

In 2010, the National Association of State Directors of Career Technical Education Consortium (NASDCTEc) convened a seminal event that resulted in all 50 states and many partners committing to the principles and action steps defined in [*Reflect, Transform & Lead: A New Vision for Career Technical Education*](#), specifically that, for CTE to reach its full promise, it must:

1. Ensure that the United States leads in global competitiveness;
2. Actively partner with employers to design and provide high-quality, dynamic programs;
3. Prepare students to succeed in further education and careers;
4. Be delivered through comprehensive programs of study aligned to The National Career Clusters® Framework; and
5. Be a results-driven system that demonstrates a positive return on investment.

This Vision has been impactful, resulting in tangible advances – some of which we will highlight below – as well as many intangible benefits. Most importantly, this Vision has provided a clear signal to the CTE community about the direction in which we are moving collectively and to the nation that we are committed to high-quality programs.

Now, five years later and with more interest and activity around CTE and career readiness than ever before, it is time to revisit this Vision. In anticipation of “The Future of CTE Summit,” we have written a series of short briefs to take stock of what has been accomplished and what still needs attention since the release of the original Vision.

This brief will explore the fourth principle:

CTE is delivered through comprehensive programs of study aligned to The National Career Clusters Framework

A transformation in the content and delivery of CTE programs is necessary. Programs of study (POS) aligned to The National Career Clusters® Framework are the means to accomplish this goal and should be the method of delivery of all of CTE. A rigorous and comprehensive POS, delivered by qualified instructors, is a structured sequence of academic and CTE courses that leads to a postsecondary-level credential, with aligned standards, curriculum and assessments to ensure coordination and seamless delivery of instruction for students. Students should have access to comprehensive career planning that empowers them to prepare for a lifetime of career and educational choices. Relevant work-based learning opportunities, and leadership development offered through Career Technical Student Organizations (CTSOs), are incorporated into the POS.

To accomplish this, we must:

- ✓ Convene and lead CTE stakeholders to develop policy, resources and technical assistance to help states with the design and implementation of POS
- ✓ Support incentives for employers to provide work-based experiences and professional development opportunities for teachers and faculty
- ✓ Encourage dual academic and technical certification of all teachers and faculty to support seamless and blended instruction
- ✓ Support federal legislation that encourages rigorous, comprehensive POS as the delivery model for education

PROGRESS TO DATE

This principle was designed to position [The National Career Clusters® Framework](#) and rigorous, comprehensive programs of study as transformative tools for *all* of CTE – pushing the community far beyond the minimums outlined in federal law.

Since 2010, many states have been using programs of study to set a high bar for expectations and quality for their CTE systems with a number of national organizations and the federal government leading initiatives to encourage these high-quality sequences of courses and cross-sector collaboration.

Widespread Adoption of Career Clusters

The 16 Career Clusters and related 79 Career Pathways aim to help students navigate their way to greater success in college and careers. The broad design of the framework, which encompasses the full world of work, has been critical in helping CTE move from preparing students for individual jobs to ensuring they gain the adaptable skills and knowledge needed to succeed in today's fast-paced, ever-changing global economy.

To date, [every state](#) uses The National Career Clusters Framework in some way to organize and deliver CTE programs, supported by the Perkins requirement that states report on [CTE student participation](#) by Career Cluster area. The flexibility of the framework allows states to tailor the Career Clusters to fit their economic needs. For example, **Georgia, Colorado** and **Florida** have added an energy-focused cluster; **Nebraska** reorganized the 16 Career Clusters into six career fields aligned with the state's key sectors.

Programs of Study's Potential to Improve Student Outcomes

Programs of study should be an intentional sequence of courses spanning both secondary and postsecondary education; providing students with a full array of career exploration, career preparation and dual enrolment opportunities; and culminating in a degree or credential. Although programs of study are still relatively new, research has shown that they are having a positive impact:

- Programs of study help K-12 CTE students get [better grades](#) and early indicators show they even [outperform](#) their non-CTE peers in graduation and overall GPA.
- Research found that 80 percent of students felt the program of study's intentional design [helped](#) them focus and

What is a Program of Study?

The 2006 reauthorization of the federal law governing CTE, [the Carl D. Perkins Career and Technical Education Act](#) (Perkins), required for the first time that states offer at least two programs of study, which may be adopted by local K-12 and postsecondary institutions. In turn, to receive federal funding, locals must offer at least one program of study.

According to the U.S. Department of Education, a program of study is a comprehensive, structured approach for delivering academic and career and technical education to prepare students for postsecondary education and career success.

Yet, this definition by itself is broad and not clearly defined. In 2010, NASDCTEC and other CTE stakeholders collaborated with the U.S. Department of Education to identify the [10 components](#) that, taken together, support what is known as, **rigorous programs of study**.

The 10 components are:

1. Legislation and policies
2. Partnerships
3. Professional development
4. Accountability and evaluation systems
5. College and career readiness standards
6. Course sequences
7. Credit transfer agreements
8. Guidance counseling and academic advisement
9. Teaching and learning strategies
10. Technical skills assessments

understand where they are headed throughout and after high school.

