**Community College
Virtual Symposium**

Aligning Secondary and Postsecondary Education: Experiences From Career and Technical Education

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Aligning Secondary and Postsecondary Education: Experiences From Career and Technical Education

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Acknowledgements

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Contents

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Preface

America's competitive advantage in the global economy depends on a qualified, skilled workforce.

A troubling gap, however, currently exists between the skills and knowledge of the country's current and projected workforce and the demands of jobs expected to grow most rapidly during the next decade. Community colleges are ideally positioned to help close that gap. President Obama has acknowledged this reality by calling for increased college graduation rates and a commitment among students to complete at least one year of postsecondary education (Obama 2009).

Community colleges have a long history as leaders in workforce education, collaborating with business and industry to meet local employment needs. They offer affordable tuition, open admissions, flexible course schedules, and convenient locations. They provide opportunities not only for students leaving high school, but also for older students, low-income and minority students, and working adults. Several problems, however, must be addressed if community colleges are to succeed as engines of workforce development and economic prosperity. These challenges include low rates of student persistence and completion and insufficient alignment among education standards and workforce expectations.

This brief is one of a series of four prepared for the April 27, 2011, *Community College Virtual Symposium*, a project of the U.S. Department of Education, Office of Vocational and Adult Education, held at Montgomery College, Silver Spring, Md.[1] This series is intended to spur dialogue among state and institutional leaders and identify and disseminate policies and practices proven effective in meeting the challenges mentioned above.

Greater alignment between secondary and postsecondary education can promote easier student transitions, less course duplication, and a reduced need for developmental course work when students enter college. This brief follows the evolution of efforts to align secondary and postsecondary career and technical education (CTE) and outlines several promising CTE practices that may be effective in achieving better alignment for all students.

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[1] The other three briefs include *Promoting College and Career Readiness: Bridge Programs for Low-Skill Adults*; *Connecting Curriculum, Assessment, and Treatment in Developmental Education*; and *Integrating Industry-Driven Competencies in Education and Training Through Employer Engagement*.

The Evolution of CTE Alignment

A postsecondary credential—a degree, certificate, or industry license—is increasingly necessary to obtain a skilled job and good wages (Carnevale, Smith, and Strohl 2010; Holzer and Lerman 2009; Partnership for 21st Century Skills 2008). Even students with a high school diploma, however, may not be fully prepared for the demands of postsecondary education and training (Roksa et al. 2009; Bailey, Jeong, and Cho 2009; ACT, Inc. 2008; Attewell et al. 2006). While lack of preparation can be the result of multiple factors, too many students struggle to bridge the gap between different standards for high school graduation and postsecondary entry.

As early as the late 19th century, educators noted the divide among educational institutions and called for better connections between secondary and postsecondary education (VanOverbeke 2009). Recent efforts have focused on promoting achievement standards for all students and a system of subbaccalaureate credentials for those who do not seek a bachelor's degree (National Center on Education and the Economy 1990); closer alignment of high school graduation requirements, state academic achievement standards, and postsecondary entrance requirements (U.S. Chamber of Commerce 2011); and stronger links among assessments, accountability systems, and the expectations of postsecondary institutions and employers (Achieve 2009).

Alignment can be difficult to achieve and remains a persistent challenge. Even among the more than 40 states that have adopted the common core state standards (CCSS)—outlining what K–12 students are expected to learn in English language arts and mathematics—only a few have plans to align postsecondary admission requirements and first-year curriculum with these standards (Kober and Rentner 2011).

CTE educators have been developing strategies to better align secondary and postsecondary CTE for more than two decades, although CTE is by no means alone in such efforts. While many of the CTE initiatives are targeted only at CTE students—and the greatest successes may be achieved when alignment does not occur in silos—the experiences of the CTE community can provide valuable insights into larger efforts to align secondary and postsecondary expectations for all students.

The following section follows CTE alignment efforts from early course-to-course initiatives—such as Tech Prep and articulation agreements—through more recent efforts—including dual enrollment, programs of study (POS), and career pathways and clusters—that are designed to offer broader preparation for postsecondary education.

