Chapter 9
Examining Pathways to and Through the Community College for Youth and Adults

Debra D. Bragg

Introduction

Increasingly community colleges are envisioned as the place where students, regardless of age, make the transition to and through college to employment. Endorsing this perspective, in 2009 the president of the United States, Barak Obama, unveiled the American Graduation Initiative (AGI) to provide a 10-year, $12 billion investment in community colleges to boost college enrollment and graduation for the nation. An important goal of this new initiative is to capitalize on community colleges to prepare a competent workforce and strengthen the nation's lagging economy (Mullin, 2010). The president expressed confidence in the contribution that community colleges could make to addressing the nation's recession by stating that, "We will not fill those jobs, or keep those jobs on our shores, without the training offered by community colleges" (as cited in Lothian, 2009, p. 1). Despite the failure of Congress to enact the AGI, changes to the student-loan program that were part of AGI were included in the Patient Protection and Affordable Care Act (PL 111-148) that President Obama signed into law in March 2010. Since that time, the president has continued to advocate for the AGI, calling the student-loan bill a down payment to more federal funding for community colleges. His perspective holds steady that community colleges should serve as the higher education institution of choice to provide more US citizens with college access and credentials.

This chapter examines student transitions to and through community colleges by documenting prominent and emerging policies and programs in the literature, particularly the empirical literature that examines pathways to college and careers for youth and adults. The chapter provides background on the diversity of students that enroll in higher education, and it considers what we know about programs and policies that purport to facilitate youth and adult transition to and through community colleges in preparation for further higher education and employment. The

D.D. Bragg (✉)
Department of Educational Organization and Leadership, University of Illinois, Champaign, IL 61820, USA
e-mail: dbragg@uiuc.edu

J.C. Smart, M.B. Paulsen (eds.), *Higher Education: Handbook of Theory and Research* 26, DOI 10.1007/978-94-007-0702-3_9,

centerpiece of the chapter is a review of the literature using the student-centered P-16 accountability model conceived by Venezia (2001, p. 1) to describe what we know about (a) college access for diverse student groups; (b) policies and programs that attempt to connect and align disparate levels of the overall educational system, from pre-kindergarten to graduate level and beyond, referred to as P-20,[1] and (c) efforts at "'streamlining' policy signals" (p. 4) to demystify higher education for students matriculating from pre-K-12 education or adult education, particularly students who represent groups underserved by higher education. Finally, the chapter ends with conclusions and implications for policy and research to extend the notion of pathways to national priorities associated with President Obama's AGI proposal, and other policies and programs that may contribute to enhanced college access, completion, and employment.

Background

Over the last decade, numerous programs and policies have been enacted to overcome fragmented efforts to move students from the pre-K-12 grades to the postsecondary level and into the workplace and address what some authors have called the "educational pipeline" problem (see, for example, Ewell, Jones, & Kelly, 2003; Haney et al., 2004). Among these policies are governmental and institutional attempts to enhance the college and career readiness of students, including the present-day initiative focused on the common core of college and career readiness standards (Conley, 2010; Common Core State Standards Initiative, undated). One of many federal policy initiatives that has implications for college and career readiness and helping students transition from the secondary to postsecondary level and to employment is the federal Carl D. Perkins Career and Technical Education legislation, including its emphasis on programs of study, career pathways, and career clusters. Another federal bill that focuses on youth but even more on adults is the Workforce Investment Act (WIA), which provides funds to train unemployed workers as well as adult education and adult literacy funding to help out-of-school youth and adults enhance their basic literacy skills and prepare for or re-enter employment. With respect to these policy initiatives, community colleges represent a primary and in some cases growing means of reaching diverse student populations. Due to the nation's current recession, and consistent with cyclical patterns of higher education enrollment when the economy falters, students are enrolling in higher education institutions, especially community colleges, in unprecedented numbers (Fry, 2009). Of all sectors of higher education, community colleges are seeing

[1] At the time Venezia's monograph was published in 2001, the term P-16 was a prominent means of portraying system alignment from pre-kindergarten through undergraduate education. Presently, the favored term is P-20, indicating the beginning of the formal education system at the pre-kindergarten level and extending to the graduate level (and beyond) to depict the overall education system in the United States.

the largest increase in freshman enrollments (Taylor, Fry, Velasco, & Dockterman, 2010).

Many policies and programs intent on transitioning youth and adults to and through the community college envision 2-year institutions as the primary access point—the nexus—for a large and growing number of students who are underrepresented and underserved by the US higher education system. Among many 4-year institutions, particularly those with selective enrollment, these student populations are enrolled in modest numbers and preference often continues to go to students with traditional characteristics (Bowen, Chingos, & McPherson, 2009). However, students defined as traditional by such characteristics as full-time enrollment status and reliance on parents for financial support are declining in number in all types of higher education institutions (Choy, 2002). Non-traditional students, particularly adult students 24 or over who work and provide the primary financial support for their families, are growing despite barriers that impede their enrollment in higher education (Pusser et al., 2007). No doubt, the transition to and through college is challenging for most students on some level, leading some scholars to talk about the "pipeline leakage" problem and major system-level challenges (e.g., confusing standards for college readiness, the disjuncture between high schools and colleges) (Callan, Finney, Kirst, Usdan, & Venezia, 2006); however, the transition to college is especially difficult for minority, low income, and first-generation college-going students who are beyond traditional college age (Park, Ernst, & Kim, 2007).

Reviewing trends in college access and participation, transition to college is rising in the United States; however, there are differences in the rates at which diverse student groups enroll in college and these differences are evident in national trend data. The percentage of high-school graduates who enroll in 2- and 4-year college in the fall immediately after their high-school graduation increased nearly 20% points between 1972 and 1997, from 49 to 67%, then dropped to 62% between 1997 and 2001, before rising to between 67 and 69% between 2005 and 2007 (National Center for Education Statistics [NCES], 2008). However, this trend masks the differential transition rate by racial/ethnic group. Whereas in 2007, the immediate high school-to-college transition rate was 69% for Whites, the immediate enrollment rate for African-Americans was 56 and 64% for Hispanics, showing the difference in immediate enrollment remains high between Whites and minority groups. The reasons for this gap are numerous, with inadequate pre-K-12 academic preparation, structural diversity at the secondary level, limited social networks between high school and college, and financial need being important contributors (Enberg & Wolniak, 2009).

Continuing this discussion of national trends in postsecondary enrollment and their relationship to enrollment by gender, the immediate enrollment rate of female high-school graduates exceeds male high-school completers, with much of the growth of female enrollees occurring at the 4-year level since the ratio of females to males has been higher in 2-year colleges historically. In 2008, 72% of immediate high-school completers who were female enrolled to college compared to 66% of immediate high-school completers who were male (NCES, 2008). By 2003, women received 58% of the bachelor's degrees awarded in the United States (NCES, 2005)

and they continue to outpace their male counterparts (NCES, 2008). They also receive higher grades and complete their degrees in less time than males (NCES, 2005). One reason for the difference in postsecondary participation by gender is that males have a higher drop rate from high school and therefore fewer are eligible to access college younger in life, contributing to their foregoing college altogether. Buchman (2009) shows the gender advantage for women holds of all race/ethnicity groups and is especially evident for members of the African-American, Hispanic, and Native American groups.

Differences in immediate enrollment rates by family income and parental education persist in the United States, confirming immediate college enrollment is higher for high-school graduates from high-income families than from low-income (Institute for Higher Education Policy, 2010). Low-income Whites fair better than African-Americans and Hispanics in terms of their enrollment in college, due to the higher propensity of members of these minority groups to drop out of high-school relative to Whites. And, whereas a promising trend in the data is the rising rate of college enrollment among low-income minority students, the percentage receiving a postsecondary credential has remained steady over the past decade. The recent report by the Institute for Higher Education Policy (2010) raised important questions about whether these trends are related to mismatched expectations for college aspirations and preparation, unmet financial need, and challenges these students face juggling family, school, and work. Of all underserved groups, those reported in the lowest income group are the least likely to graduate from college (Cabrera, Burkum, & La Nasa, 2005; Choy, 2000). The percentage of low-income students who graduate within 6 years is 54%, compared with 77% for high-income students (Carey, 2004).

Looking at yet another group that has been underserved by higher education historically, Valentine et al. (2009) observed that college enrollment among students with disabilities has increased dramatically over more than a decade, attributing this phenomenon to passage of a number of federal laws including Section 504 of the Rehabilitation Act of 1973, the Americans with Disabilities Act (ADA) of 1990, and the Individuals with Disabilities Act (IDEA) amendments of 1997 and 2004. Newman (2005) documented that, between 1987 and 2003, the college participation rate of students with disabilities more than doubled, rising from 15 to 32%. Despite the growth in numbers, retention and completion by students with disabilities remain a concern. Based on case studies in six states, the National Collaborative on Workforce and Disability Services (2009) claimed that programs offered by community colleges are more accommodating for students with disabilities than 4-year institutions. However, all programs tended to focus on college access, academic services, and classroom accommodations, paying insufficient attention to retention and completion.

These enrollment trends portray the pervasive gap in college access for students of a range of race/ethnicity, gender, income, and disability status characteristics. They raise the question of what policies and programs support college access, transition, and completion for diverse student groups that often struggle to access and complete college. What policies and programs support access and success for these

students? Assuming innovative solutions can be found, how can we ensure that the P-20 system is accountable to its many stakeholders and constituents while striving to meet students' aspirations to participate and succeed in college? Answering these questions is a necessary prerequisite to finding solutions that can extend the opportunity of college access and succeed to all students.

Part of the solution is in finding better ways to prepare students who desire to transition from high school to college (Callan et al., 2006). Understanding pre-K-12 achievement patterns has potential for understanding patterns of college transition in the United States including the disconnects between students' aspirations, their preparation and their actual college enrollment. Of the approximate 2.5 million public high-school graduates each year, over half aspire to a bachelor's degree despite their lack of engagement in high school-level course work that prepares them for collegiate-level studies. Over 50% of new college entrants take remedial courses, many in multiple subjects (Attewell, Lavin, Domina, & Levey, 2006). Referencing national statistics that show that the figure for college completion has reached an all-time low for several consecutive years, Venezia (2001) has argued that the disconnect between student aspirations and academic preparedness contributes to large percentages of students lacking the requisite skills they need to enter college and the high incidence of leaving college before the second year. The historical gap between pre-K-12 and higher education, and the subsequent lack of communication, working relationships, and accountability between the educational sectors, exacerbates problems that students experience as they attempt to transition to and through college. While difficulties accessing college are evident for traditional-age college goers, adults also experience high rates of remediation that create difficulties for their success in college (Jenkins & Boswell, 2002).

Measures of adult literacy in the United States consistently point to gaps in functional literacy: literacy that pertains to adults performing a wide range of tasks associated with their daily lives. Over a decade ago, the 1992 National Adult Literacy Survey (NALS) (Kirsch, Jungeblut, Jenkins, & Kolstad, 1993) surveyed over 13,000 adults, with results weighted to represent the total population of persons age 16 and over in the US population. Results show about 14% of respondents fall into the below basic literacy level, while another 21–23% demonstrate skills in the basic proficiency level in prose, document, and quantitative literacy.[2] These figures remained relatively constant over the decade of 1993–2003 (Kutner et al., 2007), showing a substantial proportion of the US adult population continues to exhibit deficiencies sufficient enough to compromise their ability to engage in secondary and postsecondary education, employment, and other economic opportunities. Whereas about a quarter of this group consists of immigrants with limited English-speaking experience, the majority is native-born speakers, with nearly two-thirds having dropped out of high school and over two-fifths living in poverty.

[2] The NALS study developed three scales to determine the literacy status: prose literacy, document literacy, and quantitative literacy. Within each scale the levels of proficiency ranged from level 1, the lowest, to level 5, the highest. Adults' scores tended to fall at the same proficiency level across all three scales, even though the skills measured differed across the scales.

Moreover, adults functioning at lower literacy levels reported working fewer hours and receiving lower weekly earnings than adults performing at higher literacy levels.

Results of the NALS (Kirsch et al., 1993; Kirsch, Braun, Yamamoto, & Sum, 2007) show several demographic groups are overrepresented in the below basic category, however, the most vulnerable of all adult groups are individuals who do not speak English before entering school, who are members of the African-American and Hispanic minority groups, and who have multiple disabilities. Results also show adults who discontinue schooling and receive their high-school diploma or GED between the ages of 20 and 24 score lower in literacy than those who complete by age 19. These findings suggest the importance of better educating adults at all levels including providing them with programs and services that are carefully designed to help them transition into college as well as employment.

