Association for Career and Technical Education
ACTE

ISSUE BRIEF

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CTE's Role in Secondary-Postsecondary Transitions

IN THIS BRIEF:

This issue brief will explore the significant role that career and technical education programs play in aiding students' successful transition from secondary to postsecondary education. Through initiatives such as Programs of Study, Dual Enrollment, Tech Prep, and Early and Middle College High Schools, CTE programs are on the front lines of ensuring that all students have opportunities to gain the skills and credentials necessary for success in the 21st century economy.

Photo: Lee County High Tech Central

The United States is increasingly facing a deficit of skilled workers, and the need to get additional people in and through postsecondary education and training has never been more necessary. While past generations could secure employment offering family supporting wages and opportunities for advancement with merely a high school diploma or on-the-job training, obtaining advanced skills has become vital to career success.

While there is job growth in the low-skilled service sectors, many of the newest and most financially rewarding jobs are in occupations that have postsecondary skill requirements. The Bureau of Labor Statistics estimates that of projected openings in 2014, "24 of the 30 fastest growing occupations are among those for which the most significant source of postsecondary education and training is a vocational award or an academic degree."[1]

As the Secretary's Commission on Higher Education stated in its final report, "Everyone needs a postsecondary education."[2] Whether a student's ultimate goal is an industry certificate, apprenticeship, or an associate or baccalaureate degree, more must be done to ensure that all students have access to and success in the postsecondary education and training that make these credentials possible.

The Concerns

LOW POSTSECONDARY COMPLETION RATES

A recent survey by the National Association of Secondary School Principals and Phi Delta Kappa International found that 92 percent of middle school students indicated that they will definitely or probably attend college.[3] However, numerous other reports and statistics show that this is far from the reality of what occurs when these students finish high school, if they even make it to graduation. According to the Digest of Education Statistics, the percentage of high school graduates who actually begin college at either a two-year or four-year institution immediately after high school is approximately 67 percent.[4]

Even fewer of these students will actually complete a postsecondary credential once enrolled in college. While acquiring some college credit does increase individual earnings by a small amount, the real payoff, for the individual and the economy, comes with the completion of some type of postsecondary credential, certificate or degree. Unfortunately, only about a quarter of those who begin college earn a degree in a reasonable amount of time.[5]

Low completion rates not only harm an individual's ability to be successful in the 21st century economy, but also slow the growth in that economy, as business and industry are not able to find the skilled workers needed to fill available jobs. From now until 2020, there will be no net growth in the native-born U.S. population age 25–54, the prime working age.[6] Estimates are that the United States will have 15 million new jobs that require some postsecondary education by 2020, and is only on pace to produce a net gain of 3 million college-educated employees.[7] Currently, there are not enough students earning a postsecondary credential to ensure the economy continues to grow during this time. At the same time as U.S. growth rates have slowed, international competitors are doubling and tripling the number of college graduates they produce.[8]

A BROKEN PIPELINE

The high aspirations of most young students, coupled with the low rates of postsecondary attendance and completion, have cast a spotlight on the transition from secondary education into postsecondary education. Strengthening this transition point has been suggested as one of the most efficient ways to ensure more students achieve postsecondary success.[9]

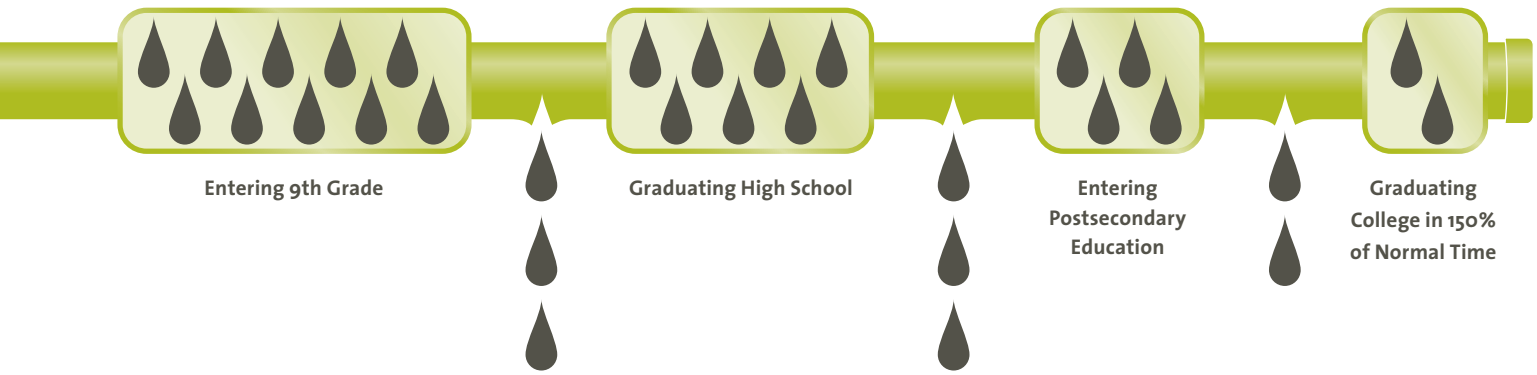
> "Providing a higher skilled, more educated workforce is clearly the future of our country in the worldwide economy."
>
> U.S. Secretary of Labor Elaine Chao, May 12, 2007

