

***Translating VET Issues in the United States for International Reviewers***  
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This brief provides a context for the OCED expert team's review of VET programs and policies in Texas and South Carolina. It summarizes U.S. policy debates, offers observations about the country's system of career and technical education (CTE), and points to CTE's strengths and challenges as states and districts implement it.

NOTE: While the other OECD countries in Learning for Jobs provide VET mainly in upper secondary, the U.S. equivalent—CTE—is provided in both high school and community college. In the U.S. education system, students complete high school at age 18; they then can either enter the labor market or go on to postsecondary education. Among CTE graduates who go on to postsecondary, most choose a community college to pursue an Associate's degree in an applied field or an industry certificate. Other post-high school options are short-term training programs delivered either in for-profit or community-based organizations. According to a new report from the National Center for Education Statistics, in 2008, 47% of students were enrolled in subbaccalaureate programs, and the total number of subbaccalaureate awards conferred increased 28 percent between 1997 and 2007, to 1.5 million.

Over the last decade, U.S. educators and policy makers have increasingly advocated for placing in-depth technical training—what OECD defines as [Tertiary B](#)—in community college rather than in high school. The main reason is that students need stronger foundational or basic skills than ever before—math, computer skills, writing, critical thinking for many occupations. These cannot be taught in high school to the levels necessary simultaneously with high-level technical skills. In addition, many high schools lack the equipment, trainers, and resources to provide high-quality technical education. However, the growth of dual enrollment programs—postsecondary courses taught to high school students—has introduced what might be called a version of Tertiary B CTE at the secondary level. This brief focuses on high school CTE but also touches on its links with the community colleges.

#### **National education policy related to CTE**

Almost all recent policy statements about education reform and the need of the United States to increase the number of young people who complete postsecondary credentials begin with some version of this statement from Barack Obama's speech to a Joint Session of Congress in February 2009—barely a few weeks into his Presidency:

"It is the responsibility of every citizen to participate in [education]. And so tonight, I ask every American to commit to at least one year or more of higher education or career training. This can be community college, a four-year school, vocational training, or an apprenticeship. But whatever the training may be, every American will need to get more than a high school diploma. And dropping out of high school is no longer an option. It's not just quitting on yourself, it's quitting on your country—and this country needs and values the talents of every American." He added, "Countries that out-teach us today will out-compete us tomorrow."

Led by the President, with major boosts from unprecedented dollars flowing to the U.S. Department of Education from the American Recovery and Reinvestment Act and supported by

major charitable foundations, the United States is embarked once again (or still) on an effort to improve its educational outcomes—both quality and quantity. But there is suddenly a new wrinkle: after years of focus on improving high school graduation rates and college access (meaning matriculation into college), the nation is focused on the *completion* of a postsecondary credential. Unlike in European systems, “some college” is counted in national statistics of educational attainment as a value in itself. Today, however, that is changing. Attention is turning to end points: Completion means a Bachelor’s degree, an Associate’s degree (culmination of community college), or a credential or certificate acceptable to employers attained after completion of high school.

The new urgency is generally attributed to the following:

1. More occupations than ever, and especially the fastest-growing ones, require more than a high school diploma; we have jobs unfilled because we lack prepared candidates.
2. Key jobs are being “off shored,” especially in STEM fields (science, technology, engineering and mathematics).
3. According to OECD statistics, the United States is falling behind in postsecondary degree production; we used to be the best-educated population in the world. Now we are 10<sup>th</sup> and our older citizens are better educated than our younger ones.

As Paul Lingenfelter, president of the State Higher Education Executive Officers organization, put it in a recent talk, “The rest of the world has learned the recipe the U.S. used for economic prosperity in the last half of the 20<sup>th</sup> century: 1) Combine a well-educated workforce with investment in R&D; 2) Marinate in a competitive market economy governed by fair laws; and 3) Stir gently and continuously.”

