



Southern Regional Education Board

# **Commission on Career and Technical Education**

Career Pathways Connecting  
High School, Work-Based Learning  
and Postsecondary Education

Commission Chair: Governor Steve Beshear, Kentucky

*Executive Summary*

Draft Report  
For Discussion Only | Do Not Disseminate  
June 22, 2014

## SREB Report on Career and Technical Education — Draft

In the 21st-century economy, most jobs require some education and training after high school. But too few young people are graduating from high school equipped with the foundational knowledge and skills they need to earn the kinds of credentials and degrees that will help them obtain those jobs. The workplace demands people who know how to learn, analyze information, work in teams, think critically, solve problems and think mathematically — workers with both academic skills and advanced technical skills. These are also the skills needed to succeed in colleges and universities. In recent years, however, far too many young people have struggled to settle into productive careers while high-paying jobs have gone unfilled. High school graduates need to be prepared for a full range of college and career options. Our states' economies depend on it.

*How can we provide young people with an education that connects academics with the workforce and prepares them for postsecondary success and good careers?*

Career and technical education (CTE) offers a solution to this problem by integrating academic and technical knowledge and skills and emphasizing real-world applications of those skills. Research has shown that all students can benefit from participating in high-quality CTE.

Career pathway programs of study that help students understand how education leads to lifelong learning and career advancement require significant collaboration across many sectors. To build career pathways, K-12 agencies, postsecondary institutions, workforce organizations, industry associations, parents and businesses need to come together for the good of students and communities.

### What Do Career Pathway Programs Look Like?

**They teach college-ready academics, technical skills and workplace know-how in the context of broad career fields.** Students learn to read and write about complex texts and to apply math concepts in career-focused courses. A pathway in aerospace engineering, for example, integrates skills specific to that career with math, literacy and science standards.

**They show students routes to community, technical and four-year colleges and to good jobs and careers.** Beginning in the middle grades, many caring adults help students explore careers and the preparation they need to enter them. Students learn about potential jobs and workplace readiness through hands-on learning in the workplace. High school students earn valuable college credits through dual enrollment programs at community and technical colleges and other avenues.

**Local business and industry groups work with K-12 and postsecondary partners to design programs and expose students to the world of work.** Career pathways meet the needs of local communities because schools work with industry leaders to develop them. Pathways align with community and technical college programs that lead to the credentials and degrees industry needs. Businesses help students link classroom learning with workplace problems through work-based learning experiences like job shadowing and internships.

**All kinds of students, in many kinds of schools, choose these programs.** Students of all levels of achievement enroll in forward-looking career pathways. Students in traditional high schools, career academies, early college high schools and shared-time technology centers understand their educational and career options and find motivation in instruction and assignments that bridge high school and the real world.

## What Actions Will Make This Vision a Reality?

**Action 1: Relevance** — Partner with postsecondary, workforce and business leaders to ensure that the career pathways schools offer launch students on the path to postsecondary studies and high-wage, high-demand jobs.

**Action 2: A New Vision of CTE** — Establish in state policy a new vision for CTE that encourages students of all levels of achievement to pursue postsecondary education and training leading to 21st-century jobs.

**Action 3: High Expectations** — Expect all students to graduate with the college-ready academic skills needed to succeed in credit-bearing postsecondary courses without the need for remediation and recognize and reward schools that graduate more students meeting these expectations.

**Action 4: Technical Readiness** — Identify technical readiness standards for each career pathway and select measures of technical readiness that offer value to students, employers and the economy and encourage more students to pursue postsecondary education and training.

*SREB's Commission on CTE challenges states to forge strong partnerships and build bridges from high school to lifelong learning and success.*

**Action 5: Accountability** — Design state accountability systems that assess and reward high schools and postsecondary institutions implementing career pathways that help more students earn advanced certifications, credentials and degrees.

**Action 6: Informing Students and Parents** — Build websites powered by educational and employment data that show students and parents how career pathway programs connect to education, training and well-paying careers after high school.

**Action 7: Low-Performing High Schools** — Adopt an accelerated framework of strategies that restructures low-performing high schools into career-themed small learning communities that align with postsecondary education and integrate college-ready academics with rigorous technical studies and work-based learning.

**Action 8: Technology Centers** — Review shared-time technology centers to assess the quality and alignment of their programs with curricula, instruction and technology in high schools, postsecondary institutions and workforce demand.

