



### Introduction

Policy makers and educators around the nation are wrestling with an important challenge – how to raise expectations for high school achievement, while increasing relevance and engagement in learning to keep students in school. Career and technical education (CTE) has received renewed attention as a strategy for increasing school engagement and rigor as policy makers grapple with these complex challenges.

Although, on the surface, their approaches may look very different, the Carl D. Perkins Career and Technical Education Improvement Act of 2006 (Public Law 109-270) and the college- and career-ready agenda focus on a common objective: ensuring that all American students graduate from high school with the skills and knowledge they need to be ready for college and careers. If students complete high school adequately prepared for college and the workplace, it will help strengthen American economic competitiveness at the regional, state and national levels. More specifically, the Perkins Act includes a number of provisions that have direct relevance to the college- and career-ready agenda including: *the alignment and integration of academic content standards; programs of study; measuring technical skill attainment to determine work readiness; and strengthened reporting and accountability requirements.* Below we explore each of these major areas, the implications for the college- and career-ready agenda and offer state examples.

### The Alignment and Integration of Academic Content Standards

Several provisions of the Perkins Act articulate how CTE programs should relate to established academic standards. One provision directs the state to support programs that “include coherent and rigorous content aligned with challenging academic standards, that have been adopted by the state” under the No Child Left Behind Act. Another provision requires the state to “ensure that students who participate in such career and technical education programs are taught to the same challenging academic proficiencies as are taught to all other students...” A third related provision in the Perkins Act promotes programs that “integrate rigorous and challenging academic and career and technical instruction.”

### Implications

Each of these provisions addresses the concept of rigorous and challenging academic standards from a slightly different approach. The first approach is to ensure that CTE content is *aligned to* rigorous and challenging academic content – that CTE course content runs parallel to and complements challenging academic content standards. The second approach is to ensure that CTE students themselves are taught *to the same academic standards and expectations* as other students. Furthermore, the third expectation is that rigorous and challenging academic content is *integrated into and with the CTE content.*

These provisions originally were designed to counter the practice that holds CTE

### Major Provisions in the Perkins Act from the 2006 Reauthorization

**Programs of Study:** Each local recipient of Perkins funds, including school districts, community/technical colleges or area CTE schools, must offer the portion of at least one Program of Study that is appropriate to its students. Programs of study are sequences of CTE curriculum designed to culminate in a recognized credential, certificate or degree at the community or technical college level – although certificates could also be offered at the secondary level of the Program as an intermediate skill validation.

**State and Local Accountability:** Local recipients are held accountable for the achievement of individual students in a series of performance indicators, while the previous version of the Perkins Act only held the state accountable for aggregated results.

**Tech Prep:** Tech Prep is a smaller program within the Perkins Act that was created in 1990 with the purpose of demonstrating a more rigorous form of CTE that holds students to high academic expectations and helps them make smooth transitions into postsecondary studies and apprenticeships. The program requires school districts and colleges to form consortia to which the Tech Prep state funds were distributed. States now have the option to maintain Tech Prep as is – with increased accountability indicators – or to merge Tech Prep into the general Perkins state grant program.



students to lower academic expectations than non-CTE students or a “non college-bound” track. While some of the provisions are holdovers from previous Perkins authorizations, including ensuring CTE students are taught to the same academic standards as their non-CTE peers, the new Perkins improves upon the legislative intent to eliminate the two-track approach and raise expectations for students who take CTE courses.

As far as alignment to rigorous and challenging academics and teaching to the same standard, unfortunately these provisions carry little weight on their own. In states where there are differentiated expectations for students, CTE programs can still be aligned to less rigorous academic expectations and meet the requirements of the Perkins Act, particularly since there is no clear or uniform definition of “rigorous and challenging.”

Integration of academic and career and technical education is not defined in the Perkins Act, but can be implemented in a few ways. One approach is to identify academic content that is inherent within a CTE program, and teach those skills more explicitly through applied lessons. Another approach is to fully integrate the content of an academic course and CTE content in a way that both academic credit and CTE elective credits can be awarded. For example, in some cases, an agriculture science program can be counted for a science credit on a student’s high school transcript, and a business accounting program can be recognized as a mathematics credit.

