Common Core State Standards & Career and Technical Education

Bridging the Divide between College and Career Readiness

Common Core State Standards & Career and Technical Education: Bridging the Divide between College and Career Readiness was prepared for Achieve by Hans Meeder and Thom Suddreth of the Meeder Consulting Group, with the Association for Career and Technical Education and the National Association of State Directors of Career Technical Education Consortium.

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Executive Summary

The goal of ensuring that all students graduate from high school ready for college, careers and life has taken hold in every state across the nation. Yet all too often, the focus on "college readiness" and "career readiness" remains in two distinct silos, even though there is little question that reading, writing, communications and mathematical reasoning are all core skills for success in postsecondary education, in the workplace and for citizenship and that educators across all disciplines should help students develop, deepen and refine these core skills.

Right now, the moment is here, and the opportunity is clear: As states are working to align their education systems with the Common Core State Standards (CCSS) in support of the goal of graduating all students ready for college, careers and life, academic and career and technical education (CTE) leaders at the state and local levels can and should maximize this opportunity to finally break down the silos between their disciplines and collectively find ways to ensure that the new standards rigorously engage all students in both academic and CTE courses.

Bridging this divide, however, will happen only with intentionality and forethought at the policy and program levels. A substantial gap remains between the opportunity and need for engagement of the CTE community and CTE's current level of involvement in the implementation of the CCSS. Nearly half of the states that responded to an Achieve survey report that they have no CTE representation on their CCSS implementation teams, implying that in their states the CCSS are (currently) being viewed as purely an academic initiative, despite interest from CTE leaders to be involved.

Common Core State Standards & Career and Technical Education: Bridging the Divide between College and Career Readiness aims to provide guidance to state education leaders about how they can maximize the opportunity to better align academics and CTE through the implementation of the new CCSS by:

- Summarizing what state leaders are currently doing to integrate the CCSS and CTE;
- Providing specific strategies and supporting examples of what particular states are doing; and
- Identifying common barriers and challenges that state leaders face.

STRATEGIES FOR BRIDGING THE DIVIDE

1. Developing a Common Understanding of College and Career Readiness
2. Forming Cross-Disciplinary Teams for CCSS Planning and Implementation
3. Ramping up Communications and Information Sharing
4. Creating or Updating Curricular and Instructional Resources
5. Enhancing Literacy and Math Strategies within CTE Instruction
6. Fostering CTE and Academic Teacher Collaboration
7. Establishing Expectations for and Monitoring CCSS Integration into CTE
8. Involving Postsecondary CTE in CCSS Implementation

The Common Core State Standards and Their Implications for Career and Technical Education

The goal of ensuring that all students graduate from high school ready for college, careers and life has taken hold in every state across the nation. Yet all too often, the focus on "college readiness" and "career readiness" remains in two distinct silos, even though there is little question that reading, writing, communications and mathematical reasoning are all core skills for success in postsecondary education, in the workplace and for citizenship and that all educators should help students develop, deepen and refine these core skills. As such, these literacy and mathematics skills are not, and should not be, the sole domain of the English language arts (ELA) and mathematics departments but rather should be infused throughout education.

Effective career and technical education (CTE) programs have an inherent advantage because they are modeled closely after real careers that students may one day enter. They can readily demonstrate the answer to questions such as "*How* am I ever going to use this?" and "*Why* should I learn this?" Reading, written communications, listening, speaking and mathematical reasoning (with problem solving) are embedded in careers — especially in the middle- and high-skills careers that lead to family-supporting wages and benefits. And given that the majority of those middle- and high-skills jobs require some education and training beyond high school, the link between the academic preparation and the technical preparation for careers becomes even stronger.

The federal funding stream for CTE, the Perkins Act, has made reference to rigorous integrated academics since the 1980s. Since the late 1990s, Perkins' CTE accountability provisions have required reporting on student acquisition of reading and mathematics competencies, and in the 2006 reauthorization of the Perkins Act, states were required to use the same ELA and mathematics assessments that they were using for high school students under the Elementary and Secondary Education Act. In many cases, state and local initiatives have already taken great strides to explicitly integrate reading and math strategies into CTE programs.

However, state and local CTE directors acknowledge that these efforts to formally integrate math and literacy strategies in the CTE classroom are sporadic. While there are models of success — certain career academies, for example — the models have not been brought to scale. Furthermore, even in places where integration of academic content into CTE classes is systemic, integration of real-world CTE content into the core academic classroom is almost nonexistent. The Perkins Act has sustained the expectation for CTE educators to integrate math and literacy into CTE, but no similar policy emphasis has directed academic teachers to integrate real-world relevance into their teaching. Effective teachers often embrace real-world projects, challenges and relevance in their teaching, but it is still not the norm nationwide.

Today, 46 states and Washington, DC, are engaged in implementation of the new Common Core State Standards (CCSS), which affects instructional materials, curricula, professional development and assessment. The CCSS identify the ***knowledge*** and ***skills*** students need at each grade level, providing

potential opportunities for CTE educators to share their expertise around project-based learning and the application of content to their colleagues in mathematics, English and other affected disciplines. In addition, the CCSS were designed to address the common criticism that state standards are "a mile wide and an inch deep," with educators expected to cover a broad array of topics each year without having the opportunity to go deep in any of the topics. The CCSS include fewer topics each year, allowing teachers to focus on the most important content and help their students gain a deeper conceptual understanding of that content, including how it is applied in real-world contexts. The widespread adoption of the new standards, along with the systemwide changes states are making as they implement the more focused CCSS, provides the nation with the best opportunity to create academic and CTE classes that truly reinforce one another and provide students with multiple ways of mastering college- and career-ready knowledge and skills.

Exploring these opportunities requires more fully understanding how the CCSS differ from the typical state ELA and math standards they have replaced.

Differences between the CCSS and Previous Standards

English language arts

The CCSS in ELA offer a number of departures from most states' previous ELA standards.[1] Perhaps the most significant change for CTE programs is that the CCSS include literacy (reading and writing) standards for the teaching of history/social studies, science and technical subjects, not just for the ELA classroom. The standards explain what students should be able to do in reading and writing related to content that is specific to the technical disciplines taught in CTE courses.

The CCSS do not ask the CTE instructor to teach basic reading skills but to help students develop deeper reading comprehension within the technical discipline. In addition, in reading, another major advance is the shift away from literature-focused standards to a balance of literature and informational texts to reflect college- and career-ready expectations. The CCSS also focus more on text complexity and at what level students should be reading.