**Action 9: College Placement and Remediation** — Increase the number of students earning postsecondary certificates, credentials and degrees by helping community and technical colleges improve their placement measures, developmental education programs and student support strategies.

**Action 10: Teacher Training** — Support new career-technical teachers coming from industry backgrounds with fast-track teacher induction programs and ongoing professional development.

## Ten Priority Actions States Can Take: An In-Depth Look

In all SREB states, leaders from education, industry and government are seeking solutions to the skills gap and rebuilding their economies through policies and practices designed to strengthen the connections between education, employers and the job market. Members of SREB's Commission on CTE described how states are working to improve the quality and responsiveness of their secondary and postsecondary career-technical programs to industry and workforce needs.

### **Career pathways offer a powerful way to seamlessly connect high school and advanced education and training with existing and emerging 21st-century jobs.**

These 10 priority actions can help states develop comprehensive policies and practices to prepare more students with the college- and career-ready knowledge and skills needed in the new global economy.

#### **Action 1: Relevance**

Prioritize the creation of career pathways in key industry sectors that:

- blend college-ready academics with challenging technical studies;
- include ongoing work-based learning and dual credit learning opportunities;
- engage students in ongoing career exploration and counseling for careers and postsecondary studies;
- require further education and training beyond high school; and
- lead to existing and emerging high-wage, high-skill jobs.

Most states' education and workforce preparation systems are not structured to respond to changing workforce needs in key industry sectors, and many students are not on pathways leading to high-skill, high-wage jobs in these sectors. **Commission members agreed that states need to partner with the private sector to design optional career pathways that bridge high school, work-based learning and postsecondary education and lead to 21st-century jobs.** By creating pathways that blend college-ready courses with career-technical studies, schools can close the divide between college and career and accelerate students' college- and career-readiness.

#### ***Additional Steps States Can Take:***

*Engage the private sector in identifying and continually reassessing the state's key industry sectors and current and projected needs in those sectors. Charge economic and workforce development agencies and secondary, postsecondary and industry partners with developing, validating and aligning career pathway standards and curricula with meaningful assessments that meet workforce demands and prepare students to enter and advance in the labor market. Ensure that for each industry sector, career pathways begin in high school with broad preparation for the field and lead to more intensive postsecondary studies. Structure pathways to offer multiple entry and exit points on the path to educational and career advancement. Where possible, structure pathways around stackable postsecondary and industry credentials.*

*Leverage Perkins, Workforce Investment Act and other funding sources to require cross-institutional partnerships and invest in the development of new career pathways leading to 21st-century jobs. Redesign or repurpose career pathways that do not prepare students to complete postsecondary programs or earn certifications leading to high-demand jobs.<sup>1</sup>*

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<sup>1</sup> **Tennessee** is retooling its career pathways to offer greater academic and technical rigor and align seamlessly with postsecondary programs leading to emerging jobs. The state has retired outdated career-technical courses and is developing new or revising existing courses to blend academic college- and career-readiness standards with technical standards. In the case of a Plant and Soil Science course, for example, older course standards for one module required students to define terms related to soil chemistry and plant nutrition, perform soil pH analyses and assess plants for signs of disease. Revised standards require students to apply their knowledge of plant growth and diseases by recommending treatments and prescribing preventative control measures for major crops. The module's technical standards are linked with new state reading, writing and biology standards.

*Incentivize industry partners to expand work-based learning for all students in high schools, technology centers and community and technical colleges. Ensure that work-based learning experiences engage students in authentic applications of academic, technical and workplace skills and, where possible, carry both high school and community and technical college credit.*

*Locate responsibility for coordinating work-based learning at the school district or regional level, leveraging the resources of workforce development agencies or Chambers of Commerce. Support districts with adequate staff and resources to ensure broad student participation.*

*Work with workforce commissions, insurers and other agencies to develop policies that protect students and the employers who are providing high-quality work-based learning.<sup>2</sup>*

## **Action 2: A New Vision of CTE**

**Establish in state policy a new vision of CTE based on optional, academically and technically challenging career pathways that encourage students of all levels of achievement to pursue postsecondary education and training leading to 21st-century jobs.**

Labor market analyses have shown that two-thirds of all jobs in the new economy require further education and training beyond high school. Secondary and postsecondary career-technical programs play a vital role in preparing students for these jobs, and rigorous CTE studies joined with a college-ready core can also launch students on paths to postsecondary education and training.

