

Chapter 9 Preview

Secondary component:			
7. Provides opportunities for students to earn college credit through dual/concurrent enrollment or articulation agreements.			
Postsecondary component:			
8. Provides opportunities for students to earn college credit through dual/concurrent enrollment or articulation agreements.			

Dual enrollment provides several incentives for Career Pathway students to do well in high school and transition to college after high school graduation:

1. By enrolling in college courses while still in high school, students who have already completed their graduation requirements do not waste time in their senior year.
2. High school juniors and seniors have an opportunity to “experience college.” They experience a different environment in which they are treated more as adults. And they discover that they can compete at the college level.
3. They discover early whether they have deficiencies that might prevent college entrance, and have an opportunity to correct those deficiencies so that they will not be required to take developmental (remedial) courses in college.
4. They have an opportunity to earn up to one year of college credits by the time they graduate from high school. This “jump start” is not just a morale booster; it can result in significant savings in college expenses.

This chapter explains the differences between articulation (which is predominant in typical Tech Prep consortia) and dual enrollment. Sometimes the authors use the terms “articulation” and “Tech Prep” interchangeably. The reader should not assume that the comparison is “Tech Prep versus dual enrollment”; rather, the authors’ purpose is to show how most Tech Prep consortia could improve student incentives and opportunities by converting from articulation to dual enrollment.

But converting to dual enrollment in Tech Prep is not a simple process. It is most effectively accomplished after a new 4+2 curriculum framework is created, as described in Chapter 3.

D.H.



DUAL ENROLLMENT/ DUAL CREDIT: ITS ROLE IN CAREER PATHWAYS

Katherine L. Hughes, Melinda Mechur Karp, David Bunting, and Janice Friedel

As Dan Hull points out in *Career Pathways: The Next Generation of Tech Prep*,¹ Tech Prep has been widely effective in many ways but now faces challenges. Hull calls for Tech Prep to be seen as a change agent—for Tech Prep practitioners to use their knowledge and partnerships to bring about program improvement through the creation of Career Pathways. This chapter focuses on a particular feature of Career Pathways: dual enrollment, also called concurrent enrollment.

An important goal of Tech Prep has been to connect students' high school and postsecondary course-taking—to create curricular alignment so that high school students can transition seamlessly to college, and enter with advanced standing. Achieving this goal, however, has been difficult for

¹ Dan M. Hull, *Career Pathways: The Next Generation of Tech Prep* (Waco, Texas: National Tech Prep Network, 2004).

some Tech Prep partnerships, as we will elaborate on below. Still, the current popularity of dual enrollment demonstrates the continued interest in accelerating some high school students' studies. And, the essential characteristics of an ideal Career Pathway, as defined by CORD and the College and Career Transitions Initiative, and approved by the Office of Vocational and Adult Education, U.S. Department of Education, include the provision of opportunities for high school students to earn college credit. Thus, to understand the role that dual enrollment can play in the next generation of career and technical education (CTE) programs, it is instructive to examine how dual enrollment is being promoted and developed around the country, at the state and local levels.

Dual enrollment programs allow high school students to enroll in college courses and earn college credit that is placed on a college transcript. In some programs, students earn high school and college credit simultaneously; these programs may be referred to as dual credit. Dual enrollment is not always for dual credit. Though dual enrollment has existed for many years, it is becoming increasingly widespread and student enrollment has been growing. In Florida, for example, the number of students participating in dual enrollment grew from 27,689 in 1988–1989 to 34,273 in 2002–2003.² Forty states have policies addressing dual enrollment.³ Over 50 percent of colleges in the United States allow high school students to enroll in college courses.⁴

² Florida Board of Education, untitled, undated presentation of dual enrollment participation data (http://www.flboe.org/news/2004/2004_03_10/DualEnrollment_Pres.pdf; accessed July 2005).

³ Melinda Mechur Karp, Thomas R. Bailey, Katherine L. Hughes, and Baranda J. Fermin, *State Dual Enrollment Policies: Addressing Access and Quality*, Community College Research Center Brief Number 26 (New York: Community College Research Center, Teachers College, Columbia University, 2005).

⁴ Tiffany Waits, J. Carl Setzer, and Laurie Lewis, *Dual Credit and Exam-Based Courses in U.S. Public High Schools: 2002–03* (NCES 2005-009) (Washington, D.C.: U. S. Department of Education, National Center for Education Statistics, 2005).

Traditionally, dual enrollment has been targeted at academically advanced students. However, policymakers and educators now believe that dual enrollment is not only for high-achieving students. Instead, they argue that dual enrollment programs may meet the needs of a range of young people, technical students included.⁵ The federal government has called for the expansion of dual enrollment to new student populations on a number of occasions.⁶

The chapter is organized as follows. We differentiate between dual enrollment and the articulation model found in many Tech Prep programs, highlighting the advantages and disadvantages of using one versus the other of these models. We then discuss some issues that practitioners face when implementing technically oriented dual enrollment programs, focusing on questions of program model and state policy context. We then highlight one program model, Iowa's career academies, that demonstrates the role that dual enrollment can play in helping CTE students move seamlessly from high school to college and credentials. Finally, we offer recommendations for those seeking to include dual enrollment as part of a Career Pathway.