The writing standards include a strong emphasis on argument and informative/explanatory writing, along with an emphasis on writing about or from sources or using evidence to inform an argument. The CCSS include speaking and listening standards that also can be applied in technical subjects and have particular relevance for preparing students for the expectations of the workplace. The ELA standards also pay attention to the use of media and technology and to language, with an emphasis on academic and discipline-specific vocabulary acquisition. Unlike the ELA standards for reading and writing, the standards for speaking and listening, media and technology, and language are not broken out specifically for science and technical subjects, yet they can certainly be applied within the CTE context.

Mathematics

The CCSS in mathematics are not designed specifically to cut across the curriculum in the same way that the ELA standards are, but several changes in the math standards are relevant to CTE. Most notably, the CCSS include eight standards for mathematical practice, infused in every grade, that call on students to make sense of problems and persevere in solving them, reason abstractly and quantitatively, construct viable arguments and critique the reasoning of others, use tools

appropriately, etc. Specifically, these standards call on students to apply mathematical ways of thinking to real-world issues and challenges; they prepare students to think and reason mathematically.[2] Given the nature of CTE and its curricular link to occupational skills, CTE programs have much to offer to help fulfill this new expectation for high school mathematics.

Another major change in the high school math standards is the emphasis on mathematical modeling. As described in the CCSS, mathematical modeling is the "process of choosing and using appropriate mathematics and statistics to analyze empirical situations, to understand them better, and to improve decisions." Modeling is so critical that the standards for modeling are actually embedded in the other content areas (e.g., geometry, statistics and probability) rather than treated as a separate domain. For CTE educators, this focus on mathematical modeling could entail developing activities that have students formulate ways to use data to make decisions related to each activity, generate and gather the required data, analyze the data to make the decisions, and gather follow-up data to review the impact of their decisions. For many teachers, developing activities relating to mathematical modeling will require exemplar resources and professional development. But this change in the math standards provides CTE educators with a valuable opportunity to better align their instruction with academic learning to help students use the higher-order skills of problem framing and problem solving.

Using CTE To Strengthen Core Literacy and Math Skills

Because of the significant changes to ELA and math expectations, CTE educators are beginning to view the CCSS as an opportunity to build upon the foundational work called for in the Perkins Act. In particular, many state CTE directors and local administrators actively are establishing CTE as an integral partner in strengthening core literacy and math skills, while continuing to play a valuable role in fostering student career aspirations and providing practical career preparation for high school-age youths. While some states and districts have already embraced the implementation of the CCSS as an opportunity to better integrate academic and technical knowledge and skills in their K–12 systems, many others have yet to take on this challenge and are focusing more intently on implementing the CCSS in the core academic areas at this time.

The moment is here, and the opportunity is clear

As states are working to align their education systems with the CCSS in support of the goal of graduating all students ready for college, careers and life, academic and CTE leaders at the state and local levels can and should maximize this opportunity to finally break down the silos between their disciplines and collectively find ways to ensure that the new standards rigorously engage all students in both academic and CTE courses.

The remainder of this report examines specific state-level strategies for meeting this goal. State leaders in CCSS implementation and CTE should have an equal stake in adopting and adapting the new standards for their states. Likewise, local academic and CTE leaders should take ownership of and have equal opportunity to be involved in the implementation of the standards, and states should work to ensure that CCSS professional development and technical assistance efforts include all educators across the curriculum.

About the Project

Project Methodology

To establish a reference point on the current level of CTE involvement in CCSS implementation, Achieve and the Meeder Consulting Group developed a survey for state CTE directors and state CCSS coordinators to take collectively. The survey was implemented during a two-week window in November 2011. Drawing from the survey findings, eight states were selected for more in-depth interviews: California, Illinois, Kentucky, Mississippi, Missouri, New Jersey, Ohio and Oregon.

The purpose of the survey was to determine how state education agencies are including CTE leaders as stakeholders or partners in their CCSS implementation efforts. The findings from the survey were intended to guide further interviews and creation of this policy paper. States were told that their specific answers to the survey questions would not be published and that only aggregated or non-identifiable findings would be published. In total, 22 states provided responses to survey questions.

Summary of Findings

The responses to the survey suggest a rather substantial gap between the opportunity and need for involvement of CTE and CTE's current level of engagement. Not only do nearly half of responding states have no CTE representation on their CCSS implementation teams, but there is also the implication that, in their states, the CCSS are (currently) being viewed as purely an academic initiative, despite interest from CTE leaders to be involved. Although not stated explicitly, many answers, comments and recommendations implicitly suggest that a great divide still separates academic and CTE programs. This divide is indicated by the numerous responses urging closer collaboration between academic and CTE professional development, lesson planning, and CCSS implementation. For more information on the survey and its findings, see Appendix.

STATE LEADER RECOMMENDATIONS FOR PLANNING AND LEADERSHIP

"Make sure that the state CTE team is at the table during all initial planning and implementation meetings."

"Department and division leaders should break down the silos in the state department and access the expertise in other divisions. It is imperative that the communication be strong at the state level so that there is a consistent message to districts."

"It is important to build a good leadership team that speaks with one voice and shares a common vision."

"Make sure that CTE representation is on board early in the process."

"The state CTE team should offer to partner with the team responsible for the academic core; offer specific resources for activities to build relationships."

"State leaders should make a concerted effort to add people to the team that work in the field. … Attempt to break down organizational silos so that there is more communication."

"Organize and collaborate state leadership and initiatives to make a cohesive transition to the CCSS."

"Make sure that CTE has a pronounced role at the state-level leadership area."

Strategies Currently Being Used

Based on the in-depth interviews with the eight selected states and additional follow-up documentation provided, summaries for each state were developed, indicating their outreach and implementation strategies, progress to date, barriers and challenges, and planned next steps.

The survey and interviews indicated that state CCSS and CTE leaders are employing eight strategies to integrate the CCSS into CTE programs. The strategies, described in more detail on the following pages, include:

1. Developing a Common Understanding of College and Career Readiness
2. Forming Cross-Disciplinary Teams for CCSS Planning and Implementation
3. Ramping up Communications and Information Sharing
4. Creating or Updating Curricular and Instructional Resources
5. Enhancing Literacy and Math Strategies within CTE Instruction
6. Fostering CTE and Academic Teacher Collaboration
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1. Developing a Common Understanding of College and Career Readiness

Action

Include CTE leaders and business partners in efforts to create a broader view of college and career readiness.

