INSTITUTE FOR HIGHER EDUCATION
LEADERSHIP & POLICY

# CAREER OPPORTUNITIES:

## Career Technical Education and the College Completion Agenda

Part III: Promising CTE Policies from Across the States


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# Executive Summary

California's community colleges are key to resolving the shortage of educated workers that is threatening the competitive position of the state's economy. Tremendous potential for addressing this challenge resides in the system's career technical education (CTE) mission which, with appropriate structures and support, could help many more students earn credentials with value in the workplace. In two previous installments of a four-part series of reports titled *Career Opportunities: Career Technical Education and the College Completion Agenda*, we concluded that the CTE mission in the California Community Colleges is not organized and supported optimally to produce the outcomes that the state needs. CTE is fragmented, lacks sufficient stable funding, and is not well integrated into the core of the college system. The extensive program offerings are not well targeted to labor market needs, resulting in an inefficient use of resources. The lack of common standards across similar programs devalues the credentials awarded by the system because employers are uncertain of the knowledge and skills possessed by students who attain the credentials. Students are given too little encouragement and guidance to find their way into and through CTE programs.

This report, Part III of the series, examines policies and practices in other states that might offer helpful lessons for shaping CTE in California's community colleges to better meet student and employer needs. It provides brief examples (with endnotes that point readers to additional information) in the following five policy areas.

## 1. Determining What Degree and Certificate Programs to Offer

Community colleges offer a variety of credentials that prepare graduates for employment as well as for further education, with the goal of matching programs to local and regional labor market needs, ensuring that the programs impart competencies that are valued by employers, and constantly adapting the set of programs to a changing economy. Associate of Applied Science degrees, offered in 48 states, equip students to move directly into the workforce, while applied baccalaureate degrees in some states preserve later transfer options. Streamlined or temporary approval processes for CTE programs can allow colleges to respond more quickly to emerging labor market needs. Facilitating college access to and analysis of labor market information can also improve responsiveness.

## 2. Curriculum Structure and Delivery

CTE students often have little familiarity with navigating complex college environments. The challenge for colleges is to give them the knowledge and skills they need in ways that their busy lives and individual circumstances can accommodate. Statewide competency standards for similar programs can serve to communicate clearly to students and employers the meaning of workforce-oriented credentials.

Systematically addressing proficiency standards for English and math in CTE programs can also send clear signals about expected competencies to students and employers. Ensuring that shorter certificates articulate to a longer certificate program or associate degree program can allow students to climb a career ladder over time. Facilitating the sharing of curriculum across colleges can increase access to programs, enhance program quality, and improve cost effectiveness.

## 3. High School – Community College – Workplace Pathways

Education reformers across the country are beginning to focus on building and sustaining clear pathways for students beginning in high school and extending through community college to the workplace. K-12 programs that introduce school children to career options can demonstrate how students' high school education can serve as a stepping stone into a career. Policies that encourage articulation of high school and community college CTE courses, and that facilitate the earning of college credits while in high school, can give students a head start toward a career. Building pathways from noncredit adult education and workforce training, by aligning curriculum, targeting recruitment efforts, and providing credit for prior learning, can encourage low-skill adults to pursue college credentials and increase the competitiveness of a state's workforce.

## 4. Financing CTE – College and Student Costs

Some states have found ways to address the higher costs of many CTE programs that arise from the need for specialized equipment, smaller class sizes appropriate for working with equipment and in laboratories, more frequent review and revisions to curriculum, and continual engagement with potential employers to ensure program vitality. Examples include funding formulas that provide higher state funding for enrollment in particular CTE programs and policies that allow colleges to charge higher tuition or special fees for some programs. CTE programs could also fare better under policies that award a percentage of funding based on completion of certificates and associate degrees. Financial aid policies that target adult and part-time students can better meet the needs of CTE students, particularly those in short-term programs.

## 5. Accountability

Traditional outcome measures used in community colleges fall well short of providing educators and policymakers with meaningful information about how well CTE programs are meeting workforce and student needs. Some states are beginning to ask their community colleges to account for completion rates by program. Others are facilitating linkages of college and employment data to better understand labor market outcomes, including outcomes for students earning certificates and for those who enroll in but do not complete CTE programs.

Like California, states across the country are struggling to capitalize on the assets of community college CTE programs to bolster their economies through education and workforce development. Examining policy examples in other states can help educators and policymakers identify some models and some resources to inform their ongoing discussions about improving CTE to better serve students and California's communities.

# Learning from Other States

Community colleges are key to resolving the shortage of educated workers that is threatening the competitive position of the nation's economy. In addition to transferring legions of students into bachelor's degree programs, they offer a multitude of certificate and associate degree programs that can equip graduates, without further education, for well-paying jobs in high-growth fields. Even amid high unemployment rates, such "middle skill" jobs are going unfilled for lack of workers with the requisite education and training.[1] Labor projections consistently show strong growth in demand for workers with postsecondary education at the sub-baccalaureate level in a variety of fields.[2] The challenge is for community colleges to build and support effective career technical education (CTE) in appropriate fields and help students find their way into and through these programs, earning credentials of value in the workplace.

This is the third installment of a four-part series, titled *Career Opportunities: Career Technical Education and the College Completion Agenda*, with a goal of identifying necessary changes to state and system policies to improve CTE in California's community colleges (see Figure 1). Part I, *Structure and Funding of Career Technical Education in the California Community Colleges*,[3] described the complex organizational structure and policies currently in place for the CTE mission of California's community colleges. Part II, *Inventory and Analysis of CTE Programs in California Community Colleges*,[4] analyzed the inventory of CTE offerings using data collected from the California Community Colleges Chancellor's Office and college catalogs.

Figure 1
IHELP Research Agenda to Improve the Policy Environment in Support of CTE

- Overview of structure and funding for CTE and identification of key issues
- Inventory and analysis of CTE certificates and vocational associate degree programs
- Effective state policy approaches used in other states to support CTE (this report)
- Comprehensive analysis of state policy environment affecting CTE in California

Based on these two studies we concluded that the CTE mission is not organized and supported to produce the outcomes that Californians need. CTE is fragmented, lacks sufficient stable funding, and is not well integrated into the core of the college system. Program offerings are too extensive to be targeted well to regional labor market needs and reflect an inefficient use of resources. Enrollments and completions are highly concentrated in a small percentage of CTE fields and programs, leaving many programs with few students and fewer completions. The lack of common competency standards across similar programs devalues the credentials awarded by the system because employers are uncertain of the knowledge and skills possessed by students who attain the credentials. Students are given too little guidance to find their way into CTE programs of study, especially in the face of so many similar-seeming program options.

# Learning from Other States

## Report Methodology and Scope

Career technical education is receiving considerable attention across the country as states try to match human capital to the needs of their economies. Unlike California, many states have been unequivocal about the value of sub-baccalaureate credential programs in their community colleges. Policies in such states may be more supportive of CTE than are policies in California, where the transfer function is valued far more highly than the career education mission of the community colleges. In our attempt to identify ways to improve the policy infrastructure for career technical education in the California Community Colleges (CCC), we searched for state policies and programs in other states that appear better aimed at satisfying the seven criteria for effective CTE that we have set forth to guide this four-part study (see Figure 2).

Figure 2
Criteria for an Effective Career Technical Education Mission

1. Programs articulate with K-12 where appropriate
2. Prospective students are helped to identify and enroll in community college CTE programs of interest
3. Program offerings adapt to changing labor market needs
4. Efficient pathways exist for transition into entry-level credentials and advancement through credential levels
5. Students and employers understand the skills and competency outcomes of credential programs
6. Credentials offered have market value for students, as validated by outcomes data
7. Resource allocation for CTE programs is predictable and responsive to workforce priorities

We began our research by looking at nine states that were consistently highlighted as innovative in their approaches to CTE: Arkansas, Florida, Kentucky, North Carolina, Ohio, Oregon, Tennessee, Washington, and Wisconsin. We reviewed available research and policy reports on these states by other researchers, policy experts, and community college systems. We also reviewed the websites of those states' community college systems for more detail on the development and implementation of policies and programs. From there we expanded our search to include policies in other states that addressed key issues that we identified.

Three caveats are in order. First, this report is not exhaustive, as we did not review all 50 states. There are undoubtedly examples from states not highlighted that could provide valuable lessons for California. Nor do we provide extensive detail for the policies we have identified. Second, this report should not be mistaken as a summary of validated "best practices." Many of the included policies came to our attention because of research documenting their effectiveness, but where this was not the case we searched for independent research or publications by the programs themselves indicating the quality of implementation and any documented outcomes. Appendix A identifies the available research analyzing the programs and policies highlighted in this report.