#### **New importance of two-year degrees**

The U.S. education system is dominated by a propensity to set numeric goals for future achievement. The President’s goal is that the nation have “the world’s highest proportion of college graduates by 2020 which would mean that 55% of the population would have a credential.” Lumina Foundation for Education has put forth a second goal: 60% of the population with a credential by 2025. A number of organizations have calculated and publicized the number of additional degrees required and populations targeted for increased attainment. As Jamie Merisotis, president of Lumina Foundation, said in a recent talk: “For the past four decades, U.S. degree attainment has hovered around 39 percent, so you can see we have a big job ahead of us. In fact, to reach the Big Goal, the nation will have to produce 16 million more graduates than are expected at the current rate.” The National Center for Education Statistics has already said that this goal will be almost impossible to meet, and it has produced projections to back up that assertion.

So what does this have to do with career and technical education in the United States? There are some fine points to the argument above:

- The United States has fallen behind because we lag in the production of Associate’s degrees even though we produce a high number of Bachelor’s degrees.
- About 77% of recent high school graduates in the middle to upper socioeconomic groups will earn Bachelor’s degrees.
- To increase degree production, we will have to educate the most challenging segments of the population—students who are first-generation college goers, students of color, low-

- income students, and English language learners.
- Many of these students either now do not complete high school or graduate poorly prepared for college.
  - While according to the American dream, these students should have the choices of their more affluent and better prepared peers—to get a Bachelor’s degree over four+ years on a residential campus—many will end up in community colleges.
  - They will want and be counseled or tracked into programs leading either to a transfer degree or, more likely, a career-oriented program.

So working backwards, it is first important to know that the policy community has now focused unprecedented attention on two-year postsecondary institutions as the engines of job training. In July 2009, President Obama announced the American Graduation Initiative, a 10-year, \$12 billion plan to invest in community colleges, and he added a fine point to the goal of increasing the number of degree holders: 5 million additional community-college graduates by 2020. Backed by the White House and supported by a new undersecretary of education, Martha Kanter, who is a former community college president, and using Vice President Joe Biden’s wife Jill as the “poster woman” for community colleges—she teaches English at Northern Virginia Community College—two-year institutions are in the limelight. And as is always the case when the U.S. economy falters, students are flocking to these schools, exposing just how stretched they are in meeting their goal of producing graduates ready to enter the labor market with the appropriate skills and training. Many of the institutions serving heavily populated areas have turned away applications for lack of seat space. In California, for example, community colleges have said no to nearly 250,000 students in the last year.

Recently, policymakers have begun to focus on community college outcomes: if students are being denied entry because of overcrowding, is this because the lucky ones accepted are taking up resources getting degrees? Unfortunately, the answer is no. Most community colleges do poorly in assuring that the students they take in complete degree and credential programs. And so, to add one final component to this story, with good news about investment in community colleges comes the companion to investment: accountability. Over the last year, and particularly in recent months, the American Association of Community Colleges, the Association of Community College Trustees, and other organizations, with funding from the Gates and Lumina foundations, have set in place major initiatives to establish interim student-progress benchmarks and program-completion rates. [According to the Gates Foundation](#), the goal is to establish a “national, voluntary accountability system for community colleges.” (In the United States, state’s rights and a tradition of local control prevent the US Department of Education from mandating a national curriculum or measuring outcomes by a standardized test or assessment; hence “national” is always paired with “voluntary.”) The first stage is to create a “common set of metrics and data points to evaluate their effectiveness, both internally and against one another, developed specifically for their mission.”

### **Purposes of high school education**

The attention given to community colleges as the main sites for career preparation in an economy facing a “jobless” recovery has reawakened debates about the proper goals of high school in preparing students for work. While oversimplifying, one might put forth three positions, each with implications for high school CTE curricula and goals:

- *The progressive view:* Everyone should graduate from high school ready for college entrance or to start a career<sup>1</sup> (and these both have demanding high school exit requirements although some believe the requirements can differ). Every one needs a postsecondary credential—whether from a two- or four-year college, a union or other apprenticeship program, or another nonprofit or for-profit provider. This is often called the “multiple pathways” approach. The progressive view is shared by the majority of education policymakers in the United States, including at the federal level, and as such will be the primary concern of this brief.
- *The civil rights view:* All students should be prepared for a four-year college because if we promote two-year degrees or other work-related credentials, low-income young people and people of color will once again be tracked into these less valuable pathways. Community colleges are dead ends and largely unsuccessful in launching the most vulnerable populations into careers with middle-income wages. This is a tougher version of the progressive view: students should not only graduate from high school “college and career ready,” but all should go on to a baccalaureate degree. It has a small number of highly respected proponents.
- *The traditional view:* High schools should have two tracks—one leading to four-year college preparation, one leading to post-high school employment. Not everyone needs a postsecondary credential. Too many ill-prepared and bored students go to college who might be better off working after high school rather than using public subsidies for education and getting themselves in debt. High schools should prepare less academically inclined or talented students for jobs. The economy needs service workers, and one can earn a decent living in some fields without a postsecondary credential.