A first step toward academic integration is creating a crosswalk of academic standards that reside in a CTE curriculum. A vital second step is to prioritize which academic standards should be taught and create clear processes for how to integrate academic content in CTE courses. This requires significant professional development and the creation of model lesson plans for academic integration. As states move to adopt and implement the Common Core State Standards (CCSS), they may consider reviewing the new standards with an eye towards how they can be integrated with CTE content.

### **State Examples**

Schools in states such as **Minnesota**, **Colorado** and **Kentucky** have participated in the “Math-in-CTE Project,” coordinated by the National Research Center for Career and Technical Education. This project involves professional development in which groups of teachers from several CTE disciplines work with math teachers to identify and extract math concepts embedded in their courses. CTE and math teachers collaborate to develop CTE instructional practices that allow CTE instructors to teach these concepts using the same terminology and format that students experience in their traditional math courses. On various measures of success, these activities produced measurable improvement in the math achievement of CTE students.<sup>1</sup>

### **Using Programs of Study to Encourage Student Preparation for College and Career Readiness**

The Perkins Act (Section 134) includes a provision in which school districts must describe how they will “encourage career and technical education students at the secondary level to enroll in rigorous and challenging courses in core academic subjects (as defined in section 9101 of the Elementary and Secondary Education Act of 1965).”

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<sup>1</sup> For more information, see <http://www.nccte.org/>



### Implications

While the provision to encourage enrollment in rigorous and challenging courses is compatible with the college- and career-ready policy pillar of “requiring all high school graduates to take challenging courses that prepare them for life after high school,” there are really no “teeth” to the Perkins provision, as schools are required only to “encourage” such course-taking, there is no related reporting requirement, and no clear or uniform definition of “rigorous and challenging” is provided.

Yet states do have the responsibility to develop Plans of Study – or recommended sequences of courses – for each individual program of study. It is logical for states to include a recommended core curriculum in the Programs of Study documentation, so that students will see the preferred academic courses that accompany preparation for their area of career interest. It would also be feasible to require that, in each introductory CTE course or in earlier grades, CTE students are made to understand the value of taking a rigorous academic curriculum to keep all postsecondary options on the table. In addition, there are actually some CTE pathways – such as the pre-engineering Project Lead the Way – that require students to take rigorous academic courses simultaneously. Just as it is important for states to build CTE into their college- and career-ready graduation requirements, states also should integrate the core academic courses into the CTE Programs of Study whenever and however possible.<sup>2</sup>

The issue of academic course-taking is one of the most common and contentious sources of friction between leaders who are pushing for increased graduation requirements and some CTE advocates. Many CTE teachers and leaders are concerned about the “squeeze-out” factor. They perceive that increased academic course requirements for graduation will make it challenging for students to fit CTE courses into their schedules, leading to an overall decrease in CTE participation. For students who are behind academically, they may be required to take a double block of academic courses, further crowding electives out of their schedules.

The other concern is that with increased math and science requirements in the 11th and 12th grades, scheduling becomes more constrained, and students may not be able to take CTE courses because of conflicts. These scheduling conflicts are exacerbated when students take their CTE courses at a regional CTE center, having to travel some distance to and from the center from their home school, taking away instructional time. In schools that utilize a block schedule, there are additional credits and courses available to students that fill their requirements, and generally there are enough available elective credits to accommodate a full sequence of CTE courses. Still, in many small or rural schools that have limited availability of higher-level academic courses, perhaps only offered during one period per day, it is feasible that real scheduling conflicts may arise between academic courses and CTE courses. There are a variety of strategies states can adopt to address this issue, including the development of interdisciplinary courses, distance learning opportunities or incorporating remediation into applied and/or elective courses.

### State Examples

**Indiana** has created a “Technical Honors” endorsement for the high school diploma for students entering high school in 2007. To earn the *Core 40 with Technical Honors* diploma, students must complete all requirements for Core 40, a college- and-career set of graduation requirements, complete a career-technical program (8 or more semesters of related credit), and complete two of the following:

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<sup>2</sup> For the sample Plans of Study for the 81 State Career Cluster Pathways, see <http://careerclusters.org/resources/web/pos.cfm>



achieve certain scores on WorkKeys, complete dual high school/college credit in a technical area, complete a Professional Career Internship course or Cooperative Education course, complete an industry-based work experience as part of a two-year career-technical education program, and/or earn a state-approved, industry-recognized certification.