Third, some of the promising approaches we identify in other states are likely in place in California, but not on the statewide scale that we believe necessary to yield stronger CTE programs and better student outcomes. We do not cite examples of practices employed by individual California colleges because we are seeking state-level policies that can be more far-reaching in supporting a college system's CTE mission.

This report is organized by category of policy. For each policy area we explain how the topic generally relates to the provision of effective CTE, and provide brief descriptions of relevant policies in a few of the target states. The discussion is intended to serve as a reference to suggest general outlines of potential new policies for California and to encourage interested parties to seek additional information about those issues, states, and policies of greatest interest and potential application.

# Issue 1: Determining What Degree and Certificate Programs are Offered

Community colleges, nationally, offer a variety of credentials that ideally prepare graduates for employment as well as for further education: associate degrees in career-oriented fields, applied associate degrees, certificates of various lengths, and in a few states, applied baccalaureate degrees. The goal for career technical education is to match programs to local and regional labor market needs, ensure that the curriculum for such programs yields competencies that are valued by employers, and design agile processes for constantly adapting the set of programs to a changing economy. In California, as we have documented in the first two reports of this series, program offerings are not well targeted to employment needs. There are too many programs that serve few students, too much variability across programs, and ineffective processes to keep program offerings vital in relation to regional labor market needs. Below are some examples of how other states use policy in the attempt to offer programs with value to students and employers.

## The Applied Associate Degree

Applied associate degrees emphasize applied coursework and should equip students to move directly into the workforce without the need to transfer into a four-year program. Applied associate degrees typically include fewer general education (GE) requirements than associate of arts or sciences and correspondingly more specialized courses. Applied associate degrees are offered in all but two states, but are not offered in the California Community Colleges.

**Kentucky** offers two types of associate degrees. Associate of Arts (AA) and Associate of Sciences (AS) degrees are intended for transfer to four-year universities and include 48 credits of GE.[5] Associate of Applied Science (AAS) degrees are designed to prepare students for entry-level employment, and require fewer GE credits. Even though AAS degrees are not designed for transfer, GE credits earned towards the degree generally transfer to a four-year college as part of the state's applied associate transfer policy.[6]

**Washington** provides the Associate in Applied Science-Transfer (AAS-T) degree, built upon the technical courses required for job preparation but also including a college-level general education component with a minimum of 20 credits of transferable GE courses.[7]

**Oregon's** Associate of Applied Science degree is designed for direct entry into the workforce. Applied or specialized associate degrees and long-term certificates (one-year or more) are expected to contain a recognizable body of instruction in program-related areas of communication, computation, and human relations as part of the general education component. When appropriate, topics like industrial safety and environmental awareness can also be included in the curriculum.[8]

## The Applied Baccalaureate Degree

Applied baccalaureate degrees are designed to incorporate applied associate courses and degrees once considered terminal while providing students with advanced technical knowledge and higher-order thinking skills.[9] There are several types of applied baccalaureates, including "career ladder" degrees, inverse or upside down degrees, and management ladder degrees.[10] Career ladder programs are primarily intended to provide students with advanced technical skills through upper division study in a field. Upside down programs reverse the traditional curriculum by accepting associate degree technical courses and adding the general education coursework typically required for a bachelor's degree. Management ladder degrees are designed to provide students with applied management skills to allow for advancement into managerial positions in a technical field. Applied baccalaureate degrees are offered by universities or, in some states, by community colleges. Neither the CCC nor California State University is authorized to award the applied baccalaureate degree through regular credit programming.

**Washington's** State Legislature gave the State Board for Community and Technical Colleges authority to pilot applied baccalaureate degrees at select campuses, later making the programs permanent. Applied baccalaureates fill specific skill gaps and serve students seeking degrees in technical fields with a limited number of programs available at four-year colleges.[11]

# Issue 1: Determining What Degree and Certificate Programs are Offered

**Florida's** community colleges possess the authority to offer Bachelor's of Applied Science (BAS) degrees in order to help fill labor market needs and serve the educational aspirations of students. In addition, the majority of Florida's community colleges have agreements with public or private universities to offer upper division coursework at community college campuses as part of a baccalaureate program.[12]

## Program Approval, Review, and Discontinuation Processes

Curriculum in community colleges is the purview of the faculty, who are primary participants in program approval and review processes typically through curriculum committees. As these processes can involve multiple levels of approval and take significant time, they are not ideal for CTE programs, which should be responsive to short-term labor market trends. Moreover, it is difficult for the liberal arts faculty, who predominate in these processes, to know how to evaluate the multitude of specialized CTE programs. In California, there is an additional level of review for CTE programs. In addition to the college and Chancellor's Office review, they must pass through a regional consortium whose intended role is to prevent unnecessary duplication. Judging from the proliferation of programs we documented in an earlier report[13] and from interviews with system and campus officials, the regional and system components of the review process do not effectively screen out duplicative or low-priority programs. Lengthy, variable, and spotty college policies do not incentivize the discontinuation of programs once in operation.[14]

While transfer-oriented associate degree programs require prior approval from the **West Virginia** Council for Community and Technical College Education, colleges can implement new occupational AAS and certificate programs without state approval, as long as they notify the chancellor about the new program. The Council will review such programs after three years, including such issues as enrollment, retention, adequacy, necessity, viability and consistency with mission.[15]

The **Texas** Comptroller can approve grants for the development of new CTE programs provided that the programs are identified by local businesses as being in high demand. The primary consideration in choosing programs to support is the expected economic returns to the state. Other factors include the availability of dual credit opportunities for public high school students and whether the program is provided in cooperation with other colleges in different service areas.[16]

## Aligning Curricula with Industry Certifications

Community colleges offer large numbers of short-term certificates, the economic value of which has not been confirmed by researchers.[17] We found that two-thirds of the certificate programs offered in the CCC are less than one year in duration (i.e., less than 30 semester units).[18] Many industries offer certifications that signal the attainment of specified knowledge and skills. Some examples are certified welder, issued by the American Welder Society, electronic systems technician, issued by the National Center for Construction Education and Research, and Java Associate, issued by Sun Microsystems, Incorporated. Industry certifications are usually obtained by passing a test administered or approved by the issuing entity. In many cases a student can become prepared to pass such a test by taking a series of community college courses. Yet the certification per se is not the same as a college-awarded certificate. Students taking courses to prepare for industry certification may or may not earn a college certificate. In order to help students earn credentials of value, it seems advisable for colleges to align their curricula, including their short-term certificate programs, with industry certifications, where such exist. An emphasis on aligning short-term certificate programs with industry certifications could help reduce the number of short-term certificate programs that do not bring economic return. Many California colleges offer programs to help students gain industry certification, but there is no consistency across colleges and no systematic effort to align college certificates with such programs.

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In **Florida**, the Florida Advanced Technological Education Center (FLATE) designed a national model Engineering Technology AS degree program. The program, offered at 11 community colleges in the state, has as one of its components an engineering technology technical core (15 credits), which aligns with the Manufacturing Skills Standards Council Certified Production Technician (MSSC-CPT) national certification. Students already possessing this certification are able to earn the degree with 15 fewer credits, while un-credentialed students are able to earn the certification as part of their education.[19] As another example, a CTE course within the existing culinary management AAS degree program was developed to address, specifically, the requirements needed to obtain the Professional Food Service Manager Certificate (ServSafe®) as specified by the National Restaurant Association Foundation. The course provides three credit hours towards the degree in culinary management or toward a certificate in culinary arts in community colleges across Florida.[20] In an effort to help colleges align their curriculum with external certifications, the Florida Department of Education's Division of Career and Adult Education maintains a listing of licensing assessments and industry certifications.[21]

The **North Carolina** Community Colleges recently completed the Code Green Super Curriculum Improvement Project, an effort to redesign program standards and curriculum for five sector areas including building, energy, engineering, environment and transportation technologies. As part of the effort, attention was given to ensure that the curricula aligned with industry certifications. For example, graduates of the program in Mechatronics Engineering Technology are prepared to sit for the Packaging Machinery Manufacturers Institute examination, and those completing the Industrial Engineering Technology program are prepared for certification exams offered by the Society of Manufacturing Engineers and the American Society for Quality.[22]

Recent legislation in **Iowa** requires the Department of Workforce Development to issue a quarterly report identifying industries in the state with a shortage of skilled workers, and directs worker training programs in the community colleges to use the national career readiness certificate and the skills certification system endorsed by the National Association of Manufacturers.[23]

In the **Wisconsin** Technical College System, one of the three levels of assessment performed on all programs concerns how well students perform in gaining national, state, or industry credentials, placing an emphasis in these programs on alignment with external certifications.[24]

## Access to Useful Labor Market Information

A vital aspect of the community college mission is its service to its local region, including producing educated workers for the regional economy. In order to do that, colleges must have timely labor market information that allows them to identify matches and mismatches between the labor markets they serve and the graduates they produce. In California, individual community colleges must acquire and interpret labor market data on their own, as there is no comprehensive statewide approach to helping the 112 colleges match programs to labor market demand. What is required is not only timely labor market data but also analyses of any gaps between projected labor market demand and current pipelines to produce graduates for those jobs.