The CCSS represent the academic expectations for the ELA and mathematics knowledge and skills necessary to be prepared for postsecondary studies without remediation as well as for successful entry into the skilled workplace. Of course, many other factors besides academic readiness are important for high school graduates to be "ready" for the next step of education and employment. CTE, with its well-established grounding in workplace occupational skills and workplace employability skills, has much to offer the academic part of the education community as it develops a comprehensive understanding of college and career readiness.

Engaging stakeholders, including academic and CTE teachers, to ground their work in a fuller understanding of college and career readiness could be a critical first step for gaining more buy-in and common understanding across the academic and CTE disciplines. Further, this engagement can begin to shape the mindset that college and career readiness is a shared goal among all educators.

State examples

The **California Department of Education (CDE),** under direction from the State Board of Education, is working with a variety of partners from K–12, postsecondary, and business and industry to ensure that the stakeholders reach a common agreement on a full definition of career and college readiness that is grounded in the CCSS. CDE and the other stakeholders will then review and revise programs and materials to reflect that agreed-on definition of career and college readiness. The State Board intentionally places the word "career" first to clarify the importance of career preparation for all students. The CDE indicates that it is referring to the work of Dr. David Conley from the University of Oregon and Educational Policy Improvement Center to create the framework for the agreed-on definition of career and college readiness.

California's CCSS implementation plan includes this work — specifically in the section of the plan titled "Collaborate with the postsecondary and business communities to ensure that all students are prepared for success in career and college" — noting that in 2012 the state will participate in a multistate panel to reach agreement on a common definition of career and college readiness that is grounded in the CCSS and to then revise programs and materials to reflect this common definition.

In December 2011, the **Massachusetts Board of Elementary and Secondary Education** launched a new task force to develop recommendations for more fully integrating college and career readiness into the state's K–12 education system. Consisting of local business, education and community leaders, the Integrating College and Career Readiness Task Force will explore ways to better engage students and employers in activities to boost career readiness and ensure that career readiness is integrated into every child's instruction, while maintaining the state's commitment to the CCSS and other college- and career-ready reforms.

RESOURCES FOR DEFINING COLLEGE AND CAREER READINESS

Association for Career and Technical Education paper on defining career readiness:
www.acteonline.org/readiness.aspx

***What Does It Mean to Be College and Career Ready?* David T. Conley and Debra Humphreys:**
www.epiconline.org/files/pdf/20120228_SHEEO_ConleyHumphreys.pdf

California's CCSS implementation plan:
www.cde.ca.gov/ci/cc/documents/ccssimpsysplanforca.doc

The Common Core State Standards:
www.corestandards.org

College and career readiness:
www.achieve.org/college-and-career-readiness

2. Forming Cross-Disciplinary Teams for CCSS Planning and Implementation

Action

Ensure that CTE representatives are part of the state team for planning and implementing the CCSS. If the state office or bureau responsible for CCSS implementation has not already reached out to the state CTE director, then the CTE director should take the initiative to get involved.

The majority of states have formed CCSS implementation teams within the state education agencies responsible for the planning and implementation of the CCSS and related programs, initiatives and policies. Typically the implementation teams include those responsible for curriculum and instruction, professional development, assessment, and (sometimes) communications but often do not include CTE in the early stages. Not including CTE indicates a misunderstanding of the amount of literacy and math that can be embedded into CTE courses, as well as a lack of knowledge that CTE programs are already accountable (through the Perkins Act) for making a positive impact on the literacy and math skills of CTE participants. More broadly, it is a missed opportunity for bringing CTE's voice into the discussion and ensuring that CTE educators are included in the statewide implementation efforts.

By contrast, when states include state-level CTE leaders early in the process, they can maximize the understanding and buy-in of local CTE administrators and teachers and engage CTE educators as partners in helping students achieve college and career readiness.

State examples

In October 2010, the **Oregon Department of Education** formed the Stewardship Team, a team of stakeholders to guide implementation of the CCSS. The Oregon Department of Education's director of CTE is represented on the Stewardship Team, as are K–12 and postsecondary educators in ELA, mathematics, science, social science and CTE; early childhood educators; education service district staff; faculty from colleges of education; special education and English language learner directors; and representatives from business, the Oregon Parent Teachers Association and other professional educational organizations. The Stewardship Team was divided into four working groups: Communications, Instructional Materials, Professional Development, and Teaching and Learning. The team meets monthly, with the working groups meeting weekly and providing updates and progress reports. CTE representation was part of the group from the beginning.

In January 2010, the **California State Legislature** established the Academic Content Standards Commission (ACSC) to develop new content standards for ELA and mathematics. The ACSC made recommendations to the State Board of Education, and on Aug. 2, 2010, the Board of Education adopted the CCSS. Since then, the team that was appointed within the California Department of Education (CDE) — led by the Curriculum Frameworks and Instructional Resources Division — meets regularly at an executive level with bi-weekly staff meetings. Representatives from the CDE's CTE division have been part of the team from the beginning and have closely connected the work of the CCSS implementation to related efforts to update CTE curriculum standards.

RESOURCES FOR CROSS-DISCIPLINARY IMPLEMENTATION

California presentation on the CCSS and technical subjects: www.cde.ca.gov/ci/cc/documents/ccss6to12lhstcta.ppt

California CCSS meeting resources: www.cde.ca.gov/ta/tg/sa/northsouthmtnginfo.asp

Oregon State Board meeting notes: www.ode.state.or.us/search/page/?=3253

3. Ramping up Communications and Information Sharing

Action

Implement a communications plan that specifically includes CTE administrators and instructors and uses a wide variety of communication strategies: email and listserves, informational videos, local workshops and presentations, and regional and statewide conferences.

The majority of states have focused their early CCSS implementation efforts on building awareness among K–12 educators about the CCSS. Some states are focusing on specific grades or education topics, based on where the most significant shifts occur in the content or how they have phased their implementation plan. By and large, this awareness building has been targeted at district and school leaders and English and math teachers. Few states have brought CTE into the fold and focused on specific ways to get critical information to CTE educators.

The earlier they are engaged, the more likely it is that CTE educators will emerge as advocates of the standards and identify ways to support implementation in their schools and classrooms.

State examples

The **Indiana Department of Education** created a number of videos and related PowerPoint presentations explaining key information about the CCSS initiative. The videos were delivered by state CTE curriculum specialists to CTE teachers in fields such as agriculture, business and family consumer science. Most of the information was similar from video to video, but each presentation was customized slightly to match the interests of the target audience and was delivered by state staff members who were already familiar with many in the target audience.