The issue of increasing secondary-postsecondary transitions involves improving a number of individual but related outcomes, including increasing the preparedness of secondary students, decreasing postsecondary remediation rates, and increasing postsecondary enrollment and persistence toward completion.

For every 100 students who start ninth grade, only 67 will graduate from high school on time, 38 will enter postsecondary education and training immediately, approximately 26 will still be enrolled in college for their sophomore year, and only 18 will graduate from college with a bachelor's degree within six years or an associate degree within three years.[10]

Programs must be in place to ensure that students continue on a seamless pathway toward a postsecondary degree or credential and avoid leaving the system at any of the common exit points—such as dropping out before high school completion, not continuing on to postsecondary education, or leaving postsecondary education after only a short enrollment period. Gaps and leaks in the educa-

Broken Pipeline



From Ewell, Peter, Dennis Jones, and Patrick Kelly, Conceptualizing and Researching the Educational Pipeline (Boulder, CO: National Center for Higher Education Management Systems, 2003).

tion pipeline must be plugged to ensure students stay on a seamless pathway from secondary school to postsecondary completion.

Efforts to address this pipeline are evident in a range of education reform activities at the state and national level, such as the creation of P–16 councils and a focus on increasing the rigor of the high school curriculum to ensure all students are prepared for postsecondary education. However, these changes alone are not likely to address all of the varied challenges that face students as they seek to complete a postsecondary credential. Researchers have concluded that educators and policymakers should establish systems that provide multiple pathways to college and careers in order to meet students' diverse needs and interests.[11]

CTE Provides Solutions

In past decades, career and technical education (CTE) programs, formerly known as "vocational" education, were often thought of as programs for students who were not planning to attend college, and instead planned to enter the workforce immediately after high school. As the economic realities of today's high skill workforce have evolved, and postsecondary education has become more of a necessity than a luxury, CTE has matured as well. CTE programs are now leading the way to prepare high school students to transition to postsecondary education.

The 2004 NAVE Final Report states that CTE student college attendance increased by nearly 32 percent between 1982 and 1992[12], and this trend is continuing. Recent research has shown that there is very little difference between the college-going rates of CTE students and the general student population.[13] Additionally, when a quality CTE program is combined with a rigorous academic core, the Southern Regional Education Board has found that students are more likely to pursue postsecondary education, have a higher grade point average in college, and are less likely to drop out in the first year.[14]

As states and national organizations have embarked on new initiatives to address the transition from secondary education to postsecondary education, numerous reform strategies that involve a strong focus on CTE have emerged. Success of these initiatives hinges, in part, on reducing resources needed by individuals and institutions and by building system capacity. They seek to streamline the K–16 educational system to avoid duplication of courses, prepare students for the rigor and expectations of postsecondary curriculum, reduce the need for remediation, present college as a viable option to students who may not be considering postsecondary education, increase student motivation through added relevance, and increase college affordability and availability.[15]

Through initiatives such as Programs of Study, Dual Enrollment, Tech Prep, and Early and Middle College High Schools, CTE programs are on the front lines of ensuring that more students transition to postsecondary education and are prepared for success there.

CTE PROGRAMS OF STUDY

One of the highlights of the new Carl D. Perkins Career and Technical Education Act passed by Congress in 2006 was the requirement for the development and implementation of "career and technical programs of study." These programs of study are defined and referenced throughout the Act, and are designed to seamlessly link a student's entire secondary and postsecondary education experience. States must develop the programs of study in consultation with local programs so that they may be offered by each local school district and community or technical college receiving Perkins funds.