Much more attention than in the past is focused on high schools because of the new urgency to achieve a higher rate of high school graduation and college completion. Thus, it is interesting to note that while specific kinds of high school improvement are singled out as appropriate for federal investment, neither Race to the Top nor “i3” (the Innovation Fund), the two biggest new federal investments, totaling \$5 billion combined, mentions career and technical education in the drafts sent out for public comment.

One guess about why this is so is related to “the progressive view.” Within that camp, college and career readiness are most often defined as one and the same. And states have worked to have all students meet the same requirements, whatever their post-high school path: four years of English, three of math (Algebra I and II, geometry), three of lab science (biology, chemistry, physics), three and a half of social studies (chosen from U.S. and world history, geography, economics, and government), and two of a language other than English. In some states, this is the default course of study, and parents must opt out of this curriculum for their children. Indeed, 35 states have signed on to implement both a set of benchmarked outcome standards and a default college-ready curriculum as part of Achieve’s American Diploma Project. (Achieve is a Washington, D.C.-based NGO focused on helping states raise academic standards and graduation requirements, improve assessments, and strengthen accountability.) Because CTE is stigmatized and associated with weak high school achievement and policymakers generally focus on raising achievement levels, some policymakers feel that it is better to avoid the CTE

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<sup>1</sup> The current phrase is “to graduate college and career ready.”

question entirely. An acceptable proxy for CTE is STEM, although the tacit understanding is that STEM requires demanding science and math preparation, while many CTE programs do not.

### **Challenges to “some postsecondary for all”**

The progressive view is not without challengers. Indeed, Texas, Georgia, and Louisiana have all had recent educational “dust ups” regarding one set of standards for all. With Governor Bobby Jindal as the chief advocate and backed by the legislature, Louisiana has [just implemented](#) a two-tiered diploma similar to the one that policy organizations have sought to abolish over the last decade of school reform. The legislation requires school districts to establish a new career diploma for students who do not intend to go to college, which would include more vocational and technical courses. Some of the classes could be offered through the Louisiana Community and Technical College System.

In response to a similar and ultimately unsuccessful initiative in the Texas legislature, the state’s progressive high school reform community asked Jobs for the Future to explain how Texas can implement a college-ready curriculum for all students, while preparing them for careers with advancement prospects and future academic success in two-year, four-year, and technical colleges. Texas is a national leader in taking steps to ensure that more young people graduate high school prepared for postsecondary and career success. Policymakers understand that securing the state’s economic future rests on the ability of its workforce to do jobs that increasingly require a postsecondary credential or degree, but there are disagreements about how to come at this goal.

In our Texas brief, we noted that the legislature had raised legitimate concerns, such as: Is it really possible for schools to implement a college-ready curriculum for all students, while also preparing those who will enter the labor market right after high school for careers with good pay and advancement prospects? Should schools worry about whether students going from high school into the job market have the preparation for further education if they choose to return to college later? These are the kinds of questions that holders of the progressive view see as warning signs of the reemergence of a two-tiered diploma system that sets lower expectations for one group of students and college-ready expectations for others.

### **The Federal Carl D. Perkins Act**

The degree to which presidents and secretaries of education use the bully pulpit to change education policy varies from administration to administration. As the architect of No Child Left Behind, George W. Bush had an aggressive policymaking agenda, and the Obama administration has the same. Currently, with new federal funds available, some states are quickly enacting legislation to enhance their eligibility: several are lifting their caps on the number of charter schools eligible for funding, and others, against labor union protests, are agreeing to link teacher pay with student test results. Both these policies are favorites of the new administration. Such obvious and rapid state compliance with federal policy is unusual.

