

The Underserved Third: How Our Educational Structures Populate an Educational Underclass

Regina Deil-Amen

Center for the Study of Higher Education, University of Arizona

Stefanie DeLuca

Department of Sociology, Johns Hopkins University

In this article, we present multiple assertions relevant to the plight of students who are underserved and structurally positioned to transition out of school unable to access labor market rewards. First, we juxtapose economic realities against collective ideologies about the role of education in creating opportunities for individuals. Second, we discuss conceptual understandings of “tracking” with a particular focus on the role of subbaccalaureate education in the tracking and transition process. Third, we propose to dismantle dichotomous notions of “career” and “college” preparation to expand opportunities for underserved students and reduce inequities by preparing all students for both college and work options simultaneously.

In this article, we consider the plight of a structured educational underclass comprised of a large group of underserved students. Although America’s postindustrial economy requires a more highly educated workforce, such claims are overstated in the national rhetoric. Several realities undercut the ideology of higher education as a cure-all for marginalized, weakly prepared students. Highly skilled technical labor does not dominate the labor market, and the stable pattern of less than a third of jobs requiring a postsecondary credential is predicted to continue into the foreseeable future. Further, nearly half of the fastest growing occupations require less than a bachelor’s (BA) degree. Despite the power of education to provide individuals with enhanced opportunities, an ideology that prioritizes “college for all” as a societal-level approach to inequity fails to acknowledge how educational structures induce risk among marginalized populations and position them to enter the least attractive, yet most plentiful, labor market positions. Only transformative practices will prevent current inequities in college and career readiness.

Rather than the traditional idea of two tracks—one academic and one vocational—secondary and postsecondary students may be conceptually divided into three categories. The first group is exposed to a true college preparatory curriculum and well-prepared for success in college and rewarding occupations. The second group is relatively prepared for labor force participation through their involvement in either high school or postsecondary career and technical education

(CTE) programs (Levesque et al., 2008). A third group constitutes a virtual underclass of students who are neither college-ready nor in an identifiable career curriculum. This “underserved third” group is likely to depart from high school having taken classes mainly from the high school general curriculum in which they are at risk of receiving low-quality instruction, lower levels of academic preparation, and little to no job preparation or guidance (Gray & Herr, 2000; Laird, Chen, & Levesque, 2006). This group is at risk of not enrolling in college or enrolling (often at a remedial level) and leaving before earning a degree; either course places them at risk of not accessing preferred occupational pathways and transitioning successfully into work and adult life.

Combining our analysis of National Educational Longitudinal Study data with other studies, we estimate that one-third of high school students are in the first group (college preparation trajectory), which is disproportionately composed of White and higher socioeconomic status (SES) students. One-fourth of high school students make up the second group, students taking at least two courses in CTE (Greene & Foster, 2003). This leaves over 40% of students falling within the underserved third group—lacking adequate college preparation and occupational training. This third group is disproportionately composed of lower SES, underrepresented minority, immigrant English language learner, and first-generation college students. Among students who earn a high school diploma, less than half are college-ready; more than half take at least one college remedial English or math class (Goldberger, 2007; Parsad & Lewis, 2003).¹ As the underserved third group transitions into college, they populate the bulk of such remedial classes and are among the “two thirds or more of community college students” who “enter college with academic skills weak enough to threaten their ability to succeed in some of their college-level courses” (Bailey, 2009, p. 1). These students are structurally positioned to transition out of school destined to fail to access labor market rewards.

Recent federal legislation advocates improvement in the quality of and a broadening of high school CTE to incorporate rigorous college preparatory academic skills. However, how such changes might benefit this underserved third group has not been explicit. Furthermore, vocational, or applied, community college programs are no longer simply a lower-level alternative to transfer preparation. Two tiers of occupational education have emerged in which restricted access two-year college applied programs can lead to lucrative occupations, whereas more open access two-year degrees and certificates lead to less economically rewarding jobs. Nowhere is there a safety net to prevent the underserved third group of youth from falling through the cracks in the two-year pipeline.

We need to more carefully consider the available college options and structural alternatives to college in a way that does not sacrifice college preparation in the interests of work preparation, because CTE has shown promise for improving several outcomes. Adding rigorous academic content to CTE coursework and infusing academic content with integrated career and professional content has the potential for positive effects, particularly for the underserved third group. Therefore, we propose strengthening avenues of opportunity for the underserved third in their work and college transitions with an emphasis on restricted access subbaccalaureate

¹The astounding rate of departure from college that accompanies our high rates of enrollment cannot be ignored. Currently, only two states award more than 20 degrees per 100 students at community colleges, and only eight states award more than 20 degrees per 100 students at public four-year colleges (National Center for Higher Education Management Systems, 2007).

programs in high-demand fields with high earnings. Different from traditional calls to simply better prepare students, we support the fusion of both career and academic curricula in high school to provide more feasible methods of opening up career and college options for all.

IDEOLOGIES IN THE CONTEXT OF ECONOMIC REALITIES

The dominant U.S. rhetoric highlights the necessity of a college degree to ensure social mobility, future job security, and national economic well-being, especially in a postindustrial knowledge economy that demands higher levels of technical skills and higher-order thinking. A report by the Spellings Commission states:

In an era when intellectual capital is increasingly prized, both for individuals and for the nation, postsecondary education has never been more important. . . . Already, the median earnings of a U.S. worker with only a high school diploma are 37 percent less than those of a worker with a bachelor's degree. Colleges and universities must continue to be the major route for new generations of Americans to achieve social mobility. (U.S. Department of Education, 2006, p. 1)

An ideology dominated by the economic and social mobility functions of postsecondary education emphasizes its necessity for both meeting the needs of our new postindustrial knowledge economy and providing the cure for the ills of blocked individual social mobility by proclaiming the need to increase college enrollment among youth in poverty. Although this goal is laudable, the rhetoric is problematic because it fails to align with the realities of the college trajectories and occupational futures of lower-SES high school students. Although college can also afford many other social benefits (e.g., personal development, informed citizenry), we limit the scope of this article to this economic function to better explore the intersection of education and the labor market.

College access has increased dramatically, but to parade enrollment in higher education as a guaranteed pathway to social mobility is illusory. To imagine that youth in poverty can be upwardly mobile via college access denies the fact that the education system positions them be members of an educational underclass and ensures that they experience a structured lack of opportunities. Current educational ideologies do not align well with available jobs in this economy. Over 90% of high school sophomores expect to attend college, but only 70% will likely enroll. Only about half of those enrolling in a four-year college will actually graduate, and only a quarter of those ever attending any kind of college will finish a bachelor's degree (Horn & Berger, 2005).² Those who don't enroll and who don't complete degrees are disproportionately racial minority youth in poverty—exactly the students who have always experienced limited educational and social mobility in the United States (Astin & Oseguera, 2004; Cabrera & LaNasa, 2002; Deil-Amen & Turley, 2007; Gándara & Contreras, 2009; Orfield, Marin, & Horn, 2005; Perna, 2006). For low-SES youth, credential acquisition as a route to mobility is limited.