⁵ See, for example, Thomas Bailey and Melinda Mechur Karp, *Promoting College Access and Success: A Review of Dual Credit and Other High School/College Transition Programs*. Report prepared for the Office of Vocational and Adult Education, U.S. Department of Education (New York: Community College Research Center, Teachers College, Columbia University, 2003); National Commission on the High School Senior Year, *Raising Our Sights: No High School Senior Left Behind* (Princeton, N.J.: The Woodrow Wilson National Fellowship Foundation, 2001); Katherine L. Hughes, Melinda Mechur Karp, Baranda J. Fermin, and Thomas R. Bailey, *Pathways to College Access and Success* (Washington, D.C.: U.S. Department of Education, Office of Vocational and Adult Education, forthcoming).

⁶ U.S. Department of Education, Office of Vocational and Adult Education, *The Secondary and Technical Education Excellence Act of 2003: Summary of Major Provisions* (Washington, D.C.: Author, 2003); U.S. Department of Education, Office of Vocational and Adult Education. *OVAE Review*, April 2005 (<http://www.ed.gov/news/newsletters/ovaereview/orev043005.html>; accessed July 2005).

TECH PREP AND DUAL ENROLLMENT: TWO MODELS FOR STUDENT ACCELERATION

Tech Prep consortia work with partnering high schools and colleges to identify opportunities for curricular alignment. In the traditional model of Tech Prep, this involves identifying opportunities for the partnering college to offer courses on the high school campus that are part of a connected sequence of courses at the college. High school students who successfully complete the high school course may be exempted from the equivalent college course upon matriculation into the postsecondary institution.

For example, a college offering an associate degree in culinary arts may collaborate with a high school creating a culinary arts program. In looking at syllabi, the two institutions may determine that two semesters of high school culinary arts courses could be based on the college curriculum, so that the high school students would gain the same competencies that they would taking Culinary Arts 101 at the college. The two institutions may come to an agreement that any high school student who completes the two courses and matriculates into the college may enroll directly in Culinary Arts 102.

In this way, Tech Prep articulation agreements help connect students' high school course-taking to future education in their career fields. They may also lend coherence to students' high school curricular experiences by rewarding students for taking multiple courses in the same subject area and encouraging students to build their skills in a sequential, progressive manner. Finally, these agreements may help accelerate student progress toward degrees or certificates, because students should not spend time in college relearning the skills already mastered in their high school Tech Prep courses.

In our research around the country, however, we have heard that the promise of articulation agreements is often not realized. For a variety of reasons, articulation of high school and college coursework does not lead to high levels of curricular coherence for students or widespread acceleration toward degrees. A national evaluation of eight consortia also found that students tended not to benefit from the articulated

credits, sometimes because student participants were unaware that they could earn college credits from their high school Tech Prep coursework.⁷ Thus, there are reasons to be concerned about this model of Tech Prep.

First, though conceived as curricular pathways or discrete CTE programs, Tech Prep frequently devolves into a series of electives. Pathways may exist on paper, but, in practice, students take only one or two courses in the program. Instead of a coherent multiyear program, Tech Prep courses remain one of a variety of elective course options. In other words, although many students are enrolling in Tech Prep, fewer are completing Tech Prep sequences.

This has a number of ramifications for students' educational and Career Pathways. Engaging with technical coursework for only one

semester, rather than through a sequence of courses, may not allow students to develop a progressively complex understanding of the technical area. Students do not have the opportunity to recognize that technical skills build upon one another over time, nor are they likely to make connections between technical and

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academic courses. Also, when students do not complete a Tech Prep sequence, secondary and postsecondary curricula remain unconnected.

A second concern with the articulated Tech Prep model is the nature of credit-earning it promotes. Articulation agreements are institution-specific. This means that if a student takes an articulated Tech Prep sequence offered through a community college, there is no guarantee that any other

⁷ Debra D. Bragg, *Promising Outcomes for Tech-Prep Participants in Eight Local Consortia: A Summary of Initial Results* (St. Paul, Minn.: National Research Center for Career and Technical Education, 2001).

postsecondary institution will recognize the competencies he or she learned in that sequence. Hence, unless students matriculate into their high school's postsecondary partner, they are unlikely to reap the college-credit-earning benefit of participating in Tech Prep.

Moreover, even when students take a full Tech Prep sequence in high school and matriculate into the partnering college, they may not receive credit for their articulated classes. Many articulation agreements rely on something called "credit-in-escrow." This means that students must meet a complex set of requirements to receive credit on their college transcripts for their Tech Prep courses. Though these requirements vary, depending on the institutional agreement, they are often quite onerous. At one consortium in our research, we found that to have their Tech Prep courses placed on their college transcripts, Tech Prep students had to enroll in the college within two years of high school graduation, declare their major in the same field as their Tech Prep courses, submit a petition to the registrar's office asking for their credits, and take at least six credits at the college. The result of this policy is that, while thousands of high school students are enrolled in Tech Prep courses, only a handful receive college credit each year.

The practitioners we have spoken with express frustration at these aspects of articulated Tech Prep models. They support the goal of creating a seamless transition from high school CTE into college majors that lead to occupational certifications and degrees. And they recognize that by working together, secondary and postsecondary institutions can help students make connections between their coursework and their occupational goals. But they often feel that this Tech Prep arrangement discourages such connections, in large part because of ambivalence in presenting Tech Prep programs as coherent program sequences, and because Tech Prep courses do not easily lead to college credit. Many consortia have begun to look for alternative models through which to accelerate their students' learning. Some consortia no longer rely on articulated courses, instead integrating dual enrollment courses into their Tech Prep pathways.