Federal policies use incentives and rewards to encourage states to implement certain policies, but since state and local revenue pay for public education almost entirely—the federal

government contributes 7 cents on the dollar—federal policies are only one among many priorities that shape state education policies and programs.

The Carl D. Perkins Act is the primary vehicle by which the U.S. federal government supports and attempts to shape vocational education programs. The Department of Education’s Office of Vocational and Adult Education administers the act. Federal funds—about \$1.3 billion—are channeled primarily through OVAE to the 50 State Boards for Vocational Education, using a funding formula that takes into account state population in certain age groups and per capita income. OVAE is charged with ensuring that the nation has the programs, services, and activities necessary to meet education and workforce needs, and it provides technical assistance to states to ensure that high-quality CTE programs are produced in grades 7 through 14. The Perkins Act was revised and reauthorized in 2006, which is when the term “vocational education” was replaced by career and technical education. The changes were implemented as a result of a wide-ranging, congressionally mandated evaluation entitled, the National Assessment of Vocational Education. The new law:

- Establishes separate core indicators of performance for the secondary and postsecondary levels;
- Modifies the required contents of state and local plans, including adding linkages between the Perkins Act and the Elementary and Secondary Education Act, as modified by the No Child Left Behind Act;
- Requires eligible agencies and eligible recipients to meet at least 90% of their adjusted levels of performance on each of their core indicators of performance or be required to develop and implement an improvement plan;
- Permits eligible agencies to withhold funds from eligible recipients failing to make

**CTE Fast Facts: Texas**

- 1.1 million secondary CTE students and 400,000 postsecondary CTE students
- \$93 million in Perkins funding and \$8.3 million in Tech-Prep funding
- CTE delivery models include standard community and technical colleges, high school courses, standalone and imbedded career academies, magnet schools and tech prep/2+2 Programs.
- CTE-relevant statewide initiatives include, Closing the Gaps, College Readiness Standards and Texas High School Project.
- Top three CTE licensure/certification programs are information technology, health services and cosmetology.
- State law requires that all postsecondary CTE programs be evaluated with respect to workforce alignment.

**CTE Fast Facts: South Carolina**

- 210,000 secondary CTE students and 63,000 postsecondary CTE Students
- \$19 million in Perkins funding and \$1.7 million in Tech-Prep funding.
- CTE delivery models included technical colleges, courses offered in high schools and middle schools, career and technology centers (in large school districts), state correctional agencies, career academies, and independent, multi-district career centers.
- CTE-relevant statewide initiatives include High Schools that Work, Project Lead the Way, and Personal Pathways to Success.
- The state attempts to promote workforce/CTE alignment via the South Carolina Education and Business Alliance. Business and Industry Councils also exist at the local level.

- progress or show improvement;
- Modifies the required and allowable uses of state leadership funds;
- Maintains the tech prep program as a separate program but permits eligible agencies to consolidate their funding under the basic state grants program and the tech-prep program.

Schools and districts must use Perkins funding to support “add ons” to the basic education funding rather than to replace state dollars—the usual language is “supplement not supplant.” In general, Perkins funds are approved for use on such things as equipment, vocational curriculum materials, professional development of teachers in vocational subjects, and the like. Funds also can go to remedial classes and to serve populations such as special education students. Funds can only be used at the middle school level for career exploration and guidance activities. The new Perkins Act also encourages the expansion of [tech prep programs](#), which link and align CTE offerings between high schools and two- and four-year postsecondary programs. It also requires that each recipient have one “program of study”—a planned sequence of courses that integrate high quality core academic knowledge with technical and occupational skills and knowledge to provide a pathway to postsecondary CTE education and career goals. (One might reasonably ask why planned sequences should be the exception not the rule.) Funding provided by states is called Average Daily Attendance. The per pupil costs of CTE are reflected as an addition to ADA, so, for example, Texas funds CTE at 1.35 of full-time equivalency (FTE) and Perkins accounts for the additional (0.35) funds.