Beginning in August 2010, the **New Jersey Department of Education** conducted more than 300 awareness sessions around the state to inform stakeholders about the CCSS. Participants in the sessions included K–12 educators, postsecondary educators, parents and businesspeople, as well as CTE leaders and teachers. Through these and other sessions, the Department of Education communicated a clear message that the CCSS literacy standards are integral to the success of CTE programs to build awareness and to spark ideas on how educators can begin to change their practices in alignment with the CCSS.

Beginning in early 2011, the **Oregon Department of Education** began actively communicating about the CCSS throughout the state. The state agency team partnered with the Confederation of Oregon School Administrators (COSA), the Oregon School Board Association, the Oregon University System and the Oregon Education Association. COSA sponsored a series of statewide conferences to drive awareness and implementation of the CCSS. The first round of those meetings was completed in December 2011, with a second round of events occurring in April and May 2012; CTE administrators were well represented at those events.

RESOURCES FOR COMMUNICATIONS

Indiana CCSS videos: www.doe.in.gov/achievement/curriculum/literacy-standards-historysocial-studies-science-technical-subjects

New Jersey in-service presentation on the New Jersey Core Curriculum and the CCSS: www.state.nj.us/education/cccs/pl/DOE_Inservice_7-23-10.ppt

Oregon College and Career Ready Symposium resources: www.ode.state.or.us/teachlearn/pte/cte_updates-symposiumresources.doc

Even with the intensive general outreach, the Oregon Department of Education team believed that a special effort was needed to engage the state's CTE community. To receive feedback from CTE educators during the early stages of CCSS implementation, in April 2011, the Oregon Department of Education CTE team hosted a dynamic College and Career Ready Symposium in Eugene, Oregon. Representatives from the National Association of State Directors of Career Technical Education Consortium (NASDCTEc) and staff from the University of Oregon also played an integral role in the highly interactive symposium. Through a guided feedback process, symposium participants expressed their support for the concept of college and career readiness standards, but they also expressed concern about the omission of employability and technical content standards. Participants advocated for a broader concept of career readiness and also called for continued and expanded involvement of CTE stakeholders in the CCSS work. Feedback from the symposium was shared with the Department of Education's Stewardship Team; the event played a major role in gaining the support and engagement of Oregon's CTE community for CCSS implementation.

4. Creating or Updating Curricular and Instructional Resources

Action

Engage CTE and academic educators to update CTE standards to reflect the CCSS and create crosswalks between the new CCSS standards and existing CTE standards.

Most states already have a set of state-developed content standards for CTE programs that operate within the state. These standards vary from state to state but typically are a compilation of industry expectations, state-developed standards, and standards developed by national CTE or industry organizations. Many of these sets of standards already have been crosswalked to existing state ELA and math standards, demonstrating where a literacy or math concept can be employed or reinforced in a CTE course. For states with existing crosswalks, the crosswalk should be updated to reflect the new CCSS. For other states, creating the crosswalk may be an important first step for integrating the CCSS into CTE courses — and the first opportunity for CTE educators to familiarize themselves with the new standards.

States also typically have a schedule for reviewing and updating their CTE content standards. During this revision process, references to the application of the CCSS for literacy and math can be inserted where appropriate.

State examples

The **California Department of Education (CDE)** is currently updating its Career Technical Education Model Curriculum Standards, which were developed in 2005. These model curriculum standards outline the knowledge and skills that are recommended within 48 pathways that fall within the state's 15 industry "sectors" (adapted from the national model of 16 industry career clusters). CDE shared information about the model CTE standards with advisory committees consisting of business and industry and postsecondary and secondary faculty for each of the 15 industry sectors. The CDE continues to convene the industry-sector committees, guiding them through the process of reviewing the skills standards and conducting a comparison of the embedded academic requirements with the new CCSS ELA and mathematics standards.

The new CTE model standards are being written in a format and with a hierarchy of knowledge that emulates the structure of the CCSS. CDE is attempting not to explicitly embed the CCSS standards into the new CTE standards but to identify where the CCSS standards most naturally occur in the context of the industry. The curriculum review team has developed a matrix for CCSS/CTE alignment that combines the Depth of Knowledge model, W. Daggett's Rigor and Relevance Framework, and the current iteration of Bloom's Taxonomy.

The **Ohio Department of Education** is leading a three-year process of revising its 16 career clusters. The revision includes aligning the CCSS and the new state standards in collaboration with academic and CTE teachers. Through the course of the scheduled standards revision process, the updated state career cluster standards will embed the CCSS math and ELA standards.

RESOURCES FOR STANDARDS UPDATES AND CROSSWALKS

California's current CTE frameworks and standards: www.cde.ca.gov/ci/ct/sf/documents/cteframework.pdf

www.cde.ca.gov/ci/ct/sf/documents/ctestandards.pdf

Oregon's crosswalk between the math CCSS and the Career Clusters: www.ode.state.or.us/wma/teachlearn/commoncore/mathcccareerclusters.xls

New York State CTE Technical Assistance Center CCSS and CTE curriculum matrix: www.nyctecenter.org/spn/page/Curriculum-Matrix

Ohio timeline for CTE curriculum revision: http://education.ohio.gov/GD/DocumentManagement/DocumentDownload.aspx?DocumentID=114576

Ohio CTE standards: http://education.ohio.gov/gd/gd.aspx?Page=3&TopicRelationID=1714&ContentID=55793&Content=118680

Action

When possible, update or create model instructional resources for both CTE and core academic teachers that have the CCSS embedded.

In most states, even ones that have state-required academic or CTE knowledge and skills standards, local school districts retain the authority to create curricular and instructional resources that guide day-to-day instruction. The diversity and large number of CTE programs makes keeping CTE programs up to date with new technology, work processes and developments in the field particularly challenging at the local level. As such, some states provide model instructional resources that accompany their state CTE standards. States can embed the new CCSS into their model CTE curricular resources to efficiently support local integration of the CCSS in CTE courses.

Similarly, to fulfill the expectations of the CCSS, a number of states and districts are working to develop, modify or identify existing instructional materials for core academic classes that help bring the CCSS to life. Curriculum units that are developed jointly by academic and CTE teachers, often in the context of a career academy, provide an exciting way to build not only rigor but also relevance into those instructional materials.