Although aggregate statistics point to a postindustrial economy that increasingly requires a college-educated labor force, not every job requires a bachelor's degree, and not every

²We acknowledge recent research showing higher levels of degree completion and intergenerational mobility when students are followed for up to 30 years (Attewell & Lavin, 2007), but our framework focuses on more immediate trajectories.

local labor market is dominated by technical labor.³ The vast majority of jobs—about 70%—are still held by workers with less than a four-year degree. In fact, 41% of U.S. workers have a high school diploma or less, more than the under 30% who hold a BA or higher (U.S. Bureau of Labor Statistics, 2007). Even these numbers are deceiving. They do not account for the fact that many college-educated people are underemployed: “While over 60% of people in existing jobs *have* ‘some college’ or a postsecondary credential . . . only about 3 in 10 jobs *require* a postsecondary certification of some sort” (Barton, 2008, p. 19). Although some jobs requiring a degree are fast growing, it is predicted that between 2004 and 2014, jobs requiring only a high school diploma will increase by 10% and account for more than a third of all new jobs. Nearly three-fourths of the top 30 occupations with the largest (rather than the fastest) growth in the share of jobs during that period will not require college (U.S. Bureau of Labor Statistics, 2006). The high-tech, high-payoff careers that excite the popular imagination (e.g., computer analysts, software engineers, forensic scientists) only reflect a small fraction of the total labor market.

Although the postindustrial economy does bring an increased demand for some high-level technical skills, it is not the only structural change at play. Society has had a loss of industrial occupations and a rise in service sector occupations, most of which require little or no postsecondary education and garner little earning power. Among the 30 fastest growing occupations, over 40% require less than a BA, and more than one-quarter require no postsecondary credential. Across industries, the fastest growing jobs are not even necessarily lucrative, with over a third providing low or very low wages (Dohm & Shniper, 2007). The occupational group with the largest share of employment in 2000 (about 18%)—office and administrative support—was not among the fastest growing. Together with sales, production, food preparation, and transportation and material moving, these jobs constitute more than half of all employment (U.S. Bureau of Labor Statistics, 2001). As of 2006, the top 15 largest occupations, making up a quarter of all jobs, included low-wage service and laborer occupations, with only two of these—registered nurses and managers—paying above the mean 2006 annual salary of \$39,190 (U.S. Bureau of Labor Statistics, 2006). Marginalized youth are among those most likely to end up in these low-wage occupations.

Simply sending more and more students to college will not change the types of jobs that dominate the economy through their sheer numbers, and a college-for-all ideology (see Rosenbaum, 2001) should not be expected to mask this reality. Nevertheless, many youth are exposed to such an ideology that promises a pathway to a better future. However, gaps in college attainment leave most youth unprepared for transitions to adulthood. Rather than blindly advocating bachelor’s degrees as the only valuable option and the cure for all social ills, it might be wise to seek broader societal solutions that extend beyond more of the same push for higher education as a route to individual mobility. The underserved third are at the tail end of the race for individual educational advancement and economic opportunities, and mere tinkering will not lead to large-scale change in opportunities available to youth at risk. Can society be more purposeful in creating structured, supported routes from high school and subbaccalaureate education into the workforce in ways that do not foreclose options for more advanced levels of schooling?

³This echoes the work of Russell Rumberger and others, who found that as early as three decades ago, educational attainment far outpaced skill demands in the labor market (e.g., Rumberger, 1981).

Tighter coupling between academics and career pathways does not have to involve a decoupling from further college opportunities. Recent legislation on CTE departs from the vocational education of the past. The 2006 reauthorization of the Perkins Act (Perkins IV) encourages both academic inclusion and a route to postsecondary options for students in career-focused curricula (i.e., through Perkins IV-mandated programs of study). Such integration has not yet fully materialized in ways that transcend traditional stratification patterns in education. Career concentrations are still stigmatized in society as a lower track alternative for more disadvantaged students, whereas a traditionally academic curriculum is considered superior.

Oakes and Saunders (2008) provided promising directions for transformative policies and practices that create multiple pathways that hold the potential to transform these dichotomies. We agree with their contention that disrupting the false dichotomy between *career preparation* and *college preparation* can disrupt enduring inequities. In this article, we consider the intersection of school and occupational preparation in today's postindustrial economy, paying particular attention to institutional mechanisms that guide and structure students' academic and work preparation in both high schools and subbaccalaureate colleges. We advocate a broader definition of career preparation and the school-to-work transition. All students are preparing for an eventual transition to work, whether in formal vocational or academic programs at the secondary level, or through occupational/technical programs, preprofessional, or general liberal arts and sciences degrees at the postsecondary level. Nothing but an overhaul of how people conceive of distinctions within secondary education will suffice to alleviate inequities while continuing to meet labor market needs. In examining the current landscape of economic opportunities, employers' skill requirements, and the links between education and economic demands, Stoll (2008) claimed that blurring the lines between college and labor market preparation would benefit the workforce generally and racial minorities in disadvantaged schools in particular.

RECONCEPTUALIZING SECONDARY AND POSTSECONDARY TRACKING

Old Conceptions of Vocational Education

A prominent thread of sociological research decades ago uncovered high school patterns of tracking students with low measured ability and behavioral problems into vocational curricula while diverting resources to higher-status academic programs (Oakes, 1985). Research portrayed vocational education as a domain in which poor and minority youth were concentrated disproportionately in courses with little academic rigor and limited learning opportunities (Gamoran & Mare, 1989; Oakes, 1985; Vanfossen, Jones, & Spade, 1987). Tracking occurred not just within schools, but also between schools, resulting in lower-income minority schools more heavily vocational in their curricula. Other classic work presented vocational students as trapped, having already lost the most important round of the educational tournament with no hope of improving their academic or social status (Kerckhoff, 1993; Rosenbaum, 1976). Sociologists have since focused heavily on distinguishing between students who take the sequences of courses necessary for college and those who don't (Schneider, Swanson, & Riegle-Crumb, 1998). The prevalent notion endures of a two-track system in which lower status vocational track students will enter jobs directly from high school and not be prepared for college work.

A complicated U.S. history of vocational education and race adds to the negativity and ambivalence surrounding career education. Whereas Booker T. Washington saw training of Black youth for industry as a promising pathway for work, W. E. B. DuBois saw it as preventing Blacks from being educated, enlightened citizens. As late as 1994, a federal assessment of vocational education voiced concerns that it had become a dumping ground for minority and low-SES youth and an “educational backwater” (Cohen & Besharov, 2004, p. 15). However, federal legislation has since been passed to improve the quality of secondary school CTE, increase accountability, increase resources to disadvantaged students, and broaden the emphasis of CTE to combine academic skills with work preparation. This shift emphasizes attention to postsecondary opportunities, but the term CTE generally refers to secondary-level career and technical education reforms since the early 1990s, and the CTE designation is used in this way throughout this article.

Old conceptions of postsecondary vocational education have focused on the subbaccalaureate level, derived from Burton Clark’s sociology of community colleges, which shaped a view of postsecondary occupational degrees as a lesser alternative to the BA. Clark (1960a) introduced the *cooling out* concept to describe a process whereby counselors (armed with students’ low test scores, grades, remedial status, and vocational and aptitude evaluations) convince BA-aspiring students that a terminal vocational associates degree is the better alternative. These students are “moved out of a transfer major to a – or two-year program of vocational, business, or semiprofessional training . . . induced to accept a substitute that has lower status in both the college and society in general” (Clark, 1960b, p. 572). This cooling-out process is a key finding in Clark’s widely cited article, but his book includes a more contextualized and less-noticed description of the institution’s place within a particular historical moment. San Jose Junior College (SJJC) originally occupied the same campus as a technical high school that prepared students for industrial trades. This vocationally oriented fusion within local school districts was the institutional form of many junior colleges at the time. Administrative and school district players preferred that SJJC have a terminal vocational focus, and they invested in expensive facilities and equipment for that purpose (Clark, 1960a). The occupational orientation of SJJC may have been quite compatible with (or a consequence of) the national-level vocationalizing efforts of a vanguard organized by the American Association of Junior Colleges (AAJC), which promoted in their national conferences the use of counseling as a tool for maximizing enrollments in junior college applied vocational programs. This was part of the AAJC’s efforts to establish a semiprofessional training niche within the higher education market (Brint & Karabel, 1989).