Early CTE Initiatives

Early efforts to align secondary and postsecondary CTE generally connected individual secondary courses or course sequences with an occupational program at one or a few community colleges. The programs were limited to CTE students and typically focused on providing students with a specific set of skills to prepare them for an occupational program at the postsecondary level.

Tech Prep

Tech Prep programs, introduced in the early 1990s and defunded in 2011,[2] emphasized sequential coursework beginning in high school and continuing into community college. Research on outcomes of Tech Prep programs was not extensive, and the *Carl D. Perkins Career and Technical Education Act of 2006* left significant room for local differences in design and implementation, making it difficult to evaluate fully the efficacy of Tech Prep (National Research Center for Career and Technical Education 2010).

In general, however, it appears that Tech Prep did not yield the benefits that educators and designers intended (Hughes et al. 2005; Bragg et al. 2002). In a study of eight Tech Prep consortia, researchers found that many students continued their Tech Prep program in community college (Bragg et al. 2002), but too few were prepared for college course work. Some 20 to 60 percent did not place into college-level course work using locally defined career standards, while half or more in each consortium did not place into college-level courses using locally defined transfer standards.[3] In each consortium, fewer than one in five students who enrolled in college earned a degree or certificate.

The results of one analysis indicated that participation in Tech Prep programs had a negative effect on college attendance (Neumark and Rothstein 2006). Additionally, in 2003, the U.S. Department of Education reported that only an estimated 10 percent of Tech Prep consortia offered the comprehensive "2+2" model that was designed to ease student transitions by combining two years of high school

with two years of community college (Office of Vocational and Adult Education 2003). Thus, Tech Prep courses may have been offered or perceived as disconnected elective course options rather than as a coherent multiyear program (Hughes et al. 2005).

Articulation Agreements

Articulation agreements permit school districts and community colleges to enact direct agreements governing the connections between specific courses and programs across institutions. Articulation agreements allow students to earn college credit for selected high school electives if the course content is deemed to be similar to a college course. Articulation agreements are a common component of Tech Prep but are also used as tools for aligning secondary and postsecondary education outside of Tech Prep.

CTE students may not use the credits they earn in articulated courses, however, and some may not even realize they have acquired college credits (Bragg 2001). Others decide to retake articulated high school courses when they enter college, reducing the potential savings in time and resources resulting from earning college credit while in high school. Some students encounter difficulty applying credits earned in high school even if they enroll in a similar course of study. The "residency requirements" in some articulation agreements ask students to enroll in and complete specific requirements at the community college before postsecondary credits they earned in high school can be awarded (Hughes et al. 2005).

Recent CTE Initiatives

In the last few years, efforts to link secondary and postsecondary CTE have adopted a broader vision of what secondary course work should offer and what students should be prepared for when entering college. Rather than linking

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[2] *Carl D. Perkins Vocational and Applied Technology Education Act of 1990.*

[3] Bragg et al. (2002) defined "career standard" as the local institutional standard for college placement in career programs and "transfer standard" as the local institutional standard for college placement in college-level course work.

specific secondary and postsecondary courses in a single occupational area, such initiatives as career clusters and pathways, programs of study (POS), and dual enrollment attempt to prepare students for an array of postsecondary opportunities and careers. While some of these strategies are designed to serve CTE students, each initiative contains elements that may be appropriate for all students.

Career Clusters and Pathways

Career clusters and pathways are designed to connect broad career areas in secondary education to a range of postsecondary education and training opportunities. Their overarching goal is to provide students with knowledge and skills that can be applied to a variety of specific jobs within an occupational area.

The States' Career Clusters Initiative (SCCI) began as a collaborative effort of the U.S. Department of Education's Office of Vocational and Adult Education; the National School-to-Work Office (NSTWO); and the National Skill Standards Board (NSSB) in 1996.[4] The SCCI created curriculum frameworks in 16 broad career areas to align secondary instruction with postsecondary and employer expectations (Ruffing n.d.). By 2009, 53 states and territories were using all or some of the career clusters framework (National Association of State Directors of Career and Technical Education Consortium 2010).