State examples

Beginning in 2010, the **Mississippi State University Research and Curriculum Unit** (on behalf of the Mississippi Department of Education) began to write the CCSS into its CTE curriculum, which is scheduled to be updated. Typically the state revises four to five programs a year, revising the postsecondary CTE standards first to align the programs with industry standards and, in the following year, revising the aligned secondary content standards. This process creates alignment of programs at both levels and contributes to statewide articulation agreements. During the rewriting of the curriculum, academic and CTE teachers are brought in to collaborate on the process, allowing academic teachers to more easily see how CTE adds relevance to their own courses as well as supports the CCSS in literacy and math. Through this rewriting and examination of programs, over time the CCSS standards will be embedded into all the state's CTE programs.

For several years, the **Illinois State Board of Education** has offered an online curriculum resource available free of charge to Illinois educators that provides lessons as well as assessments for the five areas of CTE instruction (agriculture; business, marketing and computer education; family and consumer sciences; health science technology; and technology and engineering education). These resources focus only on the most heavily requested areas of CTE and are not comprehensive of all the programs offered by local districts. The CTE curriculum currently included on the site has been updated to align with the CCSS. As the state board works to "de-brand" the site to remove the perception that it is only a CTE resource, additional curriculum materials related to the CCSS may be added in the future.

As part of a multistate curriculum project, the **Ohio Department of Education** is working to identify applications of CCSS-aligned math and literacy to embed in its Automated Materials Joining Technologies curriculum, which is currently in development. This program is part of a cross-state curriculum project called Preparation for Tomorrow (PFT), managed by the Southern Regional Education Board. The PFT initiative aims to develop intellectually demanding career and technical courses in high-demand, high-skill, high-wage career fields that can be joined

RESOURCES FOR MODEL CTE RESOURCES

Kentucky online CTE curriculum database: www.kytechcurriculum.org/lp_SelectCourse.asp

Kentucky CTE curriculum alignment effort: www.education.ky.gov/KDE/Instructional+Resources/Career+and+Technical+Education/Career+and+Technical+Ed+Resources

Mississippi State University Research and Curriculum Unit: www.rcu.msstate.edu/Curriculum/CurriculumDownload.aspx#LiveTabsContent6381

Missouri model CTE curriculum samples: www.missouricareereducation.org/index.php?view=content_area

Southern Regional Education Board/ High Schools That Work *Preparation for Tomorrow* presentation: http://publications.sreb.org/2011/JoiningaCollegeReadyAcademicCore_Bottoms.pptx

STEM Transitions, including 61 integrated lessons developed by CORD, Inc., for career clusters based in science, technology, engineering and math (STEM): www.stemtransitions.org

with a college-ready academic core and forged into a pathway or program of study. The expected programs of study and the states taking the lead development responsibility are Aerospace Engineering **(Alabama)**; Futures in Science and Technology **(Arkansas)**; Science, Technology, Engineering and Math Education and Training **(Kansas)**; Informatics **(Kentucky)**; Construction Design and Management **(Maryland)**; Health Careers **(Mississippi)**; Food and Nutritional Sciences **(Nebraska)**; Project Management **(North Carolina)**; Automated Materials Joining Technologies **(Ohio)**; Renewable Energy Technologies **(South Carolina)**; and Energy and Power **(West Virginia)**.

COMMON CAREER TECHNICAL CORE

While state teams are working to integrate the CCSS into CTE instruction, a related effort — **the Common Career Technical Core (CCTC)** — is under way to develop a shared set of rigorous, high-quality CTE standards.

The state-led initiative is being coordinated by the **National Association of State Directors of Career Technical Education Consortium (NASDCTEc),** which represents the state and territory heads of secondary, postsecondary and adult CTE across the nation. A range of stakeholders from business and industry to educators are involved in the multistep process to develop the CCTC. The development of the standards is being led by working groups made up of state-nominated experts from a variety of sectors. Their involvement will help ensure that the CCTC reflects the timely education and workforce needs of today's global economy.

Since December 2011, 41 states and Washington, DC, have signed a Declaration of Support for the development of the CCTC. In February 2012, states began the process of nominating individuals for working groups charged with leading the development of the CCTC — work that began in March 2012. In May, NASDCTEc sought public comment on the draft standards, and the final standards are scheduled for public release in June 2012, at which point states will move individually to adopt and implement the CCTC.

For more information on the CCTC, visit www.careertech.org/career-clusters/cctc/.

5. Enhancing Literacy and Math Strategies within CTE Instruction

Action

Launch new or build upon existing professional development activities to help CTE teachers integrate literacy and math strategies in their CTE classrooms.

Aligning the new CCSS with CTE instructional materials is a good start, but it is not sufficient. CTE teachers need to develop the skills to integrate literacy instruction into their classroom activities to help students master the CCSS literacy expectations for technical subjects, as well as to create lesson plans that strengthen student understanding of core math concepts, in support of students' mastery of standards for mathematical practice. While many CTE instructors already teach discipline-specific literacy, they will need to be more explicit and intentional in that instruction and be sure that it is aligned with the CCSS literacy expectations.

Prominent models for integration, such as Math-in-CTE and Literacy-in-CTE, have been developed and evaluated, and they both demonstrate that students who participate in these models strengthen their math and literacy skills at higher rates than typical CTE students. With this strong research base, Perkins' accountability for literacy and math, and the clear connections to the CCSS, states should begin expeditiously implementing statewide literacy and math professional development for CTE instructors and administrators. States may also need to examine their pre-service training for CTE teachers along with their in-service professional development.

STATE LEADER RECOMMENDATIONS FOR ALIGNING CTE INSTRUCTION WITH CCSS EXPECTATIONS

"Provide ongoing resources to CTE teachers to increase their competence in math and literacy."

"Get academic teachers involved with business partners through discussion groups, site visits and teacher externships so they become aware of skills required in the workplace."

"If Common Core is to be taken seriously, apply it to all classes in high school."

"Build teacher teams that include CTE and core content teachers together."

"Have CTE teachers develop lessons that increase their students' reading, thinking and problem-solving skills."

"Don't think of CCSS in a vacuum. It must be broadly applied across all academic and CTE areas."

State examples

In summer 2011, the **Mississippi Department of Education** (working with its university partner) launched a new literacy initiative in which student support personnel received extensive literacy training. Then, at the start of the 2011–12 school year, these trained staff members began working directly with CTE instructors on how to incorporate literacy strategies into their classrooms. After the first year of the initiative, the state CTE team plans to survey the teachers who have been through the literacy training to discover what is working and what is not and then adjust the professional development accordingly.

