

The State of Career Technical Education
An Analysis of State CTE Standards



About The National Association of State Directors of Career Technical Education Consortium

NASDCTEc was established in 1920 to represent the state and territory heads of secondary, postsecondary and adult Career Technical Education (CTE) across the nation. NASDCTEc, through leadership, advocacy and partnerships, aims to support an innovative CTE system that prepares individuals to succeed in education and their careers, and poises the United States to flourish in a global, dynamic economy. In cooperation with the National Career Technical Education Foundation (NCTEF), NASDCTEc provides leadership and support for The National Career Clusters[®] Framework to deliver high-quality CTE programs through improved curriculum design and instruction. The ultimate goal: To elevate student success in college and career while strengthening the economy and driving America's competitiveness worldwide.

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For the first time in the history of Career Technical Education (CTE), states and territories throughout the United States have developed a common set of benchmark standards – the Common Career Technical Core – that defines what CTE students should know and must be able to do to thrive in a global economy.

The state-led development of these benchmarks represents a critical step towards the states voicing and agreeing on a shared understanding of the foundational capabilities successful CTE programs are expected to shape and instill in participating students. Although significant, this achievement is but a first step in ensuring that graduates of CTE programs acquire the knowledge and skills they need to be relevant in today’s highly competitive and global labor market. The critical next step is for states to adopt and implement the Common Career Technical Core so they may reap the full benefits of these standards.

The State of Career Technical Education: An Analysis of State CTE Standards is the result of a study conducted to compare state CTE standards to the Common Career Technical Core and gather information on the major policy levers and structures that support the adoption and implementation of CTE standards at both the secondary and postsecondary levels. Never before has this information been gathered about states’ CTE standards and policies.

Some of the findings are, in brief:

- ▶ 46 states and three territories have state-approved secondary CTE standards and 13 states and two territories have state-approved postsecondary standards. Only two states and one territory have CTE standards that are fully aligned between secondary and postsecondary systems.
- ▶ The majority of states have the authority to adopt both secondary and postsecondary CTE standards, although most only exercise this authority at the secondary level.
- ▶ Most states have adopted The National Career Clusters Framework as a model for how they describe their CTE system. However, few have adopted The Framework in a way that directly affects CTE instruction.
- ▶ The majority of states that have state-approved secondary CTE standards have course-level standards that relate to specific occupational or job preparation, or at the program level, which are then further broken down into course-level standards.
- ▶ The monitoring required by the Carl D. Perkins Career and Technical Education Act of 2006 drives how states review secondary CTE programs, including determining the fidelity with which standards are implemented locally, while accreditation is the major driver of postsecondary CTE program evaluation and monitoring.
- ▶ Nearly all states have programs of study (sequences of courses across the secondary and postsecondary levels), even though few have statewide postsecondary standards to which these programs of study are aligned.
- ▶ There is a significant mismatch between states' current CTE standards and the Common Career Technical Core, largely explained by the level of state standards (i.e., secondary course-level) and the level of the CCTC (i.e., end of program-of-study level).

Moving forward, states should consider:

- ▶ Filling the postsecondary CTE standards gap
- ▶ Implementing CTE standards with fidelity
- ▶ Continuing to make progress on programs of study
- ▶ Implementation of the Common Career Technical Core



The forecasted needs of the 21st century, the pace of technological change, demographic shifts, the challenges of student engagement and achievement, and increasing global competitiveness instigated an evaluation of the current and future role of Career Technical Education (CTE) in the United States. In response, and in keeping with our leadership role and responsibility, in 2010 The National Association of State Directors of Career Technical Education Consortium (NASDCTE^c) put forth a bold vision to guide CTE's role in our nation's educational, workforce and economic advancement and success.¹

The vision honors the rich history of vocational education but also charts a progressive course for the future that seeks to break down the silos between academic and technical education, and between secondary and postsecondary education. It holds CTE accountable for the ongoing transformation of programs to be responsive to the needs of the economy. It calls for strengthened partnerships with employers and demands data-driven decision-making. And it cements CTE leaders' commitment to a delivery system organized by The National Career Clusters[®] Framework delivered through comprehensive programs of study. The vision, agreed to by all the states, includes specific and actionable steps to chart progress toward the accomplishment of the vision, including the development of *"a national common core of technical standards."*²



Serving 12.5 million students a year, CTE provides students and adults with the academic and technical skills, knowledge and training necessary to succeed in future careers and to become lifelong learners.

Why Common CTE Standards?

Creating Order Out Of Chaos

As the economy has changed, many CTE programs transitioned from helping students prepare for an entry-level job to helping students prepare for a career. As part of that transition, national organizations like NASDCTE, individual states, and even industry-based organizations, created different sets of standards for student learning in CTE programs. The result was a hodgepodge of standards that vary in quality and specificity from one state to the next, putting some students at a distinct disadvantage for competing in the ever-changing global economy. Recognizing the need for more consistency, the idea emerged to transition the decade of work on Career Clusters to a common and shared set of standards that are a benchmark for students in CTE programs, regardless of where they live or which delivery system they use.

Common Benchmarks for a Complex System

The CTE delivery system is vast – with about 1,400³ high schools, 1,200 regional technical centers and 1,700 two-year colleges offering CTE programs.⁴ CTE programs are offered at the secondary, postsecondary and adult levels in myriad settings and constructs such as career academies, regional technical centers, technical high schools, technical and community colleges and comprehensive high schools. And nearly every high school student takes at least one CTE course, with 38% of high school students earning three or more CTE credits.⁵

CTE's state governance reflects the complexity of the system it oversees. The federal investment in CTE, the Carl D. Perkins Career and Technical Education Act of 2006 (Perkins) requires states to identify an “eligible agency” responsible for the federal investment. In all but 15 states/territories, the State Education Agency is the eligible agency (See Appendix A). However, the reality is that there are often multiple state agencies with responsibility for CTE programs, such as community college boards, state workforce agencies and governors' offices. Another incongruity is the financial investment states make into CTE. A recent survey found that 36 states dedicate categorical state funding to secondary CTE, while only 16 do so at the postsecondary level. All of these factors create great diversity in how CTE is defined, how it is delivered, and against what standards programs are held accountable.

Raising The Bar

While the new CTE vision calls for breaking the silos of academic and technical education and secondary and postsecondary education, it also calls for CTE to transform to meet the needs of the ever-changing workplace. With the pressure of global competition impacting the U.S. economy and the education system, there is an urgency to ensure more students graduate high school ready for their next steps. We know that high-quality CTE produces positive outcomes including better test scores, improved progress towards and through high school graduation and transition to postsecondary education, as well as persistence and completion of postsecondary degrees and credentials. Common benchmarks will guide more CTE programs to achieve these impressive results.

What is the Common Career Technical Core?

In 2012, 42 states, Washington DC and Palau⁶ came together to develop a set of common benchmarks for CTE. Informed by input from more than 3,500 representatives from K-12, postsecondary, and business and industry, and built upon a decade of nationally-validated Career Clusters Knowledge and Skills Statements, the Common Career Technical Core (CCTC) are a result of this two-year effort led by the states.