The College and Career Transitions Initiative (CCTI) was a multiyear effort that brought community colleges together with secondary schools, employers, and four-year institutions to define new career pathways for students in five occupational areas (Warford 2006).[5] CCTI defined "career pathways" as articulated sequences of academic and career courses that begin in the ninth grade and lead to an industry-recognized credential, associate's or bachelor's degree, and beyond.

CCTI's career pathways are joint efforts of secondary and postsecondary education, business, and employers, and they are available to all students, including adults (Warford 2006). This is a departure from earlier alignment efforts: instead of focusing on a subset of students, career pathways are intended to be available and relevant to all students, whatever their interests and career intentions.

CCTI resulted primarily in systems changes—including implementing career pathways, using data for decision making, improving partnerships between high schools and colleges and between education and businesses, and encouraging advising (Barnett 2008). Those changes, however, helped to lay the groundwork for career pathways within CTE.

Programs of Study (POS)

Introduced in 2006, POS build upon both Tech Prep and career clusters by promoting sequential courses of study within broad career areas. So far, there is little research available that evaluates the potential benefits of POS, although several studies are under way that will shed light on the scope of POS implementation, student involvement, and outcomes.

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[4] The National School-to-Work Office (NSTWO), under the oversight of the U.S. departments of Education and Labor, provided funding and technical assistance related to the *School to Work Opportunity Act of 1994* (U.S. Department of Labor 2010). The NTSWO closed when the legislation sunset in 2001. The *National Skill Standards Act of 1994* established a National Skills Standard Board (61 Fed. Reg. 12109 [March 25, 1996]) to develop a voluntary system of national skill standards and certification of attainment of skill standards (61 FR 12109).

[5] The five CCIT occupational areas are Education and Training; Health Science; Information Technology; Law, Public Safety, and Security; and Science, Technology, Engineering, and Mathematics.

Programs of study have the potential to strengthen the connection between secondary and postsecondary education by emphasizing rigorous content and challenging academic standards. They also may offer students a more demanding high school experience by requiring technical skill assessments that go beyond course grades (National Research Center for Career and Technical Education 2010). In addition, whether or not students continue their POS in college, researchers in one study concluded that POS may "increase student engagement, improve academic skills, and deepen student understanding of occupations" (Lewis, Kosine, and Overman 2008, 2), which may lead to easier transitions from high school into further education and training. The potential drawback of POS, however, is that they may be implemented similarly to Tech Prep, focusing on connecting occupational courses in high school with specific occupational programs in college. That would limit their ability to prepare students for a wide range of career options and opportunities.

Dual Enrollment

As educators have increasingly recognized the limitations of articulation, dual enrollment has grown in popularity as an alternative means of connecting high school and college course work and providing high school students with opportunities to earn college credit. Dual enrollment allows students to enroll in a college course, either at their high school

or at a local community college, and earn college credit. Once students successfully complete a course, college credit is conferred immediately and documented on a college transcript. Dually enrolled students also have access to college libraries and support services, including career guidance, advising, and tutoring (Hughes et al. 2005).

Some dual enrollment programs have been driven by the desire to provide high school students with access to the broader array of CTE programs and courses available at community colleges. Such programs are also more likely than those at high schools to have facilities that simulate workplaces and have up-to-date equipment.

Dual enrollment requires high schools and colleges to work together, fostering collaboration between college faculty and high school teachers that can potentially lead to better alignment of curricula. Additionally, there is some evidence that participating students have better postsecondary outcomes: a study of two dual enrollment programs in Florida and New York City indicated that this approach can promote postsecondary success for all students, including CTE students (Karp et al. 2007). In Florida, participation in dual enrollment programs was positively correlated with college enrollment and persistence to a second semester in college, higher postsecondary grade point averages in the first year of college, and earning more postsecondary credits.

State and Local Efforts Promoting Alignment

CTE educators across the country are implementing new policies and programs to promote alignment between secondary and postsecondary education. The examples in this section demonstrate that educators have used a combination of the strategies discussed so far. South Carolina's statewide reform effort promotes POS for all students and requires the use of articulation and dual enrollment agreements. A career pathways initiative in Illinois attempts to prepare students for a range of postsecondary opportunities, while Iowa relies on career academies to connect secondary and postsecondary programs. Santa Barbara Community College has established an extensive dual enrollment program that serves thousands of high school students each year.