Programs of study are very similar to, and build on, positive initiatives already underway in CTE programs around the country, such as career pathways, career academies, and

Programs of Study—Key Elements

Incorporate secondary education and postsecondary education elements.
Include coherent and rigorous content aligned with challenging academic standards and relevant career and technical content in a coordinated, nonduplicative progression of courses that align secondary education with postsecondary education to adequately prepare students to succeed in postsecondary education.
May include the opportunity for secondary education students to participate in dual or concurrent enrollment programs or other ways to acquire postsecondary education credits.
Lead to an industry-recognized credential or certificate at the postsecondary level, or an associate or baccalaureate degree.[16]

career clusters. In many states, the foundational elements of programs of study are already in place. For example, in Kentucky, career pathways have been outlined starting in ninth grade and include a coherent sequence of academic and CTE courses in broad career areas. Also, since 2002, Kentucky students have been required to complete an Individual Graduation Plan which emphasizes academic and career development based on student interests, and provides a pathway for students through high school to postsecondary education and a career.[17]

The States' Career Clusters Initiative has developed 16 Career Clusters that have served as a launching point for many states' programs of study. Through the Clusters project, sample plans of study are available that include a sequenced listing of academic and career-related courses that connect students' high school and postsecondary educational experiences. In 80 percent of states, supporting effective transitions between secondary and postsecondary education has been a key impetus behind the implementation of Career Clusters.[18]

In Texas, an initiative based on the Career Clusters system and programs of study, known as "AchieveTexas," was launched to increase secondary-postsecondary transition rates and other achievement measures. Under the AchieveTexas initiative, Career Pathway Programs of Study have been created for each of the 16 Career Clusters. These programs of study outline the courses students should take in high school, as well as recommended postsecondary and on-the-job training experiences, employment outlook statistics, certifications, and extended learning experiences such as extracurricular activities, service-learning, and professional associations. The Career Pathway Programs of Study are designed for students but can also be used with administrators, counselors, teachers, business and industry representatives, and parents.[19]

DUAL ENROLLMENT

Dual enrollment, also known as dual credit or concurrent enrollment, is defined by the National Center for Education Statistics (NCES) as "a course or program where high school students can earn both high school and postsecondary credits for the same course."[20] These courses may be offered on the high school or postsecondary campus, and operate in a variety of different structures and formats across all 50 states.

During the 2002–2003 school year, NCES estimated that more than 70 percent of public high schools offered courses for dual credit.[21] Other estimates show that almost half of high school juniors and seniors today are enrolled in some type of dual credit course.[22]

A 2003 Florida report stated that high school students who successfully earned postsecondary credit during high school performed better in postsecondary programs, were less likely to enroll in remedial courses, and were more likely to return for the second year of study than peers who had not been involved with a dual enrollment program.[23]

As the state of Arkansas has developed its Career Clusters system, it has placed a special focus on its concurrent enrollment program. Working with other state agencies and postsecondary institutions, concurrent college classes were instituted in 16 of the state's secondary area career centers and aligned with frameworks based on the Career Cluster and Career Pathway organization system. These courses provide students with opportunities to complete from 15–30 hours toward an associate degree while still in high school, and are free of charge to the students.

During the 2003–2004 school year, 1,124 students earned 10,338 credits in CTE concurrent enrollment programs. This number increased to 3,607 students earning 24,620 credits during the 2006–2007 school year, an increase of 138 percent over the four-year period. The credits earned represent a savings of $1.75 million to students based on college tuition rates. The number of CTE students entering college also increased dramatically, by 47 percent, while remediation rates decreased.[26]

Arkansas' concurrent enrollment arrangement has enabled a few students each year to receive both high school diplomas and associate degrees at the same time. One recent student, Sam Jones of Greenwood, received his associate degree at the University of Arkansas—Fort Smith a week before receiving his high school diploma in May 2007.[27]

Jones enrolled in concurrent enrollment classes at the Western Arkansas Technical Center (WATC), as well as additional courses during the evenings and summer, and earned an Associate of Applied Science degree in General Technology with a Welding Emphasis. He intends to also pursue a computer-aided drafting degree, then a bachelor's in mechanical engineering. While Jones is the first WATC student to graduate high school with an associate degree, many other students there earn proficiency certificates or one-year technical certificates during high school. They often have only a few general education courses to complete at the University in order to complete their associate degrees.

CTE has been very involved in the dual credit movement. About half of the schools offering dual credit offered courses with a CTE focus, and about 36 percent of students enrolled in the programs were enrolled in CTE courses.[24] In many places, the population of students reached through CTE dual enrollment programs is more diverse than students who are enrolled in academic dual enrollment programs. Increasingly, dual enrollment is becoming integrated into CTE models such as programs of study, career clusters, and career pathways.