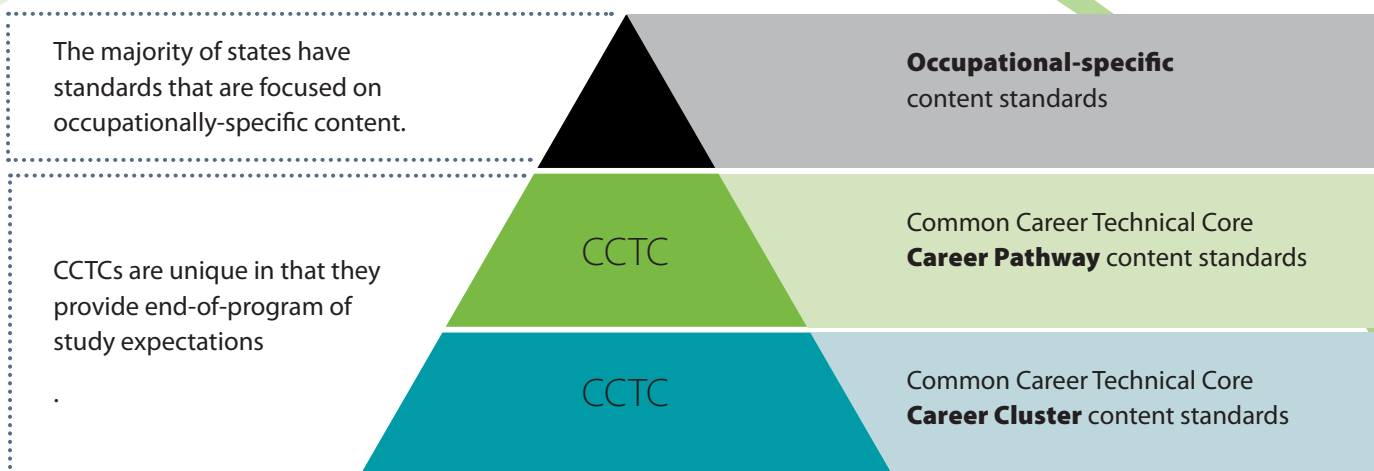
The CCTC includes a set of standards for each of the 16 Career Clusters and their corresponding 79 Career Pathways as well as an overarching set of Career Ready Practices. The Career Ready Practices are 12 statements that address the knowledge, skills and dispositions that are important to becoming career ready. These practices provide a framework for developmental experiences that can be “practiced” using many different approaches and in a variety of settings (e.g., academic and technical classrooms, after-school programs, career technical student organizations, work-based learning experiences, etc.).

It is important to note that the organization and intent of the CCTC standards is very different from most of the existing state-developed or industry-developed CTE

standards. The CCTC are benchmark standards that define what a student needs to know and be able to do at the end of a **program of study**. Many existing state standards are course-level standards that are more occupationally or job focused.

The CCTC are not implicitly intended to be a wholesale replacement for existing state standards, although states have the option of doing this if they so choose. Depending on the states’ current standards, the CCTC could:

- ▶ Supplement existing occupation-specific standards by providing relevant Career Cluster or Career Pathway standards, which are broader in scope than the occupation-specific standards; and/or
- ▶ Serve as an anchor for the state CTE standards, likely requiring the addition and deletion of currently-used state standards; and/or
- ▶ Replace existing state standards.



The State of Career Technical Education: An Analysis of State CTE Standards

In late 2012, NASDCTE^c commissioned an alignment study, the first-of-its-kind analysis comparing each state's secondary and postsecondary CTE standards to the CCTC. To accomplish this, it was essential to gather the existing body of knowledge around state CTE standards. This included collecting the actual state CTE secondary and postsecondary standards, as well as supporting policies, procedures, legislation and practices around how states develop, adopt and implement standards.

A summary of the methodology used to conduct this analysis can be found in Appendix B.

What's Next?

Each state is being provided a customized report that provides an analysis of its state standards against the CCTC. The purpose of this analysis is to provide states with information to guide considerations and decisions regarding adoption of the CCTC. States will analyze the results of their alignment reports and determine if they wish to adopt the CCTC.

At the national level, the information collected by this report is vast, with many implications for states and local CTE programs. The report provides an analysis of the trends in state CTE standards, raises questions for further consideration and puts a stake in the ground where priority attention must be made to realize our vision.



CTE Policy Landscape

The following section offers an overview of the current policy landscape with regard to statewide secondary and postsecondary CTE standards. It lays out the what, who and how of states' CTE standards.

Standards Development & Authority

Similar to the diverse governance and delivery systems of CTE, states take a wide range of approaches in organizing and requiring standards for CTE programs and courses at the secondary and postsecondary level. Even more so than with academic standards, many states' approaches to setting CTE standards allow for significant local decision making with varying degrees of guidance and policies encouraging implementation of state standards. This variability among and within states results in a wide variety in the quality of CTE programs.

Statewide CTE standards are much more prevalent at the secondary level, which is not surprising given the academic freedom often given to postsecondary faculty and the decentralized nature of postsecondary education. In total, 46 states offer statewide CTE standards at the secondary level (along with another three U.S. territories), 13 offer statewide CTE standards at the postsecondary level (plus two U.S. territories), and the same 13 states require CTE standards at both the secondary and postsecondary level.

Only two states – **Iowa** and **Oregon** – utilize the same CTE standards across secondary and postsecondary systems for all CTE, as well as Guam, which has adopted the Common Career Technical Core. Another seven states – **Alabama, Colorado, Florida, Georgia, Indiana, Kansas, and Mississippi** (and Palau) – have varying levels of alignment between their secondary and postsecondary standards, facilitated by joint standards development and revision processes. This is not to say other states do not leverage secondary-postsecondary alignment and coordination through programs of study or articulation agreements, but it remains very rare for states to have standards fully aligned across systems, despite the benefits.

Defining “Standards”

While there are many different types of standards used to develop and evaluate CTE programs, courses and students, for the purposes of this report, standards are defined as **clear expectations of what students should know and be able to do at the end of a CTE program or course.**

To be considered “statewide” CTE standards, the standards must be formally required for all CTE students enrolled in a specific CTE course or program of study.

Table 1: Statewide CTE Standards, by Learner Level

| State | Level of Secondary Standards | Adoption Authority | Level of Postsecondary Standards | Adoption Authority |
|----------------------|------------------------------|---|----------------------------------|---|
| Alabama | Course | State Board of Education (SBE) | Course | State Higher Education Agency |
| Alaska | Practice Standards | SBE | None | State Board of Regents (SBOR); Other |
| Arizona | Program | SBE | None | None |
| Arkansas | Course | SBE | None | State Higher Education Agency |
| California | Program | SBE | None | SBOR |
| Colorado | Program | State Board for Community Colleges and Occupational Education | Course | State Board for Community Colleges and Occupational Education |
| Connecticut | Program; Course ⁷ | SBE ⁸ | None | SBOR |
| Delaware | Program | SBE; Commissioner/ Supt of Education | Program and curriculum | Board of Trustees, Technical and Community College |
| District of Columbia | None | SBE | None | State Higher Education Agency; Other |
| Florida | Course | State Education Agency (SEA) | Course; Program ⁹ | SEA |
| Georgia | Course | SBE | Course; Program | State Board for Technical College System |
| Hawaii | Course | SBE | None | SBOR |
| Idaho | Program | SBE; State CTE Director | None | SBE; State CTE Director |
| Illinois | None | SBE | None | SBOR; Other |
| Indiana | Course | SEA | Course; Program | Locally selected |
| Iowa | Program | SBE | Course | SBE |
| Kansas | Course; Program of Study | SBE | Course | SBOR |
| Kentucky | Course; Program | SBE | None | SBOR |
| Louisiana | Program | SEA | None | SBOR; Other |
| Maine | Industry standards | Commissioner/ Supt of Education | None | SBOR; Other |
| Maryland | None | SBE | None | SBOR; Other |
| Massachusetts | Program | Commissioner/Supt of Education | None | Locally selected |
| Michigan | Program | SBE | None | Locally selected |
| Minnesota | Program | Locally selected | None | Locally selected |
| Mississippi | Course | SBE | Course; Program | State Board of Education; State Board of Regents |
| Missouri | None | SBE | None | SBE |
| Montana | Practice Standards | SBE | None | SBOR |
| Nebraska | Course; Practice standards | SBE | None | Locally selected |
| Nevada | Program | SBE | None | SBOR |
| New Hampshire | Program | SEA | None | Locally selected |
| New Jersey | Program | SBE | None | Locally selected |
| New Mexico | Practice Standards | Commissioner/ Supt of Education | None | SEA |
| New York | Program | SBE | None | SBOR |
| North Carolina | Course | SBE | None | SBOR; State Higher Education Agency |