However, students of the late 1950s, entranced by the promise of an accessible, affordable stepping-stone into universities, flocked to junior college transfer programs, as was evident in Clark’s (1960a) study. Student demand for transfers diminished the already ailing vocational high school, making the cooling-out function of the junior college necessary (Clark, 1960a). Research has since focused on student diversion from transfer programs or BA goals by measuring the gap in BA attainment between two-year community college and four-year college beginners (Dougherty, 1994; Long & Kurlaender, 2009). Fixed in our collective perception is the notion of a dichotomous tracking system with vocational, or applied, community college programs as a bottom rung on which lower SES students are diverted away from preparation for transfer and BA pathways and into lower-level alternatives (Brint & Karabel, 1989; Dougherty, 1994; Zwerling, 1976).

The “New Tracking” in Secondary and Postsecondary Schooling

After years of battles, two trends have emerged. First, old forms of explicit, formalized tracking of high school students into academic and vocational pathways have now morphed into more obscure and complex systems. Vocational education has been reorganized and repackaged as CTE, in which a majority of students participate to varying degrees. However, Advanced Placement, special education, and gifted and talented programs continue to replicate inequalities. Further, the research of Lucas (1999) revealed patterned SES differences in the courses students take, much of the time under the guise of individual choice. Second, occupationally focused sub-baccalaureate programs have proliferated, shifting much vocational training to the postsecondary realm. Unfortunately, most research has focused on a two-track dichotomy of lower status career preparation versus higher-level academic preparation at both the secondary and postsecondary levels. However, students are falling through the cracks of a labor market structure that does not operate as a dichotomy.

In the past, vocational concentrators (the second group) were considered the most disadvantaged (Oakes, 1985). However, since the 1990s, vocational education has undergone reform, and school-to-work (or career) programs have flourished. Research now suggests that non-college-bound CTE students enjoy some modest gains in labor market outcomes relative to similar students who do not participate (Arum & Shavit, 1995; Kang & Bishop, 1989; Kemple, 2008; Stern, Finkelstein, Urquiola, & Cagampang, 1997; Stern, Raby, & Denton, 1992; Stern, Stone, Hopkins, McMillion, & Crain, 1994). Since the reauthorizations of the Perkins Act (Perkins IV, 2006) and the rise of innovative career academies in urban neighborhoods, students who receive a blend of CTE courses and work experience fare better than would traditionally be expected. Although these programs vary in quality and scope, it is important to reconsider the potential of CTE as not just the low track, but as an effective pathway toward work or further education. In fact, over 70% of CTE students eventually pursue some postsecondary schooling, further breaking the stereotype (Levesque et al., 2008).

It is the underserved third—who neither are prepared for college nor participate in CTE—who are often the most disadvantaged. They exist both within schools, usually as the lowest achieving students, and between schools, with some low-SES schools providing low-level academic preparation for a majority of their students, even those destined for college (Venezia, Kirst, & Antonio, 2003). The Education Trust (1999) reported, “In truth, the courses that pass for ‘college prep’ in some schools are but watered down versions of similarly named courses in other schools” (p. 5). Reformers often overlook the reality that such courses are quite inferior to both true college preparatory classes and to CTE. Although research highlighting unfair tracking practices is warranted, researchers should also examine the implications of our three-group conceptual hierarchy.

A corresponding postsecondary hierarchy has also emerged, with a first group of college-ready students who succeed in four-year colleges and community college transfer programs. These students (a) are mainly of higher SES with college-educated parents, (b) were enrolled in advanced academic classes in high school, and/or (c) have received a private secondary education or benefited from residence in an affluent community with well-resourced schools. Also successful is a smaller second group of students with an SES profile not that different from the first group; these students enter restricted-access applied science (vocational/occupational) degree programs at two-year colleges in high-demand, high-paying fields. Such programs enroll

only those who successfully complete prerequisite science and math courses before applying for competitive admission. Students who earn associates degrees in these fields fare well in the labor market relative to students who earn some credits or earn general associates degrees (Grubb, 2002; Kane & Rouse, 1995). As Brint (2003) noted, “While no one disputes . . . that two-year college vocational programs are neither economically nor socially equivalent to the bachelor’s degree, new evidence does suggest that . . . vocational education [is not] ‘the bottom rung’ of higher education’s tracking system” (p. 27). No longer does an occupational two-year program equate directly to a lower status pathway, as it did at the time of Clark’s (1960a) study.

Instead, an underserved third group warrants consideration as the lowest rung—they come mainly from the underserved third group of high school students, enroll disproportionately in community colleges (this is particularly the case for Latinos), and fail to successfully navigate the remedial, transfer, and more rigorous applied programs in two-year institutions. Although there are some economic returns to completing some credits with no degree, the benefits are not equally distributed, with those who only complete one semester, men, remedial students, and general-degree students without a specific vocational focus faring worst (Grubb, 2002; Kane & Rouse, 1995; Marcotte, Bailey, Borkoski, & Kienzl, 2005). These circumstances leave a large group of students to enter the labor market unprepared for work at a more delayed point in the tournament. They have successfully managed the hurdle of college access, yet they have no college credential and little human capital.

Past sociological frameworks focused almost exclusively on the postsecondary vocational/transfer distinction at the expense of understanding the structural constraints imposed on this underserved third group of college students. What does the cooling-out process entail for these students and how are new institutional and economic contexts shaping their experiences? Students continue to drop out of two-year colleges at alarming rates, and because today’s community colleges bear few of the structural constraints and incentives that previously drove the cooling-out process, are such colleges no longer guiding potential dropouts toward vocational alternatives? If not, then what role do two-year applied occupational associates degree programs now play in the structure of both stratification and upward mobility? Which groups of students are accessing the applied associates degree pathways leading to promising job prospects in higher status fields, and which students are accessing more traditional terminal routes via one-year certificate programs and lower-paying occupations? Most important, we should consider the fates of those students who are not accessing a career path at all. Are they floating through unguided, with few of the structural alternatives that guided them in the past?

The admissions criteria for applied associates’ degrees needs to be considered more closely, because occupational degrees may not necessarily be second best. In fact, a range of career options with differing admissions criteria exist at community colleges and lead to very different labor market destinations. Remedial level students, among the most marginal in higher education, are more likely to come from the underserved third and drop out before obtaining a bachelors degree. Sometimes a more vocationally focused degree is presumed to be a viable alternative to traditional liberal arts transfer. However, many applied associates degrees are not accessible options for these students. Despite the open access provided by community colleges generally, entry into many applied associates degree programs is, in no way, open. Some require a level of academic performance beyond that required to enter more traditional degree programs.

For instance, at City Colleges of Chicago (CCC), students need to pass English 101 to enroll in the Information Technology program. Admission to Associate Degree in Nursing program requires passing English 101, a B in college biology and chemistry, a GPA of 2.5, and a reading assessment. At the extreme, the Associates in Engineering Science is strictly a transfer degree, not a pathway into work at the subbaccalaureate level, and it has its own admissions requirements that exceed any other degrees offered by CCC. Large-scale access for the underserved third group to such avenues into health and technology-oriented professions could disrupt existing stratification patterns. The other end of the subbaccalaureate career spectrum reproduces, rather than disrupts, enduring stratification patterns, as students can freely enroll in applied associates or certificate programs that lead directly to occupations with lower earnings potential, such as accounting, addiction and social work, child development, and hospitality.