The Community College Research Center has recently undertaken a study of the impact of CTE dual enrollment programs using data from Florida and the City University of New York (CUNY). Preliminary results from the study show that students from the 19 CTE high schools in New York who subsequently enrolled in a CUNY college, and who took at least one dual enrollment (known as "College Now" in the CUNY system) course while in high school, were more likely to obtain positive outcomes than their classmates who had not participated in College Now. The students who had participated in dual enrollment "were more likely to pursue a bachelor's degree, had higher first-semester grade point averages, and earned more credits during their first three-and-a-half years of postsecondary education."[25]

TECH PREP

Tech Prep programs were begun in the early 1980s and became federally authorized under the Carl D. Perkins Vocational and Applied Technology Education Act of 1990. Since that time, Tech Prep programs have received federal funding and have continued to grow and expand across the country.[28]

Tech Prep is built on the concept of alignment between secondary and postsecondary education, and programs encompass at least the last two years of high school and the first two years of postsecondary education. Some programs begin as early as ninth grade and transition students through to a bachelor's degree in the chosen career field.

Federal Tech Prep funds are awarded to consortia of secondary school districts and postsecondary institutions to establish programs of study that integrate academic and technical education across education levels and lead to a technical skill proficiency, credential, certificate or degree. Through Tech Prep programs, non-duplicative sequences of courses are established, often through the use of articulation agreements that allow students to earn postsecondary credit while still in high school.

The Department of Education estimates that approximately 7,400 high schools, or about 47 percent, offer one or more Tech Prep programs. Nearly all community and technical colleges are part of a Tech Prep consortium, and many other four-year universities and business and labor organizations also participate.[29]

While Tech Prep programs have been implemented to various degrees throughout these consortiums, high quality Tech Prep programs have proven to help students transition to postsecondary education. When students who attended a CTE Tech Prep program in Ohio between 1997 and 2001 were compared with a similar group of non-Tech Prep

In West Virginia, the concept of Tech Prep has been developed into the EDGE program, which stands for "Earn a Degree, Graduate Early." EDGE is backed by the state's Department of Education, Council for Community and Technical College Education and Higher Education Policy Commission.

The EDGE program's goal is to make the transition from high school to college more seamless by eliminating coursework duplication between the two levels and encouraging more mid-level students to continue their education beyond high school by exposing them early to college level coursework. EDGE was started to address concerns that not enough students were taking advantage of articulation agreements that were already in place throughout the state. Research found that students and parents did not understand the value of articulated credit, and that there were numerous barriers in place that kept students from actually receiving postsecondary credit for high school coursework.

In the EDGE program, students are now able to take high school courses for free community and technical college credit that is awarded immediately, and can save substantial time and money toward a postsecondary degree. Depending on the courses and career area a student chooses, he or she may save up to $3,000 and can earn an associate degree in a high wage career field, such as respiratory therapy or computer programming, as soon as one year after high school graduation.

Students must earn at least a "C" for a high school course and pass an end-of-course exam, developed jointly by secondary and postsecondary educators, to get the college credit, which can be transferred to one of the state's community colleges and then to some four-year institutions. The end-of-course exam ensures that students are prepared for the next level of postsecondary education.

The program began during the 2003–2004 school year with just a few hundred students, and now enrolls about 40,000.[32] Follow-up studies of students who have participated in the program have shown that remediation rates for EDGE students are much lower than throughout the community and technical college system. For example, only 16 percent of EDGE students enroll in developmental math, while the average is 57 percent of students system-wide. The potential return-on-investment of the EDGE program was estimated at $4,668,934 for the 2005–2006 school year.

peers, the Tech Prep students scored significantly higher on the college entrance exams, earned higher grade-point averages, and were more likely to return for a second year of study.[30] A New York state survey found that Tech Prep appeared "to be especially beneficial to students who initially had no plans to continue their education beyond high school."[31]

EARLY AND MIDDLE COLLEGE HIGH SCHOOLS

While different models of Early and Middle College High Schools exist around the country, in general, they are small high schools located on postsecondary campuses that allow students to graduate with a high school diploma and earn an up to two years of college credit at the same time. From the time the first middle college opened in the mid-1970s, the goals were clear—"Provide a seamless secondary-postsecondary educational continuum, use innovative curricula and pedagogy, and create a small nurturing environment."[33]

Since this first Middle College High School opened, the initiative has been rapidly expanding, and investments from leading national foundations, such as the Bill and Melinda Gates Foundation, the Ford Foundation, the Carnegie Corporation of New York and the W.K. Kellogg Foundation, have helped to provide funding to establish these unique educational environments.