States need to establish policies requiring the redesign of existing career-technical curricula or the adoption of new curricula that blend college-ready academics and rigorous technical studies and provide optional pathways to the full range of college and career options.

### ***Additional Steps States Can Take:***

*Offer students access to intense, technology-based career pathways in comprehensive high schools, shared-time technology centers, community and technical colleges, early college high schools and career academies. Allow all students to pursue career pathways without sacrificing participation in activities at their home high schools.*

*Use appropriate measures and indicators to capture the quality and rigor of curriculum, instruction and assessment in career pathways. Use these measures to ensure that students are receiving challenging assignments that require the application of academic, technical, technological, cognitive and workplace readiness skills to complete.*

*Ensure that the maximum number of students can participate in dual enrollment by making participation free, setting flexible eligibility requirements and offering programs in a range of settings (e.g., high schools, community and technical colleges and online). Equitably fund high schools, technology centers and community and technical colleges that offer dual enrollment.*

*Promote dual enrollment as part of joint programs that seamlessly connect high school and postsecondary education. Structure pathways to eliminate unfocused or duplicative course-taking. Ensure that credits earned in high school count toward graduation requirements, are automatically transcribed at the community and technical college and transfer across state institutions.*

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<sup>2</sup> **Maryland** covers students participating in unpaid work-based learning experiences through the state's Workers' Compensation system. The state offers protection for the employer from being sued and bearing the cost of litigation. Students receive protection from the cost of medical expenses. In some rare cases, school systems contribute to the cost of any premium increases for employers. In **Louisiana**, the state works with the Louisiana Workforce Commission to ensure that work-based learning is viewed as an extension of the classroom experience, which allows student workers to be covered differently under Wage and Hour regulations than if they were employed without being students. For its manufacturing apprenticeship program, **Kentucky** signed an agreement with a temporary employment agency that hires and assumes liability for 16- and 17-year-olds participants.

*Counsel schools, students and parents to help them understand the value of career pathways leading to advanced industry certifications, postsecondary credentials and degrees and 21st-century jobs. Use educational and employment data and ongoing advisement to help students, parents and teachers understand the connections between the pathways students pursue and the jobs and careers they can obtain.*

### **Action 3: High Expectations**

**Expect all students to graduate with college-ready academic skills needed to succeed in credit-bearing postsecondary courses without the need for remediation and recognize and reward schools that annually increase the percentage of students who meet these expectations.**

Most states have a long way to go toward meeting SREB's goal that 80 percent of all students will graduate ready for both college and careers. Most states recognize that, at least for the near future, some career-technical students may not meet academic college-readiness standards.

Although all students should be held to the same high expectations, states need to draw upon research and the judgment of their industry and postsecondary partners to establish academic career-readiness standards that ensure that career-technical graduates leave school with the foundational literacy and math skills needed to succeed in advanced training programs and college and to adapt to a changing workplace and a volatile labor market.

#### ***Additional Steps States Can Take:***

*Identify the foundational literacy and math skills students need to complete advanced training programs and become adaptable, lifelong learners. Ensure that standards for each career pathway reflect the levels of academic preparation required by the career field (e.g., STEM-related fields may require more math and science). Drawing upon the input of employers and postsecondary partners, develop state guidelines to inform the ongoing development and revision of academic and technical curricula in career pathways to meet these standards.*

*Ensure that benchmarks of academic career readiness on multiple measures — including state or nationally normed assessments, technical skills assessments and industry certification examinations — predict success in advanced training programs and the workplace.*

*Restructure graduation requirements to ensure that the senior year of high school prepares students for their next steps by offering capstone career-technical courses and advanced work-based learning and college credit-earning opportunities. Offer literacy and math readiness courses to students who need help meeting academic college-readiness standards or academic career-readiness standards. Allow these courses to count toward graduation requirements as fourth English or math credits.*

### **Action 4: Technical Readiness**

**Identify technical readiness standards for each career pathway and appropriate measures of technical readiness that:**

- **offer long-term value to individual students, employers and the economy;**
- **carry transferrable college credits; and**
- **are directly linked to more advanced certifications and further study.**

**At the high school level, ensure that such measures include third-party industry certification examinations, technical skills assessments, portfolios and college credit-bearing end-of-course assessments.**

Twenty-first century jobs demand that individuals have both occupationally specific technical knowledge and a broad range of skills that reflect the larger industry. Working with secondary and postsecondary agencies, workforce agencies and employer associations, states need to establish technical standards at the secondary and postsecondary levels. They also need to identify appropriate measures of technical, workplace and postsecondary readiness. However, many career pathways culminate in industry certifications that exceed the time, resources and scope of the high school curriculum. In the rush to provide students with access to industry certifications, many states may be adopting lower-level certifications without a strong sense of whether their content truly prepares students for advanced training or career advancement or aligns with industry standards, employer preferences and 21st-century jobs.