Like articulated Tech Prep, dual enrollment programs are predicated on close cooperation between high schools and colleges. In dual enrollment programs, high school students enroll in college courses. Because these courses are the same as those offered on college campuses — usually using the same syllabi and textbooks — high schools and colleges do not need to engage in a process of matching competencies, such as that done for some Tech Prep and other articulation agreements. Instead, it can be assumed that a student taking Culinary Arts 101 through a dual enrollment program is mastering the same skills as a regularly matriculated student taking Culinary Arts 101 as part of his or her college course load. Thus, the college credit earned through dual enrollment courses is immediately placed on students' college transcripts.

High schools and colleges partnering for dual enrollment do have decisions to make together. Dual enrollment programs can vary along a range of features and adhere to a variety of program models (see text box, following page).⁸ Partnering institutions must decide the location of the course (high school or college), who will teach the course (college faculty or high school faculty certified as college adjuncts), what the student mix will be (high school students only, or high school students mixed with college students), how the courses will be financed (who will pay tuition?), and which students will be permitted to enroll.

⁸ For a full description of these program models, see Thomas Bailey and Melinda Mechur Karp, *Promoting College Access and Success: A Review of Dual Credit and Other High School/College Transition Programs*. Report prepared for the Office of Vocational and Adult Education, U.S. Department of Education (New York: Community College Research Center, Teachers College, Columbia University, 2003).

**Ten Features Along Which Dual Enrollment
Programs Can Vary**

- **Target population:** Do programs target a specific type of student and, if so, which type?
- **Admissions requirements:** What criteria must students meet to be eligible for participation?
- **Location:** Are dual enrollment courses offered at the high school, the college, or both locations?
- **Student mix:** Do dual enrollment students take courses with regularly matriculated college students, or do they have their own separate courses?
- **Instructors:** What credentials must dual enrollment teachers hold?
- **Course content:** Are dual enrollment courses identical to regular college courses? If not, are processes in place to ensure that their content is college-level?
- **Credit-earning:** How do dual enrollment students earn credit? Is it dual credit? Is this regulated by the state or institutionally determined?
- **Program intensity:** Does state policy encourage or mandate *singleton*, *comprehensive*, or *enhanced comprehensive* programs?
- **Funding:** How are dual enrollment programs funded? What happens to full-time enrollment (FTE) and average daily attendance (ADA) funding for dual enrollment students?
- **Mandatory nature of state dual enrollment policy:** Are dual enrollment programs required by state policy, or simply permitted at an individual institution's discretion?

Source: Melinda Mechur Karp, Thomas R. Bailey, Katherine L. Hughes, and Baranda J. Fermin, *State Dual Enrollment Policies: Addressing Access and Quality* (Washington, D.C.: U.S. Department of Education, Office of Vocational and Adult Education, 2004). See also the 2005 *Update* to this report.

Partners must also determine whether dual enrollment programs will adhere to a singleton, comprehensive, or enhanced comprehensive program model. Singleton programs are single-course electives. Comprehensive programs include a series or sequence of dual enrollment courses and usually

encompass much of students' junior and senior years of high school. Enhanced comprehensive programs also include multiple dual enrollment courses over a number of semesters or years, and provide support services to help students enter and succeed in postsecondary education as well. These services may include counseling, assistance with financial aid applications, or work-based learning experiences.

Dual enrollment programs often focus on academic courses, such as English composition or statistics. But they are also a useful model for offering technical coursework. Many high schools do not have up-to-date equipment for CTE; college partners often do. Moreover, many high-wage, high-growth technical fields require high levels of academic skills. Technically oriented dual enrollment programs can address both types of coursework by building program pathways that include college-level academics and college-level technical classes. Comprehensive programs include the curricular sequencing necessary for developing students' technical skills, and enhanced comprehensive programs include services tailored toward easing CTE students' transition into postsecondary education and employment. The Iowa career academies discussed later in this chapter are one example of dual enrollment as CTE.

ADVANTAGES AND DISADVANTAGES

From our perspective, dual enrollment has three distinct advantages—and one possible disadvantage—in creating seamless transitions for CTE students, as compared to articulated models of Tech Prep. These stem from the fundamental difference between the two arrangements, namely, whether or not high school students are enrolled in the partnering college. In many current Tech Prep arrangements, high school participants are not considered college students. Their Tech Prep courses are, first and foremost, *high school* courses. Dual enrollment students, in contrast, are students in

two institutions. They are high school students who are also simultaneously enrolled in college.⁹

By considering participants college students, dual enrollment programs eliminate one of the thorniest issues facing articulated Tech Prep models – that of credit transfer. Dually enrolled students earn college credit that appears on a college transcript, just as would any other college student. Therefore, if they choose to matriculate into a different postsecondary institution, they can request the transcript and have their credit applied toward a major at their new college in the same way that transfer students might. (It should be noted that credit is not guaranteed to transfer – but it is no less likely to transfer than credit earned by a freshman transferring to a new institution as a sophomore.)

For students who matriculate into the institution at which they took their dual enrollment course, credit transfer is even simpler. Because it is already on their transcript, they automatically receive credit toward their college degree. This credit may count toward their majors, if they continue to pursue a degree related to their CTE coursework. Or, if they choose to pursue a different career, their dual enrollment credit may count as an elective course. Either way, there are no additional hurdles to navigate. Thus, dual enrollment students enter college with a head-start toward a degree. They may also understand that their high school coursework was connected to their college course-taking, because they see the tangible connection between what they did in high school and what they plan to achieve in college. And, because dual enrollment credits, in many cases, may count toward students' majors, those credits are the first step in a sequence of career-specific courses leading to a credential.