Table 1: Statewide CTE Standards, by Learner Level (continued)

| State | Level of Secondary Standards | Adoption Authority | Level of Postsecondary Standards | Adoption Authority |
|----------------|---|---|--------------------------------------|---|
| North Dakota | Program | Other | None | Locally selected |
| Ohio | Course; Program | SBE | None | SBOR; SHEA |
| Oklahoma | Course; Program | State CTE Director | None | SBOR; State CTE Director; Other |
| Oregon | Course; Program; Program of Study | SBE | Course; Program; Program of Study | SBE |
| Pennsylvania | Course; Program of Study | SBE | None | Locally selected |
| Rhode Island | None | SBE | None | SBE |
| South Carolina | Course | SBE | None | SBOR |
| South Dakota | Course | SBE | None | SBE; Other |
| Tennessee | Course | SBE | Course | SBOR; Other |
| Texas | Course | SBE | End-of-course objectives | Higher Education Coordination Board |
| Utah | Course | SBE; State CTE Director | None | SBOR; Other |
| Vermont | Course; Program | SBE | None | SBOR; Other |
| Virginia | Course | SBE; SEA | None | Locally selected |
| Washington | Program; Program of Study | SBE | None | Locally selected |
| West Virginia | Course; Program | SBE | None | SBOR; Other |
| Wisconsin | Grade-band | Commissioner/ Supt of Education | Other ¹⁰ | Locally selected |
| Wyoming | Practice Standards | SBE; Other | None | Locally selected |
| Guam | Program of Study | Guam Community College Board of Trustees | Program of Study | Guam Community College Board of Trustees |
| Palau | Program | Commissioner/ Supt of Education; State CTE Director | Program | State CTE Director; Other |
| Puerto Rico | Course | SEA | None | SBOR |
| Virgin Islands | None | SEA | None | SEA |
| Total | 49 States/Territories | | 15 States/Territories | |

Table 2: Secondary Standards Revision Cycle

| Revision Cycle | States |
|-----------------------------|---|
| 1 year | Florida, Indiana |
| 2-4 years | Arizona, Arkansas, Iowa, Kentucky, Michigan, Mississippi, Pennsylvania, Utah, Washington, Guam |
| 5 years or longer | Alabama, Alaska, Colorado, Idaho, Kansas, Missouri, Montana, New Jersey, North Carolina, North Dakota, Ohio, Tennessee, Wisconsin, Wyoming |
| Other | California, District of Columbia, Georgia, Hawaii, Louisiana, Maine, Massachusetts, Minnesota, Nebraska, Nevada, New Hampshire, New Mexico, New York, Oklahoma, Oregon, South Dakota, Texas, Virginia |
| No revision cycle or N/A | Connecticut, Delaware, Illinois, Maryland, Rhode Island, South Carolina, Vermont, West Virginia, Palau, Puerto Rico, Virgin Islands |

Nearly every state engages in a standards development and revision process for secondary standards that incorporates input from K-12 and postsecondary educators and industry representatives. In some cases, these groups (often called advisory committees) simply review existing standards and make minimal adjustments. In other states, these advisory committees are charged with reviewing the entire universe of CTE standards to ensure not only the relevance and accuracy of the individual standards, but also to ensure there are courses and programs meeting the workforce needs.

At the postsecondary level, the standards development and revision process typically engages only postsecondary faculty, community/technical college leaders and industry/business representatives. It is rare for secondary educators to be involved in the development or revision of postsecondary CTE standards, with the exception being states that have CTE standards fully aligned across both levels or leverage aligned standards through programs of study or dual enrollment programs.

State Boards of Education (SBE) are the most common body to approve or adopt secondary CTE standards, just as they commonly approve standards in other content areas. In some cases, the state education agency (SEA), K-12 superintendent of schools or State CTE Director has the authority to approve CTE standards. At the postsecondary level, adoption authority is more of a mixed bag, with community college presidents or chancellors, individual institutions of higher education, State Boards of Regents (SBOR), SBEs and state higher education agencies all playing roles across states.

The Carl D. Perkins Career and Technical Education Act of 2006

One cannot fully understand the state CTE policy landscape without understanding the Carl D. Perkins Career and Technical Education Act of 2006 (Perkins), which governs nearly all CTE programs. A few key elements of Perkins include:

- ▶ Perkins requires states to report out on students' academic and technical achievement, but explicitly prohibits the federal government from requiring – or certifying – any specific set of state CTE or academic standards.
- ▶ All states leverage Perkins reporting as a way of providing oversight over local CTE programs (e.g., program approval, program evaluation and re-approval)
- ▶ As of 2006, Perkins requires every secondary and postsecondary local recipient of Perkins funding to have more than one program of study in place.

Florida: Aligned CTE Standards

Florida delivers CTE programs and courses through three different systems – secondary, postsecondary/adult vocational (PSAV), and postsecondary degree/certificate programs. The state maintains a separate set of industry-driven CTE standards (i.e., curriculum frameworks) for each of its delivery systems; however, the three sets of CTE standards are developed concurrently by the same committee of business/industry, secondary and postsecondary representatives.

CTE Standards & the Career Clusters

At both the secondary and postsecondary level, it is most common for states to organize their CTE standards at the course or program level rather than at the program of study level. Specifically, 16 states have course-level standards at the secondary level and 16 states have program-level standards. Another seven states have both course- and program-level standards.¹¹ **Maine**, as another example, has identified and approved certain sets of national industry standards which districts can choose from, rather than develop state standards. **Alaska, Montana, New Mexico** and **Wyoming** only have practice standards, rather than content, or Career Cluster-specific, standards.

At the postsecondary level, six states have statewide course-level CTE standards, another five have standards at the course- and program-level, while the remaining states with postsecondary CTE standards either have program-level or other types of standards.

Over the last decade, nearly every state has begun to use The National Career Cluster Framework as a way of organizing CTE programs and standards. A number of states – including **New Jersey** and **Oregon** – have embraced The Career Cluster Knowledge & Skills Statements, which are a pre-cursor to the CCTC, and fully use them as the basis of

their CTE standards. Other states have used the 16 Career Clusters as a jumping off point to organize their own Career Clusters, such as **Nebraska**, which has identified six career fields, into which the 16 Career Clusters fit, or **Georgia, Colorado** and **Florida**, which added a 17th Career Cluster in energy.

Most common, however, is for states to use The National Career Clusters Framework as a *conceptual* framework for organizing and communicating their existing CTE programs rather than a *practical* framework that provides standards for creating or affirming CTE programs.

Regardless of whether states use the Career Clusters as a foundation for their CTE standards or simply as an organizing framework for communicating about their CTE programs, the majority of states have CTE standards that fall under most, if not all, of the 16 Career Clusters. This is not surprising, as the Career Clusters were designed to cover the entire world of work. Specifically, nearly every state that has statewide CTE standards has standards that fall within the majority of the Career Clusters, as shown in Figure 1.

In **West Virginia**, local districts are required to submit applications for program approval and annual updates to their local Perkins plan. In these applications, districts are required to indicate their use of the state's secondary CTE standards, typically based on their use of the state-approved courses (which are aligned to the statewide CTE standards, now the Common Career Technical Core).

Local districts can apply for a waiver to this requirement if they wish to implement their own courses. Local districts can develop their own courses that are aligned to other standards, but only with West Virginia Department of Education approval.

Massachusetts uses their Professional Standards for Vocational Technical Teachers, Professional Standards for Vocational Technical Administrators, and Professional Standards for Vocational Technical Cooperative Education Coordinators to implement the Vocational Technical Education Frameworks (i.e., statewide CTE standards). Specifically, Massachusetts's regulation governing professional standards explicitly requires that vocational technical teachers, administrators and cooperative education coordinators use the Commonwealth's Vocational Technical Education Frameworks and Massachusetts Curriculum Frameworks within their local programs.

Reinforcing Policies

Simply requiring CTE standards at either or both learner levels does not mean that those standards are being implemented with fidelity at the local level. As with standards in any content area, it is the reinforcing policies and processes that help ensure state standards are reaching classrooms consistently and with an equivalent level of rigor. Within the CTE policy landscape there are a few key policy levers utilized by states to help monitor the local use of state CTE standards: program approval and evaluation; programs of study; technical skill assessments; and credit transfer agreements.

Program Approval & Evaluation

All states have a process in place for approving and evaluating locally-administered CTE programs, as required by Perkins. At a minimum, states collect data on a number of federally-required indicators of student achievement and attainment as a condition of receiving federal funds.