Employers also expect potential employees to behave professionally, demonstrate integrity, show dependability, think critically, analyze information, anticipate and solve problems, communicate effectively, function on a team, follow directions, locate and use information and adapt to new technologies. **In general, the field of CTE lacks adequate measures of these personal qualities and workplace readiness skills as well as the curricula and pedagogies needed to help students acquire them.**

### ***Additional Steps States Can Take:***

*Develop seamless career pathways that encourage high school and community and technical college students to work toward advanced industry certifications. Create or identify high school-level technical skills assessments, industry certifications or end-of-course assessments that carry college credit and lead to more advanced certifications at the postsecondary level. Bundle more narrowly focused certifications with other certifications, credentials and degrees.*

*Charge a designated state agency to work in partnership with secondary and postsecondary education agencies to evaluate and approve certifications that reflect appropriate depth and breadth of academic and technical content and lead to 21st-century jobs in key industries.*

*Ensure that technical assessments carry transferrable college credits and form part of a system of stackable postsecondary credentials that offer students multiple entry and exit points on the path to educational and career advancement.*

*Create advisement systems for high schools, technology centers and community and technical colleges that help educate district and school leaders, teachers, counselors, students and parents about the value of well-vetted stackable credentials and career pathways.*

*Ensure that students and parents do not have to pay for industry certifications used as technical skills assessments, accountability measures or graduation requirements.*

*Provide incentives to high schools, technology centers, community and technical colleges and instructors who accelerate student acquisition of advanced certificates, credentials and degrees, regardless of course or program structure (i.e., competency-based vs. seat time). Use incentives to ensure that these institutions offer pathways to postsecondary attainment and 21st-century jobs.*

*Restructure high schools and shared-time technology centers to permit the extended instructional time (e.g., an extended day, week or year) needed for students to receive intensive training and to earn advanced industry certifications.*

*Work with employers to identify or develop appropriate measures of workplace readiness skills. Establish rubrics that career-technical teachers can use to assess students' acquisition of workplace readiness skills as they progress through their career pathways. Structure pathways to include portfolios, work-based learning experiences, project-based assignments and senior projects that allow students to demonstrate their workplace readiness skills.*

## **Action 5: Accountability**

**Design a state accountability system that measures, recognizes and rewards districts, high schools, technology centers and community and technical colleges that implement career pathways leading to postsecondary certificates, credentials and degrees. Ensure that secondary, postsecondary and industry partners share responsibility for students' academic and technical achievement.**

Commission members agreed that state secondary and postsecondary education partners need to work together and in collaboration with workforce development agencies and industry partners to define college and career readiness and to prepare more students for 21st-century jobs. State accountability systems need to incentivize high schools and community and technical colleges that develop rigorous career pathways and measure and recognize the outcomes of those pathways.

“Pre-postsecondary” programs like Project Lead the Way and SREB’s Advanced Career courses, for example, were designed to teach a mix of academic, technical and 21st-century skills and potentially carry transferrable college credits that allow students to seamlessly transition to postsecondary study.

### ***Additional Steps States Can Take:***

*Employ multiple measures of college readiness and career readiness that have relevance and value outside the accountability system for schools, students, postsecondary institutions and employers, including:*

- achievement of academic college-readiness benchmarks or achievement of academic postsecondary readiness benchmarks appropriate to students’ chosen career pathways.
- completion of career pathways consisting of a college-ready academic core and at least four sequential career-technical courses related to a high-demand industry sector.
- participation in work-based learning (e.g., internships, apprenticeships).
- achievement of technical readiness standards, including:
  - attainment of advanced industry certifications,
  - acquisition of dual credit for career-technical courses and
  - passing end-of-course assessments in career-technical courses that carry college credit.
- completion of postsecondary educational programs.