In more recent research, Levy and Murnane (2006) reinforce findings from NALS, showing adults who display the lowest levels of literacy work fewer hours, earn lower wages and are more likely to live in poverty than adults at higher literacy levels. They also found workers with the lowest levels of literacy have the fewest opportunities for training and employment, and the jobs they obtain are less stable and seldom pay a family-living wage. Along with other researchers and policy analysts, Jenkins (2006) and others have recommended community colleges offer new curricular pathways, called career pathways, to enhance educational and economic options for adults. In line with the President Obama's call for the role of community colleges to grow in enrolling and completing more students, Jenkins argues that community colleges are the venue for educating more students post-high school as a means to strengthen individual and societal economic circumstances saying, "In a global economy, communities will thrive or decline based on how well they do to ensure sufficient numbers of high-value jobs and an ample supply of 'knowledge workers' to fill them" (p. 4). The growing need for adults to secure literacy training, coupled with the growing demand for increased literacy levels, presents a challenge to government officials and educators to close the skills gap (Mazzeo, Rab, & Alssid, 2003), offering a complimentary reason for supporting community colleges as the venue for increasing college enrollment and completion.

Combined with changes in the labor market that deem at least a 2-year college education vital to family-wage employment (Berker & Horn, 2003; Carnevale & Desrochers, 2001; Carnevale, Smith, & Strohl, 2010), the need for equitable transition to college for underserved groups highlights the need to better align secondary and postsecondary education. Misaligned policies and programs that confuse youth and adults, particularly those who are unfamiliar and inexperienced with college, are unlikely to result in increased access to and through higher education. Many students struggle with determining what they need to know and be able to do to enter and succeed at the postsecondary level. Given the necessity for more youth and adults to participate in college, some states have begun to recognize the importance of transition through the educational pipeline, particularly the transition from high school to college (Kirst & Venezia, 2004; Venezia, Callan, Finney, Kirst, & Usdan, 2005). Efforts to enhance college and career readiness of high-school graduates have grown in recent years, including legislative policies and programs addressing college and

career readiness adopted by such states as the states of Illinois (Khan et al., 2009) and Texas (Conley, 2010). Despite these potentially promising developments, state and local institution responses to connect the disparate levels of the educational system take different forms, complicating research and evaluation on their impact and benefits. The limited knowledge of solutions that prevent students from falling through cracks in the educational system is disconcerting.

Representing an early voice in the P-20 education system alignment movement, Hodgkinson (1999) argued a fully integrated education system is a single entity that promotes student achievement and educational attainment from the primary grades through college. According to several other researchers and policy analysts who followed his footsteps (see, for example, Haycock & Huang, 2001; Van de Water & Rainwater, 2001), a P-16 (or P-20) framework is a way to reach more learners and enhance education system efficiency and effectiveness. By creating a P-20 educational system that operates as one, the system is better able to prepare students to advance from one level to the next and find employment linked to personal and financial success. In an earlier work conducted by the National Center for Higher Education Management Systems (NCHEMS), Ewell (2004) reported as many as 30 states implement P-20 state policies to raise pre-K-12 standards and enhance the academic preparation of students who desire to enroll in college and enter the workforce, and this number is bound to have grown over the latter half of this decade. Alignment of curriculum, standards, and assessments represent important means of linking pre-K-12 education with higher education and creating the potential for more youths and adults to transition to college ready to learn and complete their studies with postsecondary credentials. Without deliberate efforts to connect the system in serious and meaningful ways, many students, particularly historically underrepresented and underserved students, will continue to struggle with accessing and completing college.

Conceptual Framework

Van de Water and Krueger (2002) suggest the fundamental goals of P-20 education are to improve student achievement at all levels and close the gap among groups of students who have had differential opportunities to participate in college by raising standards, requiring assessment, and demanding accountability. The underlying assumption is that students who are prepared for college are more likely to transition to, persist in, and finish college, and also make a successful transition to the workplace. Theoretically, policies that encourage the integration of aligned curriculum with content, standards, and assessment produce students who are better prepared to transition to college, to persist and secure credentials, and to obtain viable family-wage employment. Conversely, misaligned policies and programs impede student transition to college, especially for students who are marginalized by the educational system and who lack fundamental knowledge about how to go to and be successful in college.

Introducing a P-16 accountability framework to address implementation issues at the state and local institutional levels, Venezia (2001) recommended that the overall educational system adopt three foci to improve coordination and efficacy and serve the needs of all students who seek and deserve the opportunity to attend college. Whereas her thinking was focused on student transition from pre-K-12 to higher education, her theory, at least on the surface, appears to apply equally well to adults. The three foci of the P-16 accountability framework are as follows: (a) to increase access by closing the achievement (performance) gaps between different student groups; (b) to connect and align curriculum, standards, and assessments; and (c) to "streamline policy signals" to clarify for students what academic competencies (skills and knowledge) are required to be admitted and placed into college-level course work (p. 4).

Though signaling related to employment was not mentioned in Venezia's model, it plays an important role in student transition to work, a complimentary topic discussed in this chapter. In this regard, Rosenbaum (2001) observed that employers use cues sent by the educational system to determine whether graduates are a match for their workforce. He contends the signals that schools send to employers influence student transition to college and careers, noting the miscommunication of signals sent by education to employers can contribute to inequities for students who enter the labor market or higher education. While the views of Venezia and Rosenbaum differ substantially on the importance of college, with Venezia advocating to make college more universally available to all high-school graduates and Rosenbaum questioning the relevance of college for students who prefer a direct path from high school to work, both authors recognize the importance of signals that the educational system sends to students about their post-high-school options.

Looking first at college access, Venezia's (2001) P-16 accountability framework points to inequities in pre-K-12 achievement that contribute to students' difficulties in accessing college. She argues P-16 systems fail if college is not a viable reality for all students, not only for students who have traditionally enrolled in college, including students who are White and from families with higher income and higher parental attainment (i.e., students who are not first-generation college). She argued that fundamental inequity in college preparation, especially in core academic subjects like math, science, and English, dramatically affect college options. Her research speaks most directly to high-school age yet underserved students who seek to transition to college, but the implications of her concerns are relevant to adults, especially those who have left the educational system and who later seek to re-enter higher education through adult education and adult literacy programs. She contends minority, low-income, and first-generation college students are disproportionately impacted by the misalignment between levels of the educational system and that these inequities need to be addressed by making system-wide improvements in policy and programs, including college preparation courses and programs; curriculum alignment, assessment, and accountability; and student admissions, placement, and completion.

Second, Venezia (2001) observed that the fragmentation of the educational system and disconnects between pre-K-12 and postsecondary education are endemic

and especially problematic for underserved students. To rectify structural problems, Kirst and Venezia (2004) emphasized alignment of pre-K-16 policies to support curriculum articulation that facilitates students progressing to learn subsequently advanced content without repeating course work that loses time and momentum and increases cost in tuition at the postsecondary level. Basing their recommendations on results of the Bridge Project, a multi-state, multi-year study that examined the alignment of systems, policies, and programs associated with high school-to-college transition, the authors emphasized the importance of systems-level solutions to address the challenges faced by substantial numbers of high-school students who seek to attend college. Their work showed that higher education sets standards for curriculum and determines assessments and cut-off scores for college placement without adequate consideration of the rest of the system, particularly the pre-K-12 level. Similarly, the pre-K-12 level determines curricula taught at the elementary, middle- and high-school levels without seeking to understand college entrance standards, the demands of college coursework, and the ramifications for students if their prior course taking does not align with college curriculum. As a result, the curriculum and standards of high schools and colleges are inadequately aligned, contributing to students' lack of readiness for college or careers.

Looking at similar concerns for misalignment between adult education and postsecondary education, Reder (1999) observed a wide gap between adult basic education (ABE) and postsecondary education, and more recent research by Berker and Horn (2003) confirms this assertion for the large and growing group of adults who work and attend college. These studies show the disconcerting misalignment for adult learners who work with being retained in college and completing credentials. Like their youth counterparts, many adults find the transition to higher-education treacherous terrain, contributing to their difficulties entering college or, once there, dropping out because of the inability to navigate college, often due to their lacking the requisite skills and knowledge to make a successful transition to college and be successful learners once they get there.

Third, Venezia (2001) recommended to "streamline policy signals to create a less confusing environment for students, their parents, and [pre-]K-12 educators (who often grapple with trying to stay abreast of constantly changing postsecondary admissions and placement policies)" (*parentheses those of the author,* p. 4). Venezia (2001) as well as Rosenbaum (2001), Rosenbaum, Deil-Amen, and Person (2006), and Kirst and Venezia (2004) argue for the importance of streamlining and communicating clear signals about a wide range of policies and programs pertaining to improving students' readiness for college. Specifically, Kirst and Venezia (2004) argue for "clear, consistent, and reinforced signals that will enhance the college knowledge of prospective students in secondary school" (p. 19). For them, signals are closely aligned with incentives that provide "extrinsic motivation" (p. 19), noting student transition to college happens unequally by income and racial and ethnic group. Similarly, Reder (1999) noted the importance of clear signals to adults about the importance of college as a route to securing credentials that have value in the labor force, noting Adult Basic Education (ABE) and General Equivalency Diploma (GED) programs often fail at preparing adult learners with needed

competencies to transition to postsecondary education successfully, and, as a consequence, ABE and GED programs lack credibility as means of preparing adults for college.

Discussion of the Results

A literature review was conducted to identify research results on transition to, through, and from the community college. The review includes quantitative and qualitative studies, including research relying on secondary analyses of national- and state-level datasets as well as researcher-developed datasets. This discussion summarizes research results about what we know about the transition of youth and adults to college. The two sections use Venezia's (2001) P-16 accountability framework to summarize results pertaining to youth transition and then studies focusing on adult transition.

Transitions by Youth

Community colleges have a long history of providing access to higher education for a wide spectrum of the US population, including individuals who have had no prior experience in their families with college and who never considered college as an option. In fact, students who attend community colleges are some of the most racially, ethnically, and economically diverse of all students in higher education (Bailey & Morest, 2006). To address their students' needs, community colleges offer a wide array of curricular options, ranging from liberal arts-baccalaureate transfer to career and technical education, to continuing education for non-credit (Bragg & Townsend, 2007). The characteristics of graduates of the pre-K-12 level who enroll in community colleges run the gamut, from those who have participated in a rigorous college preparatory (college prep) curriculum to those who engaged in coursework offering minimal academic intensity (Adelman, 2006).

Drawing on national data to point to the inequity in academic preparation of pre-K-12 students, Haycock (2006) and others have shown that racial and ethnic minorities and low-income students are far less likely to enroll in college prep curriculum during high school that will prepare them for college than White upper income students, partially because of structural inequities in the pre-K-12 system. Students failing to complete college prep curriculum at the pre-K-12 level often lack the academic competencies needed to meet college admissions requirements, pass college entrance exams, and enter college ready to learn. In an increasingly competitive higher education environment, students enroll in community colleges for many reasons but one is their lack of preparation to qualify them for admission to other sectors of higher education. Increasingly, these students turn to the community college to upgrade their academic competencies and forge a plan to secure future college and career options.

An investigation of the 50 states' high school-to-college transition initiatives, referred to as Academic Pathways to Access and Student Success (APASS),

investigated various academic pathway models and approaches employed throughout the United States (Bragg & Barnett, 2006). The authors defined academic pathways as "boundary-spanning curricula, instructional and organizational structures, and meaningful assessments that either link or extend from high school to college, including both 2-year and 4-year institutions" (p. 6). The extent to which these models encourage college access by reaching underserved students was an important question of the study, including understanding the role community colleges play in supporting student transition to college and careers. Of the various academic pathways examined, Advanced Placement (AP), technical preparation (tech prep), and adult bridge programs were reported by state officials as the most widely implemented in the 50 states. These three pathway options were also the most highly aligned with the goal of reaching and enrolling underserved students, according to state officials. While AP was widely used and applicable to students who took the AP exams and presented their scores to colleges to qualify them for college credit, other models seemed more integral to community college's efforts to support enhanced transition for underserved learners; therefore they are the focus of this chapter.

Dual enrollment/dual credit[3,4] is an academic pathway model that is proliferating rapidly in the United States, and potentially closely aligned with enhancing access for historically underrepresented and underserved learners (Karp & Hughes, 2008a, 2008b). Despite such claims, which are pervasive in the literature, a national survey of high schools showed dual credit programs favor students attending larger and less ethnically diverse secondary schools (Waits, Setzer, & Lewis, 2005). A related model, the Early College High School (ECHS) or Early Middle College High School (EMCHS), targets underserved students in grades 9 and 10 to participate in rigorous coursework that offers sufficient dual credit to accelerate their graduation from high school and propel them toward a college degree more quickly than the typical 4 years of high school plus 2 or 4 years of college would require (American Institutes for Research and SRI International, 2009). To date, most of the institutions (high schools and colleges and universities, primarily community colleges) implementing this model have depended on external funding. Therefore, this model is not as widely implemented nationwide or as extensively researched as some of the other models.