The **Arkansas** Department of Workforce Service provides labor market information, which is used by state policymakers and colleges to ensure that programs are in growing occupations. The Arkansas Department of Higher Education requires proof before a pathway is established that it matches with high-demand, high-wage industries.[25] After a program starts, the state requires follow-up information to ensure the program maintains its relevancy in the local economy. The state employs an outside consultant, Economic Modeling Specialists, Inc., to produce local employment reports for each college to help evaluate their CTE programs.[26]

# Issue 1: Determining What Degree and Certificate Programs are Offered

In **Washington**, each community college uses local labor market data produced by the Labor Market and Analysis division within the Employment Security Department of Washington State (ESD) to demonstrate how its pathways respond to the local labor market and fall within high-demand sectors. Additionally, colleges can provide their own evidence from traditional labor market data, industry data, trade association data or other data when creating a new program. The state emphasizes the need to align programs with local demand by requiring colleges to provide evidence that the programs are in fields with local demand when applying for funds from programs run by the State Board for Community and Technical Colleges, like Opportunity Grants[27] or Integrated Basic Education and Skills Training (I-BEST).[28]

## Useful Engagement of Employers in Program Planning

CTE programs are intended to impart a set of knowledge, skills, and competencies that will make graduates employable in their chosen field. It is important that CTE educators receive substantive input from employers about the need for programs to keep up with regional needs and industry standards. In California, state law requires that every CTE program have an industry advisory committee but there is no consistency to colleges' interpretation of "program" as defined in law[29] and there is widespread consensus that many committees are not active or effective.

Community colleges in **Kentucky** are required to display contributions of funding from local employers when submitting applications to develop new career pathways.[30]

In **Washington**, all technical programs offered at the community colleges are required to have an advisory committee designed to provide input on curriculum and ensure compliance with industry standards. Each advisory committee must hold at least two meetings per year and publish minutes from each meeting. Committees are expected to replace any member missing more than 50% of meetings.[31]

**Arkansas** requires active advisory councils for all programs in career pathways. To be "active" the council must meet at least twice a year; programs failing to do so are placed on probation and may be eliminated.[32]

**Utah's** Program Advisory Committees (PACs) are charged with keeping CTE programs current with business and industry standards. Industry leaders serve on PACs and they monitor CTE programs' services and resources and make recommendations to improve programs as necessary. PACs also provide community college boards with program information and program needs regarding enrollment, faculty preparation, scholarships, internships, job placement, donations, and more. Nearly 50 PACs exist within the Salt Lake Community College System and their activities are centrally supported and coordinated through the Salt Lake Community College Advisory Council (CAC).[33]

# Issue 2: Curriculum Structure and Delivery

Students enroll in CTE programs for a variety of purposes and from widely varying life experiences. Many seek near-term employment and want a short-term program to get them there. Some can commit to a program of two years or longer. Still others have college degrees and seek career advancement or retraining. Many students in all of the above circumstances lack basic proficiency in reading, writing, and math. And, like most community college students, CTE students often have little familiarity with navigating complex college environments. The challenge for colleges is to give them the knowledge and skills they need, and that employers expect, in ways that their busy lives and individual circumstances can accommodate. Some examples from other states illustrate some of the possibilities.

## Statewide Skill and Competency Standards for CTE Programs

If similar-sounding programs in a region or state vary significantly in length and content, neither employers nor students will be well served. Employers will not know what a credential means in terms of skills and competencies of graduates, and students will be unclear for what jobs they will be qualified. States that ensure program consistency around competency standards communicate clearly to students and employers about the meaning of their workforce-oriented credentials and provide a clear path for students towards college completion and a career. Having statewide standards to ensure program consistency around competencies will help students transfer CTE credits across colleges in the state. In California, only a few disciplines have developed statewide standards to ensure common program outcomes. Beyond those few there is great variability among similar programs.

The **Tennessee** Technology Centers (TTC) aim to achieve 85% similarity across its programs statewide, giving each campus a set and known structure while allowing administrators enough room to meet local needs. The TTC has students apply to and enroll in a program, with a clearly specified number of courses and a set number of hours required for graduation, helping to keep programs consistent.[34]

**Oregon's** Board of Education, with input from the state's community colleges, the Oregon Manufacturing Workforce Steering Committee, and other employers developed the Basic Manufacturing Technician Statewide Certificate, also referred to as the Core certificate. The certificate is designed to be completed in one semester and is composed of classes in the five basic skill areas needed by employers in all sectors of manufacturing. The Core certificate has common learning outcomes for technical content and workplace competencies, making its credits fully transferable to any college offering the certificate. In addition, it is embedded in established one-year certificate programs and AAS programs in manufacturing.[35]

The Division of Career and Adult Education within **Florida's** Department of Education develops curriculum frameworks for each vocational program offered in the state's community colleges and the 44 technical centers operated by K-12 districts.[36] The frameworks specify the standards for all certificates (in both technical centers and community colleges) and AS/AAS degrees (only offered in the colleges), including the technical and academic competencies, program lengths (credits), minimum basic skill levels for students, and required instructor certifications. Colleges decide which CTE programs to offer based on local needs, and design their courses and delivery of instruction according to local preferences as long as the total program meets the statewide standards. The development of statewide frameworks was made easier by the existence of the Statewide Course Numbering System (SCNS), developed in the 1960s in response to concerns about students being forced to repeat courses that failed to articulate between state institutions. All public and many private postsecondary institutions now use the common course number system. Courses are treated as being equivalent by all institutions using SCNS if a teacher with comparable credentials instructs it and the same academic content is covered.[37]

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The **North Carolina** Community College system publishes curriculum standards for CTE programs offered across the system on its website.[38] For each program, the standards specify credit and course requirements for both general education and the major, for each level of credential offered (diploma, certificate, AAS). The requirements refer to commonly-numbered courses in the system's Combined Course Library. Courses are proposed by colleges and approved by a statewide Curriculum Review Committee and the State Board of Community Colleges. Revisions to the curriculum for a program require approval by the State Board and by two-thirds of the colleges approved to offer that program.

## English and Math Proficiency for CTE Programs

The ineffectiveness of developmental education sequences for community college students, generally, has been well documented.[39] Such course sequences have been even less effective for CTE students, leading to a search for ways to incorporate or "contextualize" basic skills instruction into substantive coursework. Complicating the situation for CTE is that some students are seeking associate degrees, where proficiency requirements are usually well defined within a college or system, but other students seek a variety of certificates or just sets of courses for which proficiency expectations may be less well defined. In California, there is no systemwide standard for English language arts or mathematics proficiencies for students seeking to complete certificate programs, and no systematized means to assess whether students attain proficiency by the end of their programs. Several states have developed more systematic means to address student proficiency in CTE programs, including non-degree programs.

In **Florida**, students enrolled in career education programs that have a required total greater than 450 credit hours must complete an entry-level basic skills examination within the first six weeks of admission into the program. If the student must take remediation courses, the student will have to be retested using an alternative form of the same exam that was used for initial testing. No student will be awarded a career certificate until the student achieves the minimum level of basic skills required for that program by the Department of Education.[40]

An **Oregon** bill, House Bill 2398 (2009), established the Oregon Career Readiness Certification Program which includes a process through which the proficiency level of students' work-ready skills in reading, applied mathematics, and locating information are assessed to ensure students meet business and industry skill demands. The certificate is awarded in four levels, depending on the individual's performance on the assessment, with a higher level indicating readiness for a wider range of jobs.[41]

Recent legislation in **Iowa** provides $5 million for tuition grants for skilled workers in CTE fields where there is a shortage of workers. Applicants for tuition assistance complete an initial assessment administered by the community college and they complete assessments for a National Career Readiness Certificate, in the areas of reading for information, applied mathematics, and locating information.[42]

**Washington's** Integrated Basic Education and Skills Training pairs occupational training with adult basic education (ABE) or English as a Second Language (ESL), allowing students to work towards a career while acquiring basic academic skills.[43] I-BEST classes feature two instructors: a basic skills instructor and an instructor from the professional-technical program jointly teach in the same classroom with at least a 50% overlap of the instructional time to provide an integration of both types of education.[44]

## Cohort and Academy Models

As part of the national reform efforts to provide more structure and guidance for community college students, some states have begun to use highly structured models for CTE programs by which students enter programs and attend multiple classes with a small group of the same students on a set schedule.