*Allocate extra weight in state accountability systems for each high school student who meets both academic college-readiness standards and technical career-readiness standards. Allocate the same weight for career-technical students meeting academic and technical career-readiness standards as for students meeting academic college-readiness standards. Provide incentives to high schools and community and technical colleges that increase the percentage of students meeting both college- and career-readiness. Award diploma endorsements or college credits to students meeting these measures.*

## **Action 6: Informing Students and Parents**

**Build publicly accessible websites that use secondary, postsecondary and workforce data to illustrate not only how career pathway programs connect to further education and training and jobs in high-demand fields, but also how well career pathway programs are preparing students for success.**

In order to better inform students and parents of the value of rigorous career pathways, states need to create greater transparency regarding the relationship between education and labor market outcomes. This will require states to link educational and employment data.

**Commission members stressed the need to develop state longitudinal data systems linking educational, employment and workforce data as a strategy to align career pathways with workforce needs.** Such data can inform policymakers and education leaders about program relevance, quality and institutional performance and show the return on investment of education.

This recommendation does not come without challenges. In the case of some proprietary industry certification examinations, for example, policymakers and educators lack reliable information on their content, rigor, reliability and relevance to employers.<sup>1</sup> Further, most states receive little student outcome data from industry examinations; most states cannot link student examinations to their labor market participation. Without such data, states are limited in their ability to align career pathways with workforce needs, improve curricula and assess readiness.

### ***Additional Steps States Can Take:***

*Ensure that websites contain information and tools that allow policymakers, administrators, teachers, counselors, students, parents and employers to explore:*

- *the available job opportunities and earnings associated with career pathways at different levels of preparation and certificate, credential or degree attainment;*
- *the performance of institutions offering those pathways; and*
- *the costs incurred by students pursuing those pathways, including tuition, fees and average time to completion.*

*Use websites to inform counseling and career development, college and career exploration and the annual revision of students' individualized learning or graduation plans. Use counseling to shift students' focus from merely choosing a college to also choosing a career focus.*

*Use analytic tools that draw on real-time job data to analyze workforce needs and identify the licenses, certificates, credentials and degrees requested by employers for 21st-century jobs.*

*Protect the security and privacy of student data.*

*Collaborate with other states to create a national database of industry certifications that includes not only how many certifications are attempted and awarded, but also information regarding the depth and breadth of academic and technical content they contain as well as their connection to workforce needs. Use data to meet accountability requirements, help high schools and community and technical colleges improve their programs and award transcribed credits to students who pass examinations.*

## **Action 7: Low-Performing High Schools**

**Adopt an accelerated framework of strategies to restructure low-performing high schools into theme-based small learning communities offering career pathways that seamlessly align with postsecondary education and include:**

- **at least four sequential career-technical courses;**
- **a college-ready academic core;**
- **integrated academic and technical instruction and assignments;**
- **scaffolding and supports to raise students to grade-level standards, like tutoring, supplemental instruction and transition courses;**
- **ongoing work-based learning;**
- **counseling for career and postsecondary planning;**
- **opportunities to earn college credits;**
- **a schedule that allows students to take classes as a cohort and gives academic and career-technical teachers time to plan project-based assignments; and**
- **after school and summer bridge activities that enhance readiness, like career and technical student organizations (CTSOs), student clubs, work-based learning and project-based learning.**

Previous reform efforts targeting low-performing high schools have often failed because their focus has been limited to remediating students in isolation from their regular classes instead of adopting accelerated strategies that help students master grade-level standards. Improving low-performing schools

needs to be the responsibility of the entire school community, not just English and math teachers. **Further, CTE has been shown to benefit all students, but students in low-performing schools often have the least access to high-quality career-technical programs that are aligned with 21st-century jobs.** Students gain hope for the future when they take on challenging, contextually based assignments in their academic and career-technical classes, engage with the real world in progressively intensive work-based learning experiences and receive guidance from caring adults that exposes them to a broad range of college and career options.

### ***Additional Steps States Can Take:***

*Provide ongoing, intensive professional development to administrators, teachers and guidance counselors on how to implement rigorous career pathways.* Help all teachers learn how to use literacy strategies to engage students in mastering academic and technical content. Ensure that all math teachers learn how to create assignments that build students' math reasoning, understanding and procedural fluency. Help science teachers to create assignments that build students' ability to approach problems and think like scientists.