⁹ Dually enrolled students are not always considered identical to regularly matriculated college students. They are often considered nonmatriculated students or special registrants, and they are ineligible for federal financial aid. Nonetheless, dually enrolled students are typically counted in colleges' FTE headcounts and, for practical purposes, are considered college students.

The second important advantage is that dually enrolled students, because they are considered college students, have access to all of the support services available on the college campus. These may include tutoring and advising. Tech Prep students, by contrast, do not usually have access to those services.

Support services provide dual enrollment students with additional resources to ensure that they will be successful in their college-credit classes. Access to tutoring and other academic supports is particularly important for students in rigorous technical fields such as health, because high school-based staff may not have the specialized knowledge to help students. Academic and career counseling at the college may also help students with their overall transition to college. Such services can help students understand the educational and career trajectories they might take to build upon their high school experiences. Students who take advantage of college-based advising are likely to have more information that enables them to engage in planful behavior. They may, for example, come to understand that their intended major requires them to take additional math and science in high school to prepare for high-level technical courses in college. Or they might better understand how their coursework connects to their future jobs, or the types of degrees they need to pursue to enter their chosen professions.

High school counselors are often overworked and unable to provide students with the personal attention they need to select a college, navigate the admission process, and apply for financial aid. Moreover, many high school counselors are unfamiliar with the variety of career options and the educational backgrounds necessary to enter technical fields. Thus, dual enrollment students can use college counselors as an additional resource for determining their post-high school plans.

As college students, dual enrollment participants often have access to college facilities, such as libraries, and may even receive priority registration for future semesters. Spending time on the college campus may help students learn about “college life,” thereby smoothing their transition into

postsecondary education. And for students hoping to pursue majors with waiting lists, such as those in the health professions, early registration may make it easier for them to meet their degree requirements in a timely manner.

A third potential benefit of dual enrollment as part of a Career Pathway or other CTE program is that it can raise the prestige of such programs. Given the current national emphasis on raising academic standards, courses with college-level curricula add rigor to CTE programs. In addition, as opportunities for college-credit-earning such as AP and dual enrollment become more popular with students and parents, the inclusion of transcribed college credit in CTE programs would serve to make those programs more attractive.

There is one potential drawback to dual enrollment, however. Because dual enrollment students are enrolling in college courses, they often have to meet the same entry standards that regularly matriculating college students do. Eighty-five percent of colleges nationwide have admission requirements for dually enrolled students.¹⁰ In addition, high schools¹¹ and states sometimes impose additional eligibility criteria. Thus, when compared to Tech Prep, in some locales students may have to meet higher academic requirements to participate in dual enrollment. This has the effect of restricting access.

These requirements vary widely. At some colleges, students must pass some or all placement tests to take a dual enrollment course—even if it is in a technical field. In others, students may have to gain regular admission to the college. Other colleges permit technical students to take only certain courses (leading to certificates rather than degrees, for

¹⁰ Brian Kleiner and Laurie Lewis, *Dual Enrollment of High School Students at Postsecondary Institutions, 2002–2003* (Washington, D.C.: U.S. Department of Education, National Center for Education Statistics, 2005).

¹¹ Tiffany Waits, J. Carl Setzer, and Laurie Lewis, *Dual Credit and Exam-Based Courses in US High Schools, 2002–2003* (Washington, D.C.: U.S. Department of Education, National Center for Education Statistics, 2005).

example), while others allow high schools to determine which students are ready for college-level coursework. These requirements are particularly troublesome when dual enrollment is targeted at CTE students. CTE students are sometimes disengaged from traditional academic work, or learn better when academics are placed in context, and therefore could benefit mightily from technical dual enrollment – and yet their previous academic performance may prevent them from entering the program.

The question of dual enrollment entry standards is a contentious one. Colleges are justified in expecting that high school students enrolled in their courses meet the same standards as regular college students. Moreover, allowing students to enter college courses without going through the admissions process may ignite the criticism that technical education is less rigorous than traditional academics. Ensuring that students in technical dual enrollment programs are prepared to do college-level work through admission requirements could demonstrate the quality of CTE, as well as help ensure that students are not set up for failure when they enroll in college courses.

Finally, eligibility criteria are only a potential drawback, and actually present an opportunity. One of the essential characteristics of an ideal Career Pathway is that it meets postsecondary entry and placement requirements. Career Pathway programs aim to ensure that high school students are prepared to meet the standards set for college entry. Thus, such programs offer secondary and postsecondary partners the opportunity to clearly align not only their curricula in the technical area, but their academic exit and entry requirements as well.

STATE POLICIES AND DUAL ENROLLMENT

For those making efforts to move from the traditional articulated Tech Prep model to technical dual enrollment, certainly an important step is to examine one's state policies for dual enrollment. While not all states have policies addressing

dual enrollment, in those that do the policies will provide some parameters for program implementation.

State policies regarding dual enrollment vary widely.¹² Some policies are quite comprehensive, while others do little more than grant institutions the option of offering dual enrollment if they so desire. Policies can range along the ten features highlighted earlier (in the text box).¹³ For the purposes of this discussion, we focus on the features most relevant to the creation of CTE pathways that include dual enrollment. However, since dual enrollment has traditionally focused on advanced students, in many states the needs of technical students are not explicitly addressed by current policies.