Thirty-nine states use the program approval and/or evaluation process to ensure local programs are aligned to statewide CTE standards at the secondary level. More often than not, Perkins monitoring and reporting serves as the framework and guide for program evaluation, which includes assessment of the local implementation of state-approved or industry standards and programs of study. Some states require the use of state-developed or state-approved CTE courses as part of the program approval and evaluation process. Other states require local education agencies to report out on the use of state standards along with other performance indicators. Some states, such as **Georgia** and **West Virginia**, allow local districts to submit their own course standards or curriculum, which must be approved at the state level and, in the case of **Tennessee**, can then be added to the list of state-approved courses. Among these 39 states, the weight given to the use of state standards varies, with the Perkins reporting requirements still the primary information collected.

At the postsecondary level, accreditation is often a more significant driver of program evaluation. While state postsecondary agencies may require local institutions to report out a variety of inputs (e.g., standards and industry engagement) and outputs (e.g., student achievement and attainment) it is often the accreditation requirements set by such bodies as the Middle States Commission on Higher Education or the North Central Association of Colleges and Schools Higher Learning Commission to whom postsecondary programs, institutions and agencies hold themselves accountable.

Programs of Study

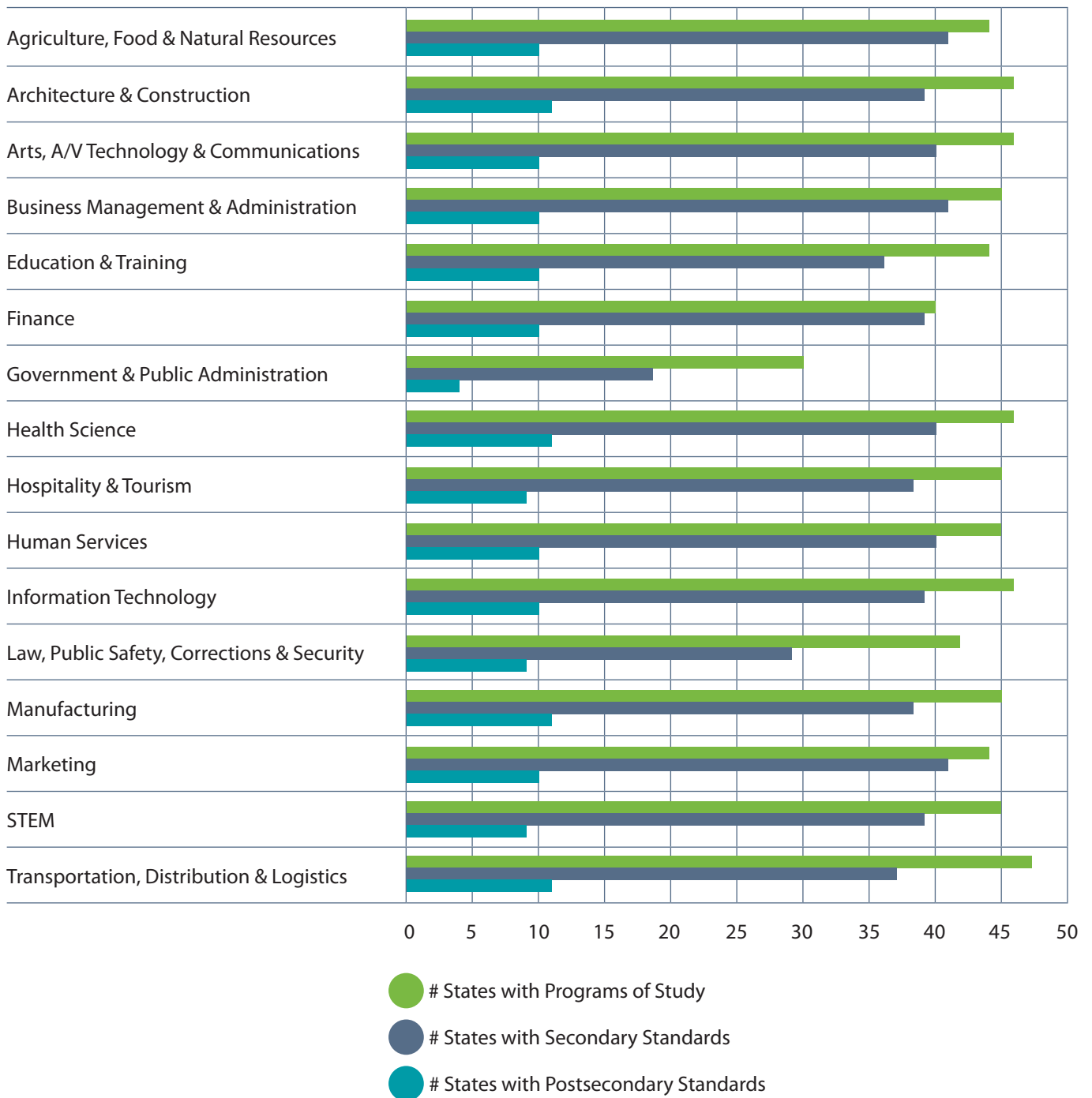
Perkins requires all states and local eligible recipients to implement at least one program of study. Perkins' definition of a program of study includes four core elements:

- ▶ Incorporate and align secondary and postsecondary education;
- ▶ Include coherent and rigorous content aligned with challenging academic and CTE content in a coordinated, non-duplicative progression of courses that align secondary education with postsecondary education to adequately prepare students to succeed in postsecondary education;
- ▶ Offer the opportunity, where appropriate, for secondary students to acquire postsecondary credits; and
- ▶ Lead to an industry-recognized credential or certificate at the postsecondary level, or an associate or baccalaureate degree.

By definition, programs of study are intended to have fully aligned standards to ensure fully aligned secondary-to-postsecondary transitions for students. Interestingly, nearly every state has programs of study across the 16 Career Clusters, even without statewide standards in those Career Clusters at the secondary and/or postsecondary level. As a result, most of these programs of study rely on locally-developed standards, particularly at the postsecondary level. Further, there are many programs of study being implemented at just one learner level – secondary or postsecondary – and in these cases, the federal definition of/requirements for a program of study are not being met.

In **Oregon**, the statewide CTE standards (i.e., the Skill Sets) are the only CTE skill standards acknowledged for program of study design and those standards apply simultaneously to the secondary component and postsecondary component of a program of study.

Figure 1: State Programs of Study, by Career Cluster



Comparing the availability of statewide standards at each learner level to the stated program of study offerings, it becomes clear that the lack of standards at one learner level or the other is a barrier to full program of study implementation. The CCTC can provide a strong foundation, spanning the learner levels, for the work being done at the state and local level to create and validate programs of study.

There are some states, such as Montana and Alaska, which are leveraging the program of study model to ensure quality and consistency across CTE programs in lieu of having a strong standards infrastructure. For example, **Montana's** Big Sky Pathway initiative is the state's effort to build strong, fully-articulated programs of study. The state is supporting the development of local Big Sky Pathways in six Career Cluster areas, taking into account the use of relevant state and/or industry standards as well as the alignment between the secondary and postsecondary standards and curriculum in their approval process. **Alaska** provides detailed guidance around the local selection of CTE standards to promote consistency and quality.

Career Pathways Collaborative

Colorado, Kansas and **Mississippi** have joined together through the Career Pathways Collaborative to develop the Career Pathways Assessment System™ (cPass®). By Spring of 2014, the Collaborative will have developed 10 assessments including a general assessment and nine pathway-level assessments: Comprehensive Agriculture, Animal Systems, Plant Systems, Manufacturing Production, Design and Pre-construction, Comprehensive Business, Finance, Marketing, and Education/Training. The assessments blueprints are largely organized around the Career Clusters and therefore will likely be well aligned to the Common Career Technical Core.

The goal of these assessments is to provide a tool for postsecondary programs and industry to determine if students are ready for a specific career once they complete a program of study.

Technical Skill Assessments

Every state has policies in place around the use of assessments within their CTE programs. In fact, Perkins, in part, defines “career and technical education” as “*organized educational activities that... offer a sequence of courses that provide individuals with coherent and rigorous content aligned with challenging academic standards and relevant technical knowledge and skills needed to prepare for further education and careers in current or emerging professions; provide technical skill proficiency, an industry-recognized credential, a certificate or an associate degree.*” Many states simply allow districts to select their own assessments, be they industry-recognized assessments or locally-developed assessments. Other states require (or approve) specific industry-recognized certifications or credentials to be used within local CTE programs.