Overall, career and technical education targets a wide spectrum of students, from those currently enrolled in high schools and postsecondary institutions, to out-of-school workers looking to upgrade their skills. Perkins identifies [16 Career Clusters](#) within CTE and requires states receiving Perkins funds to report on their offerings in these areas. The States’ Career Clusters Initiative is a voluntary national initiative intended to help states and schools organize their programs and guidance activities around clusters of similar occupations. The 16-cluster format used by the U.S. Department of Education encompasses all 970+ occupations identified by O\*NET. (O\*NET is a national public-access database containing information on hundreds of standardized and occupation-specific descriptors.) A state must provide to the federal government an unduplicated count of its “CTE concentrators” using the 16 career cluster categories recognized by OVAE and the National Association for State Directors for Career and Technical Education Consortium. In regard to data about students in general, states report to the National Center for Education Statistics on a wide range of indicators, but these data are still limited. States are developing “student unit record systems” that will allow them to follow students from high school to postsecondary and eventually into the labor market. Today, only Florida has data that can link all three.

### **CTE students and their schools**

A significant proportion of American high school and college students intend to pursue employment that does not require a baccalaureate. Many enroll in career and technical programs at the secondary level. About one in five high school students in the US concentrate in occupational education programs, according to the National Center for Education Statistics (NCES 2008), the U.S. Department of Education’s entity for collecting and analyzing data on many aspects as CTE. (The OECD data on U.S. participation appears to be substantially underreported on OECD charts in the interim Learning for Jobs report; this is probably due to

definitional issues.) Among all 2005 graduates, more occupational education credits were earned than credits in fine arts or languages.

At all postsecondary levels (certificate, Associate's, and Bachelor's), more undergraduate degree seekers concentrate in career fields than academic subjects. Over 40 percent of college freshman start in community colleges; and most of these enroll in occupational programs. The trend has been away from CTE *program* concentrators toward more academic education at both the high school and postsecondary levels, but occupational *course-taking* and credits have increased at the postsecondary level and held steady at the secondary level, implying that while students may not sign up for a CTE program, most take at least one career-focused course. According to a 2006 Congressional Research Service report for Congress, in Perkins legislation, vocational concentrators are "students who earn three or more credits in a single occupational area (e.g., business services or agriculture). Vocational explorers are students who earn three or more credits in more than one occupational area (e.g., business services and health care)."

The wide-ranging careers targeted by CTE programs are reflected in the diversity of delivery mechanisms used to instruct CTE students. Most career and technical education is delivered to postsecondary students via community or technical colleges and a number of proprietary (the term often used for "for-profit schools) institutions. Instruction includes both traditional classroom delivery and, increasingly, online courses. States are also beginning to provide *postsecondary* or more advanced college-level CTE courses to high school students, via dual enrollment classes in both traditional high schools and new models, such as early college high schools.

Programs and courses offering career preparation at the high school level are delivered in many different forms. The comprehensive high school, the legacy of the expansion of high school education to a wide range of young people in the 1950s, still predominates, especially where population density can support only a single high school or in large urban areas. Such a school would have academic and CTE tracks within it, although some proportion of CTE students would likely be placed in academic courses with their college prep peers. In a number of instances, these large schools have been broken down into smaller learning communities or even separate schools with their own principals housed in a single large building. Such smaller entities often have career themes—media, health careers, leadership, social justice, business, information technology, and the like. While these often sound like career preparation programs, most are not intended to lead directly to work after graduation. In theory, the idea is to engage young people in school by allowing them to choose some form of applied learning that demonstrates the relevance of schooling. There may be internships, a partnership with an employer, or a community service opportunity, but the idea is not so much career commitment as exploration. (It is also important to note that such schools raise definitional problems since some but not all receive Perkins funding—and may or may not be counted in student CTE participation data).

CTE is also delivered through schools devoted primarily to career preparation. These include the following variants: high schools in large urban areas devoted to a single career area (e.g., automotive technology, aviation science); or vocational schools offering multiple programs serving either an entire region or a smaller city. Sometimes, such vocational technical centers serve students who are transported there for parts of the school day. These schools are more likely to prepare students to enter the workforce directly and may [provide licensure or industry certifications](#), such as Microsoft or Cisco. They also often mount demanding science and



technology programs, for example, in such fields as biomanufacturing leading to state certification, and with clear pathways into four-year baccalaureate degrees.