State policies addressing eligibility requirements are the first feature that may influence technical students' access to dual enrollment. Most states with dual enrollment policies address the question of which students may take college courses. Some states regulate only the age of dually enrolled students, while others set forth specific admission requirements. Other states' policies allow institutional discretion over student eligibility. As noted earlier, eligibility requirements may prevent CTE students from taking dual enrollment courses. And when a state makes those requirements part of its official policy, institutions have little flexibility to tailor admission requirements to the types of programs they offer.

Some states have created policies that support the inclusion of a broad range of students in dual enrollment. In some cases, students must demonstrate that they do not need remediation in the subject of their dual enrollment course. A student who wants to take a college-credit math course (perhaps as part of a technical sequence) need only place out of remediation in

¹² See Melinda Mechur Karp, Thomas R. Bailey, Katherine L. Hughes, and Baranda J. Fermin, *State Dual Enrollment Policies: Addressing Access and Quality* (Washington, D.C.: U.S. Department of Education, Office of Vocational and Adult Education, 2004). See also the 2005 *Update* to this report.

¹³ Ibid.

math; poor history or English performance would not prevent his or her participation in dual enrollment. Another possibility is to create two admission standards—one for academic courses and another for technical courses. Students with low grade point averages may be able to take technical courses, even if they are not deemed prepared for college-level liberal arts classes. This solution, however, risks sending a message that technical courses are less rigorous than academic courses.

Second, policies addressing program structure may play a role in establishing dual enrollment for CTE students. Most states do not have in-depth policies addressing program structure. In the case of dual enrollment as part of a Career Pathways initiative, the lack of policy may have positive or negative consequences.

Leaving program model decisions up to individual institutions likely benefits CTE programs, as it provides them with the flexibility to create programs that best prepare students for careers. However, if policies do not provide support for the additional effort that must go into creating comprehensive and enhanced comprehensive programs, CTE programs may suffer. Technically oriented dual enrollment programs should be comprehensive or enhanced comprehensive. This is because dual enrollment is only one component of Career Pathways and therefore must be integrated into the larger CTE program. Dual enrollment teachers should have a connection to the high school, so that they understand students' previous CTE experiences and can link the content of a college course to prior learning. And, if students take more than one dual enrollment course, those courses must be deliberately selected so as to extend high school learning in an ordered manner.

Such programs take additional staff time, as they require coordination and collaboration between the college and the high school, additional planning time for teachers, and extra time for creating meaningful curricular pathways. Policies typically do not address these needs. For example, states usually do not provide incentive funding for programs attempting to create curricular pathways. Because singleton programs are simpler (and probably cheaper) to implement,

colleges may be more likely to implement them than more comprehensive efforts such as technically oriented curricular pathways. Thus, the lack of policy in this area can serve as a disincentive.

Policies addressing other aspects of program structure also influence technical dual enrollment. Some states require that dual enrollment courses be offered only on college campuses; programs must then develop ways to transport students from the high school to the college during the school day. Similarly, regulations regarding who is eligible to teach dual enrollment may limit the pool of available faculty members to such an extent that there is no one to teach a technical dual enrollment course offered at a high school. State policies rarely address the inclusion of support services in dual enrollment programs. They do not prevent support services, but do not encourage them either. Thus, programs may find it difficult to include such services—especially services tailored to the needs of CTE students.

Third, state funding of dual enrollment often serves as a disincentive to the creation of comprehensive or enhanced comprehensive programs. Though state policies vary widely (and we do not have space to address the intricacies of funding streams in this chapter), suffice it to say that policymakers struggle with funding dual enrollment programs in ways that benefit students, high schools, and colleges equally. States often seek to ensure that students need not pay for their dual enrollment courses. This necessitates, however, the state or an educational institution paying program costs.

Some states allow both institutions to receive full funding for dual enrollment, essentially paying twice for the same students. Other state policies stipulate that only one institution can receive funding, or that both institutions may receive partial funding, for dually enrolled students. In such arrangements, the net result for the institutions is a loss of funds, thus potentially discouraging institutional participation. Additionally, even when both institutions receive funds for dually enrolled students, they do not usually receive additional funding for activities supporting comprehensive dual enrollment programs. So again, funding may discourage the

creation of technical curricular pathways that include dual enrollment. Moreover, we are not aware of any funding arrangements that account for the more expensive nature of technical courses. In other words (as is often the case with the funding of higher education generally), institutions do not receive additional funds for students enrolled in technical courses, even though technical courses are often more expensive than academic courses. This, too, may discourage widespread institutional participation in technical dual enrollment.

This limited discussion of state policy might give the impression that state policies, on the whole, discourage CTE students from participating in dual enrollment. But this is not the case. Many states provide limited guidance for dual enrollment programs. Institutions that are committed to creating dual enrollment pathways for CTE students face few constraints. In fact, some of the most innovative dual enrollment programs we have seen have been in locales in which there is no state policy; though institutions in these cases must fund their programs creatively, they also have leeway to develop and refine the programs in ways that best meet the needs of their students. This should also be the case in states where policy is not terribly stringent; flexibility within the regulatory constraints is possible. Second, it is rare for all of the negative situations described above to occur at once. Again, this leaves programs with significant flexibility.