*Encourage key stakeholders to take ownership of low-performing schools by engaging district and school leaders, industry and postsecondary partners, community members and parents in designing pathways and reforming schools.* Foster sustainability by locating accountability for reform at the school board and community levels.

*Encourage fidelity of implementation of reform strategies by supporting school leadership teams with resources and external support.* Help schools and communities unite around the shared goal of providing all students with equitable access to high-quality career pathways.

### **Action 8: Technology Centers**

**Conduct a review study of shared-time technology centers to assess the quality and alignment of their programs with curricula, instruction and technology with home high schools, postsecondary education and training programs and workforce demand in key industry sectors.**

SREB states have more than 500 shared-time technology centers offering specialized training programs that are often too expensive to be offered in comprehensive high schools. Although curriculum and instruction in some shared-time centers have not kept pace with emerging industries and 21st-century jobs, most centers remain a viable component of states' education and workforce preparation systems. However, as academic requirements for graduation have risen in all states, students have lost time in their schedules to pursue career pathways leading to advanced certifications and further study. As a consequence, especially in rural areas in which shared-time centers serve students from many schools, far too many students are spending more time riding the bus than receiving instruction or engaging in work-based learning.

SREB's research has shown that significantly fewer students attending shared-time centers in its Technology Centers That Work (TCTW) network are meeting college- and career-readiness goals compared to students completing career-technical programs at comprehensive high schools. About 8 percent fewer students met literacy goals, 12 percent fewer met math goals and 10 percent fewer met science goals compared to their home high school peers. Literacy scores were especially low for boys, who comprise 55 percent of the total population of TCTW schools.

Commission members agreed that shared-time centers and home high schools need to share responsibility for career-technical students' outcomes. As such, states need to adopt policies that help shared-time centers and home high schools align their courses, integrate academic and technical instruction, engage in shared development and plan assignments together. New school structures or schedules may be needed to support these policies.

### ***Additional Steps States Can Take:***

*Give shared-time technology centers the additional resources, scheduling and staffing flexibility needed to coordinate planning, instruction, professional development and counseling with administrators, teachers and counselors at students' home high schools.*

*Staff shared-time technology centers with literacy and math teachers who will work with career-technical teachers to embed literacy and math standards into student assignments and provide students with the supplemental literacy and math instruction they may need to successfully complete authentic, project-based assignments.*

*Consider restructuring shared-time technology centers as full-time technical high schools, offering full-time study at the centers during students' junior and senior years or extending the school day at the centers to allow more time for integrated academic and technical instruction. Where possible, allow students receiving literacy and math instruction during extended days at the center to earn English and math credits over a two-year period.*

### **Action 9: College Placement and Remediation**

#### **Increase the number of students earning postsecondary certificates, credentials and degrees by helping community and technical colleges improve their placement measures, developmental education programs and individualized student support strategies.**

As high schools strive to help more career-technical students meet academic and technical readiness standards for postsecondary education and training programs, community and technical colleges face an equal challenge in helping students earn certificates, credentials and degrees leading to gainful employment. Many serve high percentages of students who lack the literacy and math skills needed to complete postsecondary education and training programs. Many students are quickly shuttled into non credit-bearing remedial courses that are disconnected from the occupational studies they are there to pursue. Most fail to complete. Commission members described strategies that community and technical colleges can adopt to better identify and support students in need of extra help and better integrate instruction in credit-bearing and non-credit bearing academic and career-technical courses.

### ***Additional Steps States Can Take:***

*Draw upon research and best practices to establish multiple measures of postsecondary readiness (e.g., GPA, benchmark scores on nationally normed assessments and college placement exams) that increase the number of avenues through which students can qualify for community college programs and test out of developmental education.*

*Allow students who score below college-ready benchmarks to co-enroll in credit-bearing academic or career-technical courses and developmental courses or modules. Adopt nationally recognized instructional models that use a team-teaching approach to contextualize literacy and math for low-skilled community college students in occupational pathways.<sup>2</sup>*

*Offer supplemental tutoring and skills labs and individualized support strategies like early warning systems, success courses, learning communities and summer bridge programs.*

*Redesign developmental math pathways and create multiple measures for student placement in college math courses. Ensure that such pathways take into account the math needed in STEM and non-STEM certificate, credential and associate's (AA, AS or AAS) degree programs.*