A handful of states, however, have developed technical skills assessments, aligned to the state CTE standards, which serve as end-of-course or end-of-program assessments. These technical skill assessments take into account relevant industry standards, but also are used to evaluate whether students have mastered the full range of knowledge and skills within a specific CTE program of study or course. This allows for easier comparability across districts, schools and classrooms and helps reinforce the use of statewide CTE standards. States with state-developed and/or state-specific technical skill assessments include: **Arizona, Arkansas, Connecticut, Georgia, Kansas, Kentucky, Minnesota, Mississippi, Missouri, Nevada, North Carolina, Utah, Vermont** and **Wyoming**.

Credit Transfer Agreements

Another way states can reinforce the use of statewide standards – or help validate locally-developed standards – is through credit transfer agreements between secondary and postsecondary institutions or systems. These credit transfer agreements typically include dual or concurrent enrollment courses and/or articulation agreements that allow students to earn and then take dual or concurrent credits with them to more than one in-state institution of higher education. While these agreements often take place at the local level, significantly limiting the portability of such credits for students, many states have policies or efforts in place to support the agreements and ensure their rigor and validity. In fact, all but four states and territories have some policy or guidance in place to facilitate credit transfer agreements for CTE courses.

About half of states provide guidance for the development and implementation of credit transfer agreements, ranging from sample memoranda of understanding and rubrics to comprehensive handbooks for establishing dual enrollment or articulation agreements. Another third of states have some statewide credit transfer programs, such as state-approved dual enrollment courses in a select number of CTE areas or articulation agreements recognized at the regional level, what might be considered “pilots.” Finally, nine states – **Colorado, Florida, Hawaii, Indiana, Maryland, Mississippi, North Carolina, Oklahoma** and **Washington** – have full statewide credit transfer programs or policies, meaning they have a mechanism in place for approving dual enrollment or credit transfer agreements at the statewide level. In addition, nearly all of these states also provide guidance and have additional pilots going on to facilitate more dual enrollment and articulation of credit across K-12, community and technical colleges and even four-year institutions.

While states take very different approaches to supporting, facilitating and organizing their credit transfer programs, what is common across nearly all states is a reliance on statewide secondary and postsecondary standards (where they exist) in the review and approval of programs. This is not surprising, as determinations around the rigor of a course taught in a high school or the natural overlap between secondary and postsecondary courses within the same program of study must be made by looking at standards and curricula. That being said, with so few states having statewide postsecondary standards, locally- or institution-developed standards and curricula remain the most commonly used.

Colorado Community College System’s Advanced Credit Pathways program aims to provide college credit for equivalent learning at the secondary level in CTE in alignment with criteria established in Perkins and state-required Plans of Study. The secondary-postsecondary credits are proposed by local or statewide content teams and then evaluated by a State Faculty Curriculum Committee that determines whether the curriculum meets the required threshold of 80% alignment between the secondary and postsecondary courses. This program provides targeted credit towards two-year Associates of Applied Science and certificate programs.



CCTC Alignment Results

This section includes a summary of the analysis NASDCTE^c commissioned comparing each state's secondary and postsecondary CTE standards to the CCTC to determine how well state standards align to the CCTC (and vice versa) and to provide a baseline for where state CTE standards are and where they would need to go if a state chooses to adopt or fully align their standards to the CCTC.

The CCTC's Key Assumptions

As the CCTC were being developed, there were a number of key underlying assumptions that drove the development process and that are reflected in the final benchmark standards.

The CCTC are for states, by states.

The impetus behind the development of the CCTC was the release of *Reflect, Transform, Lead: A New Vision for Career Technical Education*,¹² a paper released by NASDCTEc with the approval and support of every state's CTE director. Forty-two states signed on formally, but nearly every state contributed to the effort in some way, from serving on writing committees to providing feedback on public drafts of the standards. It is a state-driven decision to adopt the CCTC, but the value of having common (high-quality) CTE benchmarks across the nation is paramount for comparability, student mobility, and an enhanced sharing of best practices.

The CCTC address the educational expectations across an entire program of study.

The CCTC are end-of-program of study standards, meaning they represent what students should know and be able to do to at the end of a program of study within a CTE discipline. As high-quality programs of study encompass learning at both the secondary and postsecondary levels, the CCTC are intended to serve as umbrella standards for CTE programs for states to use as benchmarks against which they can compare their own state standards, curriculum and programs of study.

The CCTC provide the core expectations across the different delivery systems and approaches; as such the CCTC can be met by multiple methods and different types of state CTE standards.

The CCTC are not intended to necessarily replace existing state standards but instead ensure that all students who participate in CTE programs leave with a common set of knowledge and skills. Given the wide range of CTE systems that exist across states, both in terms of the organization and grain size of CTE standards and the delivery of said standards, the CCTC have never intended to serve as a wholesale replacement of CTE standards; they are instead a set of umbrella or anchor standards to help benchmark and raise the bar on existing state standards and programs of study.

The CCTC focus on foundational and higher-order concepts and skills for each Career Cluster and Career Pathway.

This dual task is reflected in the way the individual CCTC benchmarks are written – they are fairly broad, allowing states to fill in local, state or national industry standards under them, but they are rigorous in what they are expecting of students from a content and a depth-of-knowledge perspective.

The CCTC have two major components:

- ▶ Twelve **Career Ready Practices** that address the knowledge, skills and dispositions critical to becoming career ready, which are meant to be taught within all programs of study.
- ▶ **Content standards** for each of the 16 Career Clusters and their corresponding 79 Career Pathways.

The CCTC Alignment Study

NASDCTEc commissioned a nationwide study designed to provide state CTE leaders and policymakers the information they need to address critical CCTC adoption and implementation considerations. Specifically, a third-party research firm conducted alignment reviews between states' secondary and postsecondary standards the CCTC to identify where there was alignment and to what degree across the 12 Career Ready Practices and 16 Career Clusters. See Appendix B for a summary of the study methodology.

It is important to note that these findings represent simply a “point in time” and that one shouldn't rush to negative judgment based on them. The alignment study was not conducted to grade or rank states or state standards. Rather, it was conducted to establish a baseline to better understand how states organize their CTE standards and have embraced the program of study model.

Although the previous section notes that all but five states and territories have statewide CTE standards, not every state had standards at a level that were comparable to the CCTC or had standards that were publicly available (more often the case in the postsecondary level). A number of states were in the process of revising their standards during the alignment study and chose not to submit those drafts, and some states use very different formats across Career Cluster areas, making a consistent review not possible. In total, the secondary standards of 45 states and territories and the postsecondary standards of 13 states and territories were included in the study.¹³

The Findings

Overall, the aggregate findings from the alignment study suggest that, on average, state CTE standards are only partially aligned to the CCTC benchmark standards in all 16 Career Clusters (see tables on pages 22 - 25).

On average, states' standards are the most representative of the CCTC in Business Management & Administration and Marketing Career Clusters (at the secondary level); Health Science, Information Technology and Business Management & Administration (at the postsecondary level); and least representative of the CCTC in Transportation, Distribution & Logistics and Law, Public Safety, Corrections & Security Career Clusters at the secondary and postsecondary levels. However, it is the overarching, nationwide misalignment that is of greater importance than the Career Cluster-specific findings.

In part, the mismatch can be explained by the different organization and intents of the CCTC and state standards. As discussed earlier, when states organize their standards at the course- and occupational-levels, the intent of those standards is to provide expectations for students as they advance through a course and/or prepare for a specific job. When states organize their standards at the end-of-program of study-level, the intent is to provide expectations for students as they advance through multiple courses – at the secondary and postsecondary level – and prepare for a broader range of careers.

Another major takeaway of the results is that while most states adopted the Career Clusters over the past decade, formally or informally, the Knowledge and Skills Statements within those Career Clusters and Career Pathways were not fully implemented. The CCTC were developed through a process building on the 2008 version of The National Career Clusters Knowledge and Skills Statements, and there remains strong alignment between those two sets of standards. Therefore, these findings suggest that the voluntary adoption of the Career Clusters, without a focus on how those Career Clusters would impact standards, curriculum, assessments and other instructional tools has left those standards largely under-utilized at the state and local levels.