Unlike some other traditional acceleration options, these schools usually focus on a more diverse group of students, many of whom are minorities, of low socioeconomic status, or first generation college students, and a number of who had not been successful in the traditional school environment, but showed potential to complete more advanced studies. Saving time and tuition costs are large motivators for student enrollment, and academic and personal guidance supports are key to the success of these schools.

Many of the newest advances in Middle and Early College High Schools place a strong emphasis on relevant curriculum and on preparing students for high skill careers in high growth industries. In 2004, North Carolina Governor Mike Easley launched the Learn and Earn Initiative as part of his New Schools Project to encourage students to remain in high school, earn an associate degree, and prepare for jobs in new and emerging industries.

The Learn and Earn Initiative has aided in the creation of 33 high schools currently in operation on postsecondary campuses, with plans for another 42 to open by the fall of 2008.[34] All of the schools allow students to obtain a high school diploma plus an associate degree or two years of transferable university credit with just one additional year of study. Each Learn and Earn school offers all students work-based learning experiences, such as internships or job shadowing; and strives to ensure that students are well versed in workplace skills necessary for the 21st century, including the ability to work in teams, communicate both orally and through writing, and analyze and solve problems.[35] Many of the schools have specific career-focused themes to motivate students, such as design, technology or health care.

Other states are involved in similar efforts. Michigan recently offered grants to school districts to plan for the implementation of Middle College High Schools with a focus

As part of North Carolina's Learn and Earn Initiative, the Wake Early College of Health and Sciences (WECHS) opened in August 2006. WECHS is unique in that it involves not only the local community college, Wake Technical Community College (WakeTech), but also WakeMed Health and Hospitals, whose Raleigh campus shares proximity to WakeTech's Allied Health campus.

WECHS is located on this campus, providing students with ready access to postsecondary level courses and to the technology and resources the hospital provides. Students follow North Carolina's College/University Prep Course of Study and are able to graduate in five years with a high school diploma and an associate degree, with the option of an additional industry certification. The accelerated curriculum incorporates core academics taught in the context of health sciences with technical training in a diverse range of health care professions.

All of the college credits earned by students enrolled in the WECHS will be tuition free and may be transferable to a four-year institution after completion of the program. If students commit to employment at WakeMed after graduation, the hospital will continue to pay for the completion of further undergraduate and graduate degrees. Essentially, students who elect to attend WECHS can be assured that their entire postsecondary experience could be free—and that they will have the necessary skills to stay competitive in the health care industry of the future.

The small and diverse student body, which will eventually be no more than 400 students, will allow for personalization of curriculum and for structured extra help. Some of this support will be provided through an innovative program called PULSE—Participation, Understanding, Learning, Service and Excellence. PULSE will be offered to all students during a special period every day to provide opportunities for personal guidance, service and leadership, and any extra help students need academically. Students will also be paired with mentors from the hospital who will help guide them through the curriculum and provide tutoring and special support.[37]

"Education today must be seamless."

North Carolina Governor Mike Easley, May 9, 2007

on health sciences through a program called the Middle College High School Health Partnership Grant. The overall grant provided $2 million for the planning stages of the six new middle college schools, set to open for the 2007–2008 school year. According to Superintendent of Public Instruction Mike Flanagan, the state envisions the health sciences focus as just the first wave in the creation of new Middle College High Schools. "We will be able to adapt these health science models to other fields as future technology, manufacturing and service sectors develop."[36]

Conclusion

Career and technical education programs play a critical role in aiding students' successful transition from secondary to postsecondary education and ensuring that they are prepared for success. Through initiatives such as Programs of Study, Dual Enrollment, Tech Prep, and Early and Middle College High Schools, CTE programs are on the front lines of ensuring that all students have opportunities to gain the skills and credentials necessary for success in the 21st century economy.

As these programs expand, and as CTE programs continue to respond to the education and workforce needs of students, employers and communities, more students will be able to take advantage of opportunities to move through a seamless education pipeline toward a postsecondary credential.

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For additional information regarding recommendations related to the improvement of postsecondary education, see ACTE's position paper *Expanding Opportunities: Postsecondary Career and Technical Education and Preparing Tomorrow's Workforce,* available on the ACTE website at **www.acteonline.org.**

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