundation, W.F. Kellogg Foundation, Kresge Foundation, Open Society Foundation, The Annie E. Casey Foundation, The University of Phoenix Foundation, The Blank Foundation
Notable Achievements/Outcomes	Thirty-seven percent of all Accelerating Opportunity students are earning 12 or more college credits. In Kentucky, 68 percent of Accelerating Opportunity students are earning a credential, compared to 9 percent of the comparison group. Since January 2012, Kansas community and technical colleges have enrolled over 3,500 students in over 30 career pathway programs. To date, these students have earned over 4,000 industry-recognized credentials in areas such as healthcare, welding, manufacturing and aero-structures. Over 1,150 students have completed a 12-credit hour pathway and 910 are employed.[127]
For Further Information (website or publication)	http://www.jff.org/initiatives/accelerating-opportunity

Accelerating Opportunity aims to improve postsecondary credential attainment for low-skilled adults, breaking the cycle of poverty by combining Adult Basic Education and career and technical training into an integrated curriculum supplemented by embedded student supports—merging lessons learned and best practices from Breaking Through and Washington's I-BEST program.[128] Early data from Accelerating Opportunity show that the initiative is producing similar outcomes to those in Washington's I-BEST program: 37 percent of all Accelerating Opportunity students are earning 12 or more college credits and in Kentucky, 68 percent of Accelerating Opportunity students are earning a credential, relative to 9 percent of the comparison group.

The Alliance for Quality Career Pathways

Summary Table

Name of Program (timeline)	The Alliance for Quality Career Pathways (AQCP) (2012–2014)
Targeted Population	All Career Pathways students/participants
Major Purpose of Program	The Alliance's goal is to help state and local/regional partnerships strengthen Career Pathways systems by identifying common performance metrics.
Partners	Arkansas, California, Illinois, Kentucky, Massachusetts, Minnesota, Oregon, Virginia, Washington, and Wisconsin
Funding Source(s)	The Joyce Foundation, The Irvine Foundation, Greater Twin Cities United Way
Notable Achievements/Outcomes	The Alliance framework provides a clear set of criteria and indicators for what constitutes a quality state and local/regional Career Pathways system, as well as metrics to assess participant progress and success. The framework is designed to help Career Pathways partners continuously improve their systems.
For Further Information (website or publication)	http://www.clasp.org/issues/postsecondary/pages/aqcp-framework-version-1-0

The Alliance for Quality Career Pathways—administered by the Center for Law and Social Policy (CLASP) and funded by The Joyce Foundation, The Irvine Foundation, and Greater Twin Cities United Way—worked with states to identify essential features and functions of Career Pathways and identify metrics for measuring the quality of state and local Career Pathways systems. The AQCP focused on helping states in the more advanced stages of Career Pathways development to analyze and evaluate the components of their systems.

Phase I of the AQCP work (July 2012 through May 2014) was to develop a consensus framework that includes criteria and performance indicators of quality Career Pathways systems and a set of interim and outcome metrics for measuring and managing Career Pathways

participant progress and success. CLASP and the AQCP states endeavored to align their work with the Career Pathways framework developed by ED, DOL, and HHS.

Appendix B: Federal Career Pathways TA/Grants

The following federal Career Pathways technical assistance initiatives are underway to assist states in moving their Career Pathways system development efforts forward. All of these initiatives use the joint framework and are augmenting existing tools from the DOL's Career Pathways Toolkit to guide the technical assistance that is provided and incorporate best practices and lessons learned.

Advancing Career and Technical Education (CTE) in State and Local Career Pathways Systems

Summary Table

Name of Project (timeline)	Advancing CTE in Career Pathways (2012–2015)
Targeted Population	All individuals who benefit from participation in Career Pathways systems (e.g., secondary CTE students, out-of-school youth, low-skilled adults, dislocated workers, existing workers)
Major Purpose of Project	Phase I: To assist states in integrating their CTE programs of study with state and local Career Pathways development efforts. Phase II: To assist in developing Career Pathways in transportation.
Partners	State and local CTE, K-12, adult and postsecondary education, workforce, human services, economic development, and other system stakeholders (including employers) in Colorado, Kansas, Massachusetts, Minnesota, and Oregon
Funding Source(s)	U.S. Department of Education U.S. Department of Transportation
Anticipated Outcomes	Developing comprehensive Career Pathways systems that include CTE programs of study
For Further Information (website or publication)	http://cte.ed.gov/nationalinitiatives/advancing_cte.cfm

This OCTAE project is assisting five states and participating local areas to integrate or align their POS with state and local Career Pathways system development efforts.

Work began with identifying commonalities in definitions, key elements, and components of POS and Pathways. The contractor, Jobs for the Future, developed a crosswalk that showed significant similarities between the two frameworks, and used that information to build an integrated model through which the work of CTE programs of study can be aligned with the work underway in developing and implementing broader Career Pathways systems.