Beginning in 2006, the **Oregon State CTE Team** provided support to a small regional initiative to implement the Math-in-CTE project (see box, below). This project brings together math and CTE teachers to identify opportunities and create resources for adding real-world relevance in math courses. In 2011, the State CTE Team, along with the National Research Center for Career and Technical Education, began the Literacy-in-CTE project, using workshops that follow a design similar to Math-in-CTE. Oregon's experience with Math-in-CTE shows that these workshops increase CTE teachers' level of comfort with academic content, build partnerships between academic content specialists and CTE teachers, and open other options in districts to offer academic credit through CTE.

MATH-IN-CTE PROJECT

Since 2005, the National Research Center for Career and Technical Education (NRCCTE) has tested several models for integrating math and literacy in CTE, and several of these approaches have shown a positive impact on student learning.

The Math-in-CTE research study tested a model of curriculum integration to improve CTE students' mathematical understanding. In this model, CTE teachers from agriculture, auto technology, business/marketing, health and information technology programs were each paired with a math teacher from his/her region. During the school year, the CTE-math teacher teams met for a total of 10 days to learn the process of the Math-in-CTE integration. Teachers identified the math content that was embedded in the CTE curriculum through a curriculum mapping process. Then the CTE and math teachers developed math-enhanced lessons that brought out the embedded content and helped clarify how this math matched up with concepts that were taught in the traditional classroom.

During the school year, the CTE teachers scheduled and taught each of the math-enhanced lessons. More than 130 CTE teachers (57 in the experimental group and 74 in the control group) and more than 3,000 students took part in this study. After one year of exposure to the math-enhanced lessons, the students in the experimental classrooms performed significantly better on TerraNova and Accuplacer, two of the three math post-tests administered. On the TerraNova test, the average experimental class scored at the 71st percentile of the average control-group class. On the Accuplacer test, the average experimental class scored at the 67th percentile of the average control-group class. Both findings represented statistically significant differences between students who received instruction based on the Math-in-CTE model and those students who received the regular CTE curriculum.

Since the completion of the experimental phase of this project, the NRCCTE has provided professional development on the process model to a number of states and school districts.

RESOURCES FOR MATH AND LITERACY INTEGRATION

Math-in-CTE Project, National Research Center for CTE:
http://nrccte.org/

Math-in-CTE lesson samples:
http://136.165.122.102/mambo/content/view/69/

6. Fostering CTE and Academic Teacher Collaboration

Action

Bring CTE and academic teachers together in structured professional development activities to review and reflect on the CCSS, unpack the standards to see how they can apply in the CTE context, and create model instructional resources.

Projects that help create integrated CTE/academics and cross-curricular connections usually require core academic teachers and CTE teachers to review their respective content standards collectively and look for opportunities across the curricula to create alignments. Even though teachers and administrators often talk about the positive benefits of cross-curricular collaboration, this kind of collaboration rarely happens unless it is expected and supported by administrators and principals — by setting aside time and providing clear direction for the outcomes desired. While curricular integration and coordination is the specific task at hand in these types of activities and professional development, participating teachers often talk about ancillary benefits to the process.

In particular, core academic content teachers often note that the CTE curriculum is more rigorous and content rich than they presumed prior to the collaboration. These teachers (like the teachers who participated in the Math-in-CTE research study) discovered opportunities to bring contextual teaching examples into their classrooms — teaching strategies that sometimes persist long after the

STATE LEADER RECOMMENDATIONS FOR EMBEDDING THE CCSS INTO CTE CULTURE

"Make Common Core part of the CTE culture through sustained conversations and awareness."

"Don't force-feed the new CCSS standards to CTE educators; rather, create and support initiatives that help to the make the standards more a part of the CTE culture."

"Recognize that college and career readiness is not an end [in] itself but simply a set of knowledge and skills that act as a bridge for the student to move forward successfully."

"Find people who buy in and make them cheerleaders."

"Among CTE educators, affirm the value and necessity of academic skills and career-specific skills."

"The genius of the Common Core is the centrality of application in mathematics as well as problem solving in math application practices. The clarity of Common Core in ELA shows that it is meant to be applied across the curriculum."

"Take seriously the design of the Common Core and how it is implemented."

"Reach out to professional associations to get support for CTE."

"Train teachers from academic and CTE classes together on the implementation strategies that all instructors must have to make the CCSS part of the classroom culture."

specific activity has concluded. Further, CTE teachers benefit by strengthening their grasp of core academic concepts and enhancing their ability to teach those concepts in their CTE classrooms.

Given that the CCSS define the knowledge and skills students need to know — including mathematical practices; literacy and writing in science, history/social studies and technical subjects; and speaking and listening expectations — academic educators have much to learn from CTE educators about how to teach the application of content and knowledge, including how to embed authentic performance-based tasks into their daily instruction.

As seen in teaming models such as Linked Learning and career academies, collaboration among academic and CTE teachers can contribute to a more positive, collaborative teaching culture within a school or across a district. If a state department of education, district leadership and/or principals create opportunities for curricular collaboration between the CCSS and CTE, then a host of positive outcomes may result.

State examples

In 2011–12, teams from **Illinois, Nebraska** and **New Jersey** worked on a pilot project with Achieve and the National Association of State Directors of Career Technical Education Consortium to bring secondary and postsecondary math and CTE teachers together in the areas of construction, agriculture and health sciences, respectively. The purpose of the project was to develop sample instructional tasks that were well aligned to both the CCSS in mathematics and CTE expectations and provide educators with the opportunity to collaborate with their peers across disciplines. The tasks demonstrate how the CCSS and CTE Knowledge and Skills statements can be integrated into classroom learning — and provide classroom teachers with truly authentic tasks for either mathematics or CTE courses. Each state developed six to seven sample tasks to be used by math and CTE teachers.

The **Kentucky Leadership Network** was given responsibility for outreach and training on the CCSS by the State Department of Education. The Leadership Network offered a series of meetings across the state called "deconstruction of the standards." The meetings allowed CTE and academic teachers to work together on CTE standards and the CCSS and also allowed instructional supervisors to observe best practices from districts that already have a high level of collaboration between CTE and academic teachers with regard to the CCSS. In fall 2012, the Leadership Network is also planning to roll out additional professional development with a focus on helping CTE teachers integrate literacy strategies and the CCSS.