Looking at the multiple models emerging to assist high schools to transition students, including such models mentioned above as AP, dual credit, tech prep, ECS, and others, Hughes and Karp (2006) and Hughes, Karp, Fermin, and Bailey (2005) reported similar results to the APASS study (Bragg & Barnett, 2006) in their

[3]In this paper, dual enrollment refers to student enrollment concurrently but distinct high school and college-level courses that each generate credit appropriate to their respective level. Dual credit means students take one course that generates both high-school credit and college credit.

[4]Admittedly, dual enrollment and dual credit are used interchangeably in the literature, but dual credit is chosen as the preferred term herein to reinforce that students awarded dual credit upon successful completion of the same course receive credit at both the high-school and college level (for further information on the definition of terms, see Kleiner, Lewis & Greene, 2005).

investigation of various curricular pathways that link pre-K-12 education to college, which they refer to as credit-based transition programs (CBTPs). Their research on the implementation of CBTPs confirmed the growth of a number of different models and approaches, particularly dual credit. Their research also observed the increasingly prominent role of community colleges in partnering with high schools to deliver these models, linking this growth to their propensity to enroll diverse learners and their willingness to deliver programs that deliberately link college to the workforce.

Several emerging models that focus on high-school students' transition to the community college also emphasize college and career preparation, particularly models that emphasize career and technical education, tech prep, and other school-to-work programs where community colleges have been advanced as leading P-20-oriented curriculum reforms. In addition, several models and programs offering dual enrollment and dual credit have viewed community colleges as an integral collaborator, advancing these institutions as the logical partner for high schools attempting to increase college-going options for their graduates. A growing body of literature suggests that dual credit is proliferating nationally and that student enrollment is rising as well (see, for example, Karp, Calcagno, Hughes, Jeong, & Bailey, 2007; Kleiner & Lewis, 2005; Waits et al., 2005). Reflecting this literature, this section examines empirical evidence of the impact of models that emphasize college and career readiness with a commensurate goal of helping youth to transition to and through the community college.

College Access

Who are the students who participate in high school-to-college transition programs situated in part or exclusively in the community college? Though profiles of students enrolled in high school-to-community college programs are fairly limited, information is probably most prevalent for the tech prep model because of its longevity, beginning with funding from the federal Carl D. Perkins legislation in 1990. In a study of students who participated in tech prep, Bragg et al. (2002) found students participating in tech prep programs in eight states did not differ on race/ethnicity and several other demographic characteristics from a comparison group of non-participants who were matched on cumulative high-school percentile rank. The demographics of the tech prep participants were reflective of the racial/ethnic communities in which the students resided. However, some demographic characteristics did emerge to distinguish tech prep students from the comparison group. First, tech prep participants came from families with lower income and lower parental education levels than their comparison group counterparts. Gender was another distinguishing characteristic, with a higher percentage of tech prep participants being male in four of the eight sites studied. These results reflect a persistent gender bias that accompanies secondary career and technical education programs that are affiliated with tech prep wherein male-oriented fields that offer technical training, technician education, and trade-related programs continue to prevail (Wonacott, 2002).

Bragg, Loeb, and colleagues (2002) also found part- or even full-time jobs were prevalent among high-school students enrolled in tech prep, and so too among the non-participant group. Students engaged in high school-to-college transition programs have often already begun employment, in part because of the need to generate income to support themselves and their families (see, for example, Weller, Kelder, Cooper, Basen-Engquist, & Tortolero, 2003), leading these students to begin juggling school, work, and personal commitments even before they reach high-school graduation. It should also be noted that some of these students also assume the role of parent before leaving high school, adding even more adult and familial responsibilities. Taken together, these personal, academic, and employment factors are known to correlate with college retention problems, placing students enrolled in transition programs that focus on college and careers at risk of dropping out.

These findings parallel results of a secondary analysis of the National Longitudinal Survey of Youth (NSY97) by Stone and Aliaga (2007) who found a higher percentage of secondary tech prep and career and technical education students were male, lower income, and with lower parental education than the comparison group of all students. However, differing from the Bragg et al. (2002) study, Stone and Aliaga showed higher enrollment among African-Americans than the comparison students. Results of the latest National Assessment of Vocational Education (NAVE) (Silverberg, Warner, Fong, & Goodwin, 2004) observed similar patterns for career and technical education students compared to students enrolled in other academic programs at the sub-baccalaureate, postsecondary level. Besides the confirming results on gender, Silverberg et al. reported that career and technical education students tended to be more economically disadvantaged and to be first in their families to attend college (i.e., first-generation college), and also to be less prepared academically for college compared to the general population of postsecondary students.

Neumark and Rothstein (2007) used the NLSY97 dataset to estimate college attendance among tech prep and school-to-work (STW) participants, focusing on students who self-reported involvement in various STW activities such as co-op, internship, and tech prep. This study included students labeled the forgotten half, which the authors defined as the bottom half of the distribution of students on the probability of college attendance. Examining a number of demographic characteristics, they concluded "STW program participation is particularly advantageous for men in the forgotten half with respect to both schooling and work-related outcomes" (p. 125). Some the STW activities, for example, mentoring and co-op education, had a stronger effect on schooling-related outcomes for students associated with the forgotten half, and some had a stronger effect on employment outcomes, particularly for students enrolled in tech prep and co-op programs. The authors recognized the limitations of analyzing large national datasets that aggregate student participation in a wide range of STW programs; nonetheless, the authors felt confident enough of their results to claim that STW programs hold promise for forgotten half students, many of whom are demographically diverse and economically disadvantaged.

Looking at another academic pathway that seeks to serve diverse learners, studies of Early College High Schools (ECSs) and Early Middle High Schools (EMHSs)

show this model is enrolling a substantial number of low income and minority students, and that many of these students are well served at the high school and college levels by participating in these programs. The most recent report of a 6-year evaluation of ECSs funded by the Bill and Melinda Gates Foundation, conducted by American Institutes for Research and SRI International (2009), showed 69% of students enrolled in ECSs are minority, 59% are low income, 46% are first-generation college, and 10% are limited English proficient. Despite these characteristics, students enrolled in these ECS programs tend to outperform district average performance on a number of secondary indicators, including grade point average (GPA), academic engagement, and attendance.

System and Curriculum Alignment

As discussed previously in this chapter, the alignment of curriculum and assessments is often haphazard between pre-K-12 and higher education, and yet, if access to college is to be more universal, a concerted effort at alignment of coursework and assessment policies and procedures is needed (Callan et al., 2006). Curriculum alignment has been an evolving aspect of high school-to-college transition models that emphasize the articulation of academic with career and technical education curriculum from the high school to the associate degree (Lekes et al., 2007; Valentine et al., 2009). Referencing again the study of tech prep by Bragg et al. (2002), secondary curriculum requirements varied widely among the eight tech prep programs studied, with some aligning closely with college prep secondary graduation requirements and others requiring very modest academics.[5] In the latter case, the courses taken by tech prep students emphasized career and technical education and downplayed college prep, replicating vocational courses linked to tracking in comprehensive high schools (Oakes & Saunders, 2008).

These results suggested school level and consortium level course requirements matter in students' choices of high-school courses and may influence their behavior associated with the transition to college. When student participation in core academic courses was linked to rigorous course requirements, the students took more academic courses and they advanced to higher levels in the academic curriculum. Thus, consortia that associated tech prep with college prep requirements in visible ways (for example, aligning tech prep with college prep math and science) enrolled more tech prep students in advanced math- and science-courses than consortia that did not emphasize these courses (this finding aligns with a later discussion in this

[5]Silverberg et al. (2004) confirmed the variability of tech prep programs nationally indicating the only common programmatic element that could be identified in the NAVE study was student enrollment in one career and technical education course that was articulated with the postsecondary level. Such findings have raised concerns about the integrity and replicability the tech prep model, which precipitated changes in the 2006 federal legislation that allowed states to continue to fund tech prep implementation separate from career and technical education or to integrate it into general career and technical programs.

chapter about how clarity about course requirements can signal to students what academic competencies are needed to enroll in college).

In a secondary analysis of the tech prep dataset compiled by Bragg et al. (2002), Bragg, Loeb, Yoo, and Zamani-Gallaher (2007) found tech prep participants took slightly more advanced math courses over their time in high school than the comparison group of non-participants in four consortia. In these four, tech prep participants took at least as many advanced academic courses as the comparison group of students who graduated with similar academic performance and in some cases more, and these students were more likely to make the transition to the community college needing less remedial course work. In reviewing these results, it is important to observe that the original Bragg et al. (2002) study examined tech prep participation and student outcomes in consortia that made a deliberate commitment to implement the tech prep model as a primary vehicle for high-school reform. These sites viewed tech prep as a means of implementing comprehensive reform intended to influence and shape broader curricular changes at the pre-K-12 level that was articulated with community college curriculum. Speculating, if more high schools and community colleges had integrated rigorous academics and career and technical education fully, as the best of the consortia in this study did, the tech prep model may have had a deeper and wider impact nationally, a similar conclusion reached by Silverberg et al. (2004) who conducted the National Assessment of Vocational Education (NAVE).

Stone and Aliaga (2007) and DeLuca, Plank, and Estacion (2006) studied students enrolled in high school-level integrated academic and career and technical courses who they called dual concentrators. By dual concentrator, these authors meant students who enroll in a rigorous college prep curriculum while also taking a sequence of career and technical education courses. Results of analysis using national longitudinal datasets showed dual concentrators experience a number of positive transition outcomes as long as the career and technical education courses do not dominate the students' high-school program of study. Career and technical education courses that compliment academic course-taking is beneficial; however, a secondary program made up of too many career and technical education courses lessens college transition outcomes. Besides positive academic outcomes, dual concentrators benefit from exploring their career interests, which helps them formulate initial ideas about a college major and desired career field to pursue after college.

Lekes et al. (2007) studied students who participated in career-technical transition programs in two regions of the United States analyzing quantitative and qualitative data to ascertain students' high-school academic achievement, their transition from high school to community college, and their secondary and postsecondary outcomes, including academic achievement, retention, and credential attainment. With respect to academic achievement, career-technical transition students in both sites scored significantly higher than their matched non-career-technical counterparts on the Reading for Information subtest items of ACT WorkKeys, although the group differences were not evident on the ACT Applied Mathematics subtest items or on overall GPA at high-school graduation. A significant difference was noted, however, between the two groups on dual credit course taking, with career-technical transition students taking more than non-career-technical students.

In one site where the curriculum emphasis was on information technology/computer information science (IT/CIS), an interaction effect was found between high-school IT/CIS participation and math course taking and also between IT/CIS and science course taking, favoring the IT/CIS student group in schools rated as medium engaged in offering high school-to-college transition strategies. This finding offers insights into the impact that school-level commitment can have on academic course taking and academic performance for students enrolled in college transition programs that include career and technical education and dual credit. Neither the lesser engaged high schools, where minimal attention was paid to college transition, nor the highly engaged high schools, where whole school reform was emphasized, produced students with the same positive results as the students enrolled in medium engaged high schools. In these schools students were given the opportunity to integrate college prep math and science coursework with career and technical education, which produced positive results on various measures of academic performance for career-technical transition students relative to the non-participant group. These results point out an important relationship between institutional commitment to curriculum alignment and positive transition outcomes for students preparing to transition to the community college.

Looking at system alignment utilizing the dual credit model, Karp et al. (2007) used state-level longitudinal data to assess the impact of high school-to-college transition programs in Florida and New York City. They studied dual credit programs, comparing a sample of high-school students whose enrollment included career and technical education to a group of students who did not take these courses. Noting claims of superior transition outcomes in the literature for dual credit but little empirical evidence, Karp and colleagues' multivariate analysis included using controls for student characteristics in modeling a number of outcomes, including the likelihood of enrolling in college, college GPA, and postsecondary credits. Special attention was paid to students participating in career and technical dual credit courses in both sites.

Looking first at results in Florida, Karp and colleagues found a positive relationship between student enrollment in dual credit courses and outcomes labeled short- and long-term for the whole sample of students enrolled in dual credit as well as the sub-sample of students that took career and technical courses. These findings also show a positive relationship between dual credit and earning a high-school diploma and enrollment in college for the whole sample and career and technical education sub-sample. For students who matriculated to college, dual credit was positively related to the likelihood of enrolling full-time, to persisting for a second semester, and to having a higher GPA after 2 years of college and throughout the postsecondary studies. Surprisingly, the intensity of dual credit enrollment, referring to the number of dual credit courses taken, was not related to postsecondary outcomes in the Florida sample, meaning taking one dual credit course was equally as impactful as taking four, five, or more.