To improve access to CTE courses and mitigate scheduling challenges, **Delaware** shifted its approach in how it delivers more equipment-intensive CTE programs. Delaware formerly had shared-time regional technical centers. Students would split their time between their comprehensive high school and the regional technical center. This approach led to a number of scheduling, administrative and transportation challenges that contributed to falling enrollment at the technical centers and CTE programs, as well as low achievement and low expectations for the students that did participate in the technical center programs. In the early 1990s, the state transformed the technical centers into full day regional technical high schools, where students could take academic and career tech courses under one roof. Expectations for academic achievement rose significantly for students in the technical high schools, academic and CTE content was integrated within CTE classrooms, and collaboration among core academic and CTE teachers increased, leading to significant increases in student participation in both CTE and academic courses.

### **Measuring Technical Skill Attainment to Determine “Work Readiness”**

The Perkins Act requires states to create new means for assessing student attainment of technical (occupational) skills. Section 113 (b)(2)(A) specifies that the core indicators of performance should be “*valid and reliable,*” and should measure “*student attainment of career and technical skill proficiencies, including student achievement on technical assessments, that are aligned with industry-recognized standards, if available and appropriate.*”

### **Implications**

This new provision complements the college- and career-ready agenda because it can bring CTE courses at the high school and postsecondary levels into alignment with the skills that are needed for success in the workplace. States are grappling with how to re-configure their assessment of technical skills in a way that is realistic, affordable and contributes to improved teacher practices. Teachers need to have access to assessment data that will allow them to reflect upon the data and respond to the data, but this is not often the case, particularly for states relying on industry-based certifications to assess their students’ technical skills. A major challenge is how educators can gather data from these industry-based certifications that are provided by a third-party vendor off site. Legally, the scores from some of these assessments belong to the student and are not shared directly with the school system or college.

Another concern is that some certifications are too expensive for many students to afford to take and require the student to be at least 18 years old. Also, and perhaps most importantly, not all industry-based certifications have the same level of rigor, are well-aligned to a student’s coursework and are utilized by employers. Given there are literally thousands of national and state-based certifications, it is critical that states hone in on – and ensure students only take – those that have direct utility to their local business community in their hiring and training practices.

All of these issues, as well as issues that arise around state-developed career tech education assessments, need to be addressed so that valid and reliable data on student performance can be input into the Perkins accountability system and used to ensure all students leave high school with the academic and technical skills they need for success.



### State Examples

**Virginia's** Path to Industry Certification: High School Industry Credentialing initiative encourages students to work toward a selected industry credential or state license while pursuing a high school diploma. Students who earn a credential by passing a certification or licensure examination may earn up to two student-selected verified credits to meet graduation requirements. A credential is defined as:

- A complete industry certification program, e.g. Certified Nursing Assistant (CNA);
- A pathway examination that leads to a completed industry certification, e.g. automotive technician examinations from the National Institute for Automotive Service Excellence (ASE);
- A state-issued professional license, e.g. Cosmetology; or
- An occupational competency examination, e.g. skill assessments from the National Occupational Competency Institute (NOCTI).

**Georgia's** Industry Certification Initiative aims to identify the strongest CTE programs in the state – and provide them with the additional support they need to best prepare their students for college and careers. In partnership with business and industry leaders, Georgia's Department of Education has developed a process for reviewing and certifying school-based CTE programs. Part of this process is ensuring that the locally-developed programs incorporate industry standards (and reinforce academic standards whenever possible). To date, about 40 programs have been certified.