These major CTE programs and initiatives offer strategies that may be useful in broader alignment endeavors. So far, there is little research to indicate how effective these initiatives will be over time, although several are the subject of ongoing research studies. The information provided here is derived primarily from descriptive studies available at the time of this writing.

South Carolina Personal Pathways to Success

South Carolina passed legislation in 2005 establishing the Personal Pathways to Success system for all students. The *Education and Economic Development Act* (*EEDA*) mandates statewide school reform to improve student achievement and better prepare high school students for further

education and the workforce. The state is committed to promoting career awareness and exploration at all education levels and to creating locally relevant POS for all South Carolina students.

EEDA requires that all students have an Individual Graduation Plan that is reviewed and approved by parents to ensure that students can see the connection between their education and possible future careers (South Carolina Commission on Higher Education n.d.). Each student must declare a career major in one of a number of different clusters of study, in addition to completing existing graduation requirements. Guidance and career staff and services have been increased through *EEDA* to better identify at-risk students. High schools and postsecondary institutions must partner to create articulation and dual enrollment agreements, encouraging collaboration between education levels. That collaboration in turn supports the mandated alignment of high school graduation and college entrance requirements. In addition, the creation of 12 regional centers supports connections among students, employers, educators, and the community.

 The National Research Center for Career and Technical Education (NRCCTE) is conducting a five-year longitudinal study designed to evaluate whether *EEDA* facilitates the creation of high-quality POS and if POS have a positive effect on student engagement, achievement, and transition into postsecondary education or the workforce. In 2010, NRCCTE released its Year 2 study results describing ongoing efforts to collect quantitative and qualitative data, including outcome data, course and career-related information, Individual Graduation Plans (IGP), and the perspectives of individuals involved in

the effort (Smink et al. 2010). Preliminary data following Year 3 (academic year 2009–10) suggest that *EEDA* is supporting the implementation of POS and promoting the development of student IGPs (Hammond et. al. 2011). Early findings also indicate that students may be experiencing increased access to career planning and guidance resources. Researchers anticipate providing more data and findings following years 4 and 5.

Illinois Career Pathways

Illinois connects 16 career clusters with 81 career pathways offering multiyear programs of academic and technical study that prepare students for a full range of postsecondary options. Pathways and clusters give students a framework for considering their future career plans and obtaining career guidance (Jankowski et al. 2009).

Illinois employs multiple approaches to align secondary and postsecondary education (Jankowski et al. 2009). They include integrated academic and technical curricula that are standards-based (i.e., aligned with industry expectations), dual enrollment, career and professional development opportunities, articulation agreements, partnerships and data sharing, and continuous improvement efforts. The model encourages partnerships, and the state provides strategies to recruit, involve, and retain partners from high schools, community colleges, universities, business and industry, adult education, and community-based organizations (Jankowski et al. 2009).

Iowa Dual Enrollment Policy

In Iowa, it is considered a mission of the state's community colleges to deliver programming to high school students, and dual enrollment is supported through several pieces of legislation. The authors of a

recent report found that dual enrollment participation is at a record high in the state (Iowa Department of Education 2011).

Iowa's 1987 *Postsecondary Enrollment Options Act* (*PSEO*) (Iowa Code Chapter 261C) allowed 11th- and 12th-grade students to take college courses through state postsecondary institutions. While high schools had to pay a small amount to the college to help cover tuition, textbooks, and fees, it was less than the postsecondary institution's costs (Hughes et al. 2005). That legislative disincentive led to the introduction of supplemental weighted funding in 1998. Through supplemental funding, school districts received additional funding for each dually enrolled high school student (1.48 times normal funding per student) (Iowa Code Chapter 257).

In 2002, the state introduced a section in the community college statute that supports the development and implementation of career academies (Iowa Code § 260C.18A.2.c). Career academies combine a minimum of two years of secondary education with a postsecondary career preparation program. The programs are standards-based, integrate academic and technical instruction, incorporate work-based learning, and include an individualized career-planning process that involves parents and is designed to lead to an associate's degree or certificate (Hughes et al. 2005). Career-focused dual enrollment, in particular, is encouraged through the state's career academies.