In 2010, the **Missouri Department of Education** held several conferences in the state to provide professional development on the CCSS in advance of introducing the state's forthcoming model curriculum. The MAKE conference (an outgrowth of the "maker movement") brought both academic and CTE teachers together to "make" something together and learn together how to make that something relevant to students. **Missouri State University** instructors also presented technical writing to attendees so that CTE and academic teachers could see what it looks like and how it is applied. The goal for the professional development experience was to test and fine-tune a template for future conferences around the state.

RESOURCES FOR CTE-ACADEMIC TEACHER COLLABORATION

Overview of Achieve and National Association of State Directors of Career Technical Education Consortium pilot CCSS-CTE project: www.achieve.org/ccss-cte-classroom-tasks

Kentucky flowchart on deconstructing standards: www.education.ky.gov/users/otl/KLN/DeconstructingStandards.pdf

Missouri MAKE conference and embedded TEDTalk video: http://owp.missouristate.edu/120529.htm

New Jersey announcement for CCSS and technical implementation: http://education.state.nj.us/events/details.php?recid=15067

ConnectED California, Linked Learning Integrated Units resources: http://connectedcalifornia.org/curriculum/integrated_units

7. Establishing Expectations for and Monitoring CCSS Integration into CTE

Action

Establish clear expectations for CCSS integration into CTE by including references to the CCSS in annual funding applications, continuous improvement planning, CTE teacher qualifications and criteria for local monitoring visits.

Under the current Perkins Act, CTE programs are held accountable for the literacy and math performance of students who take a concentration of CTE courses (which is currently defined differently across states). But in some cases, the link between literacy and math is still weak.

Similarly, unless there is a clear expectation for integration of the CCSS into CTE, and ways of demonstrating the responsibility of CTE educators in this regard, integration of the CCSS may be simply a hoped-for outcome rather than a reality. As states revise and review Perkins plans, they should take steps to revise funding applications, on-site monitoring and other processes to raise the visibility of and attention to CCSS integration in CTE programs.

State examples

To teach in a state-approved secondary CTE program in Oregon and other states, the instructor must have an appropriate CTE license and/or endorsement specific to the program career area. In 2010, the **Oregon Teacher Standards and Practices Commission** reviewed and updated the *Oregon Administrative Rules* governing CTE teacher licensure. Under the revised policy, new CTE teachers are required to demonstrate proficiency in integrating math and literacy into their instruction within their first three years of teaching. New teachers have multiple avenues to meet the requirements, including Math-in-CTE and Literacy-in-CTE workshops. Teachers may also meet the requirements through online instruction at Western Oregon University.

While the new licensure requirements do not explicitly mention the CCSS, math and literacy integration proficiency definitely relates to and supports effective CCSS integration into CTE programs. Over time, as the CCSS are fully implemented in Oregon, it is reasonable to expect that the licensure requirements will get more specific in regards to the CCSS in math and ELA/literacy.

The **Idaho State Department of Education (SDE)** worked with the **Professional-Technical Education Teacher Certification Department** to create a dual certification program for CTE teachers. CTE teachers have two pathways to obtain teacher certification. The first way is by obtaining an Occupational Specialist Certificate, which is an industry-based certificate that requires teachers to meet established work experience and industry certifications before teaching. The second way is by earning a Standard Secondary Certificate (e.g., through a more traditional degree program, as educators in academic areas do) plus a technical endorsement. The endorsements are comprehensive and allow teachers to teach all courses in a specific technical area.

RESOURCES FOR MONITORING CCSS IMPLEMENTATION

Oregon teacher licensure:
www.ode.state.or.us/search/page/?id=3169

www.ode.state.or.us/search/page/?id=3228

Idaho's professional-technical education, certification/credential:
www.pte.idaho.gov/Certification/Certification_Home.html

The **Illinois State Board of Education** requires Perkins applications from local CTE consortia to include an accounting of any CCSS implementation activities they have undertaken (such as awareness building or professional development for CTE teachers). The state does not require the local consortia to undertake any specific CCSS-related activities — only to report it as part of its annual application for Perkins funding — but the reporting requirement certainly sends a signal. As of the production of this report, the state board staff has not decided whether it will require specific CCSS activities among local consortia.

8. Involving Postsecondary CTE in CCSS Implementation

Action Ensure that postsecondary CTE is also included in outreach and implementation planning.

To represent true college and career readiness, postsecondary administrators and faculty from the core academic disciplines and technical areas should be aware of and involved in implementation of the CCSS. Postsecondary CTE faculty can provide information about the kinds of literacy and math skills that will be necessary for students to succeed in their postsecondary CTE programs. Technical colleges are particularly important in these efforts given their role in delivering CTE at the postsecondary level. If secondary CTE educators are reluctant to embrace the CCSS, then this kind of input from postsecondary CTE faculty can reinforce the case for strengthening literacy and math in CTE programs.

State examples

The **Ohio Department of Education (ODE)** and **Ohio Board of Regents (OBR)** are collaborating on the High School-Higher Education Alignment Initiative, a project funded through Ohio's Race to the Top award. In February 2012, ODE and OBR announced 14 partnerships (or consortia), each of which includes representation from high schools and institutions of higher education (two and/or four year) — in some ways modeled after the Tech Prep structure. In total, about three-quarters of the partnerships include CTE representation or CTE as an area of focus.

Each partnership will work to align curriculum in ELA and math (based on the CCSS as well as the state's college- and career-ready standards in other subjects) to reduce postsecondary remediation rates, align teacher preparation programs, and exchange data between high schools and postsecondary institutions to promote greater student success. Lessons learned and best practices will be collected by ODE and OBR and disseminated so that they can be replicated by schools and communities across the state.

In spring 2012, the **Oregon Department of Community Colleges and Workforce Development** began the implementation of a grant funded by the Lumina Foundation to study the alignment of college placement with high school graduation requirements, including a specific focus on CCSS math standards and skills. CTE educators will be invited to participate in the project.

RESOURCES FOR INVOLVING POSTSECONDARY CTE

Ohio High School-Higher Education Alignment Initiative: http://education.ohio.gov/GD/Templates/Pages/ODE/ODEDetail.aspx?Page=3&TopicRelationID=1887&ContentID=122668

Common Barriers and Challenges

During the interviews, CCSS and CTE state leaders shared their current experiences and strategies with integrating the CCSS into CTE programs. They also identified a number of common issues that often make integration of the CCSS into CTE a challenge; some of the issues are based in attitudinal and ingrained behaviors, and some are structural in nature. State and district leaders will need to consider, if not address head on, the barriers to achieve a full integration of academic and technical teaching and learning.