Similarly, in Pima Community College in Arizona, admission is truly open for programs leading to direct employment in lower-end service and blue-collar jobs, such as office administration, childhood education, culinary arts, hotel/restaurant management, automotive technology, truck driving, and disabilities rehabilitation. These open-access applied programs disproportionately enroll the underserved third. However, enrollment in more restricted access two-year applied programs has largely eluded the underserved third. For example, enrollment in a computer programmer/analyst degree program requires first passing one math and one computer information systems class. To enroll in the Medical Laboratory Technician program, students must pass three biology, two chemistry, and one math courses (each having its own set of prerequisites). This essentially extends the coursework for this two-year degree over 3–1/2 years. An Engineering associates degree requires four levels of math prerequisites.

Clearly, the dichotomous notion of two high school tracks—one superior high-end college prep and one low-end vocational track—is not compatible with the system of current postsecondary institutional structures, particularly at the subbaccalaureate level. In fact, underserved students on a third track of below-adequate academic preparation in high school tend to lack awareness that they are not college-ready (Deil-Amen & Rosenbaum, 2002; Deil-Amen & Tevis, 2007x; Rosenbaum, 2001) while also receiving little guidance regarding alternative college or career pathways (Vargas, 2004). Given their high likelihood of failing to attain a BA or to attain access to the most lucrative two-year applied programs, are educators leading them down a road of deception paved with good intentions? We argue that already marginalized students are further marginalized by the obscurity in the way structured postsecondary options are presented to students in high school.

All students need preparation for work, and a nation touting equal opportunity should provide education in ways that do not sacrifice serious career preparation so readily. We need to think broadly about preparing all youth for work and college (Oakes & Saunders, 2008) and consider if “college for all” has left society to neglect the underserved third, pushing them toward higher education without adequate preparation for either work or college success. First and foremost, the quality of academic instruction needs to be improved in every secondary and postsecondary segment of the educational pipeline that is considered. The underserved third group is most at risk for poor instructional practices. With this in mind, we propose strengthening avenues of opportunity through the integration of academic and career goals in four different ways: between academic and vocational education in high school; between employment while in and employment after high school; between CTE and postsecondary education; and between school and work at secondary and sub-baccalaureate levels.

COLLEGE AND CAREER OPTIONS FOR ALL

Integrate: Academic and Vocational Training in High School

Since 1990, Congress has passed several pieces of legislation to reform high schools with the Intent to better prepare all students for careers in the new economy. The Perkins Acts (1990, 1998, 2006) and the School-to-Work Opportunities Act (STWOA, 1994) supported career preparation through the integration of academic and vocational training.⁴ CTE was thus designed not just to develop labor market skills, but also to integrate job preparation with academic subjects, erase the stigma attached to vocational education, and provide pathways to employment and postsecondary education (Castellano, Stringfield, & Stone, 2003; Lynch, 2000).⁵ The new vocational education is said to have considerable potential to enhance student engagement and integrate academics with work-relevant skills (National Research Council and Institute of Medicine, 2004). In schools, broad occupational themes are often emphasized, featuring a range of jobs with varying degree requirements within an industry, allowing students considerable autonomy to explore their postschool options (Advisory Committee for the National Assessment of Vocational Education, 2003; Stone, 2000). This contrasts with the narrow, older model of vocational education that aimed to prepare students for specific entry-level jobs.

High school courses typically categorized as CTE include: family and consumer sciences (home economics, child development, foods and nutrition, and family relations); general labor market preparation (keyboarding, exploratory industrial arts, college and career planning, and introduction to technology); and courses in specific occupational areas (Agriculture and Natural Resources; Business; Communications and Design; Computer and Information Sciences; Construction and Architecture; Consumer and Culinary Services; Engineering Technologies; Health Sciences; Manufacturing, Repair, and Transportation; Marketing; Public Services; and Protective/Legal Services and Public Administration; see Levesque et al., 2008). Recently, the National Association of State Directors of Career and Technical Education Consortium developed “career clusters” as a way to group occupations and industries to make the pathways between secondary and postsecondary two- and four-year schools more coherent and meaningful.

CTE courses are a combination of classroom-based learning experiences, cooperative education, and other workplace learning. CTE varies in terms of courses and institutional structures across 17,000 comprehensive high schools; 900 career magnets, technical schools, or career academies; and 1,200 area CTE schools (Levesque et al., 2008). CTE also comes in a variety of structural forms, such as Tech Prep programs, programs of study, cooperative education, and career academies within larger public high schools. Tech Prep programs often combine the last two years of high school with the first two years of college and involve technical preparation for careers (Bragg, 2001; Bragg, Puckett, Reger, & Ortman, 1997). Cooperative education traditionally involves a combination of coursework in school and part-time work on the job (Stern et al.,

⁴The legislation also emphasized nontraditional gender pathways to work and the targeting of special populations (i.e., disabled students and minorities).

⁵Although not every U.S. high school offers comprehensive CTE programs, most offer some, and the majority of high school students take at least one CTE course (DeLuca, Plank, & Estacion, 2006; Levesque, Lauen, Teitelbaum, Alt, & Librera, 2000; National Center for Education Statistics, 2001).

1997). Comprehensive high schools may also offer CTE in the form of career interest inventory tests, job shadowing, internships, and mentoring (Castellano et al., 2003). Programs of study (POS), coming directly out of the 2006 Perkins IV legislation, are the newest form of CTE and are meant to align rigorous academic standards with high quality technical instruction (Lewis, Kosine, & Overman, 2008). Some CTE programs may last only one day (e.g., a job shadow visit to the local hospital) and others may last for one academic year or more (e.g., cooperative education programs, Tech Prep, POS).

To date, there has been a moderate amount of research assessing the effectiveness of vocational programming in general and of CTE programs in particular since the passage of legislation in the early 1990s.⁶ Reviewing 30 years of studies, Kulik (1998) concluded that participation in vocational programs increases the likelihood that non-college-bound youth will complete high school. Specifically, he estimated participation in vocational education decreased the dropout rate of such youth by about 6%. Despite Kulik's (1998) conclusion, some studies have found no such effects (e.g., Agodini & Deke, 2004; Pittman, 1991). Although research on whether participation in vocational education (or CTE) reduces or increases dropout remains mixed, more recent studies suggest that CTE may keep some high school students engaged enough to keep them from dropping out (Castellano et al., 2003; Plank, DeLuca, & Estacion, 2008). Cohen and Besharov (2004) argued that, in addition to providing a more applied, directed, and lucrative pathway into work, CTE can provide a form of learning in context that could alleviate the disengagement that occurs prior to high school dropout. Given that youth might be slightly more likely to complete high school if they take CTE courses, is there a relationship between CTE and college enrollment?

In line with previous research on tracking, recent research finds a mixed relationship between CTE and four-year college enrollment. Most CTE students do pursue college, but most attend two-year colleges and attain certificates, and their rates of BA degree completion are lower than general or academic curriculum students (DeLuca et al., 2006; Laird et al., 2006; Levesque et al., 2008). Although today's CTE students are more likely to attend college than in the past, older data show little evidence that CTE is responsible for this increase (U.S. Department of Education, 2004), whereas more recent local demonstration programs (with comparison groups and matched controls) suggest that CTE increases college enrollment for students who might not have gone in the absence of such programs (Griffith & Wade, 2001; MacAllum, Yoder, Scott, & Bozick, 2002). However, analyses of national data suggest that vocational education reduces the likelihood of college attendance relative to students concentrating in academic courses or even career academy students (Altonji, 1995; DeLuca et al., 2006; Levesque et al., 2008; Maxwell & Rubin, 2002).