Expanding their analysis beyond Florida to New York City, Karp et al. (2007) studied graduates of 19 vocational high schools who enrolled in CUNY in 2001 and 2002, a sub-sample of which participated in *College Now*, a program focused

on helping high-school students "improve their high school performance and get a head start on college" (CUNY College Now Central Office, undated). Though the results for this analysis were not as comprehensive as for Florida, they were equally as encouraging. They show *College Now* participants were more likely to pursue a bachelor's degree than their peers and their participation in *College Now* was related to first-semester GPA and progress toward a degree. Unlike the Florida students, the *College Now* study showed some positive relationship between program enrollment and the intensity of participation in dual credit, with *College Now* participation and first-semester GPA favorably impacted by taking two or more dual credit courses. Karp and colleagues speculated that the intensity of participation in dual credit was more important for long- than short-term outcomes, including for persistence to the second year of college, GPA after four semesters, and progress toward a degree.

When examining the question of alignment, college placement is one of the most serious issues facing students transitioning from high school to college (see, for example, Adelman, 2006; Callen et al., 2006). Uniformly, studies of high school-to-college point to problems with students matriculating without the requisite skills and knowledge to enter collegiate-level studies. Looking at empirical studies that have examined college readiness an essential dimension of curriculum alignment, Bragg et al. (2007) examined college readiness for tech prep participants compared to non-participants and found differences in the need for remediation was related to differences in academic intensity in that higher-level academic preparation in high-school predicted college readiness in mathematics and English. Albeit a promising finding, further analysis showed college readiness differed by race/ethnic group membership, favoring White students. In two sites offering some of the most intensive academic course requirements, there was a significant difference between White and African-American students on college readiness, controlling for other student characteristics. In both sites, African-American students were more likely to require remediation at the community college level than White students, suggesting participation in academically rigorous curriculum is not distributed equally by race/ethnicity. Based on their increased likelihood of having to enter college taking remedial courses, African-American students were disadvantaged on other transition outcomes such as progress to degree and college completion relative to Whites.

Results of the Lekes et al. (2007) study on students enrolled in dual credit and career-technical courses found a similar pattern on community college transition, wherein African-American and Native American students were disadvantaged on college readiness relative to White students. Findings in both of these studies emerged only when multivariate analysis was used, pointing to the necessity for using advanced statistical analytic tools to understand transition effects for diverse student groups. These findings also point to the importance of understanding the academic requirements that local institutions (high schools and community colleges) expect of students, showing how different requirements can have a detrimental effect on underserved student populations despite the intention to implement college transition programs that serve diverse students.

Also drawing on the dataset compiled by Bragg et al. (2002), Kim (2006) and Kim and Bragg (2008) examined the impact of dual and articulated credit on college readiness and total credit hours in four of the eight original consortia. Using Astin's (1991) input–environment–output model, Kim investigated the relationships among student input variables such as gender, high-school percentile rank, tech prep participation, and high-school course taking; the environmental variables of academic courses, career and technical education courses, and total dual credit and articulated credit courses; and the output variables of college readiness and total credit hours. Results support the positive impact of academic dual credit and articulated credit on college readiness. This analysis also showed that dual credit courses in math and science were related to math readiness, whereas articulated career and technical education courses were related to reading and writing readiness. Controlling for student characteristics, a significant positive relationship was found between high-school students receiving articulated course credit and total college-credit hours in two sites. Results also showed the quantity and rigor of high-school course taking, particularly in math, was influential on college readiness defined as students entering community colleges without needing remediation. High-school students who took more semesters and more advanced math were more likely to be college ready in math and reading when they transitioned to the community college.

Finally, with respect to curriculum alignment, it is important to recognize that the educational pipeline that leads students from high school to the community college need not stop with an associate degree. The transfer function is a uniquely important aspect of the community college mission, and despites it's critics (see, for example, Brint & Karabel, 1989), there is conflicting evidence about the effect that transfer has on the progression of students from community college to the university and the likelihood of community college transfer students to receive a baccalaureate degree. Given the importance of the community college as a route to further higher education for all students but especially minorities that tend to begin their higher education at the community college, the question of the effectiveness of the transfer pathway from the community college to the university is important.

Melguizo and Dowd (2009) make an important contribution to the literature in an analysis that challenged the critics' contention that community college students are diverted from pursuing further higher education and receiving a bachelor's degree. The authors point to flaws in prior single-stage regression models that do not adequately account for self-selection bias and the effects of unobservable student characteristics on educational attainment. Melguizo and Dowd studied the impact of being a transfer student on individuals with low socioeconomic backgrounds, and they also examined the effect of the selectivity of the 4-year institution attended on the graduation rates of all students. They found the negative effect of being a transfer student compared to being a rising junior diminished substantially after controlling for differences in socioeconomic status (SES). The negative effect was no longer statistically significant after self-selection bias variables measuring state-level transfer policy where students enrolled in college were controlled. This study also showed degree completion rates increased with the selectivity of the 4-year institution attended. In addition, the bachelor's degree gap between transfers and

rising juniors diminished with higher levels of institutional selectivity. Finally, the results showed that when the effects of community college attendance were allowed to vary by SES by introducing an interaction term, there were no statistically significant differences between the completion rates of low-SES transfer and low-SES rising junior students. These results offer new knowledge concerning transfer from the community college to the university. Taking into account student income levels and institutional selectivity, these results suggest the penalty for starting at a community college is overstated in the empirical literature. The implications of this study are that transfer is an important component of the pathway to and through the community college because it extends educational attainment to the baccalaureate degree. For diverse students who are more likely to start their collegiate studies at a community college than a 4-year college or university, this finding confirms the importance of community colleges continuing to emphasize transfer opportunities.

Streamlining Signals

Kirst and Venezia (2004) drew attention to the problems with educational institutions sending clear and decipherable signals to students about their preparation for and readiness for college as part of their national study. Bueschel and Venezia (2006) extended this work to community colleges when they noted that the open admission policy "sends confusing signals" (p. 31) to students who enter higher education. They observed that the open-door mission confuses high-school students and contributes to their belief that any level of preparation in high school is acceptable for successful college participation. They also point to high-school teachers and counselors who are unaware of the college placement tests given by community colleges and their implications for student placement in remedial versus college courses. Related to this work, research conducted by Deil-Amen and Rosenbaum (2002) and Rosenbaum et al. (2006) and Deil-Amen and Rosenbaum (2002) sought to understand the difficulties students face when community colleges fail to inform students properly about remediation. They investigated the sources of this problem, contending that the negative stigma of remediation contributes to a lack of full disclosure about the remedial curriculum and students' course placement. Their research suggests a lack of information about how remediation works contribute to students making ill-informed choices and leads to "unintended consequences" (p. 70) in that students are cooled out (Clark, 1960) rather than being "warmed up" to stay in college. They acknowledge balance is needed between informing and discouraging students, but they argue community colleges have not found the right balance and that minority students are penalized as a consequence.

In another way, community colleges have contributed to clouded signals regarding student transition. Despite their commitment to tech prep, community colleges have sent unclear signals to students about tech prep programs (Silverberg et al., 2004). Bragg et al. (2002) observed that nearly all of the tech prep consortia studied sent students confusing messages. Despite having an explicit goal of connecting students to college, high-school administrators and teachers were hesitant to use

the tech prep moniker for fear that it would be associated in the minds of students and parents with being less than college prep. Despite one consortium's location within a state that had adopted "college tech prep" explicating the integration of college prep and tech prep, local administrators avoided associating students with tech prep except by auditing transcripts after high-school graduation when it was too late to explain to students that they had participated in a tech prep program of study. Except through inference, students were unaware that their educational experience in high school was designed to prepare them to transition to the community college. The extent to which student knowledge of the goals and components of a transition program such as tech prep relates to decisions to attend college and subsequent transition outcomes is unknown, but the theory of signaling proposed by Venezia (2001) suggests what students know matters, particularly for diverse learners who have little prior experience in their families with college.

Finally with respect to signaling, it is important to observe that in contrast to tech prep, dual credit seems to send a clear signal to students seeking to transition from high school to community college, particularly if results comparable to Karp et al. (2007), Kim (2006), and Lekes et al. (2007) are replicated in other sites and with other diverse students. Explicit in its awarding of college credit, dual credit courses may be a potentially powerful source of information about a students' academic preparation for college since they are successful or not in performing in courses that award college credit. In addition, dual credit offers a financial incentive for students as well as their parents, which may compliment signals about academic competencies required to be college ready. By note of caution, however, in discussing results associated with dual credit in the national field study of the Community College Research Center (CCRC), Morest and Karp (2006) observed potential for growth of dual credit but they offered mixed results from an equity and access standpoint. They noted career and technical education courses offered the most evidence that underserved students were benefiting from dual credit enrollment, but they considered these results preliminary and they called for more systematic studies of student progression from high school to college.

Transition by Adults

Adults make up a substantial proportion of students enrolled in community colleges. In fact, by most accounts, over half of students enrolled in community colleges are beyond traditional college age and classified as adult learners. Levin (2007) pointed out the ambiguity in definitions associated with adult learners in higher education noting, "adult education is defined in mainstream scholarship and reported as any activity where the participants are adults—usually 24 years of old or older" (p. 7). He argues that this definition falls short of capturing the complexity of personal characteristics and educational experiences that adults bring to the classroom. Offering a number of ways to portray adult learners who are "non-traditional" (p. 10) on various dimensions, Levin observes that categorizing adults by demographics is less than satisfactory because these profiles provide an

incomplete and erroneous picture of the uniquely important dimensions of adults' fuller lives. Classifications based on occupational status, employment status, enrollment status, income status, and risk factors where characterization of students using the deficit model orientation (Green, 2006) are equally dissatisfying because of the incomplete picture they paint of complex and rich diversity of adults who enroll in college.

Understanding who adult learners are is important to community colleges because these institutions also enroll many more adults than the 4-year higher education sector, particularly adults who are considered low skilled due to their prior limited educational experiences, their modest academic participation and accomplishments, and their previous or current employment circumstances at the bottom of the economic ladder in society (see, for example, Grubb, 2001). In fact, the diversity of enrollments in community colleges is best portrayed among adult learners who enroll in large numbers in both credit and non-credit coursework, although data on students enrolled in non-credit course work is very hard to come by. Understanding the high incidence of adults stopping in and out of college due in large part to varying employment circumstances, ranging from unemployed to underemployed to part- or full-time employed, helps to account for more of the struggles many adults have in trying to participate in higher education for sufficient time to accumulate credits and acquire credentials of any kind (Berker & Horn, 2003).

An ever-growing proportion of these adult students are also immigrants and English language learners (ELLs) (Rodriguez & Cruz, 2009), and many of these students are also low income. Recognizing these trends among adults and youth, scholars such as Bensimon (2006), Dowd, and colleagues at the Center for Urban Education argue that community colleges should engage in an equity agenda such that underserved learners' have the same opportunities to participate and succeed in college as their White, upper income counterparts. Related to this work but emanating from another group of scholars [see, for example, Agrawal et al. (2007); Jenkins (2006)], career pathways are proposed to serve as a primary means of helping low-skilled learners, particularly adults, to get access to education and training programs and support services that give them a bridge into college credit-bearing course work offered by the community college. Once again, this systematic linking of disparate levels and sectors of the educational systems relies on the community college to lead and be the centerpiece for building new partnerships and programs.

Though considerable attention has been paid to the creation of transition programs including career pathway programs for youth, much less attention has been paid to adults. And yet, for many adults, particularly adults who face life challenges that limit their opportunities to enroll in college, pathway programs are a potentially important means of regaining a foothold on fundamental life circumstances, including family-living-wage employment. For adults caught in the nation's current economic recession, the community college can be a stronghold for education and training, as is often the case when the nation enters difficult economic times. In this respect, career pathways that integrate adult literacy, adult basic education (ABE), GED instruction, English-language learner (ELL) programs,

and pre-collegiate developmental (or remedial)[6] education with postsecondary certificate and associate degree programs may yield beneficial transition outcomes (Jenkins & Spence, 2006). And according to new research on the applied baccalaureate degree (Townsend, Bragg, & Ruud, 2009), these benefits may extend beyond the community college to the bachelor's level.

Because of the potential importance of the community college to adult learners historically underserved by higher education, this section gives special attention the ways new and emerging policies and programs, including career pathways, support college access, and completion with credentials (i.e., certificates and degrees) awarded by community colleges. These programs are important to the students as well as to the economic well-being of their communities and the nation. However, there are serious obstacles. To be successful, these students need to overcome their high dropout rate; about two-thirds of these students do not enroll long enough to earn a credential (US Census Bureau, 2007).