To date, the five participating states, Colorado, Kansas, Massachusetts, Minnesota, and Oregon, are making progress including:

- Incorporating state and local CTE systems into broader Career Pathways system development efforts
- Increasing the use of LMI to identify high-demand industry sectors and occupations upon which to build education and training programs
- Building-out employer engagement strategies to increase buy-in of business and industry for pathways development
- Developing comprehensive Career Pathways in high-demand occupations—from secondary to and through postsecondary education and training that results in industry-recognized credentials
- Deploying cross-system data and performance metrics that will assist states and communities to build high-quality systems that measure system-wide performance and efficacy of interventions
- Leveraging and braiding cross-system resources

Moving Pathways Forward: Supporting Career Pathways Integration

Summary Table

Name of Project (timeline)	Moving Pathways Forward: Supporting Career Pathways Integration (2013–2016)
Targeted Population	Low-skilled adults
Major Purpose of Project	To provide transitions for low-skilled adults to the 21st-century workforce.
Partners	State adult education, CTE, K-12, and postsecondary education, workforce, human services, economic development, and other system stakeholders (including employers)
Funding Sources	U.S. Department of Education
Anticipated Outcomes	Technical assistance services will be available to assist states in developing and implementing their Career Pathways systems and facilitating local programs' provision of Career Pathways services.
For Further Information (website or publication)	https://lincs.ed.gov/programs/movingpathways/technical-assistance

OCTAE is implementing a new technical assistance initiative to support states in advancing Career Pathways systems that will provide transitions for low-skilled adults to employment. Moving Pathways Forward: Supporting Career Pathways Integration is a three-year project that is providing three levels of tiered assistance: a national online information exchange, tier 1, and customized TA to two state cohorts, tiers 2 and 3, for developing and advancing their Career Pathways systems. This work is building on previous federal and state investments, including OCTAE's earlier Pathways to Performance investment.

Intensive TA is being provided to 14 states through tier 3 of the project: Indiana, Iowa, Kentucky, Michigan, Minnesota, Montana, New Jersey, Ohio, Oregon, Rhode Island, Virginia, West Virginia, and Wisconsin. States receiving TA will have access to: customized virtual support to enhance and/or expand existing Career Pathways system activities; subject matter expertise to assist in addressing state-specific challenges; and opportunities to share with and learn from other states in other stages of Career Pathways systems development.[129]

Career Pathways Policy Academies

Summary Table

Name of Project (timeline)	Career Pathways Policy Academies (2014–Present)
Targeted Population	TANF recipients
Major Purpose of Project	To provide Career Pathways opportunities for TANF recipients.
Partners	State TANF agencies
Funding Sources	U.S. Department of Health and Human Services
Anticipated Outcomes	Enabling TANF agencies to better understand and integrate with Career Pathways efforts within their states.
For Further Information (website or publication)	www.acf.hhs.gov

The Administration for Children and Families, U.S. Department of Health and Human Services, is developing Career Pathways Policy Academies, contracted through ICF International. This project will provide customized technical assistance to two separate state cohorts to help TANF agencies better understand Career Pathways strategies and integrate them into funded employment and training activities. To date the Academies have produced two initiatives: the Pathways to Family Stability initiative and the Families 2gether initiative; both programs are providing TA to three to five states.

Credentials and Career Pathways Technical Assistance Project

Summary Table

Name of Project (timeline)	Credentials and Career Pathways Technical Assistance Project (2014–2015)
Targeted Population	All individuals, especially out-of-school youth and low-skilled adults
Major Purpose of Project	To assist states in developing and expanding Career Pathways systems.
Partners	Career Pathways stakeholders
Funding Sources	U.S. Department of Labor
Anticipated Outcomes	Increased participation of workforce system grantees in Career Pathways
For Further Information (website or publication)	https://learnwork.workforce3one.org

In 2014, the Employment and Training Administration began work with Manhattan Strategies Group (MSG) to encourage further adoption of the interagency Career Pathways framework. Their work includes: hosting a national convening of thought leaders to discuss policies that support implementation of Career Pathways (September 2014); launching a national peer network—Pathways to Success; working to refresh the existing Career Pathways model and toolkit using state champions and subject matter experts; and then disseminating information on these new tools once developed, so workforce systems will be better able to effectively implement Career Pathways in their states and local areas. Given the recent passage of WIOA, Career Pathways technical assistance to be provided under this project is being reframed to align with all of the major strategies endorsed by the law, including sector strategies and credential attainment.

Youth Career Connect

Summary Table

Name of Project (timeline)	Youth Career Connect (2014–2015)
Targeted Population	High School Students—encouraging participation of low-income and underrepresented students.
Major Purpose of Project	Grants to local partnerships for scaling evidence-based high school models that will more fully prepare youth with the knowledge, skills, and industry-relevant education needed for pathways to successful careers.
Partners	Local education agencies, workforce investment boards, institutions of higher education, and employers
Funding Source(s)	U.S. Department of Labor U.S. Department of Education
Anticipated Outcomes	Prepare youth with the knowledge, skills, and industry-relevant education needed for pathways to successful careers.
For further information (website or publication)	http://www.doleta.gov/ycc/

Using revenues from the H-1B visa program in 2014, the DOL awarded $107 million in 24 new grants ranging from $2.2 million to $7 million to local partnerships for projects in 2014-15 that would scale up evidence-based high school models to transform teaching and learning. Youth Career Connect grantees will incorporate project-based learning in high-demand STEM fields, requiring high-level employer engagement, as well as integrate industry-recognized credentials and postsecondary education into high school curricula. Grantees will also feature strong partnerships that provide work-based learning opportunities, exposure to different career paths, mentors for students as well as professional development for staff, and individualized career and academic counseling for students.

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