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The City University of **New York's** Accelerated Study in Associate Programs (ASAP) offers a model designed to get motivated students through associate degree programs on an accelerated schedule by requiring full-time attendance and using features like block scheduling, cohorts, and small classes. ASAP offers programs in both CTE and Liberal Arts and Sciences fields of study.[45]

At **Tennessee** Technology Centers, students usually enroll in the programs full-time for approximately 30 hours per week. All programs are organized based on "clock hours" instead of credits, meaning that programs are organized around the number of total hours a student will take to complete the coursework. Students are given limited choices in their courses, as the centers run few classes and programs but provide the option to study full-time or part-time and in the evenings or during the day. Because of the limited choices available, an entering student is able to know exactly when they will earn their credential. Students are allowed to enter or exit the program at any time, but new students are only able to enter programs with available spots in progressing cohorts.[46]

## Alignment of Shorter and Longer Credential Programs

Many students who enroll in CTE programs can benefit greatly from immediate employment, even as they continue to climb the career ladder with the benefit of more education. This can be facilitated by ensuring that shorter certificates, commonly used for gaining specific skills for the workplace, articulate to a longer certificate program or associate degree program. Many California colleges independently develop sequences of certificates, but the lack of standardized programs across the system inhibits the development of well structured career ladders or stackable certificates.

**Ohio** developed a stackable certificates framework to deliver pre-college academics and for-credit job training to adults lacking college-level skills in math and English language arts. The certificate framework was designed to combine remedial coursework, certified career training, and college credits. The certificates are stackable, meaning that a student can progress through the program, from entry-level to advanced, receiving additional certificates as they learn.[47]

Roadmaps for programs in **Arkansas**, **Florida**, **Kentucky**, **Oregon**, **Washington** and **Wisconsin** show the multiple entry and exit points, depicting how a student can move clearly between the workforce and college. Programs contain embedded certificates that prepare students for progressively higher employment.[48]

In **Kentucky**, embedded certificates are available in programs that terminate in an AAS degree. Students are able to either collect certificates on the way to completing the AAS or leave earlier and enter the workforce trained for a specific class of positions within their chosen occupation.[49]

In **Oregon**, AAS degrees and longer-term certificates (45 quarter credits or above) are used as a base to anchor shorter-term Certificates of Completion. Certificates of Completion are used to designate specific skill proficiencies, or train for specific careers within larger career pathways.[50]

## Curriculum Sharing among Colleges

CTE programs can be very specialized and dynamic, placing demands on colleges to ensure they can deliver the curriculum effectively. Small and rural colleges may have trouble offering entire programs and may need to only offer programs for limited periods to fill a need. Policies that allow or encourage colleges to collaborate in program ownership or delivery can increase access to programs as well as program quality and can be more cost effective. In California nearly all programs are developed and owned by an individual college and pressures to produce enrollments for funding purposes may inhibit sharing of programs.

The **Washington** State Board for Community and Technical Colleges established Centers of Excellence (COE) at flagship institutions to act as vehicles, in part, for the sharing and dissemination of information to community colleges in targeted industries.[51] Each of the ten Centers of Excellence provides individualized

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services based on the needs of the state and industries, but among the core expectations for all COE is to help with the development and sharing of curriculum.[52] For instance, The Center for Information Technology Excellence provides curriculum for I-BEST and information technology programs on its website.[53]

The **Texas** Board of Nursing (TBON) received authority from the state legislature to advance innovations in education with a new nursing program. In collaboration with the Texas Higher Education Coordinating Board, the Texas Board of Nursing adopted a pilot program featuring a collaborative partnership consisting of representatives from stakeholder groups, including a professional nursing organization, baccalaureate degree and associate degree nursing program educator groups, employers, and the Texas Center for Nursing Workforce Studies. In the program, nursing education programs aim to develop partnerships to share skills, simulation laboratories, and clinical placement activities and to advance innovative curriculum strategies.[54]

The **Iowa** Community College Online Consortium is a partnership of colleges working together to provide online courses and programs, including in CTE areas. The seven partner colleges combine their resources to develop online courses and programs, train instructors for online teaching, coordinate student services, and maintain an informational website.[55]

All **Maryland** community colleges participate in Maryland Online, a consortium of community colleges and universities across the state that collaborate to provide online courses and programs. Students can earn certificates and associate degrees in a variety of CTE fields, including fully-online programs in the areas of business, information technology, and public protection.[56]

# Issue 3: High School – Community College – Workplace Pathways

Education reformers are starting to question the disconnect in American higher education between education and career.[57] While this critique applies across the spectrum of education programs, it is easiest to apply to the CTE arena because such programs are aimed to help students find employment in specific careers closely related to their college programs of study. Ideally, students in K-12 should get help thinking about how their interests relate to career options and educational opportunities beyond high school. In California, the cuts to K-12 CTE programs and the emphasis on getting students eligible for the public universities have eroded much of the foundation on which stronger CTE pathways might be built. This section describes what some states are doing to build and sustain clear pathways for students beginning in high school and extending through community college to the workplace.

## Building Programmatic Pathways from K-12 to Community College

Perhaps the most important step in building career pathways from K-12 schools is to introduce school children to careers and show them how their high school education can serve as a stepping stone into a career. High school graduates who have had such exposure will be better prepared to make informed decisions at the postsecondary level, including pursuit of a career credential from a community college. While California students have access to some online resources aimed at career planning,[58] there is no formal career exploration curriculum in the state's secondary schools.

**Kentucky** first introduces students to future career opportunities through a program called Career Choices given to students in seventh, eighth, or ninth grade. The course is designed to help students begin exploring future options for training and employment. After students are formally introduced to career planning through Career Choices, a web portal (e3.ky.gov) is available to help students, parents, and employers obtain information on postsecondary degree programs, labor market information and more.[59]

**Florida's** Education Code specifies that students entering the ninth grade should create academic career plans reaching beyond high school. Schools provide information to help students and their families evaluate available paths culminating at four-year colleges, two-year colleges, employment, and/or combinations of the three. In order to meet the needs of students, they are able to alter their path regularly.[60]

**Arkansas** emphasizes career counseling in seventh and eighth grade, having students take a course titled Career Orientation. The activity-based, occupational awareness course lasts one or two semesters and is designed to allow students to explore their interests and potential employment in those fields.[61] For Arkansas students in postsecondary or high school, Arkansas Works is available as an online college and career planning service. Arkansas Works is built around the Kudor career-assessment system to assess the career interests of students, but also provides information for parents, educators, adult job seekers and employers. The Kudor system provides links to every postsecondary program in the student's field of interest.[62]

New programs at **Arkansas** community colleges use a model based on the College and Career Transitions Initiative (CCTI) of the League for Innovation in the Community College, an initiative related to developing secondary to postsecondary transition and articulation in high-demand CTE fields. The initiative focuses on developing partnerships of high schools and community colleges to develop rigorous programs of study that align and sequence CTE courses across the partner institutions.[63]

**Oklahoma** has a state agency dedicated to CTE, called the Department of Career and Technology Education. Among the priorities in its strategic plan is to market the advantages of CTE, with a focus on high school counselors and administrators. Legislation enacted in 2006 directed the agency to spend funds on such marketing and promotion.[64]

# Issue 3: High School – Community College – Workplace Pathways

## Articulated Courses, Dual Credit, and Concurrent Enrollment

Career pathways are all the more real to high school students if, in addition to getting exposed to career planning, the courses they take while in high school are connected programmatically to community college courses. There are three models for doing this. First, high school courses can be part of a clear sequence of study even though the courses themselves may not carry college credit (articulated courses), sometimes allowing students to bypass an introductory level course when they enroll in college. Second, high school students can earn college credits for some of their high school courses (dual credit). Third, high school students can enroll in college courses while still in high school and earn college credit (concurrent enrollment). While some states have implemented policies to encourage these models, California's policies related to student eligibility, funding of schools and colleges, and the award of credits at the secondary and postsecondary level discourage institutions and students from participating in such programs.[65]