There has been more extensive research comparing outcomes for students specifically attending career academies versus control groups of similar students. Career academies are schools-within-a-school that blend career-related themes, small learning communities, college preparatory courses, and linkages to employers (Stern, Dayton, & Rabey, 2000). These academies vary in their institutional organization and course concentrations, but usually include career clusters around health care, business/finance, communications media, and transportation technology (Kemple, 2008). Career academies have grown five-fold since the early 1990s, and include classes in tourism, health care, electronics, real estate, personal finance, business,

⁶See Cohen and Besharov (2004) and Castellano et al. (2003) for comprehensive reviews.

accounting, and the stock market. Students participate in job internships with institutions such as banks, school districts, and law firms. Studies suggest some positive effects of career academy attendance on college outcomes (Maxwell, 2001; Orr, Hughes, & Karp, 2002; Stern et al., 1992; Stern et al., 1994).⁷ The most rigorous study to date was an MDRC evaluation with a random assignment research design in which students were randomly assigned to career academies in eight cities (Kemple, 2001, 2008).⁸ This research found no significant improvement in college enrollment relative to the control group, but no decrease in college enrollment was found either, suggesting that a career focus does not necessarily diminish postsecondary avenues.

There is more consistent evidence of the positive effects of vocational education on employment outcomes (Arum & Shavit, 1995; Bishop, 1989; Bishop & Mane, 2004; Boesel & McFarland, 1994; Mane, 1999). Students who participate in some kind of vocational education or school-to-work/school-to-career program earn more and access higher quality jobs than similar students who do not participate in these programs or go on to college (Kang & Bishop, 1989; MacAllum et al., 2002, Stern et al., 1997). Nonexperimental evidence suggests that these programs can have benefits for students, especially when the content is focused and linked to the field or industry of their first job (Boesel & McFarland, 1994; MacAllum et al., 2002). The MDRC study found that career academy students (even those with several high-risk characteristics) had higher earnings and employment benefits relative to the control group and were more likely to be in management and financial occupations and less likely to be in education, social services, and food service jobs (Kemple, 2008).

Based on this evidence, one way to make the transition from high school to work more comprehensive and effective (regardless of college attendance) is to improve and expand some of these CTE programs. A recent U.S. Department of Education report (Agodini & Deke, 2004) stated, "Students in vocational courses suggest a variety of other reasons for their participation: to gain career exposure, to help them select or prepare for a college major, to use as fallback if college or other career plans fail to materialize" (p. 28). Either through anticipated future pay-offs or psychological engagement, students who combine academic and vocational coursework are the most likely to benefit (Arum & Shavit, 1995; Benson, 1997; Kang & Bishop, 1989; Plank et al., 2008).

Rose (2008) pointed out the unfortunate cognitive dichotomy between college prep and vocational education courses and convincingly argued for a reconceptualization of our definitions of intelligence to include a blending of principles of knowledge with applied technical skills. The pedagogy of many advanced college preparatory courses is highly dominated by verbal and written exercises but includes little inquiry or problem solving. Vocational education has traditionally been organized in the opposite way, with a focus on hands-on, real-world experience and connections. So, efforts to combine academic and vocational coursework should involve a fusion of the real-world applications of CTE classes and the conceptual push of academic classes (Rose, 2008). Doing so would be an opportunity to avoid the dualisms that impede the application of Dewey's concept of a democratic education (Dewey, 1916/1926).

⁷However, small sample sizes and nonrepresentative data sources make it hard to reach causal interpretations (see Castellano et al., 2003, for a review).

⁸Twice as many students applied to the program than they were able to serve, which allowed 1,063 students to be assigned to the program group and 889 students to be assigned to the control group who were not able to enroll in the academies. Site selections were not random, but the student selection was random.

There has also been some concern that the most disadvantaged students—the underserved third group—are often shut out of quality CTE programs and connections to blue-collar work. They are getting left behind. For example, many school-to-work programs implement a cut-off point for admission, such as GPA or school attendance history. Such structures may close off opportunities. National data reveal that students in the lowest income quartile are the least likely to participate in work-based learning programs in high school and the least likely to combine academic and vocational courses (DeLuca et al., 2006). Royster's (2003) ethnography in a Baltimore vocational school demonstrated that low-income Black youth were less likely to get referrals to the more lucrative and stable jobs from their teachers relative to White youth at the same school. A good deal of diversity exists in race and SES within career academies as well. Half of career academy students are Hispanic, and one-third are Black, but the majority come from two-parent households and report grades of mostly As and Bs. Only a little over a third have two or more risk factors (e.g., single parent household, low-income household, limited English proficiency, a sibling who dropped out of high school, neither parent with a high school diploma, and home alone at least three hours a day; Kemple & Rock, 1996). Educators need to do more to systematically reach out to lower performing students and other excluded students. Some particularly useful directions about how to implement this curricular integration comes from the Southern Regional Education Board's High Schools That Work (HSTW) initiative, which blends high academic standards with relevant and integrated CTE and focuses on career-bound students.⁹ The program started in 1987 and has expanded to 1,100 schools; it is one of the only schoolwide reform efforts of its kind that has improved students' achievement (American Institutes for Research, 1999). Evaluations of the initiative find that, on the school level, higher proportions of students completing the HSTW curriculum standards showed large increases in achievement in science, reading, and math; this is particularly the case in schools with higher implementation (Frome, 2001; Kaufman, Bradby, & Teitelbaum, 2000).¹⁰ The aforementioned findings suggest that providing multiple pathways to college and careers in ways that do not compromise the academic rigor necessary for college preparation is both possible and worthwhile. Oakes and Saunders (2008) described potential transformations that would dismantle, rather than replicate, the existing stratification of students into academic and vocational tracks. However, a key aspect of such transformations is the full inclusion of the underserved third group of students.

Integrate: Employment in High School with Life after High School

Most adolescents today have some kind of job while in high school, but research rarely considers the influence of coursework and formal employment on postsecondary outcomes together in the

⁹See <http://www.sreb.org/Programs/HSTW/HSTWIndex.asp>.

¹⁰We note, however, that the evaluations of HSTW were not done with randomized experiments or any other methods that might approximate a counterfactual design. Therefore, the results are still to be taken as suggestive associations. The HSTW group has recently convened a series of 15 state-level forums meant to foster collaboration between secondary and postsecondary education systems and to forge successful transitions from high school to college and careers (Bottoms & Young, 2008). The recommendations come from the feedback of educators and policymakers and include suggestions about how to strengthen the connection between high school coursework and labor market transitions and emphasize the importance of preparing students for both college and career readiness.

same study. Although sociologists have published extensively on adolescent employment, whether work during high school is harmful or helpful is still the subject of debate. Traditionally, work during high school has been linked to negative academic and emotional consequences, but that may have more to do with who decides to work and the quality, quantity, and intensity of the work (Bachman & Schulenberg, 1993; Mihalic & Elliot, 1997). Recently, Jeylan Mortimer and others have shed new light on the potential of work during high school for skill development, career exploration, and educational attainment. Many students use their employment experiences to help plan their futures and consider if and how to pursue postsecondary training. Some non-college-bound youth pursue employment as a source of fulfillment and achievement and to gain practical experience and enhance their labor market prospects when they finish high school (Entwisle, Alexander, & Olson, 2000; Mortimer, 2003; Newman, 1999). For these reasons, it would be informative to differentiate the impact on decision-making and future employment of the types and quality of jobs students have while in high school. Research finds that students tend to cluster in typical teenage jobs in retail and food preparation and service; and lower-SES, non-White students, and students with lower GPAs are less likely to access the more preferred white-, pink-, and blue-collar jobs with fewer hours. Most studies do not examine the impact of job type but, instead, focus on the effect of work intensity (hours worked) on outcomes such as future earnings and college enrollment (see Hirschman & Voloshin, 2007, for a discussion). Little is known of the relationship between other characteristics of the work or type of job and various employment and attainment outcomes.