- At the state level, **curriculum and instruction issues are isolated from CTE implementation.** Often they reside in separate bureaus and sometimes in entirely separate agencies.
- Within the state agency, **the CCSS coordinators are often overloaded with responsibilities just focusing on ELA and math implementation** for the core academic teachers and coordinators. Not surprising, the integration of the CCSS into CTE and other subject areas is not high on the agenda.
- At the local level, **the traditional culture of high school instruction creates silos of content.** The school focus is on teaching curriculum content in isolation rather than on developing transferable, applicable skills and knowledge for the learners.
- **ELA and mathematics teachers traditionally are responsible solely for the delivery of their content** and typically have limited experience enhancing their subject through cross-disciplinary integration with other content areas.
- Many CTE teachers are working to reinforce the academic content as they teach but have **limited experience with the explicit integration of literacy and math** into their CTE content areas.
- **CTE teachers sometimes see literacy and math instruction as a responsibility of academic teachers,** rather than seeing literacy and math integration as an opportunity to enhance student success in the CTE content area itself.
- There are **few, if any, innovative models of how to systematically integrate real-world CTE examples into mathematics instruction or English classes to enhance relevance and deeper student learning.** Where models do exist mostly at the local level, they are often difficult to replicate or bring to scale without significant resources or planning time set aside for educators to collaborate on integration strategies and materials.
- Leaders at the school building level have limited experience with cross-content instruction or integration of math and literacy content. Further, **usually no planning time is afforded to allow/encourage cross-curricular collaboration by teachers.**
- **High-quality teacher requirements** also can provide a challenge as CTE educators, unless dual certified in their technical area and an academic area, cannot assume full responsibility for the teaching of an academic subject. And currently, most CTE certification programs do not have academic-focused course or competency-based requirements.

Conclusion

With the states' implementation of the CCSS, there is a tremendous opportunity for rethinking and redefining the role of literacy and mathematics across all curricular areas. Many states and regions already have been working to strengthen math and literacy instruction inside of CTE, so those places are well positioned to integrate the CCSS in their work.

Forward-thinking state CTE directors and local administrators are right to view the CCSS as an opportunity to build upon the foundational work called for in the Perkins Act. They see an opportunity to establish CTE as an integral partner in strengthening core literacy and math skills, while continuing to play a valuable role in engaging student career aspirations and providing practical career preparation for high school-age youths.

Implementation of the CCSS gives CTE educators the opportunity to contribute to a rich, meaningful and shared understanding of college and career readiness. CTE directors, administrators and instructors will definitely want to step forward and seize this opportunity.

But just as important, state leaders, superintendents, principals and teachers with responsibility for the core academic content also need to embrace collaboration with CTE educators and be enthusiastic about employing all strategies that engage and support students in learning. CCSS leaders at the state level should actively include their CTE colleagues in this work, and that same spirit of collaboration needs to be emulated at all levels of the education system.

Collaboration around shared goals is the only means by which the promise of the CCSS — all students academically ready for college, careers and life — will be realized.

Endnotes

1 See the Common Core State Standards at www.corestandards.org.

2 Common Core State Standards Initiative. *Key Points in Mathematics.* Retrieved March 10, 2012, from www.corestandards.org/about-the-standards/key-points-in-mathematics.

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Kate Blosveren
Associate Director of Strategic Communications & Outreach

Sandy Boyd
Senior Vice President of Strategic Initiatives

Appendix: The Survey and Its Findings

The purpose of the survey was to determine how state education agencies are including CTE leaders as stakeholders or partners in their CCSS implementation efforts. The findings from the survey were intended to guide further interviews and creation of this policy paper. States were told that their specific answers to the survey questions would not be published and only aggregated or non-identifiable findings would be published.

Questions

The following questions were asked in the survey:

- Have you established a plan with specific activities for Common Core implementation?
- Have you determined a timeline or plan for Common Core implementation as it relates to CTE?
- Have you assembled a Common Core implementation team?
- Does your team include CTE representation?
- Are local CTE directors actively involved in implementing the CCSS?
- If yes to the above, please provide the names of three districts (and their leaders) that have made the most progress to date. Note: Systems will not be contacted without your approval.
- How do you see CTE fitting in with the CCSS implementation strategy for your state?
- What do you think could be done to more closely integrate CTE into the CCSS implementation process?
- Please share any thoughts on how CTE may relate to CCSS implementation or vice versa.
- Does your state allow CTE courses to be substituted for math credits?
- Does your state have any integrated CTE/math courses?

Responses and conclusions

Twenty-two states provided responses to the survey questions, indicating the following actions on CCSS implementation:

- While almost three-quarters of respondents indicated that their state has established a plan for CCSS implementation, only half of respondents said that there was a specific timeline or plan for implementation as it relates to CTE.
- A little more than half of the states noted that an implementation team had been assembled, with more than half of states indicating that there was CTE representation on the team.
- 10 states reported that local CTE directors are actively involved in implementing the CCSS.

When asked how they saw ***CTE fitting in with the CCSS implementation strategy for their state,*** most respondents felt that CTE was crucial to implementation of the CCSS, both in supplementing and supporting math and literacy in CTE courses and in providing more real-world context to core courses. Most respondents felt that CTE leaders and educators should be intimately involved, although about half indicated that they were not currently involved.

> **Summary conclusion:** While not all states are actively including CTE in initial implementation, CTE directors believe that the CCSS and CTE should be closely connected.

When asked what could be done to more closely ***integrate CTE into the CCSS implementation process***, many respondents said that there should be more partnerships, common planning and training opportunities with academic and CTE teachers.

> **Summary conclusion:** There still seems to be a lot of room for improving the relationship between the CTE and academic worlds. More collaboration between CTE and academics would lead to less disconnect between the ideas of college readiness and career readiness.

Finally, the survey asked for thoughts on ***how CTE may relate to CCSS implementation***. Respondents were fairly consistent with the notion that CTE provides context for learning, in both ELA and math. Some indicated that critical employability skills are already embedded in CTE courses and can reinforce the skills promoted in the CCSS.

> **Summary conclusion:** As in the previous questions, CTE directors are convinced that CTE/CCSS integration is important. They state explicitly that CTE provides the real-world application of academic courses. Several answers also indicate that there should or could be more integration of academic standards into CTE courses.


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