Finally, although we have focused on the possible downsides of state policy, there are many potential positives. First is that the existence of policy provides a framework for engaging institutions in collaborative efforts and a starting point for discussion regarding program implementation. Second, policies can be created that support technically oriented, comprehensive dual enrollment programs. Iowa is one example of this. In the next section, we describe Iowa's dual enrollment policies, some of which were specifically designed to support CTE. We also describe a program that both informed and has grown with the support of these policies, Kirkwood Community College's Career Edge Academies.

DUAL ENROLLMENT IN IOWA

Iowa has a long history of educational governance structures supporting local control, innovation, and cooperation across educational sectors and with public agencies and private enterprises. The vast majority of Iowa's 359 public comprehensive high schools are rural, and those communities are committed to the viability and survival of their schools. Each school district is locally governed by an elected board. The local board determines the curriculum to be offered and sets high school graduation requirements; school accreditation standards are set in Iowa Code and include vocational education program standards.

The enabling legislation for Iowa's system of public comprehensive community colleges was passed in 1965. Legislative leadership demonstrated its wisdom by creating nonduplicative educational systems that cover all regions of the state and are responsive to local community, business, and student needs. (There are no vocational area schools or vocational high schools or institutes; both the high schools and community colleges are comprehensive in mission.)

Since the late 1980s, the state of Iowa has fostered dual enrollment opportunities for high school students through policy and legislation, visionary leadership, and educational collaboration. A major outcome is a system for career development, future workforce development, and economic development in Iowa.

Iowa's public policy has encouraged the development and implementation of CTE programs that are linked across the secondary and postsecondary sectors in multiple ways: through the articulation requirement for access to the state's secondary vocational program appropriation; the state's vocational program approval process, which also requires documented articulation; the Postsecondary Enrollment Options Act or PSEO (Chapter 261C, Iowa Code); Supplemental Weighting (Chapter 257, Iowa Code); and, most recently, career academies (Iowa Code 260C.18A 1.c).

PSEO was enacted in 1987 to promote rigorous academic pursuits and to provide a wider variety of options to high

school students. It enables eleventh- and twelfth-grade students, along with ninth- and tenth-grade students identified as gifted and talented, to enroll part-time in college credit courses offered by two- and four-year colleges. In keeping with the emphasis on local control, the state does not set student eligibility requirements but allows school districts to determine eligibility, as well as determine which college courses may be made available to high school students, based on local curricular offerings. The local high school also decides whether to award high school credit in addition to the college credit.

The legislation does stipulate a funding arrangement: high schools must pay the partnering college a maximum of \$250 for college tuition, textbooks, and fees. Students must reimburse the district if they do not complete or successfully pass the course. This amount fails to cover all of the college's costs of offering courses to high school students, yet no additional fees can be collected from the students or the high school. This arrangement serves as a disincentive to high school and college participation. Hence, in 1998, supplemental weighted funding began to allow local school districts to receive additional state funding (1.48 funding) for high school students enrolled in community college courses. This funding stream is critical to the growth and sustainability of dual enrollment in Iowa, particularly the more costly CTE programs. To qualify for supplemental weighted funding, the local school district must verify that the college courses meet six criteria:

- Supplement, not supplant, existing high school courses
- Are not required by the local school district to meet minimum state accreditation standards
- Are for college credit and apply toward an associate of arts, associate of science, associate of applied arts, or associate of applied science diploma
- Are taught by a teacher meeting community college licensing requirements
- Are taught using the community college syllabus
- Are of the same quality as a course offered on a community college campus

The state policy for supplemental weighted funding has led to an increase in the number of contractual agreements between high schools (or consortia of high schools) and community colleges for the provision of college credit classes to high school students. In 2003, 17,883 unduplicated high school students were enrolled in Iowa's 15 community colleges, an increase of about 6 percent over 2002. In the same year, approximately 16 percent of the total community college headcount enrollments were high school students, and those students earned an average of seven credit hours. About 12 percent of all eleventh and twelfth graders in the state are enrolled in community college courses.

The most recent public policy supporting dual enrollment was legislation passed in 2002 for the development and implementation of career academies. The legislation defines a career academy as a program of study that combines a minimum of two years of secondary education with a postsecondary career preparatory program in a nonduplicative, sequential course of study that is standards-based, integrates academic and technical instruction, incorporates work-based and worksite learning where appropriate and available, uses an individualized career planning process that involves parents, and leads to an associate degree or postsecondary diploma or certificate in a rewarding, high-skill career field. Several existing funding streams, as well as a specially created innovative economic development funding stream, are available to support career academies.

CAREER EDGE ACADEMIES – KIRKWOOD COMMUNITY COLLEGE

The career academy legislation is an interesting instance of an existing program—the Kirkwood Community College Career Edge Academy program—influencing the development of state policy. The Kirkwood program was the model for the legislation. In 1998, Kirkwood Community College in east central Iowa was approached by a local school district regarding the need to create dynamic learning opportunities

for high school students that would better prepare them for their future. In particular, it was felt that too many students were leaving high school underprepared for academic success in college and without career direction, so there was a need to make the last two years of high school more meaningful and career-focused. As it was felt that these programs would benefit students at all high schools in Kirkwood's seven-county service area, and that this presented an opportunity for collaboration, a council of key stakeholders was established to discuss and develop this new vision.