New research suggests that advising students about links between their high school jobs and courses and their future careers might provide effective ways to manage the transition to work and make high school more relevant. In fact, half of the students who choose not to enroll in college report that they wanted to work instead, and this decision is related to early investments in paid work and local labor market conditions that reward non-college-educated labor (Bozick & DeLuca, 2008). These students were not simply those who couldn't get admitted to college; rather, they planned a career that did not involve college. Some patterns of work during high school may lead to the development of human capital—not only are they predictive of employment later on, but also influence college attainment (Staff & Mortimer, 2007). Mortimer (2003) encouraged counselors, teachers, and parents to support high-quality employment for youth so they can be more strategic while in high school and, perhaps, struggle less with employment later. Other research shows that students who find work through school contacts get better jobs (Rosenbaum, DeLuca, Miller, & Roy, 1999). One thing is clear from this research: Most high school students work while in school. Schools and parents can capitalize on this opportunity and take advantage of early employment experiences to better prepare students to navigate the transition to full-time work when it occurs. Schools should take seriously their role in working with companies, local employers, and neighborhood associations to link students with jobs and internships on a massive scale so that students can be in a position to gain valuable experience to inform their future pathways.

Integrate: CTE from High School into and through Two-Year Colleges

It would be shortsighted to suggest changes in secondary schooling without considering the integration of a career-relevant focus between secondary and postsecondary education,

especially because most students eventually attend some college. The gap in earnings between high school and college education has increased since the 1970s (Karoly, 1992; Levy & Murnane, 1992). This widening gap has fueled a college-for-all ethos, increases in college enrollment, and the proliferation of subbaccalaureate programs, thus delaying much career preparation and decision-making until after high school. As a result, many youth in poverty are leaving high school without having received much career preparation or guidance. The shift of career preparation to the postsecondary level means that costs have increased sharply for both students and taxpayers. This is particularly problematic given the fact that half of all students who enroll do not complete a degree. Furthermore, although the largest growth in two-year occupational enrollments has been at community colleges, the most rapid growth has occurred recently in the for-profit sector, which disproportionately serves lower-income minorities and can cost more than five times as much as community college tuition—and even more than average in-resident tuition rates at a state university. With their heavy investment in recruitment and marketing, for-profits have capitalized on the desperation of many first-generation college students whose career decision-making is void of much assistance from high schools (Chung & Deil-Amen, 2008; Person & Rosenbaum, 2006; Rosenbaum, Deil-Amen, & Person, 2006).

To enhance opportunities for students, secondary and postsecondary career preparation needs to be better integrated. After all, over 75% of CTE students go on to some form of college shortly after high school (Laird et al., 2006; Levesque et al., 2008). Despite this reality, there are very few state-level efforts to help increase access to postsecondary education for students focused in occupational concentrations (Castellano & Overman, 2009). However, there is some promising new evidence that Tech Prep programs, which provide a link between high schools and community colleges, increase high school completion and college enrollment (Cellini, 2006). It seems that high school CTE has the potential to shift career preparation earlier, reduce its costs to the student, and also create a stronger and more meaningful bridge to postsecondary CTE education. This was at the heart of the Perkins reauthorization in 2006, which attempted to blur the lines between career relevant education and college preparation by “promoting . . . services and activities that integrate rigorous and challenging academic and career and technical instruction, and that link secondary education and postsecondary education” (Carl D. Perkins Career & Technical Education Improvement Act of 2006).

Beyond curriculum integration, there is a need to expand high school counseling and structured bridges to college. More counselors trained for both career and college are needed to guide students for transitions into both work and college as they begin planning their educational and occupational futures. Initiatives like Early College high schools have shown some potential to increase student preparedness and facilitate the transition to college more quickly. Since 2002, more than 200 high schools have been redesigned so that low-SES and minority youth, first-generation college goers, and English language learners can simultaneously earn a high school diploma and up to two years of college credit, tuition-free. Evaluations thus far are limited, and reveal modest but promising improvements in teaching and learning, in creating a college-going culture, and in students’ measured achievement on state tests. However, many of these initiatives have had to scale down their goals of students actually earning college credit to focus on the goal of improving college preparedness instead. Such promising efforts need more rigorous evaluations that adequately control for difference between participants and nonparticipants (Lewis et al., 2008). Aiming such

restructuring toward more professional relevance in the high school curriculum and more movement of students into and through four-year institutions and restricted access, applied science subbaccalaureate programs can help to avoid the reproduction of existing patterns of stratification that might result in student enrollment in open access community college remedial and occupational pathways.

Transitions from CTE into college should extend beyond a two-year trajectory. Two-year colleges need to better prepare youth for adulthood in ways that encompass the transition into work and transition into four-year programs. This integration has already begun. Two-year occupational education is no longer merely a path directly into the labor market: It is also a path to higher degrees. Not only are the economic rewards greater for vocational students than they are for academic students who do not transfer: Students enrolled in applied associates degree programs are just as likely to transfer to four-year colleges as academic students (Brint, 2003). Increasing numbers of Associate in Applied Science (AAS) students desire to transfer (Townsend & Wilson, 2006) and almost 32% of two-year students with majors in applied fields indicate an intent to transfer to a four-year institution (Berkner, Horn, & Clune, 2000). There are now more students transferring nationally with AAS degrees than students with traditional transfer degrees (Bernstein, 1986; Cohen & Brawer, 1996; Cohen & Ignash, 1994; Prager, 1988; Townsend, 2001), and articulation agreements for the AAS are becoming increasingly common between specific two- and four-year institutions and at the state level. Some four-year institutions have developed applied baccalaureates specifically designed to incorporate such transfer students (Townsend & Wilson, 2006). By deliberately aiming to create bridges for the underserved third group into these applied yet articulated subbaccalaureate programs, access to these avenues can be expanded and current trends in socioeconomic stratification can be systematically disrupted.

Integrate: Link Secondary and Subbaccalaureate Education to the Labor Market

Other countries have education systems with stronger ties to the occupational structure of their labor market (Kerckhoff, 1995, 2001). In the United States, these links are considerably weaker. At the bottom of the occupational hierarchy (where many of the underserved third group are positioned), through federally legislated workforce development initiatives, community colleges have served a small segment of marginal workers and citizens. Further up the occupational scale, institutionally driven contract education partnerships with specific employers benefit already-employed workers looking for training and advancement (Dougherty & Bakia, 2000; Grubb, 2001).

However, despite a historical shift toward a more occupational focus, youth entering standard associates degree programs have not benefited from strong labor market linkages (Deil-Amen & Rosenbaum, 2004; Grubb, 1996). Community colleges had weak ties with employers, little understanding of their skill needs, and little to no systematic career guidance or job-placement assistance to ensure employment in students' field of study (Brint & Karabel, 1989; Deil-Amen & Rosenbaum, 2004). Because some two-year college occupational programs represent more promising avenues of opportunity to quality jobs and transfer to higher degrees, more focus needs to be placed on providing better connections between occupational students and jobs.

CONCLUSION: BEYOND THE COLLEGE/CAREER DICHOTOMY

Technically oriented health, business, and computer fields are among the fastest growing areas in the labor market, and this translates into predicted growth in demand for jobs requiring associates degrees or certificates (Cohen & Besharov, 2004; Hecker, 2005). However, jobs for high school graduates will continue to dominate the economy (Rothstein, 2002), so it is important for high school students to plan for both college success and the possibility of entering the labor market without a four-year degree. In Clark's (1960a) study, cooling-out led students to a terminal, but nonetheless structured, pathway into the labor market. Postsecondary access has grown dramatically, and it is time to revisit the idea of structural alternatives that have meaningful connections to the labor market.