*Provide incentives to community and technical colleges to create sustainable curricula and intervention strategies that increase the percentages of students who successfully complete their programs and earn postsecondary certificates, credentials and degrees.*

*Enact postsecondary funding formulas that redirect the funds saved as a result of redesigning developmental education into career pathways leading to 21st-century jobs in key industries.*

### **Action 10: Teacher Training**

**Set high academic, technical and pedagogical standards for all career-technical teachers and support new career-technical teachers coming from industry with fast-track teacher induction programs that ensure they receive the initial preparation and ongoing professional development needed to help students achieve college and career readiness.**

States use alternative certification as a means of putting teachers with valuable industry experience into career-technical classrooms.<sup>3</sup> SREB has found that about 75 percent of all high school career-technical teachers enter the profession through an alternative certification route rather than traditional teacher preparation programs.<sup>4</sup>

Requirements for alternative certification vary greatly among and within states, and some routes may take as many as five years to complete.<sup>5</sup> Few states require teachers to participate in an intensive induction program or receive mentoring during the first year of teaching. Most new career-technical teachers enter the classroom with little training and no experience designing lessons and authentic project-based assessments, managing diverse learners, preparing exams or embedding literacy and math in technical instruction.<sup>6</sup> Research has shown that under-preparedness leads to differences in instructional quality and high attrition.<sup>7</sup>

Further, many states adopting STEM-based career-technical curricula like Project Lead the Way or SREB's Advanced Career programs are discovering that their best teachers may have strong math and science backgrounds but lack the technical knowledge of the related career field.

#### ***Additional Steps States Can Take:***

*Adopt standards developed by the National Board for Professional Teaching Standards that require career-technical teachers to meet the academic standards expected of all teachers, show mastery of technical content, demonstrate effective teaching practices, earn a bachelor's degree, complete a high-quality teacher induction program and engage in ongoing professional development. Require career-technical teachers to hold the relevant certifications of their fields.*

*Offer high-quality, fast-track teacher induction programs that span the first 15 months of teaching and include at least two weeks of paid employment before teachers enter the classroom. Ensure that programs are collaboratively designed and delivered by postsecondary and industry partners and prepare new teachers with the pedagogical and classroom management skills needed to plan, deliver and assess instruction. One such model co-developed by SREB and the National Research Center for Career and Technical Education features two weeks of intensive development in the summers before and after the first year of teaching plus practice, modeling and coaching during the first year.*

*Provide ongoing, intensive professional development to academic and career-technical teachers on how to design instruction, assignments and assessments that integrate literacy, math and science with technical content. Ensure that professional development includes pedagogies like contextual learning, project-based learning, work-based learning and online instruction. Engage academic and career-technical teachers in not only developing project-based assignments for their students, but also completing those assignments themselves.*

*Support teachers in refreshing their skills through participation in national and regional professional societies, industry externships and work experiences.*

## Conclusions

Through this report, members of SREB's Commission on CTE have issued a powerful statement regarding the value of rigorous career pathways that are designed to blend college-ready academics and challenging technical studies and bridge the gap between high school and postsecondary education, work-based learning and 21st-century jobs. **Well-designed career pathways provide a truly optional way to prepare more young people for further education and career advancement.** They bring purpose to schooling and teach students how to use academic, technical and workplace skills to solve authentic problems and learn how to think critically. They can also help more young people embark on pathways to fulfilling careers earlier in life.

This report offers a set of actions that states can take to prepare more students for advanced education and training and 21st-century careers in industries that matter to state and regional economies. These actions include:

- identifying the foundational academic and technical skills career-technical students need to complete advanced training programs and advance in the workplace;
- establishing benchmarks on multiple measures of academic and technical career readiness that predict college and career success;
- designing accountability systems that recognize and reward high schools and community and technical colleges that put more students on accelerated paths to earning certificates, credentials and degrees and obtaining good jobs; and
- adopting fast-track teacher induction programs that support professionals from business and industry in becoming effective career-technical teachers.

The report provides a framework for restructuring low-performing high schools into small, supportive learning communities that blend a solid academic core with high-quality career pathways, work-based learning opportunities and college credit-earning experiences that help youth connect with their futures and engage in their education at a higher level.

The report highlights the vital role of the SREB region's more than 500 shared-time technology centers and urges states to help these centers align their curriculum, instruction, resources and technology with community and technical college programs and 21st-century jobs.