The program is a true partnership among Kirkwood Community College; the 33 school districts in Kirkwood's seven-county service area; The Workplace Learning Connection, an intermediary linking business and education; the Grant Wood Area Education Agency, an intermediary support service provider; and area business partners. Through the work of the stakeholder council it was agreed that each academy, regardless of location, would meet the following Career Edge core elements:

- **2+2+2 program design**—Students would see how their two years in high school would provide a seamless transition to a community college program and/or a four-year college or university. Students would have multiple options to continue their education or enter the workforce immediately after high school.
- **Dual credit**—Students would earn both high school and college credit, the college tuition being paid by their school districts. These earned college credits would be placed on the students' transcripts.
- **Career Pathway**—Students would follow Career Pathway plans involving both high-quality career and academic coursework at the secondary and postsecondary levels. This planned instructional sequence would guide the students in their course selections and lead to advanced placement in postsecondary programs.
- **Work-based learning**—Each academy would involve strong linkages with business and industry through job shadowing, internships, tours, and guest speakers arranged

through The Workplace Learning Connection. Because The Workplace Learning Connection works with over 700 regional employers, students would learn about career opportunities within their communities or regions and the essential skills for those careers.

- **Skills certificates** – Each academy course would provide students with certificates to validate competency and share with future employers.
- **Scholarships** – Each academy would provide scholarship opportunities to enable students to continue their education at Kirkwood Community College.
- **Advisory committee** – An advisory committee would be established for each academy. Each committee would consist of business and industry representatives, students, and faculty members from both the high school and college ranks.
- **Career Edge website** – The website www.careeredge.info would provide academy and career information for students, parents, and counselors. Students could view a model Career Pathway plan and design an individual pathway plan based on their high school curriculum.

Each career academy was to be closely affiliated with a Kirkwood academic department, providing strong faculty support, mandatory professional development for teachers, and ongoing academy coordination. The academy selection process was based on current and future employment needs, income potential in the career fields under consideration, student interest, faculty support, and commitment from a Kirkwood department. The development process involved the selection of an academy champion who would convene interested schools and facilitate the development process. High schools select which Career Edge Academies to offer. The following 10 Career Edge Academies are in operation, most in multiple locations:

- Advanced Manufacturing Academy
- Automotive Technology Academy

- Automotive Collision Academy
- Computer Programming Academy
- Engineering and Engineering Technology Academy
- Graphics and Media Communication Academy
- Health Science Academy
- Human Services Academy
- Information Systems Management Academy
- Local Area Network Academy

The structure of each academy is slightly different. In general, academy students take a series of college courses over the course of a school year and participate in work-based learning activities and support services that complement their coursework. In the Health Science Academy, for example, students attend college classes at the end of each school day. The program meets at area high schools, college satellite campuses, and local health care facilities. Academy instructors are practicing nurses who have been certified as college adjuncts by Kirkwood.

Health Science Academy students complete 10.5 college credits over two semesters. They take seven courses: Professionals in Health, Health Skills 1, Health Skills 2, Basic Medical Terminology, First Aid Concepts, Cardiopulmonary Resuscitation (CPR) for the Health Care Provider, and Nurse Aid. Students who successfully complete the Nurse Aid course are eligible to take the national licensing examination to become certified nursing assistants. Academy curricula are developed by the college's nursing faculty and mirror the content taught on campus. Course instructors are given class materials, including syllabi and lesson outlines, by the college department. These courses also serve as prerequisites for entry into many health-related majors at Kirkwood, including nursing, physical therapy assisting, and dental hygiene.

Work-based learning is integrated into the Health Science Academy. As part of their coursework, students are required to engage in clinical practice at local hospitals and nursing homes. This includes working at the hospital before school hours

under the supervision of the course instructor. Students also attend a career day at a local hospital and have the opportunity to participate in job shadowing experiences arranged by the Workplace Learning Connection.

A variety of strategies are used to recruit students into the academy programs, including brochures, posters, the Career Edge website, student/parent orientation sessions, and a Career Edge Academy program of study that can be inserted into the high school's regular program of study. High school counselors, teachers, and current academy students are all considered essential in student recruitment.

While interest is the primary criterion for admission, student success is also important. To gauge the potential for success, several participating schools have designed an academy eligibility rubric that incorporates student attendance, student behavior, prerequisite courses, and academic assessments. The rubric is shared with students who express interest in the academies. It helps them plan by enabling them to compare their current scores with academy entrance criteria. The rubric is continually refined. Students do not have to take college placement tests to enroll in a career academy.

As noted above, leadership and collaboration have been vitally important to academy development and success, particularly the commitment of Kirkwood Community College's academic departments and support services. Most applied science and technology departments have added department coordinators whose responsibilities to the Career Edge Academies include working with department faculty on an initial academy design, connecting community college and high school faculty, securing state program approval, ensuring that academy faculty meet certification requirements, coordinating professional development for academy faculty, and seeking funds for program development and student scholarships, among others.

Other Kirkwood partners essential to the success of Career Edge Academy programs include the offices of resource development, government relations, admission, marketing, and enrollment services. As an example, Kirkwood's resource development office has been instrumental in writing grant

proposals and seeking corporate investment in these programs. To date, over \$2.3 million in grants and corporate gifts have been secured. The internal collaboration and commitment are very important to the long-term success of the programs.

Funding to develop, improve, and sustain Career Edge Academy programs has come from federal, state, and local sources, including Perkins funds, U.S. Department of Labor funds, the state supplemental weighted funding, and Grow Iowa Value Funds, which provide support to community colleges for workforce development. Local business partners have also provided funds for the academies. Rockwell Collins, a world leader in avionics that develops much of the instrumentation for airplanes, supports both the Engineering Technology Academy and the Computer Programming Academy by providing five years of support for a half-time college-level electronics instructor at the partnering high school, as well as \$20,000 annually to support student scholarships.