If embedded within a college-preparatory curriculum, CTE can provide a dual set of alternatives—a structured pathway into jobs and college. A career focus can raise students' awareness of career trajectories and of the opportunities and hurdles of applied associate's degrees with more demanding admissions requirements, while simultaneously preserving opportunities for transfer to four-year college and university majors. The use of career clusters is a good example of the how to present career options by contextualizing of jobs within industries categorized by the level of education necessary to acquire such positions. Educating students about these job options while also presenting and discussing potential pathways to advancement from one level to the next—both on-the-job and through further education—would illuminate a range of possibilities about which many students do not receive systematic guidance. Further, employment while in school should be better connected to possible careers after high school, as some research suggests that working in high school can have positive consequences for college and labor market success (Light, 2002; Staff & Mortimer, 2007).

For students who do choose to attend college, many arrive underprepared and unaware of career options. Unfortunately, many who seek a concrete route to a good job pay the high cost of for-profit colleges when the same programs are often offered at much lower cost in community colleges or state universities. Preparation for careers needs to begin in high school and be reasonably linked to both immediate transitions into work and as transitions into and through college. This is especially urgent given the current loan dilemmas of for-profit institutions and of students who drop out of public and private institutions with debt burdens. Researchers need to consider models of stratification that define career preparation as more than a lesser alternative. Rather, it is an issue for all students, and it is particularly absent among those students who are most in need of it—those most likely to fail in their college attempt and least likely to be prepared for a successful labor market alternative. Theory needs to consider, yet transcend, categories of race, class, gender, disability, and language to refocus on defining this underserved third as a distinctly disadvantaged underclass at cumulative risk of dropping out of high school and college due to their structural positioning within our educational institutions. Policy efforts should be directed toward experimenting with programs designed around their needs, intervening early and often to provide relevant services.

The exact support mechanisms that would best serve various subpopulations of low-income youth are relatively unknown. Successful efforts at change should be systematically compiled to better inform future research and reform efforts. Oakes and Saunders (2008) detailed some emerging ideas about how high schools can provide a variety of pathways, all of which combine

challenging career preparation with college preparation. Stoll (2008) examined the current landscape of economic opportunities, employers' skill requirements, and links between education and economic demands; he argued that preparation for both college and work benefits the whole labor market, not just the underserved and at risk. This is a key concern, because many CTE and other vocational initiatives may be missing the most disadvantaged populations—the underserved third. An understanding of how best to support and provide resources to address their needs is yet underdeveloped, which is why those implementing programs should remain aware of this oversight and specifically aim to direct services to these students.¹¹ Broad efforts should be applied to improve instructional quality while structuring in opportunities for all students to think ahead and prepare for occupations before beginning their college journey or work careers. Leaving students to navigate their occupational future more or less on their own after high school, especially when the cost of college and the noncompletion rates are so high seems unreasonable.

Accomplishing this in a way that also maintains, strengthens, or even redefines academic rigor at both the secondary and postsecondary level is a challenge and forms the basis of current research. Oakes and Saunders (2008), in a collection of work by various authors addressing this issue, suggest such a redefinition. Their “multiple pathways” approach calls for a move beyond existing structures of tracking toward the construction of curricular pathways, all of which include both academically rigorous, college-preparatory requirements and challenging professional and technical knowledge grounded in industry standards. This is at the heart of the recent work that the Office of Vocational and Adult Education (OVAE) and others are doing to create career clusters and the new programs of study that are central to the Perkins IV legislation (see Lewis et al., 2008). Courses within each pathway would convey practical skill of immediate value while also providing the knowledge and critical thinking skills necessary for college entry and success, as Lucas (2008) said, “Graduates will be competitive for college or advanced training while also being able to enter the paid labor force directly” (p. 234). An extreme restructuring of American high schools may be needed to transform the preparation teachers provide their most underserved students. In the meantime, aligning career curriculum with academic, college-level standards and allowing for multiple subbaccalaureate avenues may ease us toward such a transformation. Looking forward, we hope to learn whether this kind of alignment is possible and effective under the new Perkins programs of study and additional state and local based efforts to implement such career pathways through creative and transformative efforts.

ACKNOWLEDGMENTS

A portion of this work was supported by a Spencer Foundation Residential Fellowship for the first author, as well as a Travel Grant from the Spencer Foundation for both authors.

¹¹Valentine et al. (2009) described the postsecondary transition points at which marginalized students might falter and examined the efficacy of programs meant to facilitate these transitions for at-risk youth. Most of the programs they analyzed tried to assist with the transition into and first two years of a four-year college, rather than programs focused on transitions through community college or occupational education. Owing to weak research designs, the effectiveness of such support programs in helping at-risk youth make connections to postsecondary opportunities in school and work remains unknown.

REFERENCES

- Advisory Committee for the National Assessment of Vocational Education. (2003). *Report of the advisory committee for the national assessment of vocational education*. Washington, DC: U.S. Department of Education Office of the Undersecretary.
- Agodini, R., & Deke, J. (2004). *The relationship between high school vocational education and dropping out* [Report submitted to the U.S. Planning and Evaluation Service]. Princeton, NJ: Mathematica Policy Research.
- Altonji, J. (1995). The effects of high school curriculum on education and labor market outcomes. *Journal of Human Resources, 30*, 409–438.
- American Institutes for Research. (1999). *An educators' guide to school wide reform*. Arlington, VA: Educational Research Service.
- Arum, R., & Shavit, Y. (1995). Secondary vocational education and the transition from school-to-work. *Sociology of Education, 68*, 187–204.
- Astin, A., & Oseguera, L. (2004). The declining equity of American higher education. *Review of Higher Education, 27*, 321–341.
- Attewell, P., & Lavin, D. (2007). *Passing the torch: Does higher education for the disadvantaged pay off across the generations?* New York, NY: Russell Sage Foundation.
- Bachman, J. G., & Schulenburg, J. (1993). How part-time work intensity relates to drug use, problem behavior, time use, and satisfaction among high school seniors: Are these consequences or merely correlates? *Developmental Psychology, 29*, 220–235.
- Bailey, T. (2009). Addressing the needs of underprepared students. *Community College Research Center (CCRC) Currents*. New York, NY: Institute on Education and the Economy (IEE) at Teachers College, Columbia University.
- Barton, P. E. (2008). How many college graduates does the U.S. labor force really need? *Change Magazine, 40*(1), 16–21.
- Benson, C. S. (1997). The new vocationalism in the United States: Potential problems and outlook. *Economics of Education Review, 16*, 202–212.
- Berkner, L., Horn, L., & Clune, M. (2000). *Descriptive summary of 1995–96 beginning postsecondary students: Three years later, with an essay on students who started at less-than-4-year institutions*. Washington, DC: National Center for Education Statistics.
- Bernstein, A. (1986). The devaluation of transfer: Current explanations and possible causes. In L. S. Zwerling (Ed.), *The community college and its critics: New directions for community colleges* (pp. 31–40). San Francisco, CA: Jossey-Bass.
- Bishop, J. (1989). Occupational training in high school: When does it pay off? *Economics of Education Review, 8*, 1–15.
- Bishop, J., & Mane, F. (2004). The impacts of career-technical education on high school labor market success. *Economics of Education Review, 23*, 381–402.
- Boesel, D., & McFarland, L. (1994). *National assessment of vocational education final report to congress: Vol. 1: Summary and recommendations*. Washington, DC: U.S. Department of Education.
- Bottoms, G., & Young, M. (2008). *Lost in transition: Building a better path from school to college and careers*. Atlanta, GA: Southern Regional Education Board.
- Bozick, R., & DeLuca, S. (2009). *Not making the transition to college: School, work, and opportunities in the lives of contemporary high school graduates*. Paper under review.
- Bragg, D. (2001). *Promising outcomes for tech prep participants in eight local consortia: A summary of initial results*. St. Paul, MN: University of Minnesota, National Research Center for Career and Technical Education.
- Bragg, D., Puckett, P. A., Reger, W., & Ortman, T. J. (1997). *Tech-prep/school-to-work partnerships: More trends and challenges* (MDS-1078). Berkeley, CA: University of California, National Center for Research in Vocational Education.
- Brint, S. (2003). Few remaining dreams: Community colleges since 1985. *Annals of the American Academy of Political and Social Science, Community College at a Crossroads: Emerging Issue, 586*, 16–37.
- Brint, S., & Karabel, J. (1989). *The diverted dream: Community colleges and the promise of educational opportunity in America, 1900–1985*. New York, NY: Oxford University Press.
- Cabrera, A., & LaNasa, S. (2002). *Understanding the college choice process of disadvantaged students*. San Francisco, CA: Jossey-Bass.