College Access

A relatively recent analysis of national data from the Adult Education of the National Household Education Surveys Program (AE-NHES) profiled adult participation in formal learning activities taking into account the different levels of education in which adults had engaged in formal learning during the previous 12-month period (Kienzl, 2008). The study examined six different types of formal learning: "(1) English as a Second Language (ESL) classes; (2) adult basic education (ABE) classes, (3) GED preparation classes, (4) college, university, and vocational/technical degree or certification programs; (5) apprenticeship programs; and (6) courses self-defined by the participant as taken mainly for work or for personal interest" (p. 1). Over half of the adults surveyed reported participating in some type of formal learning, with the most common forms being work- or personal-interest related and college/vocational technical education. The education level of the respondents was strongly related to participation in work-related courses, with participation in these types of courses by adults having a bachelor's degree eight times higher than adults with no high-school credential. Not surprisingly, participation in the GED, ESL, or ABE was most prominent among the group of adults who had not graduated from high school, which makes sense. Adults having more advanced education are not qualified nor would they want to participate in high school-level programs.

Kim, Collins Hagedorn, Williamson, and Chapman (2004) also examined national data associated with the AE-NHES survey and reported growth in participation in adult education courses that they attributed to changing demographics

[6]Recognizing the terms developmental education and remedial education have different means, this author uses both terms interchangeably in this chapter to accurately reflect the use of the terms used in the original literature reviewed for this chapter.

(e.g., the aging of the population, re-entry of women into the workforce, and an influx of immigrants), and global economic and technological advances that create changes in the workforce that affect large numbers of incumbent workers. Examining characteristics of the adult learner population, they observed the following characteristics of ESL and ABE participants: Women outnumbered men in these programs, and younger adults (the largest group was 16–30 years old) were more often enrolled in them than older adults. High-school education and household income were positively related to participation in ESL or ABE, and being Hispanic or African-American was also related to participation in these programs.

Though limited information exists about students enrolled in programs offered by community colleges that emphasize career pathways for adults, partly because of the newness of these programs, the limited amount of empirical literature on the characteristics of adult learners parallels closely the results of the AE-NHES studies. For example, Bragg et al. (2007) conducted case study research to document the evolution of career pathway programs for low-skilled adult learners, referred to as adult career pathways, portraying the characteristics of adults targeted by three occupational programs that began at the ABE or GED levels. The three programs are Carreras en Salud–Instituto del Progreso Latino (IPL) located in Chicago, Illinois; General Service Technician (GST) program at Shoreline Community College located at Shoreline, Washington; and finally, the Career Pathways Initiative (CPI) located at Ouachita Technical College in Ouachita, Arkansas. Depending on their clientele and their focus, the programs utilize different funding streams, including state and local appropriations to community colleges as well as adult education, WIA, Temporary Assistance for Needy Families (TANF), and federal career-technical education.

The Carreras en Salud-Instituto del Progreso Latino (IPL) enrolls primarily Latino students living in the city of Chicago, many of whom are immigrants with limited English skills. The GST–Shoreline Community College program also serves a high proportion of immigrants who benefit from integration of language instruction into the integrated adult education and career-technical education curriculum. This program began as a pilot of the state of Washington's Integrated Basic Education and Skills Training (I-BEST) program that emphasizes the integration of ESL and ABE with career and technical education. Through a co-teaching arrangement, the I-BEST approach emphasizes literacy education along with workforce skills. As for the third site studied, the career pathway program at Ouachita Technical College was stimulated by Arkansas' statewide Career Pathways Initiative (CPI), and it targeted students who were unemployed or employed in low-wage jobs, with a sizeable proportion being TANF recipients. Most adult learners enrolled in the three programs lacked a high-school diploma and functioned at very low literacy levels. And, whereas these cases cannot possibly represent all career pathway programs in the United States, they provide an on-the-ground snapshot of the diversity of students that similar career pathway programs appear to be attempting to serve.

System and Curriculum Alignment

The US Department of Education and a number of prominent foundations have funded demonstration projects and modest, primarily descriptive, evaluations to examine the viability of career pathway programs for adult learners. One of the earliest grants awarded by the US Department of Education, Office of Vocational and Adult Education, was for the adult basic education (ABE) to Community College Transitions Project. The project concluded with a symposium conducted in 2006 wherein speakers and participants examined results of a literature review and field visits involving 16 ABE programs throughout the nation. Among the findings were a number of illustrative practices and strategies that appear to enhance student transition from ABE to postsecondary education, including assisting adult learners to access postsecondary financial and educational resources, providing adequate academic preparation through curriculum that aligns across systems and with students' goals, providing support services to help students overcome barriers, and supporting collaboration between ABE and postsecondary institutions to help students understand college policies and procedures (US Department of Education, Office of Vocational and Adult Education, 2007).

Results of a second study funded by the Office of Vocational and Adult Education on adult career pathways (Bragg et al., 2007) found common curriculum features in three programs located in different parts of the country and enrolling different low-skilled adult groups. The three programs are Carreras en Salud–Instituto del Progreso Latino (IPL) located in Chicago, Illinois; General Service Technician (GST) program at Shoreline Community College located at Shoreline, Washington; and finally, the Career Pathways Initiative (CPI) located at Ouachita Technical College in Ouachita, Arkansas. Federal and state funds for adult education, English as a second language (ESL), career-technical education, and WIA supplement community college funding to enable these programs to operate.

Starting with initial entry in ABE, GED, or ESL, all three programs offered integrated career and technical content with ABE, ESL, and remedial education. Stackable, modularized curriculum with multiple entry and exit points was ubiquitous as well. Certificates and degrees were available at various exit points, depending on how the curriculum related to the career ladder. All three programs also supplemented the curriculum with technology enhancement to individualize instruction and accelerate students through pre-college courses, especially mathematics.

Remedial education was offered as an option by all three pathway programs (Bragg et al., 2007), but it was not the primary focus of any. All the programs professed the goal of helping students by-pass remedial education by supplementing the ABE and GED curriculum with college-level content sufficiently rigorous to prepare them for college-level instruction. Despite this well-intentioned objective, many students required additional remedial coursework before enrolling in college-credit courses. None of the programs attempted to modify the remedial curriculum, partly because it was owned by the community college while the ABE program was less central to the core. Even so, ABE and community college administrators associated all three programs expressed concern about students who spent considerable

time in meeting remediation requirements. They worried about the time and money that students need to spend to complete the remedial courses, and the detrimental impact this might have on students' debt load and their motivation to stay in school.

Although the three sites served somewhat different student populations, the programs offered similar strategies to address students' occupational preparation needs including job readiness training. Either a stand-alone course or an integrated approach was used to help students understand and value job readiness skills thought helpful to their success in the classroom and on the job. Drawing on their local partnerships, each program responded favorably to employers' calls for employability skills training, and in some cases elicited their help in determining specific content offered in the curriculum. Team teaching, small cohorts, learning communities, and project-based instruction and authentic assessment were not evident in all classrooms, but fairly widely used. An array of support services was offered by all the programs to provide students with financial aid, academic and career guidance, counseling services, and job placement, case management, transportation and childcare assistance, mental health services, and in at least one site, support for students with disabilities. Administrators and students in all three programs believed a comprehensive portfolio of support services was essential to student progression through the programs.

Attesting to the ability of the programs to align systems and benefit students, Bragg et al. (2007) constructed a preliminary picture of student outcomes based on program and institutional data. In the case of Carreras-IPL, approximately 350 students had participated since the program's inception 3 years earlier, with over 70% of the students having reached a milestone involving earning a certification or license. These credentials reflect the fact that students entered the program anywhere along the educational continuum, from entering at the GED level, to entering at the remedial level, to entering at the postsecondary career and technical education level. By 2007, 77 students had reached the License Practice Nursing (LPN) stage of the pathway earning wages equivalent to $25–$27/h.

By comparison, 24 students had enrolled in GST-Shoreline's I-BEST program with 75% of these students finishing the initial training. Of these completers, 88% obtained employment in the industry, and a follow-up study showed 68% were retained. Hourly wages averaged $12–$17/h. (Additional research results related to I-BEST programs appear next in this discussion to help put these results into context of the larger landscape of the state of Washington.) Finally, a relatively young program, the CPI-Ouachita enrolled over 400 students who had earned a WAGE certificate, and 142 (36%) of these had enrolled in college-credit courses. Of these, 40 enrollees had graduated from the Certified Nursing Assistant (CNA) program, and 7 had enrolled in Associate Degree in Nursing (ADN). While these results are indeed preliminary and without adequate controls or comparisons, they document that a reasonable proportion of students are transitioning through the programs and reaching interim milestones that offer credentials recognized in the labor force.

The General Service Technician (GST) program at Shoreline Community College represents one of a growing number of I-BEST programs in the state

of Washington. Since beginning in 2004–2005, the number of I-BEST programs has expanded to 34, enrolling with 900 students enrolled by the 2006–2007 year (Jenkins, Zeidenberg, & Kienzl, 2009). Using a multivariate analysis to compare the outcomes of I-BEST participants to a sample of basic skills students who enrolled in at least one non-I-BEST course, the researchers found the I-BEST students outperformed the comparison group on the following outcomes: continuing from the I-BEST program into credit-bearing coursework, earning credits toward a college credential, earning occupational certificates, and making point gains on basic skills tests. In additional multivariate statistics using propensity score matching to strengthen the comparison group analysis, the researchers predicted the probability of I-BEST students earning at least one college credit was 90%, compared to the probability of the comparison group at 67%. The I-BEST students earned substantially more college credit than the comparison group over the 2-year period that student outcomes were tracked, and their probability of continuing to the second year of college and earning an occupational credential was higher. Jenkins and colleagues conclude with a cautionary note that, despite their attempts to employ a rigorous statistical design, the results are not causal and the influence of selection bias is unknown, possibly affecting results for either group in ways unknown to the researchers.

Beyond these government funded studies (federal or state), organizations such as the Ford Foundation, the Joyce Foundation, the Charles Stewart Mott Foundation, and others have funded initiatives focused on adult learners, including the Bridges to Opportunity initiative funded by Ford involving six states (Colorado, Kentucky, Louisiana, New Mexico, Ohio, and Washington); the Breaking Through initiative with 29 programs and numerous states throughout the nation, initially funded by Charles Stewart Mott; and the Shifting Gears initiative located in six Midwest states and funded by Joyce. Of these three initiatives, the Breaking Through and the Shifting Gears initiatives have produced preliminary evaluation results that pertain to system alignment and program changes that link adult education and/or remedial education to postsecondary occupational programs to enhance adult learners' access to college and careers.

The Breaking Through (BT) initiative was seeded by field research conducted by Liebowitz and Taylor (2004) that revealed several ways community colleges were engaged in delivering programs to assist low-skilled adults to progress through adult education and/or remedial education to postsecondary occupational education. Four strategies described as "high leverage" (p. 1) were theorized to assist low-skilled adults to transition to the community college to complete a significant portion of their postsecondary certificate and degree requirements and to enter a family-sustaining wage career. The four strategies are as follows: (a) integrated institutional structures and systems that link disconnected programs such as ABE, ESL, non-credit workforce training, remedial education, and postsecondary occupational education; (b) accelerated learning that speeds up the time of traditional remedial courses and attempts to address the lack of diagnostic assessment of students' specific needs and abilities; (c) labor market payoffs that reflect the economic realities of working adults and their families including offering work-related

content, structures that accommodate working adults, and modular credentials; and (d) comprehensive supports that assist adults in juggling work, parenting, and education by offering student support services.

Evaluation of the six most advanced community colleges, referred to as leadership colleges, revealed a deepening level of experience with the four high leverage strategies (Bragg & Barnett, 2007, 2009). Specifically, the Central New Mexico's BT initiative in Albuquerque offered accelerated remedial curriculum with multiple supports to facilitate adults' pursuit of certificates and degrees in the construction industry. Owensboro Community Technical College in Owensboro, Kentucky provided employer-sponsored training programs in manufacturing, business, and health care, using accelerated and modularized basic skills and technical curriculum. The Community College of Denver implemented the FastStart program, which emphasized accelerated remedial course sequences integrated with career development, using a learning community approach. Similarly, Southeast Arkansas College's program offered accelerated, contextualized remedial curriculum associated specifically with the allied health program. Cuyahoga Community College offered an initial bridge into the State Tested Nursing Assistant (STNA) program that focused on improving academics while introducing core concepts in health care for students with very low literacy levels (i.e., below grade 8). Last, Portland Community College implemented the Moving On Toward Tomorrow (MOTT) program that offered intensive and intrusive advising focused on helping students' progress from remedial education to postsecondary occupational certificate and degree programs.