### **Work-based Learning**

Despite research and practitioner experience confirming that work-based learning is an effective strategy for engaging all students, and especially those who see themselves headed into the workforce rather than into a four-year college degree, U.S. schools do not have systematized connections with employers. Compared with other countries, CTE has very little employer or union buy in and almost no tradition of apprenticeship except in unionized trades (e.g., plumbing, construction, electricity, automotive). Only in rare cases are employers involved in designing a curriculum, assessing student competencies, or providing opportunities for sustained work experience. A new publication by the Workforce Strategy Center, *Employers, Low-Income Young Adults and Postsecondary Credentials*, highlights a number of top employer-linked CTE programs across the United States. These best-in-class programs represent the exception to the rule, however: most CTE efforts fail to effectively engage the workforce community.

To make up for the disconnect with workforce needs and the often weak results of high school CTE, employers mount their own training programs and even support degree-granting private universities devoted to their industries. For example, McDonald's Hamburger University serves 5,000 students a year around the world, and the restaurant manager and mid-management curricula generate a total of 46 college credits transferable to accredited institutions of higher education. The American Society for Training and Development's [2009 State of the Industry report](#) claims that "employee learning and development withstood the challenges of the difficult economy in 2008 with U.S. organizations spending \$134.07 billion in 2008, or an average of \$1,068 per employee." More training is targeted to middle to high-level employees, however, than to those at entry level.

Although students may not have school-related internships, many are not technically preparing for a first job in CTE. Unlike youth in other countries, many high school students work in the United States. The impact of a large, fluid youth labor market on CTE is not fully understood or researched, nor is the impact of low-level menial, service jobs on youth development as workers. Currently, there is a youth employment crisis, with levels of unemployment for 16 to 24 year olds at unprecedented highs. (In most countries, a 16-year old would not be labeled "unemployed" because there would be no expectation that s/he would be working and attending upper secondary.) The same is true for college students: many in the United States work, and some full time, while also attending school full time. The reasons are that most college students do not live at home and thus must earn money for living expenses, and postsecondary education is not tuition free.

Finally, the United States does little to use labor market projections to regulate or even guide the provision of training slots offered in CTE programs. Although the government does intervene to promote job training in areas of high need—the best example today is federal money passed to states to encourage training for "green" jobs and to attract students to STEM fields—the United States mainly has a market model tempered largely by availability of trainers, equipment, and teachers. Obsolete and low-quality programs continue as long as students enroll in them. Absent an education system with the purpose of helping students learn for jobs

that really exist, students must figure this out on their own or simply follow their interests without good information about whether there will be a return on their investment of time and money.

### **Challenges in program design and implementation**

As a nation of optimists and “improvers,” U.S. educators and researchers focus on how to improve and rethink the CTE system, with heavy attention to successful new models. That does not mean that signs of change—higher standards, integrated academic, technical curriculum, and applied learning options—would be evident in a random sample of vocational high schools in any state or region or that new models have been implemented at any scale. More likely, one would encounter a serious gap between education provided and commonly embraced principles of high quality. Most schools would have aging equipment, poorly trained teachers and a 20<sup>th</sup>-century curriculum, while a small number of others may have state-of-the-art workshops and laboratories with prize-winning robotics teams and links to nearby community or technical colleges or pathways to employment. Whatever the state of the school, students of color, immigrants, and lower income students would be the primary users. CTE schools often serve students with discipline problems, special education students, and those who have been poorly prepared for high school work.

The level of improvement and pockets of excellence fall far short of what is needed. The system as a whole has not responded quickly enough to changing economic and demographic realities. The rising complexity of skill demands in middle-skill jobs, the high cost of maintaining up-to-date equipment, and employer preference for experienced workers for these jobs have accelerated a long-term trend toward postsecondary institutions, not high schools, as the primary locus of technical and career preparation. The legacy career education system has not yet adjusted to all the implications of this trend—for high schools and community colleges, employers hiring for quality middle-skill jobs, and potential students and employees needing transparent information about their options. Persistent challenges include:

- High school programs that cannot meet the academic and technical standards that students need to master for entry into postsecondary programs without remediation;
- Community college programs that have high rates of potential students not meeting prerequisites or failing to complete after enrolling because of inflexibilities, lack of academic and social supports, and other limitations;
- Inadequate communication and alignment of secondary and postsecondary programs and curricula in a region, making it difficult for high school students to understand the options available to them and what it will take to gain entry into programs with labor market payoffs;
- Insufficient employer engagement in guiding technical programs to meet their needs and in sending clear signals to students about skills, attitudes, behaviors, and opportunities for exposure and experience that can maximize employment options.