- One national study showed that [75 percent](#) of students taking three or more CTE courses enrolled in postsecondary education within two years of graduating from high school.

National Support Helps Accelerate Programs of Study

Recent efforts from Congress, federal agencies and major CTE stakeholders have helped raise the profile of the Career Clusters and rigorous programs of study as necessary for scaling up high-quality CTE.

- Senator Tim Kaine (D-VA) introduced the [Educating Tomorrow's Workforce Act](#), which includes a more rigorous framework for CTE programs of study and would encourage more extensive implementation of those core features.
- From 2010-2014, the U.S. Department of Education worked with six states – **Arizona, Kansas, Maryland, Montana, Utah** and **Wisconsin**, each focusing on a specific Career Cluster – to support the implementation of the 10 key components in its [Rigorous Programs of Study framework](#). In 2014, the department also partnered with Jobs for the Future to launch [Advancing CTE in State and Local Career Pathways](#) to provide five states – **Colorado, Massachusetts, Minnesota** and **Oregon** – with technical assistance to integrate CTE programs of study into their broader career pathways systems.

The 16 Career Clusters:

- Agriculture, Food & Natural Resources
- Architecture & Construction
- Arts, A/V Technology & Communications
- Business Management & Administration
- Education & Training
- Finance
- Government & Public Administration
- Health Science
- Hospitality & Tourism
- Human Services
- Information Technology
- Law, Public Safety, Corrections & Security
- Manufacturing
- Marketing
- Science, Technology, Engineering & Mathematics
- Transportation, Distribution & Logistics

With Perkins due for reauthorization, NASDCTEc has [joined](#) a coalition major education, labor and employer groups to call for the next iteration of Perkins to fund *only* programs of study as a means to better define the federal investment and to further promote and encourage high-quality CTE. According to an unpublished NASDCTEc survey of states, roughly a quarter of states already have taken the initiative to do this at both learner levels. Also, NASDCTEc and the Association for Career and Technical Education have crafted legislative language that would amend Perkins so that it only distributes its funds to rigorous CTE programs of study.

States Using Programs of Study to Drive Change

A [NASDCTEc analysis](#) of state CTE standards found that nearly all states have state-developed or approved programs of study in each of the 16 Career Clusters. Given that programs of study are complex by nature, implementing them with fidelity requires systems coordination, aligned standards, and a means to facilitate dual enrollment, work-based learning and career exploration opportunities. Though there are clear challenges to implementing programs of study, some states have been able to leverage these key elements of a rigorous program of study to the greater benefit of students.

Career Technical Education & Programs of Study

A Five-Year Progress Report on Reflect, Transform & Lead

- **Montana's** [Big Sky Pathways](#) initiative leverages the model to ensure quality and consistency across CTE programs and create fully articulated programs of study in six Career Cluster areas.
- **Nevada** is undergoing a multi-year process to support programs of study for all students through its State Certificate of Skills Attainment. This process includes evaluating and approving only CTE courses that fit within one or more programs of study and creating statewide articulation agreements with the state's two-year institutions based on students' completion of a program of study, technical skills assessment and employability skills assessment.

"CTE options are key to preparing our young students to learn skilled trades, gain valuable work experience and discover what path is most suitable for them."

– Roy Schroer, Assistant VP, Human Resources, Union Pacific Railroad

Taking Programs of Study beyond the Classroom

Work-based learning (WBL), career exploration and [Career Technical Student Organizations](#) can be effective ways to augment and enrich students' classroom learning. A program of study's coherent sequence of courses is intended to give students exposure to the range of careers within their Career Cluster of choice, and this sequence, which gets more narrow and occupationally specific over time, should also include exposure to the workplace where students can apply the skills they have learned.

- **Iowa** is using its 15 community college regions to create a statewide network for WBL that connects K-12, postsecondary, employers and community organizations to provide a robust continuum of experiences for students. These experiences can range from internships and job shadowing to career exploration activities such as guest speakers and tours.

But WBL is not just for students. Instructors can and should be given the opportunity to explore the modern workplace as a means to bring those experiences back into their classroom and inform their teaching. This principle calls for teacher externships, and while there are some examples, it is not as widespread as envisioned in 2010.

- **Tennessee** has a robust teacher externship program that encourages school districts to send a cross-disciplinary team of academic and CTE teachers for a weeklong experience in industries such as aerospace, manufacturing and health care. Following the externship, the pair of teachers must create a cross-disciplinary project for their classrooms.

Dual Enrollment

Alignment and transitions to postsecondary education are key elements of rigorous programs of study. Dual enrollment, particularly those with a CTE focus, is [rapidly growing](#) across the country. In fact, a third of all dual enrollment credits earned by high school students - [600,000 in total](#) – are in CTE [courses](#). Statewide articulation agreements are crucial for ensuring that students' earned credit follows them wherever their postsecondary path leads them. **North Carolina**, for example, has approved over 50 CTE courses for statewide articulation between the state's high schools and community colleges.