Despite strong signs of progress with implementation (i.e., additional cohorts, increasing enrollments, and added program features), barriers were identified in the first and second years of an external evaluation conducted by Bragg and Barnett (2007, 2009) including challenges related to system alignment issues between adult education, remedial education, and postsecondary occupational programs. These program challenges related to obstacles students face progressing along the pathways continuum and difficulties sustaining their engagement at the adult education level and advancing them from ABE or GED directly into college-level occupational courses without requiring remediation. Even with additional foundation funds and strong institutional commitment from top leadership, financial resources are an ever-present concern in sustaining these programs.

The Shifting Gears initiative funded by the Joyce Foundation (Price & Roberts, 2009) works with six states in the Midwest (Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin). The initiative focuses on system change, using the following four approaches as core principles to implement programs for low-skilled adults: (a) using data to make policy and program improvements; (b) pursuing policy change to leverage system improvements; (c) engaging practitioners to develop ideas and buy-in; and (d) communicating with stakeholders to cultivate their support. Price and Roberts, external evaluators on the Shifting Gears initiative, reported results after the initial 3-year commitment of the Joyce Foundation, and their results are insightful on the question of system alignment. Their findings point to the importance of developing and reinforcing a logical approach that is articulated consistently and frequently to a wide range of stakeholders, including government

and elected officials; using multiple strategies to generate policy change; supporting collaboration and consensus among key partners; and using data to inform decision-making.

An evaluation of phase one of Illinois' Shifting Gears initiative, running from 2007 to 2009, confirmed two models that were employed by community colleges (Bragg, Harmon, Kirby, & Kim, 2009). The first is an adult bridge model that extends from adult education to occupational programs, and the second is the developmental bridge model that extends from remedial education to occupational education. In addition to these, other models emerged within the community colleges funded as part of the project, specifically a model for English-language learners, an incumbent worker model, and a hybrid model that blended adult education and remedial education. Changes observed in policy and practice included enhanced support services; enhanced alignment of adult education, developmental education and career and technical education; improved course approval procedures to facilitate fast-paced program development and delivery; and enhanced communication and coordination between departments internal to community colleges and between local colleges and the state.

Streamlining Signals

Many of the challenges with signaling mentioned earlier in this chapter pertaining to youth also fit adult populations that seek to participate in community colleges, most notably the challenges observed by Rosenbaum et al. (2006) regarding informing (or failing to inform) students about remedial courses and how they relate to college-level instruction. Bragg et al. (2007) noted attempts by the adult career pathways to by-pass remediation so that their students could progress quickly to college-level instruction, but when the adult education courses failed to prepare students for college credit courses, remediation was imposed, usually in accordance with community college policy. The outcome is that, for many students, the adult education courses and remedial courses blur. Students do not understand the purpose of the different courses, how credit and tuition charges are associated with the courses (or not), and how the courses are related to college-level degree programs.

Moreover, Reder (1999) and others have criticized the inadequacy of ABE and GED preparation coursework for failing to prepare adult learners to enter the postsecondary level ready to learn. He contends that an outdated notion of what adults need to know and be able to do to enter employment, still assuming students can complete ABE, pass the GED, and get a good job, falls short of what students need to prepare for postsecondary education and family-wage employment. To this point, Prince and Jenkins (2005) observe that a sizeable proportion of adults who make up the community college student population will not be retained in college, nor will they receive any type of certificate or degree. These findings point to a serious dilemma for adults who attend college but fail to obtain a marketable credential that signals to the labor market that they have skills and knowledge consistent with being a productive employee.

Referring to the "tipping point" study, Prince and Jenkins (2005) studied adult learners in Washington state by drawing on student record information from the Washington State Community College and Technical Education System to track two cohorts of adults 25 and older who had, at most, a high-school education and who entered the 2-year college system for the first time between 1996 and 1997 or 1997 and 1998. Results revealed the importance of adult learners attending at least 1 year of college and earning a credential in terms of their experiencing a substantive boost in their labor market outcomes, specifically both employment (being employed) and earnings. Taking basic skills courses concurrently with CTE produced significant outcomes in average rates of employment and quarterly earnings. These results offer an important understanding of the potential of college enrollment and certification to signal to employers that students offer labor market payoffs, and they replicate earlier results of Bailey, Kienzl, and Marcotte, 2004; and others.

Conclusions and Implications of Policy and Research

Community colleges operate at the crossroads that connect education and training systems associated with pre-K-12 education, higher education, adult education, workforce training, and employment, and they offer a variety of pathways for youth and adults to transition to college and careers. Since nearly their inception, community colleges have played a primary role in delivering academic education and career and technical education, more recently adding a range of programs and services highly connected to the workforce and economy (Bragg & Townsend, 2007). This chapter used Venezia's (2001) P-16 accountability model, and its foci on three dimensions: (a) increasing access and closing the achievement gaps between different student groups; (b) connecting and aligning curriculum, standards, and assessments; and (c) streamlining college transition policy and clarifying signals sent to students regarding their transition to college and employment. The remainder of the chapter considers the lessons garnered from the literature with respect to Venezia's claims and also in relation to President Obama's AGI initiative for future policy and research. Regardless of the timing of passage of the AGI, the president's proposal to improve college access and completion, using community colleges as a primary conduit to achieve this goal, is an important vision for the nation.

College Access

Results of the extensive collection of studies reviewed in this chapter address questions of access to college and preparation for students underserved by the higher education system. With respect to access, the results demonstrate the potential that community college-oriented transition programs that begin at the pre-K-12 level and extend to community colleges have to enroll underserved students. Youth and adults recognized as students of color, low income, low literacy, low skilled, and at risk of dropping out or failure need not be left out of college opportunities but

rather, through partnerships between pre-K-12 and community colleges, provide access and opportunity to enroll and progress to completion. Transition programs that extend structural inequalities, that fail to demonstrate equitable distribution of resources and opportunities for youth and adults, including learners underserved by the existing P-20 system should be modified to ensure equal access and opportunity or they should be discontinued. Research associated with this review point to ways some transition programs targeting college and careers have been shown to perpetuate inequitable outcomes, and others have not. One important key to the gaps in outcomes for different student groups is linked to pre-K-12 academic preparation, plus the extent to which the information about the college preparatory coursework that students need to take is communicated widely and clearly.

While gender stereotyping and discrimination of any kind is deplorable, transition programs that emphasize curriculum that engages male students whose numbers are declining at the postsecondary level deserve further examination including more empirical study. The fact that male students enrolled in postsecondary career and technical programs associated with tech prep and STW deserves consideration, assuming these programs do not disadvantage other groups who also require opportunities to engage in postsecondary education. To this end, efforts should be made to strengthen career-technical transition programs that reach out to males and that emphasize a pathway to community colleges and ultimately family-wage sustaining employment. Some of the areas where male students show continued interest in enrolling are fields traditionally predominated by males in science, technology, engineering and mathematics (STEM). However, as STEM fields diversify, opportunities to engage males in occupations traditionally held by women may be increasingly attractive. Carnevale et al. (2010) predicts the nation's economic recovery over the next few years will not generate an employment profile that resembles the US workforce of today. As the labor market shifts and fields such as healthcare and education grow, it will be important to continue to diversify transition programs to ensure they reflect the population and help students understand the complex connections between education, the workforce, and the economy. It is not enough to prepare students to fill jobs; what is needed is to help students understand the larger landscape by which the local, state, and national workforce and economy function.

From a macro-policy perspective, youth and adult transition programs appear to reach the target population for which they are intended; however, there is potential for these programs to hedge on providing access to the most at-risk students for the purpose of showing more successful program outcomes. Pushing for accountability through demonstrated results, including educational outcomes, is a noble cause; however, it is important for accountability systems to be logical, feasible, and transparent. Though there are no easy solutions, it is important for educators and policy makers to be thoughtful in balancing requirements for educational outcomes with student access, to maximize the most beneficial outcomes for all students. If not, the agenda to transition more students to college and careers, an agenda that is consistent with AGI, will be squelched by the requirement to demonstrate success by enrolling students who are most likely to succeed.

To engage and sustain the enrollment of students and help them attain postsecondary credentials, transition programs should be structured in ways that accommodate the personal lives and work schedules of the prospective students and assist them with the support services they need to balance work, home, and school. Focusing on rigorous academics that are aligned across systems (i.e., high school to community college, adult education to community college) is important, but the research paints a compelling picture regarding the importance of the other side of the equation. For youth and adults who have multiple challenges to staying in school, support services are critical to retention and completion.

Enhanced data collection mechanisms are needed to document transition program participants as they matriculate from the pre-K-12 to the community college to employment, and sometimes back and forth between the systems. Many of the studies related to youth and adult transition to and through the community college are descriptive, sometimes anecdotal, and lack the rigor necessary to understand program impact and student outcomes. No one level of the system—federal, state, or local—has sufficient quality data to understand how the educational experiences of students engaged in transition programs prepare them to transition from the pre-K-12 level to college, let alone alone college to careers. With the advent of state longitudinal data systems, opportunities to link disparate data systems are emerging in states that have heretofore had modest or virtually no capacity to support longitudinal research.

Research addressing questions of access to transition programs designed to prepare students for college and careers is needed, including examining the decisions underserved students make about accessing these programs. What factors influence students' plans for enrolling in transition programs that utilize the community college as the nexus for students' transition experience to and though the community college to employment? To what extent do students make deliberate plans to enroll in college- and career-oriented transition programs, and to what extent do educational plans made in high school influence students' eventual decisions to enroll and persist? How are these results distributed among diverse student populations, particularly minority and low-income students most at risk of dropping out? Researchers who have a keen understanding of the P-20 system, who have expertise in longitudinal data analysis, and who have the patience to pursue difficult questions are needed to address these important concerns.

System and Curriculum Alignment

Examining connections between levels of the educational system necessitates looking at the alignment of academic offerings (i.e., the curriculum) as well as support services availed to students. With respect to the alignment of curriculum, several of the transition models discussed in this chapter for youth and adults show promise when academic and career-technical preparation are integrated. The empirical research points to positive postsecondary outcomes when youth combine rigorous college prep studies with a modest number of career and technical education courses

offered at the secondary level, and when the curriculum allows students to achieve a dual concentration in college prep and career prep. Though relatively few students take college prep as well as career and technical coursework during high school, students who are able to balance a college prep course load with career and technical courses seem to experience outcomes superior to comparison groups of students with similar characteristics. These results seem to hold for White students of all income levels, including low income, but whether they extend to African-American students is unclear, and whether other underserved student populations benefit from these programs remains yet to be determined.

Studies of youth transition show promising results for student participation in dual credit suggesting curriculum alignment and student outcomes are enhanced if dual credit is a feature of curriculum extending from high school to the community college. Results from studies by Karp et al. (2007), Kim (2006), and Lekes et al. (2007) suggest dual credit contributes to participants' accelerated progress and success in college enrollment and degree attainment. These works also suggests that dual credit carries an incentive (in college credit) that translates into enhanced college persistence and completion. Whereas scholars of career and technical education such as Lewis and Overman (2008) have suggested the positive effects of dual credit reported in the literature are mostly an artifact of self-selection bias, Karp and Hughes (2008b) have theorized that the models used to analyze the effects of dual credit are too simplistic, underestimating complex relationships between program components, students' academic engagement and performance, their knowledge of the social aspects of college, and their motivation to participate in college. It is possible both of these assertions are true, and only through more rigorous analysis and use of more sophisticated theoretical modeling will a fuller understanding of the impact of dual credit on student outcomes emerge.

Several studies show implications for the new federal career and technical education legislation that calls for an expansion of career-related "programs of study." Prior research shows transition programs that provide high-school students with a focus on career and technical education as well as rigorous academic preparation including accelerated college learning opportunities and dual credit, offer potential for transitioning more youth to the community college. Promising programs and practices may also be emerging with respect to adult career pathways. These programs and practices need to be disseminated, replicated, and evaluated much more rigorously. Common curricular and instructional features such as an initial entry point in adult education, adult literacy programs, or ESL instruction need to be documented more fully, and the students who enroll in these programs need to be engaged in research that portrays accurately and respectfully the complexity as well as the richness of their lives. Much more needs to be known about how curriculum and instruction is being modified to meet the needs of youth and adults. What does high-quality accelerated, contextualized, modularized, and stackable curriculum that integrates occupational education with ESL, ABE, and remedial education look like? What entry and exit points make sense to ensure that students obtain viable certificates and degrees? How does technology-enhanced curriculum including computer-aided design and online learning contribute to the learning of

youth and adults who accelerate through foundational aspects of the curriculum including some areas of remedial education (math in particular)?