The impact can be seen in the results for students. At the high school level, employment and earnings gains from participation in high school CTE programs are weak: no relationship has been found between the earnings of men working full-time six years after completing high school CTE programs and the occupational courses they took in high school; for women, the impact was negative (NCES 2008). An exception to these employment outcomes is the record of

the Career Academies, small career-themed programs that have been found to result in significant employment and earnings increases for low-income males (Kemple and Snipes 2004). As noted above, academic outcomes are improving, but CTE students overall still take less rigorous curricula and are more likely to be underprepared for college and career success than those in a four-year, career prep curriculum. These challenges are at the heart of inefficiencies and inequities in technical preparation that threaten individual and broader economic advancement.

### **Promising practices in CTE**

Recent years have witnessed a new focus on improved high school outcomes and accountability. As part of this movement, academic standards in high school career and technical programs have been rising in most states. As a result, while the percentage of CTE students completing a college-prep curriculum is still lower than that of non-CTE concentrators, the trend is upward: a 14-27 percentage point gain from 1990 through 2005. The number of academic courses taken by CTE concentrators has also risen steadily (NCES 2008). A growing number of career and technical high schools are seen as very desirable and competitive high school options.

The existing literature on what policies and practices work best for the fruitful provision of CTE are summarized in the principles below which echo the progressive view described earlier. Strong CTE programs should:

1. Ensure curricular integration of standards-based academic content and career and technical content;
2. Offer professional development opportunities to ensure career and technical educators have necessary tools to integrate academic and CTE content;
3. Provide CTE students with a strong college preparatory academic curriculum;
4. Create broad-based CTE offerings that introduce students to a field with many viable career pathways and provide them with data and tools for assessing job openings, salary levels, and opportunities for advancement;
5. Include work-based learning opportunities as part of the CTE program;
6. Forge strong partnerships with the local industry; and
7. Build linkages between the district's CTE program and local postsecondary education, including the provision of college CTE courses to high school students as soon as they are ready.

A range high school models meeting these criteria has emerged over the last decade. National initiatives such as Career Academies, Project Lead the Way, and High Schools that Work combine a rigorous academic program with exploration and exposure to well-paying technical and professional careers. These programs are proud of their academic focus: they tout their college enrollment rates more often than job placement performance.

**Project Lead the Way**

<http://www.ptlw.org>

Project Lead The Way is a nonprofit organization that promotes pre-engineering courses for middle and high school students. PLTW forms partnerships with public schools, higher education institutions, and the private sector to increase the quantity and quality of engineers and engineering technologists graduating from our educational system. Today, the PLTW courses are offered in some 3,000 schools in 50 states and the District of Columbia.

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<http://www.sreb.org/Programs/HSTW/HSTWIndex.asp>

Managed by the Southern Regional Education Board, High Schools That Work consists of a network of member schools that agree to follow a series of key practices linked to improved student success. SREB provides each school with technical assistance, staff development, communications, and assessment services. HSTW includes 1,200 schools in 31 states.

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The National Academy Foundation runs small learning communities within public schools or standalone public high schools built around career themes. Meant to serve as a complement to core academic coursework, there are four possible themes (academies) for students to choose from: finance, hospitality and tourism, information technology, and engineering. NAF provides technical assistance to 500 academies serving more than 50,000 students in 40 states and the District of Columbia.

development in the alignment and specification of technical pathways. A number of Early College High School models have a career focus embedded in their combination of secondary and postsecondary course sequences. The best Tech Prep programs have also created effective pathways from high school through community college technical programs.