In **Kentucky**, career pathways are designed to directly link courses taken in high school with CTE programs of study at community colleges. Students are allowed to take technical career courses in high school for their elective requirements, which can lead to a credential upon graduation and the opportunity to continue studying in the same field at the postsecondary level.[66] Many programs are part of articulation agreements between high schools and community colleges, designed to assist students in making a smooth transition into a postsecondary program without being forced to duplicate courses.[67]

**North Carolina's** Department of Public Instruction and the North Carolina Community College System have designated certain high school courses that articulate for college credit. Approximately 50 high school CTE courses match an equivalent community college course in skills and knowledge taught, so a student that meets the post assessment and grade standards may receive college credit. In addition to the statewide articulation agreements, high schools and community colleges may form local agreements.[68]

Recent legislation in **North Carolina** established the Career and College Promise program to offer opportunities for high school students to concurrently enroll in community college courses that provide pathways leading to a certificate or degree and providing entry-level jobs skills. Credits earned through the program must allow students to complete a postsecondary credential in less time than would normally be required.[69]

**Tennessee** offers dual credit to high school students that receive high school credit for applicable CTE classes and pass a final exam. The student receives college credit upon enrollment at the postsecondary institution. Credits earned can only be used at the postsecondary institution that originally grants them.[70]

**Tennessee** also provides concurrent enrollment for high school students, allowing them to enroll in a postsecondary course taught at either a high school or the postsecondary institution. Upon passing the course, both high school and college credit is earned by the student. The college credit earned is transferable to any postsecondary institution, not only the one where the course was taken.[71]

**Kentucky's** Community and Technical College System has articulation agreements in place for the majority of secondary and postsecondary institutions, creating programs of study that reach throughout an industry. For programs not currently possessing a statewide articulation agreement, representatives from the secondary and postsecondary level are able to develop local agreements to facilitate articulation and dual enrollment when desired.[72]

Recent legislation in **Idaho** enacts the "8 in 6 Program," an effort to identify middle and high school students taking courses at an accelerated rate and provide them with incentives to graduate from high school with one or two years of college credit or with a professional-technical degree or certificate. The program provides funding to cover a percentage of the cost of overload and summer courses taken by such students.[73]

# Issue 3: High School – Community College – Workplace Pathways

**Mississippi** recently created the Mississippi Works Dual Enrollment-Dual Credit Option, allowing potential or recent high school dropouts to dually enroll in their home high school and a local community college while pursuing both high school completion coursework and a certificate or degree. Students dually enrolled under the program are not charged tuition, and their high schools continue to receive average daily attendance funding.[74]

**Texas** policies support dual enrollment, particularly as a strategy for increasing college readiness and participation among disadvantaged students.[75] The state provides funding to both high schools and community colleges for dually enrolled students, allowing schools to integrate significant college coursework for their students without financial penalty, and encouraging the development of more than 40 early college high schools across the state. The state provides a $275 per student allotment for students who achieve college-ready standards, funding some schools have used to support dual enrollment. In addition, leaders in the Texas Education Agency, the Texas Higher Education Coordinating Board, and the Texas High School Project have worked together to spread best practices in dual enrollment across the state.

## Work-Based Learning

Work-based learning opportunities allow students to connect classroom-based instruction to real-world applications of academic and technical skills in the workplace. Work-based learning experiences can include apprenticeships, cooperative education, and internships. The benefits to college students of such experiences include helping them clarify their career goals and develop the soft skills that employers are seeking in communication, critical thinking and time management, and improving their job prospects after graduation.[76] While some community colleges in California offer work-based learning opportunities that benefit their students,[77] little attention has been paid to supporting or encouraging such efforts through policy. Work experience and apprenticeship opportunities for students have declined precipitously in recent years because of reductions in categorical program funding.

The **Virginia** Community College System (VCCS) coordinates the Apprentice Related Instruction (ARI) program, a collaborative effort of employers, high schools, community colleges, and the state's Department of Labor and Industry (VADOLI).[78] Through the program, workers whose employers register them as apprentices through the VADOLI receive instruction on theoretical and technical subjects related to their occupation. Coordinated by VCCS, the colleges develop the instruction in collaboration with the sponsoring employers and receive state appropriations for delivering the instruction. Students earn journeyman licensure and college credit toward an associate degree.

All of **Wisconsin's** technical colleges offer credit to students enrolled in apprenticeships, which apply towards the Associate in Applied Science. The majority of apprenticeships are in construction-related fields, and a student who completes the apprenticeship and the related instruction will have earned 39 of 60 credits towards an AAS Journeyworker degree. In addition, community colleges collaborate with high schools to make apprenticeships available to secondary students, making part-time programs available with postsecondary instruction.[79]

**Florida** supports apprenticeships through funding policies. About half of Florida's community colleges provide instruction as part of apprenticeships, and apprentices have school fees waved and are eligible for tuition assistance. Some colleges count the related instruction in apprenticeship programs as credit toward an associate degree.[80]

**South Carolina** funds Apprenticeship Carolina, an effort within the state's technical college system to attract employers to participating in apprenticeship programs. Consultants guide employers through the registered apprentice development process at no cost to the companies. Participating businesses can receive a state tax credit of up to $1,000 per year per apprentice for four years. The state's effort has resulted in a huge increase in the number of registered apprenticeship programs and apprentices.[81]

# Issue 3: High School – Community College – Workplace Pathways

**New Jersey** has passed legislation that established "credit for prior learning" centers that will certify different types of prior learning as college-credit worthy, like stable apprenticeship programs or military experience, and that requires higher education institutions to accept those certified credits.[82]

## Pathways from Noncredit to Credit Instruction

Community colleges across the country offer a sizeable amount of noncredit education aimed at workforce training - often short-term training conducted for business or special populations like displaced workers or low-skilled adults.[83] Noncredit workforce instruction is a means of responding more quickly to changing workforce demands, but its potential to contribute significantly to the college completion agenda rests on the ability of states to create pathways from noncredit to credit programs so that students can earn college credentials. Building such pathways can be done in various ways including aligning curriculum, targeting recruitment efforts, and providing credit for prior learning. California supports noncredit workforce training in a variety of ways but lacks clear and systematic pathways for students to move from noncredit to for-credit programs.

**Kentucky** demonstrates its commitment to helping adult education students transition to postsecondary credit programs through its accountability systems. The state has set a goal to have 30% of General Education Diploma (GED) graduates enroll in a Kentucky college or university within two years by 2014-15. Kentucky Adult Education reports progress toward that goal, with data showing an increase from 19% in 2006-07 to 26% in 2010-11.[84] The state is also working to eliminate the distinction between noncredit and credit courses within its community colleges, by developing smaller noncredit course modules that, when bundled, will carry college credit.[85] This approach accommodates students who need more flexible scheduling or who may require more time to complete a full course given their need for remedial assistance.

A **Minnesota** policy requires colleges to evaluate and grant credit to students for successful college-level learning in other settings, including through noncredit coursework.[86] Colleges can award credit through nationally recognized exams like the College Level Examination Program (CLEP), through course-specific exams developed by college faculty, or through portfolio review or other demonstrations of skill competence. Credits granted through these processes are included on student transcripts and, once credits are awarded for learning determined to be equivalent to a system course, other colleges in the state must accept them as transfer credits.

**New Jersey's** College Consortium for Workforce and Economic Development, part of the New Jersey Council for County Colleges (NJCCC) is developing programs that articulate noncredit coursework with credit programs in the state's community colleges. For example, working with the New Jersey Education Association, a program allows students who have earned a noncredit certificate for completing four class modules on communication, cultural competence, child development, and school safety to convert that learning into 12 college credits when they enroll in one of three related community college certificate and AA programs.[87] The NJCCC is currently developing statewide guidelines for community colleges on articulating noncredit and credit courses.