The industry certification “checklist” includes:

- *Program information* on enrollment, alignment of curriculum to standards, use of programs of study and use of project-based learning;
- *Instructor information* on ways in which instructors are engaged with industry and national professional organizations and whether they hold any leadership positions in the community;
- Whether the programs have active *career technical student organization (CSTO)* chapter, and what activities it engages in;
- Information on whether the program has the appropriate *equipment and facilities*; and
- *Local support*, including funding and school-based support

### Strengthening Accountability for Local Results

Several performance indicators in the Perkins Act intersect with other school improvement indicators. For instance, the Perkins Act requires the state to report student graduation rates for CTE students, as measured by the state under the No Child Left Behind Act. Perkins also requires schools to report on the percentage of “*student[s] place[d] in postsecondary education or advanced training, in military service or in employment.*”

For states that choose to keep Tech Prep as a separate funding stream and program, they will need to develop a number of data reporting functions that are new to the Perkins Act. Important data include:

- Remediation at the postsecondary level for students who participated in a high school Tech Prep program;
- The percent of high school Tech Prep students who earn dual/concurrent enrollment credits while in high school;
- The percent of high school Tech Prep students who enroll in postsecondary education; and
- The percent of high school Tech Prep students who enroll in the same field or major in postsecondary education that they were enrolled in at the secondary level.



### Implications

In most state accountability systems, states only will identify students for Perkins accountability if they reach “concentrator” status, meaning they have taken three or more CTE courses. In most places, students do not reach concentrator status until their junior or senior year of high school. Thus, the graduation rate of CTE concentrators is likely to be higher than the cohort graduation rate that tracks all ninth graders through graduation. The fact that states are increasingly moving towards using cohort graduation rates that track individual students’ progress through high school will help improve the identification and tracking of CTE concentrators, yet challenges still remain.

The Perkins requirement for high school “transitions” or placement into postsecondary education, military service and employment also has shortcomings. One major challenge is collecting accurate data on what students actually do once they leave high school. To date, 16 states have P-20 longitudinal data systems capable of tracking students’ progress from K-12 to public, in-state postsecondary institutions that actually match data on at least an annual basis. According to the Data Quality Campaign’s 2009 state survey, just 10 states currently have the ability to link their K-12 and workforce data. For seamless data collection and reporting to occur, states need to bring their various data systems into alignment.

In addition to the quality of the survey data, the construction of the Perkins data element itself is also a challenge. School districts typically aggregate student information on college and training participation, military enlistment and employment into one data element. For a number of years, the average performance on this indicator has been in the 90-95 percent range, since almost all students do one of these three activities. If the data were disaggregated at the state level, states could have a more nuanced picture of what CTE students are doing after high school. For states that are keeping their Tech Prep systems separate, this is an important opportunity to develop shared data elements and reporting processes to create stronger linkages between secondary and postsecondary education systems.

### State Example

**Nevada** uses a definition of CTE “concentrators” to report its graduation rate for CTE students that is slightly different from what was originally recommended by the U.S. Department of Education. The Department’s proposed definition of CTE concentrators requires student enrollment in several CTE courses, so the majority of students considered concentrators typically would be juniors and seniors. According to this definition, concentrators would be those CTE students who generally had not dropped out of school before their junior years. Nevada believes that the U.S. Department of Education’s proposed definition of CTE concentrators would lead to the calculation of an inappropriately high graduation rate for CTE students compared to the general cohort graduation rate. By using a more inclusive definition of CTE concentrators, Nevada aims to provide a graduation rate for CTE that is more comparable to the state’s general graduation rate and would demonstrate a more accurate impact of CTE involvement across the entire high school experience.

### Policy Options to Link Perkins Implementation with the College- and Career-Ready Agenda

The following is a list of strategies from a comprehensive standpoint that state college- and career-ready teams and CTE leaders can consider working on together:

#### Coordinate Development of CTE Programs of Study

- Encourage the state’s public colleges and universities to collaborate with the K-12 and community college systems to develop and implement CTE Programs of Study that extend from high school



directly to associate degree and/or baccalaureate programs. Legislative or regulatory policy may be needed to require the collaboration, but much of the work will need to be done by consultation among high school teachers and college faculty within specific program areas.

- Require every 8th-grade student to create a personalized plan for high school graduation and beyond, identifying the rigorous academic courses and a concentration of interest-based courses necessary for success after high school. The student plans should be reviewed and updated annually to ensure the student is on track to meet graduation requirements and to modify career and interest-based courses as the student's plans change.