States are most likely to require standards at the secondary level aligned to these three Career Ready Practices:

- ▶ *Plan education and career paths aligned to personal goals;*
- ▶ *Communicate clearly, effectively and with reason; and*
- ▶ *Utilize critical thinking to make sense of problems and persevere in solving them.*

It is evident that states, on average, have standards aligned with the Career Ready Practices, with the main exceptions being the following Career Ready Practices:

- ▶ *Demonstrate creativity and innovation (a very difficult practice to require via standards), and*
- ▶ *Employ valid and reliable research strategies, which most states now require for CTE educators through the adoption of the Common Core State Standards in English Language Arts/Literacy.*

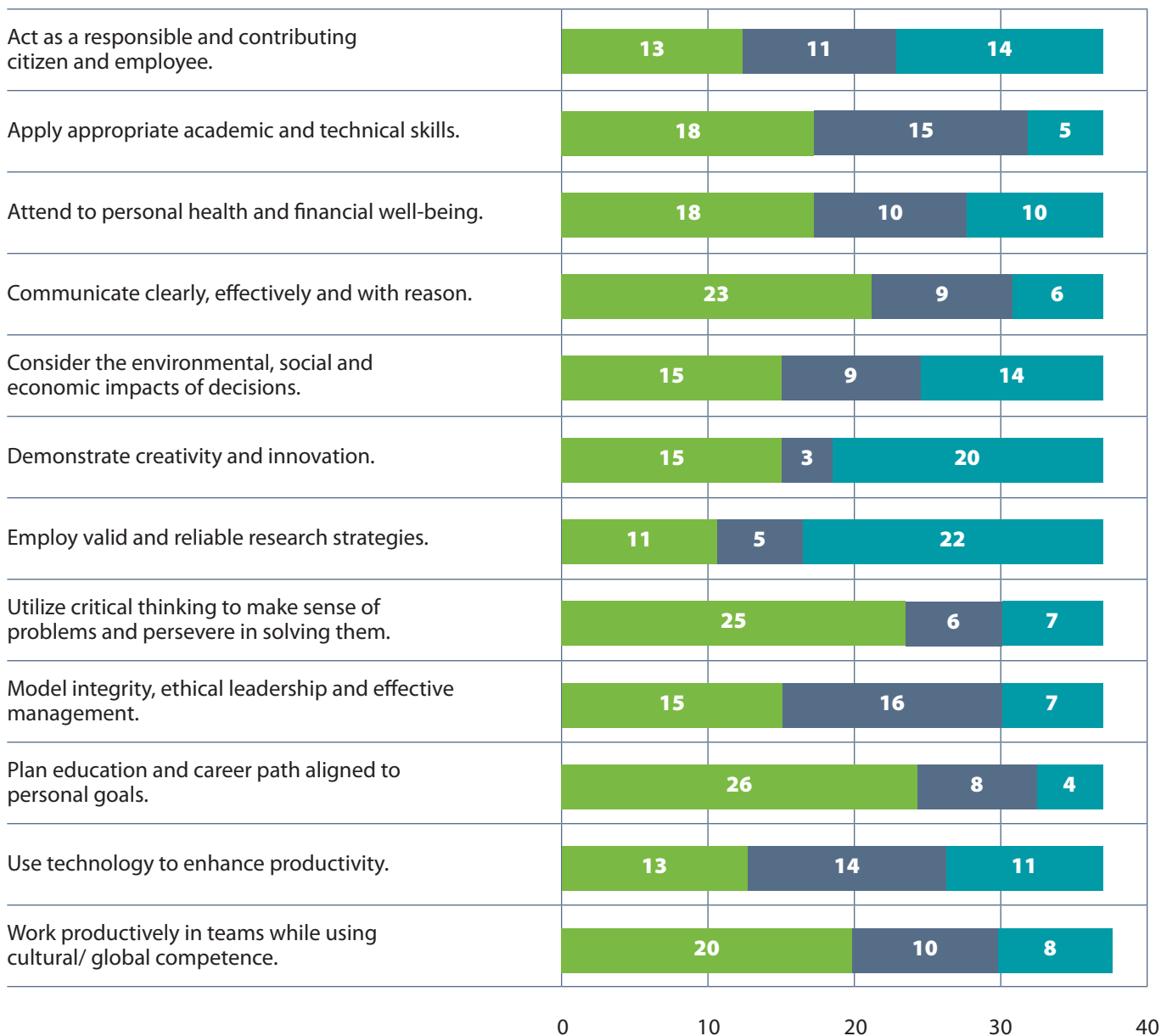
Among the 13 sets of postsecondary standards included in this alignment study, only seven had standards comparable to the Career Ready Practices, making it difficult to identify any major trends.

| SECONDARY | | | | |
|--|-------------------|-----------------------------|-----------------------|--|
| Career Cluster | Average % Aligned | Average % Partially Aligned | Average % Not Aligned | Total # of States (N size) ¹⁴ |
| Agriculture, Food & Natural Resources | 39% | 32% | 29% | 41 |
| Architecture & Construction | 35% | 29% | 36% | 39 |
| Arts, A/V Technology & Communications | 35% | 21% | 44% | 40 |
| Business Management & Administration | 59% | 24% | 17% | 40 |
| Education & Training | 34% | 28% | 38% | 37 |
| Finance | 34% | 30% | 36% | 39 |
| Government & Public Administration | 41% | 17% | 42% | 16 |
| Health Science | 38% | 29% | 33% | 40 |
| Hospitality & Tourism | 35% | 24% | 41% | 38 |
| Human Services | 30% | 26% | 44% | 41 |
| Information Technology | 41% | 29% | 30% | 39 |
| Law, Public Safety, Corrections & Security | 35% | 20% | 45% | 29 |
| Manufacturing | 37% | 28% | 35% | 38 |
| Marketing | 45% | 31% | 24% | 41 |
| Science, Technology, Engineering & Mathematics | 40% | 30% | 30% | 40 |
| Transportation, Distribution & Logistics | 29% | 20% | 51% | 38 |

| POSTSECONDARY | | | | |
|--|-------------------|-----------------------------|-----------------------|--|
| Career Cluster | Average % Aligned | Average % Partially Aligned | Average % Not Aligned | Total # of States (N size) ¹⁵ |
| Agriculture, Food & Natural Resources | 31% | 25% | 43% | 12 |
| Architecture & Construction | 42% | 25% | 33% | 13 |
| Arts, A/V Technology & Communications | 36% | 17% | 47% | 11 |
| Business Management & Administration | 49% | 28% | 23% | 12 |
| Education & Training | 30% | 23% | 47% | 12 |
| Finance | 36% | 22% | 42% | 11 |
| Government & Public Administration | 33% | 4% | 63% | 5 |
| Health Science | 50% | 19% | 31% | 13 |
| Hospitality & Tourism | 34% | 23% | 43% | 11 |
| Human Services | 37% | 20% | 43% | 11 |
| Information Technology | 39% | 28% | 33% | 12 |
| Law, Public Safety, Corrections & Security | 29% | 22% | 49% | 11 |
| Manufacturing | 49% | 22% | 30% | 13 |
| Marketing | 32% | 26% | 42% | 11 |
| Science, Technology, Engineering & Mathematics | 52% | 16% | 32% | 11 |
| Transportation, Distribution & Logistics | 24% | 19% | 57% | 13 |

NOTE: Totals may not equal 100% because of rounding.