**Oregon's** commissioner of community colleges formed the Noncredit Task Force to focus on improving the connection of noncredit workforce courses to credit programs. The task force developed the Noncredit to Credit Framework and Models[88] - a set of examples, best practices and measures of success – and sponsored a summit for community colleges to learn about models for prior learning assessment and other means of fostering noncredit to credit student progression. Oregon's legislature recently passed House Bill 4059, directing the Higher Education Coordinating Commission to carry out goals related to credit for prior learning and report back to the legislature on progress toward meeting those goals.[89]

# Issue 3: High School – Community College – Workplace Pathways

Recent legislation in **Nebraska** established grants for institutions to develop bridge programs from adult education to postsecondary educational credentials or industry-recognized credentials. The programs must be targeted to low-income adults and must focus on specific workforce needs in the state.[90]

**West Virginia** recently required the State Board of Education to offer adult basic education programs on the campuses of all community and technical colleges that offer developmental education, in order to provide a clearer pathway for adults to enter college.[91]

# Issue 4: Financing CTE – College and Student Costs

CTE programs often are more expensive than liberal arts and science classes in support of the transfer function. Higher costs come from the need for specialized equipment, smaller class sizes appropriate for working with equipment and in laboratories, more frequent review and revisions to curriculum, and frequent engagement with potential employers to ensure program vitality. These higher costs are typically not well provided for in state finance processes, leaving CTE program managers to rely on other funds – usually competitive grants – to sustain their programs. We noted in Part I of this series that excessive dependence on competitive grants can distort system priorities and disadvantage colleges that lack grant-writing capacity.[92] Ideal state policy would provide ways for colleges to sustain higher-cost programs of high value to students and employers within base institutional resources. While all states rely to a significant degree on federal Perkins funds and other external grants to support CTE, some states have devised ways to address CTE costs in more institutionalized, and therefore stable, ways. Student costs are problematic in CTE as well, because financial aid programs at state and federal levels are not well designed to support students enrolling in short-term credential programs.

## Differential Funding

Most community colleges, including those in California, receive money from their states according to formulas based mostly on overall enrollment, with no differentiation among types or costs of various enrollments. There are some states that recognize higher costs of certain programs, including CTE programs.

**Virginia** has adopted a set of funding policies for all of higher education that funds programs differentially depending on the field. Examples of programs that are funded at higher levels are engineering technology, health professions, and business and communications technology.[93]

**Arkansas's** new funding formula, per Act 1203, includes a needs-based component and an outcomes-based component. The need-based component recognizes four categories of disciplines to reflect cost differences and provides for a higher funding rate for disciplines such as agricultural sciences, communications technology, health professions, and engineering technology.[94]

**Ohio** manages a complex system of funding higher education, including CTE in community colleges. The state distributes funding to all public colleges and universities based on its formula, the State Share of Instruction (SSI). In order to base funding on average costs, enrollment, and core academic activities, the SSI assigns courses into different models organized by the subject area of study and level of study.[95] The models that apply to community college funding distinguish among courses in (1) Arts and Humanities, (2) Business, Education and Social Sciences, and (3) Science, Technology, Engineering and Math (STEM). Funding is derived from the SSI, which takes into account for its average costs the courses' price for instruction, plant operations and maintenance, and student services.

In **Kansas**, legislation was introduced and adopted in 2011 to authorize the technical education state aid act which establishes a tiered funding structure for community and technical colleges. To reflect cost differentials, the bill creates a structure where educational courses are categorized as "non-tiered" (i.e., courses that are academic, foundational, and contribute to general knowledge such as critical thinking) or "tiered technical," to prepare individuals with occupationally specific knowledge and skills necessary for employment. The bill also stipulates that postsecondary educational institutions must consider target industries critical to the Kansas economy and increase institutional responsiveness to regional workforce needs. The state board of regents will establish the rates to be used as the state's share in a given year, as well as in the actual distribution. The bill also allows for each community college and technical college to be eligible for a grant from the state general fund, as determined by the state board of regents, for non-tiered course credit hours.[96]

# Issue 4: Financing CTE – College and Student Costs

## Performance Funding

A growing number of states are allocating a portion of funding for colleges and universities based on performance. To the extent that the performance metrics that influence funding include the completion of certificates and associate degrees and some measure of meeting workforce needs, high-cost CTE programs could fare better than under enrollment-only funding approaches.

**Washington's** State Board for Community and Technical Colleges adopted a performance funding system in 2006 to reward colleges for helping students reach certain levels of achievement. Colleges receive points in four categories of student achievement, one of which is the completion of certificates, degrees, and apprenticeship training programs. Colleges are funded on the basis of change in total points from year to year.[97]

**Arkansas** changed the postsecondary formula to phase in outcomes-based, performance funding. Beginning in the 2012-13 school year and continuing until 2018, performance funding will phase in until it constitutes 25% of total state appropriations to postsecondary institutions. Components of performance to be funded include progression toward credential completion, number of credentials awarded, and meeting workforce needs.[98]

Legislation enacted in 2011 directed the **Illinois** Board of Higher Education to devise a system for allocating state funding to public postsecondary institutions based upon performance related to student success and certificate and degree completion. Beginning in fiscal year 2013, the Board is to include performance-based allocations for institutions in budget requests to the general assembly.[99]

The **Virginia** General Assembly passed legislation in 2011 that authorizes the use of targeted economic and innovation incentives to supplement enrollment based funding. "Economic opportunity metrics" to help guide resource allocation include marketplace demand, earning potential, employer satisfaction, and other indicators of the economic value of degrees.[100]

## Differential Tuition or Fees

An alternative means to accommodate higher cost programs is to charge higher tuition for certain programs or charge special fees, such as materials fees, in addition to tuition. The practice of charging differential rates of tuition for different programs is fairly common at the bachelor's level, with one survey finding that 17% of public bachelor's institutions charge differential tuition by college or program.[101] We are not aware of any statewide differential tuition policy for community colleges, however, at least 21 states do allow local boards to determine tuition and fee practices to meet their needs.[102] While only a few states appear to have established differential funding statewide based on course type, many more institutions are creating fee structures that pass on differential costs for courses to the student through tuition. Differential tuition is a growing practice at four-year universities,[103] a trend which appears to be spreading among community colleges as well.

Bristol Community College in **Massachusetts** initially charged $246 per credit for courses in eHealth, their hybrid online/in-class course and certified program, but $166 per credit for other programs. Although this tiered funding structure for eHealth was eliminated, Bristol continues to assess a $50 fee for high-cost courses in dental hygiene and nursing.[104]

Aims Community College in **Colorado** charges nearly twice as much for technology-intensive courses such as radiological technology, fire science, communication media, surgical technology, aviation, and nursing.[105]

Pima Community College in **Arizona** also uses differential tuition to help finance courses in nursing and welding.[106]

# Issue 4: Financing CTE – College and Student Costs

## State Financial Aid Suitability for Students Pursuing CTE Credentials

For various reasons of age, part-time enrollment, and short-term program goals, many financial aid programs do not meet the needs of CTE students. In general, states have not considered how they might extend financial aid to adult learners, part-time students, or those who might find certificate programs appealing,[107] but there are several examples of financial aid policies targeted at these groups of students.

**Florida** offers the Public Postsecondary Career Education Student Assistance Grant Program, which is available to students enrolled in a certificate program and attending at least half-time (six credits).[108] Florida also passed legislation allowing students eligible for the Bright Futures Scholarship to use the financial aid for an applied technology diploma, technical degree, or career certificate.[109]

**Washington** offers the Washington Award for Vocational Excellence (WAVE) to CTE students attending a public or private college or licensed vocational school. WAVE awards recipients a grant equal to up to two years of study at a college or university; actual award size depends on the type of institution the student attends.[110] The state also provides opportunity grants to financially needy students enrolled in community and technical college programs related to high-demand occupations. The grants cover tuition and mandatory fees for a maximum of 45 quarter credits, plus $1,000 per year for books and supplies.[111]

**Kentucky** runs the Go Higher Grant Program directed towards non-traditional age students (24 or older) who enroll part-time.[112]

In **North Dakota**, any resident high school graduate who has taken requisite career and technical education courses in high school and met grade point requirements is eligible for a Career and Technical Education Scholarship.[113]

**Utah** provides scholarships to students who enroll in a public postsecondary institution to pursue programs in engineering, computer science or related technologies.[114]

The Jobs and Education for **Texas** (JET) grant program provides students in community and technical colleges with a need-based scholarship if they pursue a major in a high-demand field and maintain satisfactory progress towards a degree.[115]

Recent legislation in **Kansas** establishes a Career Technical Workforce grant of $1,000 for eligible students enrolled in a postsecondary program that has been identified by the Kansas Board of Regents, as related to a high-cost, high-demand or critical industry field.[116]

In **Illinois**, financial assistance provided under the Community College Transfer Grant Program is higher for students who pursue particular majors. The bill provides for $1,000 grants to financially needy community college students who transfer to a public university after obtaining an associate degree at community college. The grant increases to $2,000 for students pursuing a degree in engineering, math, nursing, teaching, or science.[117]

The **West Virginia** Learn and Earn Cooperative Education Program, created under the Workforce Development Initiative, provides full-time enrollees in a community and technical college program with an income source while they pursue their program of study by requiring a dollar-for-dollar cash match from participating employers from which the student receives a salary. The program intends to increase the likelihood that adults will complete a credential, find gainful employment, and choose to remain in West Virginia after graduation.