The career academies have proven popular: over 1100 area high school students enroll annually from nearly 40 high schools and earn both high school and college credit in one of the ten programs. Data collected by Kirkwood find that nearly 50 percent of the Health Science Academy students continue their education at the college immediately after high school, mostly in health- and human services-related programs. This compares favorably with the 32 percent of all high school graduates from Kirkwood's seven-county service area who continue at Kirkwood immediately after graduation. Other data show that career academy students are transitioning to college well-prepared: of twenty students in the Engineering Technology and Local Area Networking Academies who continued at Kirkwood, none needed remediation in writing and only two students needed remedial work in mathematics.

Career Edge Academy students benefit from their participation in the program in a variety of ways. First, they earn transcribed college credit that can be used at Kirkwood or at other colleges and universities. Second, they are college students with access to the full range of college services, including career counseling; academic advising; computer labs;

library services; math and writing labs; and free admission to athletic events, the college wellness center, and performing arts events. Moreover, the academies often offer additional support services geared specifically toward dual enrollment students. These include work-based learning opportunities, as described earlier, as well as college orientation sessions.

Another benefit that academy students enjoy is their ability to register for their freshman-year courses earlier than other incoming students. This is helpful for students pursuing courses of study (e.g., health) that have waiting lists for certain classes; early registration means that academy students are less likely than other freshmen to be shut out of these courses. Thus, they are less likely to experience delays on the way to earning their degrees. And of course, by earning college credit while in high school, all academy students have the opportunity to enter college with advanced standing. Career academy students are also given special consideration when applying for some Kirkwood scholarships.

Finally, because academy courses are college courses, academy students become acclimated to the expectations of college classes and may be more likely than their peers to be successful as college freshmen. Career academy students may enter college with preexisting relationships with college faculty members. These relationships can help them adjust to college life more easily than other students.

RECOMMENDATIONS

We have described the ways that dual enrollment can be integrated into a Career Pathway, and why this arrangement might be preferable to more traditional Tech Prep models. We have also offered an example of a successful technically oriented dual enrollment program. As dual enrollment becomes a more prominent feature of CTE programs, practitioners will benefit from following these recommendations.

Create strong collaborative relationships and facilitate collaboration by clearly establishing the roles and benefits for each institution in the partnership. Collaboration is a difficult process and one with which some programs struggle. It is important that collaboration occur between different levels of the partnering institutions; the top levels of leadership and administration must collaborate on governance of programs, while faculty members must work together on curriculum. Collaboration is an ongoing process, and collaborative relationships must be continually nurtured.

The Career Edge Academies at Kirkwood Community College offer an excellent example of collaboration. The roles and expectations of each partner in the program are clear to all involved. Descriptions of the responsibilities for program activities are formally distributed to specific individuals throughout the partnership. For those involved at the college, in particular, academy program responsibilities are written into their job descriptions. Such clarity helps the program run smoothly and makes all partners feel that they are valued and respected members of the partnership. It also helps ensure that the academies are part of a larger workforce development system, rather than an isolated program. The high school district leadership recognizes and appreciates the college's leading role in coordinating the numerous details of the program.

Support broader integration between the secondary and postsecondary sectors. The word "collaboration" does not fully describe the type of institutional relationships that dual enrollment and Career Pathways require. These programs call for deeper institutional changes; participating high schools and colleges must be willing to overcome their structural differences and integrate their goals, practices, and services. This is the only way to create a truly seamless education system.

Alignment of high school graduation requirements with college entrance requirements is an important step. The success of the Career Pathway model depends on the ability of the high school portion of the pathway to equip students to enter the postsecondary portion without requiring remediation. When

secondary and postsecondary institutions work together to create dual enrollment opportunities for Career Pathway students, they are better equipped to communicate regarding students' college readiness.

Kirkwood Community College's Career Edge Academy program is unique in that its dual enrolled students do not necessarily have to pass the college's placement tests. Program administrators from the college trust their high school counterparts to select students who would benefit from participation. And, as described above, some academies have developed selection rubrics to use as student placement and advisement tools.

The word "collaboration" does not fully describe the type of institutional relationships that dual enrollment and Career Pathways require. These programs call for deeper institutional changes; participating high schools and colleges must be willing to overcome their structural differences and integrate their goals, practices, and services.

Simplify the credit earning and credit transfer process. A hallmark of dual enrollment, as opposed to the traditional model of Tech Prep, is that it allows students to earn transcribed college credit, rather than credit-in-escrow. We strongly support transcribed credit, rather than credit-in-escrow. We also advocate efforts to increase the transferability of college credit, for example, common course numbering across state college systems, which helps students keep their credits when they change institutions. Finally, dual credit, in which students receive high school *and* college credit for their program course work, as opposed to receiving one type of credit or the other, is preferable. Dual credit truly accelerates students' progress, since earning the two types of credit for one course saves time and money. In addition to simplifying participation for students, dual credit prods institutions to work together to align curricula. Students in Iowa's Career Edge Academies earn both high school and college credits for their program courses.

Creating Career Pathways that include dual enrollment is not easy. But such programs stand to benefit students in a

variety of ways and thus are a promising extension of the good work already accomplished by Tech Prep.

For Program Information

Career Edge – For the New World of Work

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