States with Secondary Standards Aligned to Career Ready Practices



- # States with Standards Fully Aligned to Career Ready Practices
- # States with Standards Partially Aligned to Career Ready Practices
- # States with Standards Not Aligned to Career Ready Practices

Career Ready Practices (CRP) at the Secondary Level

| | % of States Fully Aligned to CRP | % of State Partially Aligned to CRP | % of States with No Aligned Standards to CRP | Total # of States (N size)¹⁶ |
|--|---|--|---|--|
| Act as a responsible and contributing citizen and employee. | 34% | 29% | 37% | 38 |
| Apply appropriate academic and technical skills. | 47% | 39% | 13% | 38 |
| Attend to personal health and financial well-being. | 47% | 26% | 26% | 38 |
| Communicate clearly, effectively and with reason. | 61% | 24% | 16% | 38 |
| Consider the environmental, social and economic impacts of decisions. | 39% | 24% | 37% | 38 |
| Demonstrate creativity and innovation. | 39% | 8% | 53% | 38 |
| Employ valid and reliable research strategies. | 29% | 13% | 58% | 38 |
| Utilize critical thinking to make sense of problems and persevere in solving them. | 66% | 16% | 18% | 38 |
| Model integrity, ethical leadership and effective management. | 39% | 42% | 18% | 38 |
| Plan education and career path aligned to personal goals. | 68% | 21% | 11% | 38 |
| Use technology to enhance productivity. | 34% | 37% | 29% | 38 |
| Work productively in teams while using cultural/ global competence. | 53% | 26% | 21% | 38 |

NOTE: Totals may not equal 100% because of rounding.

Career Ready Practices (CRP) at the Postsecondary Level

| | % of States Fully Aligned to CRP | % of State Partially Aligned to CRP | % of States with No Aligned Standards to CRP | Total # of States (N size) ¹⁷ |
|--|----------------------------------|-------------------------------------|--|--|
| Act as a responsible and contributing citizen and employee. | 29% | 0% | 71% | 7 |
| Apply appropriate academic and technical skills. | 29% | 71% | 0% | 7 |
| Attend to personal health and financial well-being. | 14% | 29% | 57% | 7 |
| Communicate clearly, effectively and with reason. | 57% | 14% | 29% | 7 |
| Consider the environmental, social and economic impacts of decisions. | 29% | 14% | 57% | 7 |
| Demonstrate creativity and innovation. | 29% | 0% | 71% | 7 |
| Employ valid and reliable research strategies. | 14% | 14% | 71% | 7 |
| Utilize critical thinking to make sense of problems and persevere in solving them. | 57% | 43% | 0% | 7 |
| Model integrity, ethical leadership and effective management. | 57% | 14% | 29% | 7 |
| Plan education and career path aligned to personal goals. | 29% | 29% | 43% | 7 |
| Use technology to enhance productivity. | 14% | 43% | 43% | 7 |
| Work productively in teams while using cultural/ global competence. | 29% | 14% | 57% | 7 |

NOTE: Totals may not equal 100% because of rounding.



Looking Ahead

Since the states adopted the 2010 vision for the future of Career Technical Education (CTE), they individually and collectively have made much progress, including building awareness of and support for CTE, developing and implementing programs of study, and collaborating to develop The Common Career Technical Core (CCTC).

It should be no surprise that these three progress points are connected. The vision called for raising the bar for CTE by developing common high-quality standards and transitioning to a new delivery system that will better prepare students for the needs of an ever-changing global economy. States have led this charge and, as a result, others are taking notice. CTE increasingly has a seat at the table as a recognized, key partner in leading educational transformation, ensuring our nation's economic competitiveness and fostering student success, although more inroads are needed if the U.S. is to close its skills gap and ensure all students can access the careers of their choice.

What We Learned:

The diversity of delivery systems and governance, as well as financial supports, equates to significant variability among states. Yet, states take seriously the responsibility of ensuring that their programs meet high expectations, using the policy levers available to them to promote excellence.

- ▶ 46 states and three territories have state-approved secondary CTE standards and 13 states and two territories have state-approved postsecondary standards. Only two states and one territory have CTE standards that are fully aligned between secondary and postsecondary systems.
- ▶ The majority of states have the authority to adopt both secondary and postsecondary CTE standards, although most only exercise this authority at the secondary level.
- ▶ Most states have adopted The National Career Clusters Framework as a model for how they describe their CTE system. However, few have adopted The Framework in a way that directly affects CTE instruction.
- ▶ The majority of states that have state-approved secondary CTE standards have course-level standards that relate to specific occupational or job preparation, or at the program level, which are then further broken down into course-level standards.
- ▶ The monitoring required by the Carl D. Perkins Career and Technical Education Act of 2006 drives how states review secondary CTE programs, including determining the fidelity with which standards are implemented locally, while accreditation is the major driver of postsecondary CTE program evaluation and monitoring.
- ▶ Nine states have full statewide credit transfer programs or policies in place for approving dual enrollment or credit transfer agreements. All but four states and territories have some policy or guidance in place to facilitate credit transfer agreements for CTE courses.
- ▶ Nearly all states have programs of study (sequences of courses across the secondary and postsecondary level), even though few have statewide postsecondary standards to which these programs of study are aligned.
- ▶ There is a significant mismatch between states' current CTE standards and the Common Career Technical Core, largely explained by the level of state standards (i.e., secondary course-level) and the level of the CCTC (i.e., end of program-of-study level).

Next Steps

Fill the Postsecondary CTE Standards Gap

The economic forecasts project that the majority of careers will require some type of postsecondary credential or degree.¹⁸ While states have continued to make progress in building collaboration across secondary and postsecondary CTE programs, there is much work still to be done in this area. Most notably, the absence of state-approved postsecondary CTE standards in most states makes this learner level alignment a significant challenge. To achieve the desired systemic alignment, progress will need to be made toward common standards within states, and ideally across states.

Further, the lack of common postsecondary CTE standards makes credit transfer agreements between secondary and postsecondary institutions and among postsecondary institutions an ongoing challenge. While many states have devised ‘work arounds,’ including some statewide articulation and common course numbering systems, many students earn college credit in high school that has limited value in the postsecondary space beyond a single institution of higher education. Having a truly aligned set of secondary and postsecondary CTE standards would provide a common framework to more easily accomplish these goals.

Implementation of Standards with Fidelity

States have significant responsibility for monitoring the quality of CTE programs, even in local control environments. This monitoring is how most states determine whether locals are implementing state-approved standards with fidelity. However, there is a wide range in how states actually use program evaluation as a lever for ensuring quality and consistency across programs. It is often hard to tell, even in states that have required state-approved standards, how well those standards are being implemented in classrooms across the state. Improved monitoring and reporting procedures are needed to tell if standards are being implemented with fidelity.

Continued Progress on Programs of Study

States have made significant progress in the development and implementation of programs of study, but not enough to allow programs of study to transform CTE instruction for students. Programs of study require a non-duplicative sequence of academic and technical standards across secondary and postsecondary education, the model on which the CCTC were built, yet very few states actually base their programs of study on aligned state standards. Programs of study are a powerful tool for preparing students for the career of their choice, but only if they are rigorous and offer students the opportunity to experience postsecondary learning and earn a meaningful credential or degree.

Implementation of the Common Career Technical Core

When the CCTC were developed, it was intentionally done to support the goal of transitioning to a delivery system of programs of study. And while many states have a high degree of alignment to the Career Ready Practices, the implementation of such standards requires a different approach – shifting of content employability or career development standards – to practice standards that are embraced and implemented at every grade level, with increasing complexity.

States will be faced with the decision, in partnership with their employer and community stakeholders, of how to interpret the alignment results, what actions to take and if they want to move toward adoption of the CCTC. Many will have to decide if they want to incorporate a set of broader CCTC Career Cluster and Career Pathway standards, alongside of or in place of existing state or industry standards that are narrower in focus. In any case, the CCTC offer a strong anchor to states’ standards and programs of study.

Conclusion

This report provides a set of diagnostic and benchmarking information to review, analyze and act upon. For the first time, we have a collection of state CTE standards – reviewed against a common set of CTE benchmarks – and an analysis of the related policies, procedures and practices. This rich collection includes many assets and resources to learn from, leverage and to share with the states as they benchmark their work and determine next steps.

At the national level, we see an opportunity for better alignment of federal programs and requirements and continued support to states in their endeavor of increasing access to high-quality CTE programs. We have questions to wrestle with about appropriate, aligned assessments and linking systems that have different governance, accountability and delivery systems. And there is still the persistent challenge to have stronger collaboration between academic and technical content and delivery. It is our hope that this report helps establish a baseline of where states are today and where they can go as they look ahead.