# Issue 5: Accountability

Traditional outcome measures used in community colleges fall well short of providing educators and state lawmakers with meaningful information about how well CTE programs are meeting workforce needs and how successful students are in meeting their CTE goals. Institutional graduation rates carry more meaning for the liberal arts mission than for CTE, where it is *program* performance that matters to students for employment and to communities for workforce development. Yet strong programmatic accountability is uncommon across the country. Completion *rates* by program require accurate data on the specific program in which each CTE student is enrolled – data that are not always collected and certainly are hard to keep up to date when students change direction.

A major challenge in accounting for outcomes is that completion of a credential is not a sufficient indicator of success, as the more important outcome for students is a job or a wage gain. Accounting for labor market outcomes of CTE completers involves linkages with other agency data systems that can be problematic to implement. Further complicating accountability for CTE outcomes is the complexity of certificates, which vary greatly in length and workplace value. Additionally, many students do not seek college credentials, needing only some coursework, perhaps to prepare them to pass an industry certification or merely to learn a skill that will help them find a job or advance in their careers. Finally, much of the noncredit workforce instruction occurs through other delivery systems or mechanisms and is not reflected in college accountability reporting. Accounting for the outcomes of CTE is, therefore, a work in progress across the country. In California, accountability for CTE is not programmatic, consists primarily of counts and activities, rather than rates and outcomes, and does not reflect meaningful linkage with labor market outcomes data.

## Accountability with a Focus on Program Outcomes

While states still struggle to collect and maintain accurate data on the programs of study which students are attempting to complete, some states have taken steps to focus their accountability efforts more toward programs in the effort to collect data that are more meaningful than course completion rates or aggregate numbers of completed credentials without respect to individual program outcomes.

The Career Pathways Initiative (CPI) in **Arkansas** requires programs to track Transition Employment Assistance (TEA) enrollment, employment rates and employment retention rates for students who earn a certificate or degree.[118] During the past few years, Arkansas has contracted with an outside firm to evaluate whether CPI was effectively serving its students by moving them into high-demand, high-wage jobs.[119]

The **Wisconsin** Technical College System (WTCS) has developed a three-level assessment process for its CTE programs. It reviews Indirect/Local Assessment Standards based on the percentage of students completing 80% of their CTE courses. External Assessment Standards look at the programs that have external licensure examinations and track the pass rate for students. Lastly, Summative Assessments are a WTCS-approved set of measures designed to test the skills obtained by students in CTE.[120]

**Florida** uses its student data, collected throughout its entire K-20 system, to create the Florida Education and Training Placement Information Program (FETPIP) to track post educational outcomes for students receiving a public education in technical or non-technical fields.[121] Florida uses FETPIP to help evaluate all programs at its community colleges.[122]

Recent legislation in **Florida** requires two-year institutions, beginning in the 2014-15 academic year, to provide each student electronic access to the report of employment and earning outcomes prepared by the Department of Economic Opportunity.[123] The bill also requires community colleges to record the intended baccalaureate degree program for each student intending to transfer, and to inform students of the prerequisites for those programs.

# Issue 5: Accountability

Beginning in 2013, **Virginia** will require the State Council of Higher Education for Virginia to publish data on the proportion of graduates of all public and some private institutions with employment at 18 months and five years after graduation, as well as information on average salary and average student loan debt. The data are to be presented by program and program level.[124] In addition, the Higher Education Opportunity Act of 2011 establishes "economic opportunity metrics" to help students understand the economic value of various degree programs as they make career choices, and to help policymakers as they allocate funding. The metrics may include market demand for the degree, earning potential and employer feedback.

## Accounting for Labor Market Outcomes of Completers and Noncompleters

Linking postsecondary data to labor market data is especially important because it allows colleges to account not only for the market value of the credentials they offer but for the benefits that can accrue to students who don't seek a credential or who leave a program prior to earning a credential. Many individual colleges attempt to track employment outcomes of their CTE students but meaningful state-level accountability is better served with state policies that facilitate linkages with employment data.

**Pennsylvania's** system of 14 public community colleges has adopted the Voluntary Framework of Accountability (VFA), launched in 2011 by the American Association of Community Colleges (AACC) as its state-wide accountability metrics. VFA metrics for CTE include licensure exam passing rates, the percent of CTE students that have completed a program (both credit and noncredit) *or* earned 90 contact hours who are employed with a livable wage, and the median wage growth of CTE students.[125] VFA includes metrics for noncredit workforce courses as well, including the percent of noncredit CTE students that transition from noncredit to credit courses.[126]

Both **Kentucky** and **Wisconsin** use Unemployment Insurance records in conjunction with student data to track employment outcomes for students after entering career pathways.[127]

In their annual outcomes report, the **Florida** Education & Training Placement Information Program (FETPIP) publishes the economic outcomes from different postsecondary institutions by completers and leavers. The information is broken down by the program completed or not completed.

The **Texas** Higher Education Coordinating Board (THECB) maintains an Automated Student and Adult Learner Follow-Up System by matching student records to Texas Workforce Commission Unemployment Insurance (UI) wage records, Department of Defense records, federal databases of civilian employees, and the public higher education enrollment database maintained by THECB. The data reports the shares of graduates and leavers that are working, enrolled in higher education, or both.[128]

## Useful Measures of Certificate Completion

Much-needed attention is now being given to the meaning and value of certificates, which vary greatly in length, in connection to industry standards, and in value to students. As accountability efforts focus more on credential completion, it will be important to understand and account for certificates of value and to guard against efforts to augment the production of certificates (short-term or long-term) that are not valued in the workplace.

As part of its efforts under the Complete College America initiative, **Oklahoma** is conducting an audit of all certificates in higher education to establish their value in the workforce, bring them in line with national norms for certificates, and bridge opportunities with AAS programs. The audit will evaluate unnecessary duplication and identify gaps, and will ensure that certificate programs meet state workforce development goals.[129]

# Issue 5: Accountability

**Colorado**, **Connecticut**, **Florida**, **Illinois**, **New Jersey**, **Oregon**, **Rhode Island**, **Texas**, and **Wisconsin** have enacted policies that require data collection or performance tracking for certificate attainment.[130]

In **Oregon**, recent legislation directs institutions to set and achieve certificate completion targets as a requirement of receiving state appropriations.[131]

The **Minnesota** legislature passed a bill requiring the Minnesota State Colleges and Universities to study options for lower credit credentials that would be recognized by employers and could be combined into an educational career path leading to a diploma or degree.[132]

## Accounting for Noncredit Outcomes

Noncredit coursework can provide an important foundation on which students build to enter and complete CTE credentials but only if states begin to monitor and account for such coursework.

In **North Carolina**, both credit and noncredit courses appear on students' transcripts, including the course number, title, and grade (a letter grade for credit course; pass or fail for noncredit).

**Texas** mandates that workforce education courses be included on transcripts.

In **Virginia**, transcripts list noncredit courses, including grades (i.e., satisfactory, non-satisfactory, withdrawal, or incomplete) if the student chooses to receive a grade.

In **Pennsylvania**, noncredit courses are included on transcripts only if they qualify for transfer to credit. Other states provide transcripts for noncredit courses that are separate from transcripts for credit courses.[133]

# Toward a Policy Agenda for California

In the first two parts of *Career Opportunities: Career Technical Education and the College Completion Agenda* we raised a number of issues that might best be addressed with some changes to state and system policy so that colleges have more clarity, more encouragement, and more support for operating effective and efficient CTE programs. States across the country are similarly struggling to capitalize on the assets of the CTE programs to bolster their economies through education and workforce development. State policies are continually evolving such that we are able only to provide a snapshot of state policies at a moment in time. It is our intent that the brief descriptions we have provided, along with the citations to the policies themselves, can help educators and policymakers in California (and elsewhere) identify some models and some resources to inform their ongoing discussions about improving CTE to better serve students and California's communities.

# Appendix A: Some Reports on Highlighted State Policies

## Reports Covering Multiple States' Policies

Report highlighting career pathways as a policy for improving postsecondary education and CTE, which reviews the programs in Arkansas, Kentucky, Oregon, Washington, and Wisconsin as models. Policy topics: What Degree and Certificate Programs are Offered; Structure and Delivery of Programs Offered; Funding; Accountability.