**Tech-Prep Education**

<http://www.ed.gov/programs/techprep/index.html>

Tech Prep provides federal assistance to lead state education agencies to assist with programs targeting the last two years of secondary education and at least two years of postsecondary education and leading to an Associate's degree or a two-year certificate. The program also is designed to strengthen links between secondary and postsecondary schools. In 2008, Tech Prep received \$110 million in federal funding, versus the \$1.1 billion in funding for Perkins.

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### **Early College High School Initiative**

<http://www.earlycolleges.org/>

Early College High Schools blend and integrate high school and postsecondary curriculum, compressing the time to complete a degree. Over 200 such schools exist in 24 states. The schools are designed so that low-income youth, first-generation college goers, English language learners, students of color, and other underrepresented youth in higher education can simultaneously earn a high school diploma and an Associate's degree or up to two years of credit toward a Bachelor's degree. Early College High Schools generally promote academic pathways leading to postsecondary credentials; however, a number are STEM focused and lead to careers in health, computer technology, agriculture, and other applied fields.

access. A number of innovations show promise: closer integration of basic skill instruction with occupational programs; more intrusive advising and supports for students, particularly in their first year of college; early warning systems that help faculty and administrators identify students who are struggling and get them additional help; and modularization of course sequences so that working students can progress incrementally through meaningful credentials.

An important body of research has shown that more structured learning programs, with fewer electives and choices, combined with more active advising and supports, can help more students persist and succeed in occupational programs (Rosenbaum 2006). For-profit technical colleges have pioneered this model and appear to have higher completion rates for comparable technical programs than public community colleges (by about 15 percentage points).<sup>2</sup> Some nonprofit, community-based organizations have very strong results with structured models, among them, Year Up, a program for low-skill high school graduates that began in Boston and now is being replicated in six cities across the nation.

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<sup>2</sup> Over the last several years, researchers have documented the characteristics of strong postsecondary programs that students complete at high rates and that lead to strong labor market outcomes, many of which exist in the private sector among nonprofit providers and for-profit or proprietary programs. Northwestern University's James Rosenbaum (2006) describes the characteristics of these programs compared to typical public community colleges. Private two-year colleges offer students a "package deal" plan for attaining an explicit career goal in a clear time frame. The colleges identify a few desirable occupations in high-demand fields, and for each, they create a well-designed curriculum to prepare students in the shortest time and with the lowest risk of failure. Choices are fairly limited; everything is geared toward preparation for employment. Because of this, employers are typically closely involved with curriculum and recruitment of graduates. Soft skills, remediation, and technical skills, all geared toward employment in a particular field—this is the model. And it appears to pay off for low-income and underprepared young people. Rosenbaum concludes that students in two-year private programs have a 15 percent greater chance of completing their program as students with similar backgrounds in community colleges.

**Year Up**

<http://www.yearup.org/>

Year Up is a one-year, intensive training program that provides urban young adults 18-24, with a combination of technical and professional skills, college credits, an educational stipend, and corporate internship. Results to date include:

- 100% placement of qualified students into internships
- 83% student retention
- 90% of interns meet or exceed internship partner expectations
- 87% of graduates placed in full or part-time positions within four months of graduation
- \$15/hr average wage at placement

**Conclusion**

Because the career and technical education system serves so many of the country's most vulnerable and least privileged young people, its weaknesses are especially troubling. High school CTE and community colleges have become the USA's *de facto* job training system, but a much more outcome-focused, efficient, and effective system is needed. The system should begin with the assumption that the goal of quality technical education is an occupational Associate's degree and quality employment. CTE is one road that can put young people on the path to careers with middle-class wages. Among educators, there is hope today that it is beginning to get the attention and resources it needs.

### **Research and Data Resources**

Association for Career and Technical Education (includes up-to-date, accurate profiles of key factors re CTE in all 50 states)

<http://www.acteonline.org>

Community College Research Center—Workforce Education

<http://ccrc.tc.columbia.edu/Collection.asp?cid=27>

National Career Development Association

[http://associationdatabase.com/aws/NCDA/pt/sp/Home\\_Page](http://associationdatabase.com/aws/NCDA/pt/sp/Home_Page)

National Research Center for Career and Technical Education

<http://136.165.122.102/mambo/>

Office of Community College Research and Leadership

<http://occr.illinois.edu/>

The Center on Education and Work

<http://www.cew.wisc.edu/>

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