Iowa's Senior Year Plus (SYP) program was established in 2008 (218—IAC 22) and consolidates and standardizes various Iowa dual enrollment programs. The SYP brings together Advanced Placement, *PSEO*, concurrent enrollment, career academies, and regional academies under a single umbrella (Iowa Department of Education 2009). It

also revises the supplementary weighted funding and directs funds to local districts according to the number of students enrolled and the length of their enrollment (Bunting 2011).

Santa Barbara Community College's Dual Enrollment Program

Santa Barbara Community College (SBCC) and its secondary partners have developed an extensive dual enrollment program providing access to college courses for more than 1,000 high school students every semester. The partnership is known for its strong and sustained relationships between secondary and postsecondary education.

Since its inception in the late 1990s, the program's approach has been to use various methods to facilitate dual enrollment for high school students. These include bringing college classes to the high

schools; sending college staff to register students at the high schools; scheduling classes according to the high school calendar; and using high school teachers as instructors whenever possible. The program has been a leader in CTE, moving from the Tech Prep articulation model to dual-credit classes in 16 CTE areas, along with offering college credit for students' structured work experience. Secondary and postsecondary faculty and department chairs collaborate extensively on curriculum to ensure program quality.

The Santa Barbara partnership is implementing a Career Choices college class for all 9th-grade students at one of its partner high schools. The program is supported through Tech Prep, state student apportionment, and grant funds. The Community College Research Center is currently undertaking a longitudinal study of students participating in CTE dual enrollment at SBCC, and results will be available in 2012.

Discussion

In general, secondary and postsecondary education are not well aligned. The expectations and standards for high school graduation are not the same as those for successful college entry, and this has adverse consequences for students. An essential foundation for better alignment is a shared understanding—among secondary and postsecondary educators and employers—of what it means to be prepared for further education and training and the workforce.

For some time, CTE has been leading the way in alignment efforts, although these efforts have been limited in scope and in the student population they

target. The next step toward greater alignment requires more comprehensive efforts involving all areas of education as well as the workforce.

The common core state standards offer an opportunity to improve alignment between education levels by establishing a shared understanding of what high school students are expected to know upon graduation. Educators, however, will not realize the full benefits of the CCSS—at least in regard to improved alignment—unless that new understanding is also connected to expectations for postsecondary entry.

As educators and administrators explore the CCSS, several areas require greater attention. First, the role of higher education should be clarified and strengthened. Secondary and postsecondary education should be working together to use the CCSS as a tool for alignment. Only a few states have reported plans to align postsecondary entry requirements and first-year college curriculum with the new standards (Kober and Rentner 2011); it is likely that greater postsecondary input is needed.

Second, there is a need for additional discussion on how career-readiness standards should be incorporated in the CCSS. The CCSS imply that the terms "college readiness" and "career readiness" are equivalent: that is, they require students to have and exhibit the same sets of skills in further education as well as in the workforce. It also is not uncommon in discussions of the terms to focus on academic skills, suggesting that rigorous academic preparation is sufficient preparation for both college and career.

Conley proposed an operational definition for college readiness that focuses on academic preparation. He suggested that college readiness is the "level of preparation a student needs in order to enroll and succeed—without remediation—in a credit-bearing general education course at a postsecondary institution that offers a baccalaureate degree or transfer to a baccalaureate program" (Conley 2007, 5).

The Association for Career and Technical Education (ACTE) released its definition of career readiness in 2010. According to ACTE, "[c]areer readiness involves three major skill areas: *core academic skills* and the ability to apply those skills to concrete situations in order to function in the workplace and in routine daily activities; *employability skills* (such as critical thinking and responsibility) that are essential in any career area; and *technical, job-specific skills* related to a specific career pathway" (Association for Career and Technical Education 2010, 1).

These definitions suggest that more work is needed to develop a common understanding of the relationship between college readiness and career readiness, as well as the skills that students need to meet standards identified with each.

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