Appendix A: State CTE Agencies

The federal investment in Career Technical Education (CTE), the Carl D. Perkins Career and Technical Education Act of 2006 (Perkins), requires states to identify an “eligible agency” responsible for the federal investment. In all but 15 states/territories, the State Education Agency is the eligible agency. Below is a list of the non-K-12 agencies that oversee Perkins:

- ▶ Arkansas Department of Workforce Education
- ▶ Colorado Community College System
- ▶ Guam Community College
- ▶ University of Hawaii
- ▶ Idaho Division of Professional Technical Education
- ▶ Iowa Department of Education,
Division of Community Colleges
- ▶ Kansas Board of Regents
- ▶ Kentucky Education and Workforce
Development Cabinet
- ▶ Louisiana Community and Technical College System
- ▶ Minnesota State Colleges and Universities
- ▶ Montana University System
- ▶ North Dakota Department of Career
and Technical Education
- ▶ Oklahoma Department of Career
and Technology Education
- ▶ Washington Workforce Training and
Education Coordinating Board
- ▶ Wisconsin Technical College System

Appendix B: Alignment Study Methodology

The methodology for the Common Career Technical Core (CCTC) alignment study was developed by Global Skills X-Change to effectively produce an objective, third-party review of CTE policy infrastructure and standards alignment to the CCTC for each state or territory.

Specifically, to be included in the analysis the standards must have been:

- ▶ Publicly available or provided by the State CTE Director/Staff;
- ▶ Acknowledged by the State CTE Director during the interview;
- ▶ Approved/adopted by the state and used statewide at the secondary and/or postsecondary level; and
- ▶ Not reproductions of standards that are present elsewhere (e.g. industry/national standards)

In the event where a state/territory did not have standards that could be aligned to the CCTC, a case-study approach was used to describe the state’s CTE policy infrastructure, their specific approach to standards, and if they intend to adopt or adapt the CCTC in the future; however no alignment results could be generated in comparison the CCTC content and practice standards.

A number of states with statewide secondary and/or postsecondary standards were not included in the alignment part of the study because they had standards that were not publicly available (more often the case in the postsecondary level), were in the process of revising their standards during the alignment study and chose not to submit those drafts, or use very different formats across Career Cluster areas, making a consistent review impossible. In total, the secondary standards of 45 states and territories and the postsecondary standards of 13 states and territories were included in the study.

For the purposes of this study, **standards** are defined as clear expectations of what students should know and be able to do at the end of a CTE program or course (i.e., verb + object + modifier statements related to a Career Cluster, Career Pathway, or Career Ready Practice).

Online Research & Policy Scan Interview Protocol

All states had an opportunity to participate in a one-hour interview with GSX and to complete an interview policy scan. All but one state participated in these calls and every state responded to the policy scan. In anticipation of these interviews, the GSX team conducted online research to identify key standards-related documents.

Standards Extraction

Once the standards were identified, the GSX research team convened to determine the key elements of the state standards appropriate for alignment to the CCTC. This is termed “extraction” because the relevant state standards needed to be extracted from the source document into a database.

Once standards were identified for the alignment, they were extracted and placed into a database categorized by The National Career Clusters® Framework (which is comprised of 16 Career Clusters and their related 79 Career Pathways) as well as the 12 Career Ready Practices. For states that do not organize their standards based on The National Career Cluster Framework, the research team made determinations about which standards were appropriate for aligning to which Career Cluster(s) and placed the standards in the corresponding Career Cluster Excel file.

Alignment Analysis

The alignment analysis process consisted of two stages:

1. Automated algorithm to determine the extent to which the CCTC content is represented in the state standards: The GSX Alignment Tool was used to score the match between two bodies of text by searching the first body of text (the state standards) for keywords associated with a second body of text (the CCTC). The research team developed the keywords after a careful review of the CCTC content and an extensive testing and optimization phase. These keywords included not only the objects and modifiers included in the CCTC statements but also synonyms and commonly used associated objects and modifiers

The GSX Alignment Tool assigned a score indicating the degree to which the particular CCTC standard is represented by the state standards for that Career Cluster, based on the number of keyword matches. This score was then used to preliminarily place the results for a CCTC standard into one of three categories (Aligned, Partially Aligned, Not Aligned).

2. Human-driven quality assurance (QA) process to ensure the validity of the automated algorithm results: Trained standards professionals reviewed the best matches for each CCTC standard to ensure that the CCTC standard was properly assigned to its category (Aligned, Partially Aligned, Not Aligned). Experience in examining the keyword matches over multiple states suggested that alignment (if it was genuine) would typically be found among the best two or three matches to a CCTC standard although this study considered up to ten matches.

State Validation

States were given multiple opportunities to provide feedback on the alignment study results, including participating in the initial one-hour interview with GSX, a chance to review an initial draft of their state-specific report, and an opportunity to review the final state alignment results.

Definitions of Different Levels of Alignment

The degree to which the statements in the CCTC standards and Career Ready Practices are represented in the state standards provided.

- ▶ *Aligned* indicates that the state standard(s) address the CCTC standard utilizing a verb + object + modifier the same or synonymously.
- ▶ *Partially Aligned* indicates that the state standard(s) address the CCTC standard in part due to granularity differences and/or terminology differences (i.e., the object/topic area is similar, but the context or level of proficiency (verb) is below the CCTC expectation).
- ▶ *Not Aligned* indicates that the state standard(s) are not addressing the CCTC standard based on the data provided.

For the full methodology and a list of the Policy Scan Interview Protocol questions, see www.careertech.org/CCTC.html

END NOTES

¹Reflect, Transform, Lead: A New Vision for Career Technical Education, 2010.
<http://www.careertech.org/career-technical-education/cte-vision.html>

²Ibid

³National Center for Education Statistics (NCES) Build a Table for SY 2010-2011.
(<http://nces.ed.gov/ccd/bat/>)

⁴NCES Digest of Education Statistics: http://nces.ed.gov/programs/digest/d12/tables/dt12_306.asp

⁵The U.S. Department of Education (2012). The National Assessment of Career and Technical Education: Interim Report. <http://www2.ed.gov/rschstat/eval/sectech/nacte/career-technical-education/interim-report.pdf>.

⁶The states involved include: Arkansas, California, Colorado, Connecticut, Delaware, District of Columbia, Florida, Georgia, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Mexico, New Jersey, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Palau, Pennsylvania, Rhode Island, South Dakota, Tennessee, Utah, Vermont, Washington, West Virginia, Wisconsin, Wyoming

⁷Connecticut has two sets of statewide secondary CTE standards, one program-level set used by comprehensive high schools and one course-level set used by schools in the technical high school system.

⁸The Connecticut State Department of Education and the Connecticut Technical High School System have implemented statewide CTE standards when/if the State Board of Education did not do a formal adoption.

⁹Florida has two sets of postsecondary CTE standards - for postsecondary/adult vocational (PSAV) and for postsecondary degree/certificate programs.

¹⁰Wisconsin has locally developed, state-approved postsecondary CTE standards.

¹¹In addition to the standards listed in Table 1, many states also adopt or approve industry or licensure standards. As explained in Appendix B, these were left out of the alignment study and therefore were not captured in Table 1.

¹²Reflect, Transform, Lead: A New Vision for Career Technical Education, 2010.
<http://www.careertech.org/career-technical-education/cte-vision.html>

¹³The “N” sizes in the tables on pages 22 and 24 - 25 are higher than these numbers in some cases because Connecticut has two sets of secondary CTE standards and Florida has two sets of postsecondary CTE standards included within the alignment study.

¹⁴Importantly, this only takes into consideration states that currently have standards within a specific Career Cluster. If a state does not maintain standards within a specific Career Cluster, they received no alignment rating in that Career Cluster.

¹⁵Importantly, this only takes into consideration states that currently have standards within a specific Career Cluster. If a state does not maintain standards within a specific Career Cluster, they received no alignment rating in that Career Cluster.

¹⁶This only takes into consideration states that currently have standards able to be aligned to the Career Ready Practices.

¹⁷This only takes into consideration states that currently have standards able to be aligned to the Career Ready Practices.

¹⁸Carnevale, A., et al. (2013) *Recovery: Job Growth and Education Requirements Through 2020*. Georgetown University, Center on Education and the Workforce. <http://cew.georgetown.edu/recovery2020/>





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