Streamlining Signals

Results on studies of youth and adult transition confirm that policies and programs send confusing signals to students who seek opportunities to access the community college as a means of acquiring postsecondary education. With respect to streamlining policy and clarifying signals, studies show institutional and program policies and procedures about college placement, including placement testing, are unclear, sometimes because of the lack of clarity about college placement tests and cut-off scores, and sometimes because of the flexibility with which community colleges integrate remediation into the transition program or deliberately keep it out. Looking at the various transition and pathway programs examined in this chapter, it seems critical to help students understand what remedial course work is required, why they are expected to take it, and how performance in remedial courses will help them progress toward their college and career goals. Of course, these flow from the assumption that remedial education is necessary and beneficial, which, to some extent, still needs to be established. Much more research is needed on the remedial policies and practices that are utilized by community colleges, specifically how participation in remedial coursework facilitates or impedes the retention and completion of underserved youth and adults.

The successful acquisition of college credits through dual credit and postsecondary credentials (i.e., certificates and degrees) are signals to the P-20 education system as well as employers that students possess competencies needed to be successful learners in college and productive workers in the labor force. Educators and policy makers need to develop clearer and more compelling forms of signaling to inform multiple constituents of how the system is working, encouraging transparency of signaling that communicates across levels of the educational system and between education and employers. If underserved students are to gain more opportunities to participate in higher education and assume employment in family-wage supporting careers, the system needs to demonstrate that it is seriously committed to their success. Research that addresses these most critical challenges may be the most needed, but also the most difficult to conduct.

Finally, Bailey and Morest (2006) and others have suggested that the community college's equity agenda rests on a uniquely important triad relationship between academic preparation, access for traditionally underserved students, and success in the form of college completion and subsequent employment, echoing the accountability framework proposed by Venezia (2001). To serve the highly diverse student populations who desire a community college education, neglecting any one of these facets of the equity agenda (i.e., academic preparation, access or success) would seem to jeopardize the educational and economic benefits that students seek to attain and the P-20 system strives to provide. Indeed, President Obama's AGI proposal, along with a growing number of scholars, practitioners, and policy makers contend that

community colleges should play a central role in enhancing educational and economic opportunities for all learners. Finding ways to enhance access and success for students who have had limited opportunity to engage in either pre-K-12 or higher education is required if more learners are going to transition to and through the community college to secure family-wage sustaining careers. The historic commitment of the community college places this institution at the forefront of the agenda to expand access to underserved students, but whether it can deliver on progressive college retention and completion goals is unknown. The nation's college access and completion agenda is at the forefront of US educational and economic policies, with a spotlight shining brightly on community colleges as never before. The primary question that remains to be answered is whether they will be able to deliver.

References

Adelman, C. (1999). Answers in the tool box: Academic intensity. *Attendance patterns, and bachelor's degree attainment*. Washington, DC: US Department of Education.

Adelman, C. (2006). *The toolbox revisited: Paths to degree completion from high school through college*. Washington, DC: US Department of Education, Office of Vocational and Adult Education.

Agrawal, A., Alssid, J., Bird, K., Goldberg, M., Hess, S., Jacobs, J., et al. (2007). *Career pathways as a systemic framework: Rethinking education for student success in college and careers*. Phoenix, AZ: League for Innovation in the Community College.

American Institutes for Research and SRI International. (2009). *Six years and counting: The ECHSI matures*. Washington, DC: authors.

Astin, A. W. (1991). *Assessment for excellence: The philosophy and practice of assessment and evaluation in higher education*. Phoenix, AZ: Oryx Press.

Attewell, P., Lavin, D., Domina, T., & Levey, T. (2006). New evidence on college remediation. *The Journal of Higher Education*, *77* (5), 886–924. Retrieved from: http://www.league.org/league/projects/ccti/files/Systemic_Framework.pdf

Bailey, T., Kienzl, G., & Marcotte, D. E. (2004). The return to a sub-baccalaureate education: The effects of schooling, credentials, and program of study on economic outcomes. Unpublished paper for the National Assessment of Vocational Education (NAVE) study, Institute for Education and the Economy and Community College Research Center, Teachers College, Columbia University. Retrieved from: http://www2.ed.gov/rschstat/eval/sectech/nave/subbac-ed.pdf

Bailey, T., & Morest, V. (Eds.). (2006). *Defending the community college equity agenda*. Baltimore: Johns Hopkins University Press.

Bensimon, E. M. (2006). Learning equity-mindedness: Equality in educational outcomes. *The Academic Workplace*, *1*(17), 2–21.

Berker, A., & Horn, L. (2003). *Work First, Study Second: Adult Undergraduates Who Combine Employment and Postsecondary Enrollment, NCES 2003–167*. Washington, DC: National Center for Education Statistics.

Bowen, W. G., Chingos, M. W., & McPherson, M. S. (2009). *Crossing the finish line: Completing college at America's public universities*. Princeton, NJ: Princeton University Press.

Bragg, D., & Barnett, E. (Eds.). (2006). *Academic pathways to and from the community college. New Directions for Community Colleges, No. 135*. San Francisco: Jossey-Bass.

Bragg, D. D., & Barnett, E. A. (2007). Promising breakthroughs: Year one evaluation results of "Breaking Through". Champaign, IL: Office of Community College Research and Leadership, University of Illinois.

Bragg, D., & Barnett, E. (2009, April). *Lessons learned from Breaking Through*. Champaign, IL: Office of Community College Research and Leadership, University of Illinois at Urbana-Champaign.

Bragg, D., Bremer, C., Castellano, M., Kirby, C., Mavis, A., Schaad, D., et al. (2007). *A cross-case analysis of career pathway programs that link low-skilled adults to family-sustaining careers*. St. Paul, MN: National Research Center for Career and Technical Education University of Minnesota.

Bragg, D., Harmon, T., Kirby, C., & Kim, S. (2009). *Initial results of Illinois' shifting gears pilot demonstration evaluation*. Champaign, IL: Office of Community College Research and Leadership, University of Illinois at Urbana-Champaign. Retrieved from http://occrl.illinois.edu/publications/projects/shifting_gears

Bragg, D., Loeb, J., Gong, Y., Deng, P., Hill, J., & Yoo, J. (2002). *Transition from high school to college and work for tech prep participants in eight local consortia*. St. Paul, MN: National Research Center for Career and Technical Education University of Minnesota.

Bragg, D., Loeb, J., Yoo, J., & Zamini-Gallaher, E. (2007). Ready or not here they come! College readiness among tech prep participants and non-participants in four disparate locations. Unpublished paper. Office of Community College Research and Leadership, University of Illinois at Urbana-Champaign.

Bragg, D., & Townsend, B. (2007). ASHE reader on community colleges in the 21stcentury: Introduction. In B. Townsend & D. Bragg (Eds.), *ASHE reader on community colleges* (pp. xix–xxviii). Boston: Pearson.

Brint, S., & Karabel, J. (1989). *The diverted dream: Community colleges and the promise of educational opportunity in America, 1900–1985*. New York: Oxford University Press.

Buchman, C. (2009). Gender inequalities in the transition to college. *Teachers College Record*, *111*(10), pp. 2320–2346.

Bueschel, A. C., & Venezia, A. (2006). Local pathways and statewide polices aligning standards and curricula. In D. Bragg & E. Barnett (Eds.), *Academic pathways to and from the community college, New Directions for Community Colleges*. No. 135. San Francisco: Jossey-Bass.

Cabrera, A. F., Burkum, K. R., & La Nasa, S. M. (2005). Pathways to a four-year degree: Determinants of transfer and degree completion. In A. Seidman (Ed.), *College student retention: Formula for student success* (pp. 155–214). Westport, CT: Praeger.

Callan, P., Finney, J., Kirst, M., Usdan, M., & Venezia, A. (2006). *Claiming common ground: State policymaking for improving college readiness and success*. San Jose, CA: The National Center for Public Policy and Higher Education. Retrieved from http://siher.stanford.edu/documents/pdfs/Claim%20Comm%20Grnd%20Rpt%20FINAL%2003%2029%2006.pdf

Carey, K. (2004). *A matter of degrees: Improving graduation rates in four-year colleges and universities*. Washington, DC: The Education Trust.

Carnevale, A. P., & Desrochers, D. M. (2001). *Help wanted . . . credentials required: Community college in the knowledge economy*. Princeton, NJ: Educational Testing Service. Retrieved from http://www.ccsso.org/content/PDFs/Help%20Wanted%20-%20Credentials%20Required%20-%20Commy%20Colleges.pdf

Carnevale, A. P., Smith, N., & Strohl, J. (2010). *Help wanted: Projections of jobs and education requirements through 2018*. Washington, DC: Center for Education and the Workforce: Georgetown University.

Choy, S. (2000). *Low-income students: Who they are and how they pay for their education (NCES 2000-169)*. Washington, DC: US Department of Education, National Center for Educational Statistics.

Choy, S. (2002). *Nontraditional Undergraduates (NCES 2002–012)*. Washington, DC: US Department of Education, National Center for Education Statistics.

Clark, B. R. (1960). The 'cooling-out' function in higher education. *The American Journal of Sociology, 65*(6), 569–576.

Common Core State Standards Initiative. (undated). About the standards. http://www.corestandards.org/about-the-standards

Conley, D. T. (2010). *College and career ready: Helping all students succeed beyond high school*. San Francisco: Jossey-Bass.

CUNY College Now Central Office. (Undated). *Overview. New York City: City University of New York College Now website*. Retrieved from http://collegenow.cuny.edu/whatiscn/overview/

Deil-Amen, R. & Rosenbaum, J. (2002). The unintended consequences of stigma-free remediation. *Sociology of Education, 75*, 249–268.

DeLuca, S., Plank, S., & Estacion, A. (2006). *Does career and technical education affect college enrollment?* St. Paul, MN: National Center for Career and Technical Education.

Enberg, M. E., & Wolniak, G. C. (2009). Navigating disparate pathways to college: Examining the conditional effects of race on enrollment decisions. *Teachers College Record*, *111*(9), 2255–2279.

Ewell, E. (2004). An accountability system for doubling the numbers. In R. Kazia, J. Vargus, & N. Hoffman (Eds.), *Double the Numbers: Increasing postsecondary credentials for underrepresented youth* (pp. 101–112). Cambridge: Harvard Education Press.

Ewell, P., Jones, D., & Kelly, P. (2003). *Conceptualizing and researching the educational pipeline*. Boulder, CO: National Center for Higher Education Management Systems. Retrieved from http://www.nchems.org/pubs/docs/Pipeline%20Article.pdf

Fry, R. (October 2009). *College enrollment hits all-time high, fueled by community college surge*. Washington, DC: Pew Research Center Social & Demographic Trends Project. Retrieved from http://pewsocialtrends.org/assets/pdf/757-college-enrollment.pdf

Green, D. (2006). Historically underserved students: What we know, what we still need to know. In D. Bragg & E. Barnett (Eds.), *Academic pathways to and from the community college* (pp. 21–28). New Directions for Community Colleges, No. 135. San Francisco: Jossey-Bass.

Grubb, W. N. (2001). Second chances in changing times: The role of community colleges in advancing low-skilled workers. In R. Kazis, & M. Miller (Eds.), *Low-wage workers in the new economy* (pp. 283–306). Washington, DC: Urban Institute Press.

Haney, W., Madaus, G., Abrams, L., Wheelock, A., Mio, J., & Gruia, I. (2004, January). *The education pipeline in the United States: 1997–2000*. Boston, MA: The National Board of Educational Testing and Public Policy. Retrieved from http://www.bc.edu/research/nbetpp/statements/nbr3.pdf

Haycock, K. (2006, August). *Promise abandoned: How policy choices and institutional practices restrict college opportunities*. Washington: The Education Trust. Retrieved from http://www.edtrust.org/sites/edtrust.org/files/publications/files/PromiseAbandonedHigherEd.pdf

Haycock, K., & Huang, S. (2001). Are today's high school graduates ready? *Thinking K-16*, *5*(1), 3–17.

Hodgkinson, H. (1999). *All one system: A second look. Institute for Educational Leadership*. Washington, DC: Author.

Hughes, K., & Karp, M. (2006). *Strengthening transitions by encouraging career pathways: A look at state policies and practices*. New York: Community College Research Center, Teachers College, Columbia University. Retrieved from http://www.education.com/reference/article/Ref_Strengthening/

Hughes, K., Karp, M., Fermin, B., & Bailey, T. (2005). *Pathways to college access and success*. Washington, DC: US Department of Education, Office of Vocational and Adult Education.

Institute for Higher Education Policy. (2010). *A portrait of low-income young adults in higher education*. Washington, DC: Author. Retrieved from http://www.ihep.org/assets/files/publications/m-r/(Brief)_A_Portrait_of_Low-Income_Young_Adults_in_Education.pdf

Jenkins, D. (2006). *Career pathways: Aligning public resources to support individual and regional economic advancement in the knowledge economy*. New York: Workforce Strategy Center. Retrieved from http://www.workforcestrategy.org/images/pdfs/publications/WSC_pathways8.17.06.pdf

Jenkins, D., & Boswell, K. (2002). *State policies on community college remedial education: Findings from a national survey*. Denver, CO: Education Commission of the States.