The 21st-century economy demands that individuals not only have broad-based technical skills, but also the ability to apply academic knowledge, think critically, analyze information, anticipate problems and adapt to changing technologies. Career pathways that prepare students with these skills require unprecedented collaboration between employers, high schools and community and technical colleges.

**With this report, SREB's Commission on CTE challenges states to forge strong partnerships between the public and private sector and build bridges from high school to postsecondary education that join a college-ready core with high-quality CTE studies and improve developmental studies in community colleges.**

## Endnotes

1. *Measuring Technical and Academic Achievement: Employer/Certification Examinations' Role in High School Assessment*, Southern Regional Education Board, 2009. See also Robert D. Muller and Alexandra Beatty. *Work Readiness Certification and Industry Credentials: What Do State High School Policy Makers Need to Know?* Achieve, 2008.
2. Examples include Integrated Basic Skills and Training (I-BEST), developed by the Washington State Board of Community and Technical Colleges, and Accelerating Opportunity (AO), based upon I-BEST.
3. *Improving Secondary Career and Technical Education through Professional Development: Alternative Certification and Use of Technical Assessment Data*. National Research Center for Career and Technical Education (NRCCTE), 2011.
4. Gene Bottoms and Kathleen McNally. *Actions States Can Take to Place a Highly Qualified CTE Teacher in Every Classroom*. SREB, 2005.
5. Christopher J. Zirkle, Lindsey Martin and N. L. McCaslin. *Study of State Certification/Licensure Requirements for Secondary Career and Technical Education Teachers*. NRCCTE, 2007.
6. *Ibid.*
7. Richard M. Joerger. "Comparison of the Impact of Teaching Events upon the Experience of Entry-Level Agricultural Education Teachers." *Journal of Career and Technical Education*. 20:1 (2003): 51-68.

## SREB's Commission on Career and Technical Education

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### Commission Members

Governor Steve Beshear  
Commonwealth of Kentucky  
Chair, Southern Regional Education Board  
Chair, Commission on Career and Technical Education

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Alan Baker\*  
State Representative  
Alabama

Tommy Bice\*  
State Superintendent of Education  
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Arkansas Department of Career Technical  
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State Senator  
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John Legg\*  
State Senator  
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Florida Department of Education  
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Technical College System of Georgia

Barbara Hampton  
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Georgia State Board of Education

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<p>Norman Conway*  State Delegate  Chair, House Appropriations Committee  Maryland</p>	<p>Katharine Oliver  Assistant State Superintendent  Maryland Department of Education</p>
<p>Terry Burton*  State Senator  Vice Chair, Senate Appropriations Committee  Vice Chair, Senate Universities and Colleges  Committee  Chair, Energy Committee  Mississippi</p>	<p>Jean Massey  Associate State Superintendent  Mississippi Department of Education</p>
<p>June Atkinson  State Superintendent  North Carolina Public Schools</p>	<p>Hugh Blackwell  State Representative  Co-Chair, House Appropriations Subcommittee on  Education  North Carolina</p>
<p>Sharon Morrissey  Executive Vice President/Chief Academic Officer  North Carolina Community College System</p>	<p>Steve Gratz  State Director of Career-Technical Education  Ohio</p>
<p>John Ford*  State Senator  Chair, Senate Education Committee  Vice Chair, Committee on Appropriations  Subcommittee on Education  Oklahoma</p>	<p>Robert Sommers*  Secretary of Education and Workforce Development  and State Director of Career and Technology  Education  Oklahoma</p>
<p>Donald Griffith  Director, Teacher Training Program  University of South Carolina, School of  Engineering and Computer Science</p>	<p>Phil Owens*  State Representative  Chair, House Education and Public Works  Committee  South Carolina</p>
<p>Harry Ray Brooks*  State Representative  Chair, House Education Committee  Tennessee</p>	<p>Danielle Mezera  Assistant Commissioner, Career and Technical  Education  Tennessee Department of Education</p>

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### **Consultants to the Commission**

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for Career and Technical Education  
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Stephen Hamilton  
Professor of Human Development  
Director, Cornell Youth and Work Program  
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**Guests of the Commission**

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Secretary of Education and Workforce  
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Wesley Beddard  
Associate Vice President for Student Learning and  
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North Carolina Community College System

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Michael Berry  
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Texas Education Agency

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\* Indicates a member of the Southern Regional Education Board or SREB Advisory Council