WHERE MORE WORK IS NEEDED

In 2010, the State CTE Directors called for CTE to be delivered through comprehensive programs of study because they recognized its game-changing potential. Yet, despite ample state and national efforts, these high-quality programs of study still do not exist at scale. In part, this transformation has

been impeded by the minimal expectations set by federal law as well as the inherent challenges to achieving true systems change.

Scaling Programs of Study

A true program of study relies on fully aligned standards across K-12 and postsecondary systems to create the coherent, rigorous set of non-duplicative academic and technical content. A [NASDCTE analysis](#) identified two impediments to this goal: the mismatch between state CTE standards and those necessary for a program of study and the lack of postsecondary-level standards.

Most existing state CTE standards are at the course or program level, but primarily focus on narrow occupational skills, and thus fall short of the full breadth of a program of study's expectations. And, if a program of study is to bridge secondary and postsecondary systems, the fact that only 13 states have state-approved postsecondary CTE standards is a barrier to bringing programs of study to scale within a state. Just two states have CTE standards that are fully aligned across secondary and postsecondary systems, providing a critical foundation for consistent, statewide programs of study. This mismatch of expectations points to a broader misalignment, which is evident in the diverse policy motivations, data systems, funding streams, and the audiences served by the K-12 and postsecondary systems.

Preparing & Supporting Educators

At the heart of a program of study is a highly skilled educator who possesses up-to-date knowledge and technical skills. The 2010 Vision called for all teachers and faculty to have dual certification in academic and technical disciplines to support seamless and blended instruction, but five years later, little progress has been made on this front.

There are a few encouraging examples such as in **California**, where an increasing number of [teacher preparation](#) programs are incorporating an inter- and intra-disciplinary lens on the state's Single Subject Credential Program. This move was prompted by the state's successful Linked Learning initiative, which takes a blended approach to academic and technical instruction and as such requires a different kind of teaching. **Idaho** offers dual certification for CTE instructors who earn both a "standard" certificate through a traditional program, as well as a technical endorsement. Instructors with this certification can teach any course within a specific technical area, or program of study.

States are finding other ways to blur the lines between academic and technical instruction. For example, many career academies, technical high schools and early college high schools, of which there are increasing numbers, promote an education delivery system that encourages blended academic and technical instruction. Many states also have policies for validating the equivalency of CTE and academic courses and for allowing CTE courses to meet academic requirements and vice versa. And, in the absence of large-scale changes, a number of 'work arounds' have sprung up such as [Apple's Challenge-Based Learning](#), competency-based learning, and the Math-in-CTE approach – many of which seamlessly blend disciplines and instruction and/or waive traditional teacher credential requirements.

Finally, just as work-based learning is an important element of a student's education, K-12 and postsecondary instructors need opportunities to explore the modern workplace to be exposed to the latest industry standards and technologies and in turn, have those experiences impact their programs. There are some states encouraging, incentivizing or even funding educator externships and other

professional development opportunities – and in fact 23 states [report](#) having efforts in place to promote employer participation in CTE professional development at the secondary level, and 17 at the postsecondary level – this area is still ripe for development.

Once Again – Language Matters

The extent to which CTE programs of study have been implemented across the country can vary considerably due in part to the lack of a common understanding and language for what exactly constitutes a “program of study” or a “rigorous program of study” or a “career pathway” as defined in the recently enacted Workforce Innovation and Opportunity Act. Multiple terms and definitions create confusion both inside and outside the CTE community and result in an unclear message to students, parents, employers and other school peers.

It is critically important that federal policymakers craft future legislation that introduces a uniform conceptual framework for what a CTE program of study is while maintaining the maximum amount of flexibility for states and local communities to tailor these offerings to their unique needs.

CONCLUSION

Without a doubt, fostering robust programs of study is no easy task, but it is critical work that states and locals must engage in so that students are prepared to succeed in college, careers and life. States must ensure that programs of study reinforce academics, have strong connections to postsecondary education, include work-based learning opportunities and lead to relevant industry-recognized credentials, degrees or certificates.

As CTE continues to transform both its content and delivery, the move from traditional “voc ed” to a system of high-quality programs of study requires a seismic cultural shift from both in and outside the CTE community as well as practical policy and programmatic changes. Though much has been accomplished, the five-year anniversary of the Vision provides an opportunity to reflect on the work that remains to meet the full promise of programs of study, and consider issues such as:

- How can we build support internally and externally for a CTE system that supports rigorous and comprehensive programs of study as the sole delivery method?
- What will it take to reauthorize Perkins with comprehensive programs of study as a central focus? What other policies must be reauthorized or updated for this model of high-quality CTE to advance?
- What resources or technical assistance are needed most to help advance the development and implementation of programs of study?
- How can states better align their secondary and postsecondary education systems to better support a seamless educational journey for students? How can states ensure that standards at both the secondary and postsecondary learner levels are aligned to support full programs of study?
- How can employers best support professional development for instructors, through externships or otherwise?
- How can we support or incentivize more opportunities for dual certification or cross-disciplinary professional learning to support seamless and blended instruction within a program of study?