#### **Facilitate Academic and Technical Integration**

- Establish incentive funds to support schools and districts developing academic integration tools and processes. The implementation of the new Common Core State Standards provides a unique opportunity to take a fresh look at the CTE programs in the state. Integrated teams of CTE and academic teachers should develop and pilot integrated academic lesson plans. When the plans have been piloted and revised appropriately, they should be shared with other teachers and schools through professional development opportunities and web-based dissemination.
- Establish a “Real-Life Applications” initiative to bring career-based real-world applications into the core academic classes of English language arts, math and science. The state should establish a goal that a certain percentage of academic standards will be taught in the context of a real-world application or career-themed approach, so students can understand the application of academic concepts. CTE teachers and core academic teachers should be convened to review academic standards and identify examples of career applications for this content. Career-themed lesson plans and problems should be developed around the academic standards and piloted by the academic teachers. Once piloted and revised as necessary, these resources should be shared with other teachers and schools.
- In each district's school improvement plan, create a new planning requirement to describe how academic teachers are collaborating with CTE teachers to integrate academic content into CTE courses and to insert contextualized lesson plans into academic courses.
- Build recommended sequences of college- and career-ready courses into CTE Programs of Study.
- Establish “AP-style” criteria by which students achieving at a certain level of CTE assessments can earn college-level credit. Ensure that these credits are immediately transcribed, rather than held in “escrow” and made available only if the student enrolls in the community college immediately after high school graduation.
- Explore the potential for credits earned through demonstrations of proficiency, rather than traditional “seat time.” Allowing students to earn credit for academic and CTE courses through demonstrations of proficiency, through such instruments as assessments, portfolios, presentations and other projects, can facilitate interdisciplinary teaching and learning, as students may be able to demonstrate mastery of state academic and CTE standards at the same time in non-traditional ways. States need to develop processes (such as curriculum audits) and criteria for districts and schools to develop credit-by-proficiency models to ensure all students have mastered the content and skills required by the state, while providing local education agencies with flexibility to design and implement the curricula and courses as they choose.

**Build Shared Longitudinal Data Systems between Secondary, Postsecondary and Workforce Systems**

- State leaders of the college- and career-ready agenda and CTE leaders need to work together on development of P-20 longitudinal data systems. The Perkins Act accountability system needs stronger and more comprehensive data on student participation in postsecondary education, and the Tech Prep accountability requirements call for information on student remediation at the postsecondary level and student program enrollment. Longitudinal data systems that track individual student's progress from high school through postsecondary education (and beyond) are of tremendous value. With such capacity, states will be able to trace a student's postsecondary success (or failure) back to his or her high school experience and use that information to strengthen the experience for the next class of students.
- As appropriate, build CTE indicators into the state's broader accountability and reporting system. Currently, most state accountability systems fail to include indicators of college and career readiness – such as the percentage of students completing a rigorous curriculum or entering college without the need for remediation – and the new reporting requirements of Perkins can help drive states towards broadening the range of indicators they include in their systems. As states increasingly adopt college- and career-ready policies, including the new common core standards, their reporting and accountability systems must evolve to promote and drive all college and career readiness for all students, a charge of both the college- and career-ready and CTE leadership.

**Assure Portability of CTE Dual Enrollment Credits**

- Establish a data tracking mechanism where postsecondary programs annually report the number and percentage of upperclassmen in the feeder high schools that have earned CTE dual enrollment credits and what percentage of these credits are transcribed by a local community college or four-year institution.
- Create state policy to ensure that college credits earned through CTE dual enrollment courses are inserted immediately on a college transcript for the student and that these credits are portable and accepted by all other public postsecondary institutions within the state.
- Create state policy that community college credits earned through CTE dual enrollment must be honored as credits in the CTE program area by other community colleges within the state. At colleges and universities, the CTE dual enrollment credits must at least be honored as fulfilling elective credit requirements.

This paper was in part drawn from Achieve's policy brief: *The Perkins Act of 2006: Connecting Career and Technical Education with the College and Career Readiness Agenda*. The full paper is available at <http://www.achieve.org/files/Achieve-CTEPolicyBrief-02-07-08.pdf>