Jenkins, D., & Spence, C. (2006). *The career pathways how-to guide*. New York: Workforce Strategy Center. Retrieved from http://www.workforcestrategy.org/images/pdfs/publications/WSC_howto_10.16.06.pdf

Jenkins, D., Zeidenberg, M., & Kienzl, G. (2009). *Building bridges to postsecondary training for low-skill adults: Outcomes of Washington State's I-BEST program*. (CCRC Brief No. 42). New York City, NY: Community College Research Center. Retrieved from http://ccrc.tc.columbia.edu/publication.asp?uid=695

Karp, M. M., Calcagno, J. C., Hughes, K. L., Jeong, D. W., & Bailey, T. R. (2007). *The postsecondary achievement of participants in dual enrollment: An analysis of student outcomes in two states*. St. Paul, MN: National Research Center for Career and Technical Education.

Karp, M. M., & Hughes, K. L. (2008a). Dual enrollment can benefit a broad range of students. *Techniques: Connecting Education and Careers*, *83*(7), 14–17.

Karp, M. M., & Hughes, K. L. (2008b). Supporting college transitions through collaborative programming: A conceptual model for guiding policy. *Teachers College Record*, *110*(4), p. 838–866.

Khan, S., Baber, L. D., Bragg, D. D., Castro, E., Sanders, C., & Common, B. (2009, December). *Year-two evaluation of the Illinois College and Career Readiness Act pilot sites*. Champaign, IL: Office of Community College Research and Leadership, University of Illinois at Urbana-Champaign.

Kienzl, G. (2008). *Recent participation in formal learning among working-age adults with different levels of education, NCES 2008-041*. Washington, DC: Institute of Education Sciences, National Center for Education Statistics. Retrieved from http://nces.ed.gov/pubs2008/2008041.pdf

Kim, J. (2006). The impact of dual and articulated credit on college readiness and total credit hours in four selected community colleges. Unpublished doctoral dissertation. University of Illinois at Urbana-Champaign.

Kim, J., & Bragg, D. (2008). The impact of dual and articulated credit on college readiness and retention in four community colleges. *Journal of Career and Technical Education Research, 33*(2), 133–158.

Kim, K., Collins Hagedorn, M., Williamson, J., & Chapman, C. (2004). *Recent participation in formal laerning among working-age adults with different levels of education. (NCES 2008-041)*. Washington DC: US Department of Education, National Center for Education Statistics. Retrieved from http://nces.ed.gov/pubs2008/2008041.pdf

Kirsch, I. S., Jungeblut, A., Jenkins, L., & Kolstad, A. (1993). *Adult literacy in America: A first look at the results of the National Adult Literacy Survey*. Washington, DC: National Center for Education Statistics, US Department of Education.

Kirsch, I., Braun, H., Yamamoto, K., & Sum, A. (2007). America's Perfect Storm: Forces Changing Our Nation's Future, Princeton NJ: Educational Testing Service.

Kirst, M. W., & Venezia, A. (Eds.). (2004). *From high school to college: Improving opportunities for success in postsecondary education*. San Francisco: Jossey-Bass.

Kleiner, B., & Lewis, L. (2005). *Dual Enrollment of High School Students at Postsecondary Institutions: 2002–03*. Washington, D.C: National Center for Education Statistics, US Department of Education.

Kleiner, B., Lewis, L., & Greene, B. (2005). *Dual enrollment of high school students at postsecondary institutions: 2002–2003. (NCES Report No. 2005–008)*. Washington, DC: US Department of Education, National Center for Education Statistics.

Kutner, M., Greenberg, E., Jin, Y., Boyle, B., Hsu, Y., & Dunleavy, E. (2007). *Literacy in everyday life: Results from the 2003 national assessment of adult literacy*. Washington, DC: US Department of Education, Institute of Education Sciences. Retrieved from http://nces.ed.gov/Pubs2007/2007480.pdf

Lekes, N., Bragg, D., Loeb, J., Oleksew, C., Mazsalek, J., Laraviere, M., et al. (2007). *The impact of career-technical education transition program practices on student outcomes*. St. Paul, MN: National Research Center for Career and Technical Education, University of Minnesota.

Levin, J. S. (2007). *Nontraditional students and community colleges: The conflict of justice and neoliberalism*. New York: Palgrave.

Levy, F., & Murnane, R. (2006). Why the changing American economy calls for twenty-first century learning: Answers to educators' questions. [Electronic version.] *New Directions for Youth Development*, *110*, 53–62.

Lewis, M., & Overman, L. (2008). Dual credit and concurrent enrollment and transition to postsecondary education. *Career and Technical Education Research*, *33*(3), 189–202.

Liebowitz, M., & Combes-Taylor, J. (2004). *Breaking through: Helping low-skilled adults enter and succeed in college and careers*. Boston: Jobs for the Future. Retrieved February 20, 2006, from http://ncwe.org/documents/report_2004_ncweJff_breakingThrough.pdf

Lothian, D. (July 14, 2009). Obama: Community colleges can help boost ailing economy. Retrieved from http://www.cnn.com/2009/POLITICS/07/14/obama.community.colleges/

Mazzeo, C., Rab, S., & Alssid, J. (2003). *Building bridges to college and careers: Contextualized basic skills at community colleges*. New York: Workforce Strategy Center. Retrieved from http://www.workforcestrategy.org/images/pdfs/publications/Contextualized_basic_ed_report.pdf

Melguizo, T., & Dowd, A. C. (2009). Baccalaureate success of transfers and rising 4-year college juniors. *Teachers College Record*, *111*(1), 55–89.

Morest, V., & Karp, M. (2006). Twice the credit, half the time? The growth of dual credit at community colleges and high schools. In T. Bailey & V. Morest (Eds.), *Defending the community college equity agenda* (pp. 223–245). Baltimore: The Johns Hopkins University Press.

Mullin, C. M. (2010, June). *Rebalancing the mission: The community college completion challenge (Policy Brief 2010-02PBL)*. Washington, DC: American Association of Community Colleges. Retrieved from http://www.aacc.nche.edu/Publications/Briefs/Documents/rebalancing_06212010.pdf

National Center for Education Statistics. (2005). *Digest of education statistics*. Washington, DC: Author.

National Center for Education Statistics. (2008). *Digest of education statistics*. Washington, DC: Author.

Neumark, D., & Rothstein, D. (2007). Do School-to-Work Programs Help the 'Forgotten Half'? In D. Neumark, Ed. *Improving School-to-Work Transitions*, pp. 87–133. New York City, New York: Russell Sage Foundation.

Newman, L. (2005). Changes in postsecondary education participation of youth with disabilities. In M. Wagner, L. Newman, R. Cameto, & P. Levine (Eds.), *Changes over time in the early postschool outcomes of youth with disabilities.* A report of findings from the National Longitudinal Transition Study (NLTS) and the National Longitudinal Transition Study-2 (NLTS2), (pp. 4–1, 4–10). Menlo Park, CA: SRI International. Retrieved September 4, 2008, from http://www.nlts2.org/reports/2005_06/

Oakes, J., & Saunders, M. (Eds.). (2008). *Beyond tracking: Multiple pathways to college, career and civic participation*. Cambridge, MA: Harvard Education Press.

Park, R., Ernst, S., & Kim, E. (2007). *Moving beyond the GED: Low-skilled adult transition to occupational pathways at community colleges leading to family-supporting careers research synthesis*. Louisville, KY: National Research Center for Career and Technical Education.

Prince, D., & Jenkins, D. (2005, April). Building pathways to success for low-skill adult students: Lessons for community college policy and practice from a statewide longitudinal tracking study. Community College Research Center Brief, no. 25. New York City, NY: Community College Research Center, Teachers College, Columbia University.

Price, D., & Roberts, B. (2009, December). The Shifting Gears approach to system change. Chicago, IL: The Joyce Foundation

Pusser, B., Breneman, D. W., Gansneder, B. M., Kohl, K. J., Levin, J. S., Milam, J. H., et al. (2007, March). *Returning to learning: Adults' success in college is key to America's future*. Indianapolis, IN: Lumina Foundation for Education. Retrieved from http://www.luminafoundation.org/publications/ReturntoLearnIllum07.pdf

Reder, S. (1999). *Adult literacy and postsecondary education students: Overlapping populations and learning trajectories*. The Annual Review of Adult Learning and Literacy, Volume 1. San Francisco: Jossey-Bass. Retrieved February 9, 2008, from http://www.ncsall.net/?id=523

Rodriguez, G. M., & Cruz, L. (2009). The transition to college of English learner and undocumented immigrant students: Resource and policy implications. *Teachers College Record*, *111*(10), 2385–2418.

Rosenbaum, J. E. (2001). *Beyond college for all: Career paths for the forgotten half*. New York: Russell Sage Foundation.

Rosenbaum, J. E., Deil-Amen, R., & Person, A. E. (2006). *After admission: From college access to college success*. New York: Russell Sage Foundation.

Silverberg, M., Warner, E., Fong, M., & Goodwin, D. (2004). *National assessment of vocational education: Final report to Congress*. Washington, DC: United States Department of Education, Office of the Under Secretary Policy and Program Studies Services. Retrieved from http://www2.ed.gov/rschstat/eval/sectech/nave/naveexesum.pdf

Stone, J., & Aliaga, O. (2007). Participation in career and technical educations and school-to-work in American high schools. In D. Neumark (Ed.), *Improving school-to-work transitions* (pp. 59–86). New York: Russell Sage.

Taylor, P., Fry, R., Velasco, G., & Dockterman, D. (2010, June). Minorities and the recession-era college enrollment boom. Washington, DC: Pew Research Center Social and Demographic Trends Project. Retrieved from http://www.ecs.org/html/offsite.asp?document=http%3A%2F%2Fpewsocialtrends%2Eorg%2Fassets%2Fpdf%2F757%2Dcollege%2Denrollment%2Epdf

Townsend, B., Bragg, D., & Ruud, C. (2009). Development of the applied baccalaureate. *Community College Journal of Research and Practice, 33*(9), 686–705.

US Census Bureau. (2007). Educational Attainment in the United States: 2007 [Current Population Survey]. Retrieved from http://www.census.gov/population/www/socdemo/education/cps2007.html

US Department of Education, Office of Vocational and Adult Education (2007). *Adult basic education to community college transitions symposium*. Washington, DC: Author.

Valentine, J. C., Hirschy, A. S., Bremer, C. D., Novillo, W., Castellano, M., & Baniser, A. (2009, September). *Systemic reviews of research: Postsecondary transitions—Identifying effective models and practices*. Louisville, KY: National Research Center for Career and Technical Education.

Van de Water, G., & Krueger, C. (2002). *P-16 education*. Eugene, OR: ERIC Clearinghouse on Educational Management. (ERIC Digest No. ED465213). Retrieved from http://eric.uoregon.edu/publications/digests/digest159.html

Van de Water, G., & Rainwater, T. (2001). What Is P-16 Education? A Primer for Legislators. Denver, CO: Education Commission of the States, 2001. ERIC Digest No. ED 454 592.

Venezia, A. (2001). *A student-centered P-16 accountability model: Encouraging high standards, equitable educational opportunities and outcomes, and flexibility within a seamless system of education*. ECS Issue Paper. Denver, CO: Education of the Commission of States. Retrieved from http://www.ecs.org/clearinghouse/40/04/4004.htm

Venezia, A., Callan, P. M., Finney, J. E., Kirst, M. W., & Usdan, M. D. (2005). *Betraying the college dream: how disconnected K-12 and postsecondary education systems undermine student aspirations*. Stanford, CA: Stanford Institute for Higher Education. Retrieved from http://www.ecs.org/html/offsite.asp?document=http%3A%2F%2Fwww%2Estanford%2Eedu%2Fgroup%2Fbridgeproject%2Fbetrayingthecollegedream%2Epdf

Waits, T., Setzer, J. C., & Lewis, L. (2005). Dual credit and exam-based courses in US. public schools: 2002–2003 (NCES Report No. 2005–2009). Washington, DC: US Department of Education, National Center for Education Statistics.

Weller, N. F., Kelder, S. H., Cooper, S. P., Basen-Engquist, K., & Tortolero, S. R. (2003). The effect of school-year employment on academic, social, and physical functioning among high school students in South Texas. *Adolescence*, *38*(151), 441–458.

Wonacott, M. E. (2002). *Equity in career and technical education*. Columbus, OH: ERIC Clearinghouse on Adult, Careers and Vocational Education. No. 20.