Stephens, R. P. (2009). *Charting a Path: An Exploration of the Statewide Career Pathway Efforts in Arkansas, Kentucky, Oregon, Washington and Wisconsin*. Seattle, WA: Seattle Jobs Initiative.

Report highlighting state policies connected to career pathways in multiple states, including Florida, North Carolina and Washington. Policy topics: Structure and Delivery of Programs Offered; Accountability; High School – Community College– Workplace Pathways.

Hughes, K. L. & Karp, M. M. (2006). *Strengthening Transitions by Encouraging Career Pathways: A Look at State Policies and Practices*. New York: Columbia University, Teachers College, Community College Research Center.

Report on promising practices in career pathways highlights the policies Washington and North Carolina have taken at the state level. Policy topics: What Degree and Certificate Programs are Offered; Structure and Delivery of Programs Offered.

Alssid, J., Gruber, D., Jenkins, D., Mazzeo, C., Roberts, B., & Stanback-Stroud, R. (2002). *Building a Career Pathways System*. Barrington, RI: Workforce Strategy Center.

## Arkansas

Report highlighting Arkansas's Career Pathways Initiative as an innovative response to the educational needs of low-income students. Policy topics: What Degree and Certificate Programs are Offered; Structure and Delivery of Programs Offered.

Leach, M. (2008). *The Arkansas Career Pathways Initiative: A New Model for Delivering Postsecondary Training to Adult Students*. Little Rock, AR: Southern Good Faith Fund.

## Florida

Research analyzing the effectiveness of dual enrollment in promoting high school graduation and postsecondary achievement for students in the state of Florida and New York City. Policy topics: High School – Community College – Workplace Pathways.

Karp, M. M., Calcagno, J. C., Hughes, K. L., Jeong, D. W., & Bailey, T. (2007). *The Postsecondary Achievement of Participants in Dual Enrollment: An Analysis of Student Outcomes in Two States*. St. Paul, MN: University of Minnesota, National Research Center for Career and Technical Education.

Report analyzing the match between the programs at Florida's public colleges and growing careers, to identify where demand exceeds the supply of credentialed graduates. Policy topics: What Degree and Certificate Programs are Offered; Accountability.

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Report analyzing the effect of dual enrollment on students' postsecondary GPA, matriculation and retention. Policy topics: High School – Community College– Workplace Pathways.

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# Appendix A:
# Some Reports on Highlighted State Policies

Document published by the Kentucky Community and Technical College System with information on high-demand and high-wage occupations in Kentucky and their programs efforts to align with those occupations. Policy topics: What Degree and Certificate Programs are Offered; Accountability.

> Kentucky Community and Technical College System. (n.d.). *Institutional Research - Documents*. Retrieved from http://www.kctcs.edu/About_KCTCS/Institutional_Research/Documents.aspx

KCTCS publishes Demographic and Labor Market Data as part of their annual Fact Book. Included are job projections, wages, and enrollment clusters, broken down by KCTCS programs. Policy topics: What Degree and Certificate Programs are Offered; Accountability.

> Kentucky Community and Technical College System. (2012). *Fact Book 2011-2012*. Versailles, KY: Kentucky Community and Technical College System, Office of Research and Policy Analysis.

Report discussing the status, successes and challenges for Kentucky's efforts to aid high school students' transition into postsecondary institutions, including CTE programs. Policy topics: High School – Community College– Workplace Pathways.

> Southern Regional Education Board. (2005). *Building Transitions from High School to College and Careers for Kentucky's Youth*. Atlanta, GA: Author.

Report on career pathways as a model for educational advancement highlights the program in Elizabethtown, Kentucky. Policy topics: High School – Community College– Workplace Pathways.

> Jenkins, D. (2006). *Career Pathways: Aligning Public Resources to Support Individual and Regional Economic Advancement in the Knowledge Economy*. Barrington, RI: Workforce Strategy Center.

## New York

Comprehensive report published by CUNY in 2012 with an overview of the Accelerated Study in Associate Programs (ASAP) and self-performed evaluation outcomes. Policy topics: Accountability; High School – Community College– Workplace Pathways.

> Linderman, D. & Kolenovic, Z. (2012). *Results Thus Far and the Road Ahead*. New York: The City University of New York, NYC Center for Economic Opportunity.

Short publication by CUNY in 2009 analyzing the graduation rates for students in Accelerated Study in Associate Programs (ASAP). Policy topics: Accountability; High School – Community College– Workplace Pathways.

> Linderman, D. & Kolenovic, Z. (2009). *Early Outcomes Report for City University of New York (CUNY) Accelerated Study in Associate Programs (ASAP)*. New York: The City University of New York, NYC Center for Economic Opportunity.

## Ohio

Report on models for increasing the educational attainment of adult learners, which highlights Ohio's stackable certificates. Policy topics: What Degree and Certificate Programs are Offered; Structure and Delivery of Programs Offered.

> Community Research Partners (2008). *Ohio Stackable Certificates: Models for Success*. Columbus, OH: Author.

## Tennessee

Report on the structure of programs and outcomes for students at Tennessee's Technology Centers. Policy topics: What Degree and Certificate Programs are Offered; Structure and Delivery of Programs Offered; Funding; Accountability;

> Hoops, J. (2010). *A Working Model for Student Success: The Tennessee Technology Centers*. Washington, DC: Complete College America.

# Appendix A:
# Some Reports on Highlighted State Policies

## Washington

Biennial report that assesses projected job openings and educational needs to meet labor market demands. Policy topics: What Degree and Certificate Programs are Offered; Accountability.

Higher Education Coordinating Board, State Board for Community and Technical Colleges, & Workforce Training and Education Coordinating Board (2011). *A Skilled and Educated Workforce 2011 Update*. Olympia, WA: Authors.

Report analyzing the progress and academic outcomes for students enrolled in I-BEST programs. Policy topics: What Degree and Certificate Programs are Offered; Structure and Delivery of Programs Offered; Accountability;

Prince, D. & Jenkins, D. (2005). *Building Pathways to Success for Low-Skill Adult Students: Lessons for Community College Policy and Practice from a Statewide Longitudinal Tracking Study*. New York: Columbia University, Teachers College, Community College Research Center.

Report evaluating students in I-BEST based on various academic achievements. Policy topics: What Degree and Certificate Programs are Offered; Structure and Delivery of Programs Offered.

Zeidenberg, M., Cho, S., & Jenkins, D. (2010). *Washington State's Integrated Basic Education and Skills Training Program (I-BEST): New Evidence of Effectiveness* (CCRC Working Paper No. 20). New York: Columbia University, Teachers College, Community College Research Center.

## Wisconsin

Report analyzing the data from the Employer Satisfaction Survey conducted once every four years by the 16 technical colleges. The survey is sent to employers identified by graduates who reported being employed in occupations related to their training in order to evaluate how well programs trained the graduates. Policy topics: What Degree and Certificate Programs are Offered; Structure and Delivery of Programs Offered.

Wisconsin Technical College System (2010). *2010 Employer Follow-Up Report*. Madison, WI: Author.

Report analyzing the data from the Graduate Follow-Up Survey, which gathered data on the perceptions of programs and labor-market outcomes for students graduating six-months prior. Policy topics: What Degree and Certificate Programs are Offered; Structure and Delivery of Programs Offered;

Wisconsin Technical College System (2012). *2011 Graduate Follow-Up Report*. Madison, WI: Author.

Report analyzing the data from the Apprenticeship Completer Survey to measure the satisfaction of students receiving the apprentice completion certificate. Policy topics: What Degree and Certificate Programs are Offered; Structure and Delivery of Programs Offered; Faculty Policies.

Wisconsin Technical College System (2012). *2009-10 Apprenticeship Completer Report*. Madison, WI: Author.

Report analyzing the data from the Longitudinal Follow-Up Report. Graduates are asked 5 years after completing their program questions about employment and perceptions of their education in order to evaluate programs. Policy topics: What Degree and Certificate Programs are Offered; Structure and Delivery of Programs Offered.

Wisconsin Technical College System (2012). *Five-Year Longitudinal Follow-Up of 2005-06 Graduates*. Madison, WI: Author.

Report on the need for and early lessons from Wisconsin's career pathways from the Center on Wisconsin Strategy (COWS), a nonprofit research institute. Policy topics: What Degree and Certificate Programs are Offered; Structure and Delivery of Programs Offered; High School – Community College– Workplace Pathways.

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# Notes

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