- Carl, D. Perkins Career and Technical Education Act of 2006, Pub. L. No. 109-270 (2006).
- Castellano, M., & Overman, L. T. (2009, June). *Community college access and affordability for occupational and non-traditional students*. Louisville, KY: National Research Center for Career and Technical Education, University of Louisville. Retrieved from http://136.165.122.102/UserFiles/File/pubs/NRCCTE_Comm_College_research_book.pdf
- Castellano, M., Stringfield, S., & Stone III, J. R. (2003). Secondary career and technical education and comprehensive school reform: Implications for research and practice. *Review of Educational Research*, 73, 231–272.
- Cellini, S. (2006). Smoothing the transition to college? The effect of tech-prep programs on educational attainment. *Economics of Education Review*, 25, 394–411.
- Chung, A., & Deil-Amen, R. (2008, November). *For-profit colleges and the students who choose them: Identifying paradoxes, pathways, and possibilities*. Paper presented at the Association for the Study of Higher Education Annual Meeting, Jacksonville, FL.
- Clark, B. (1960a). *The open door college*. New York, NY: McGraw-Hill.
- Clark, B. (1960b). The cooling out function in higher education. *American Journal of Sociology*, 65, 569–576.
- Cohen, A., & Brawer, F. (1996). *The American community college* (3rd ed.). San Francisco, CA: Jossey-Bass.
- Cohen, A., & Ignash, J. (1994). An overview of the total credit curriculum. In A. M. Cohen (Ed.), *Relating curriculum and transfer: New directions for community colleges* (Vol. 86, pp. 13–29). San Francisco, CA: Jossey-Bass.
- Cohen, M., & Besharov, D. J. (2004). *The important role of career and technical education: Implications for federal policy* [Welfare Reform Academy Report]. Washington, DC: American Enterprise Institute for Public Policy Research.
- Deil-Amen, R., & Rosenbaum, J. E. (2002). The unintended consequences of stigma-free remediation. *Sociology of Education*, 75, 249–268.
- Deil-Amen, R., & Rosenbaum, J. E. (2004). Charter building at low status colleges. *Sociology of Education*, 77, 245–265.
- Deil-Amen, R., & Tevis, T. (2007, August). *Misalignment of hope and habitus: The relevance of entrance exams in Black and Latino students' college plans*. Paper presented at the Annual Meeting of the American Sociological Association, Montreal, Canada.
- Deil-Amen, R., & Turley, R. (2007). A review of the transition to college literature in sociology. *Teachers College Record*, 109(10). Retrieved from <http://www.tcrecord.org/content.asp?contentid=12583>
- DeLuca, S., Plank, S. B., & Estacion, A. (2006). *Does career and technical education affect college enrollment?* St. Paul, MN: National Research Center for Career and Technical Education, University of Minnesota.
- Dewey, J. (1926). *Democracy and education: An introduction to the philosophy of education*. New York, NY: Macmillan. (Original work published 1916)
- Dohm, A., & Shniper, L. (2007). Occupational employment projections to 2016. *Monthly Labor Review*, 130(11), 86–125.
- Dougherty, K. J. (1994). *The contradictory college: The conflicting origins, impacts, and futures of the community college*. Albany, NY: State University of New York Press.
- Dougherty, K. J., & Bakia, M. (2000). *The new economic development role of the community college* (CCRC Research Brief, No. 6) Albany, NY: Community College Research Center, Teachers College, Columbia University.
- Education Trust. (1999). *Ticket to nowhere. The gap between leaving high school and entering college and high performance jobs*. Retrieved from <http://www.edtrust.org/dc/press-room/archive/press-releases/1999>
- Entwisle, D. R., Alexander, K., & Olson, L. S. (2000). Early work histories of urban youth. *American Sociological Review*, 65, 279–297.
- Frome, P. (2001). *High schools that work: Findings from the 1996 and 1998 assessments*. Research Triangle Park, NC: Research Triangle Institute Report.
- Gamoran, A., & Mare, R. D. (1989). Secondary school tracking and education inequality: Compensation, reinforcement, or neutrality? *American Journal of Sociology*, 94, 1146–1183.
- Gandara, P., & Contreras, F. (2009). *The Latino education crisis: The consequences of failed social policies*. Cambridge, MA: Harvard University Press.
- Goldberger, S. (2007). Doing the math: What it means to double the number of low-income college graduates. In N. Hoffman, J. Vargas, A. Venezia, & M. S. Miller (Eds.), *Minding the gap: Why integrating high school with college makes sense and how to do it* (pp. 27–41). Cambridge, MA: Harvard Education Press.

- Gray, K., & Herr, E. (2000). *Other ways to win: Creating alternatives for high school graduates*. Thousand Oaks, CA: Corwin Press.
- Greene, J., & Foster, G. (2003). *Public high school graduation and college readiness rates in the United States* (Manhattan Institute, Center for Civic Information Education Working Paper, No. 3). New York, NY: Manhattan Institute.
- Griffith, J., & Wade, J. (2001). The relation of high school career- and work-oriented education to postsecondary employment and college performance: A six-year longitudinal study of public high school graduates. *Journal of Vocational Education Research*, 26, 328–365.
- Grubb, W. N. (1996). *Working in the middle: Strengthening education and training for the mid-skilled labor force*. San Francisco, CA: Jossey-Bass.
- Grubb, W. N. (2001). From isolation to integration: Postsecondary vocational education and emerging systems of workforce development. In D. Bragg (Ed.), *New directions for community colleges* (pp. 27–38). Edison, NJ: Wiley.
- Grubb, W. N. (2002). Learning and earning in the middle, Part I: National Studies of Pre-baccalaureate Education. *Economics of Education Review*, 21, 299–321.
- Hecker, D. E. (2005). Occupational employment projections to 2014. *Monthly Labor Review*, 128(11), 70–101.
- Hirschman, C., & Voloshin, I. (2007). The structure of teenage employment: Social background and the jobs held by high school seniors. *Research in Social Stratification and Mobility*, 25, 189–203.
- Horn, L., & Berger, R. (2005). *College persistence on the rise? Changes in 5-year degree completion and postsecondary persistence rates between 1994 and 2000*. Washington, DC: National Center for Education Statistics.
- Kane, T. J., & Rouse, C. E. (1995). Labor market returns to two- and four-year college. *American Economic Review*, 85, 600–614.
- Kang, S., & Bishop, J. H. (1989). Vocational and academic education in high school: Complements or substitutes. *Economics of Education Review*, 8, 133–148.
- Karoly, L. A. (1992). Changes in the distribution of individual earnings in the United States, 1967–1986. *Review of Economics and Statistics*, 74, 107–15.
- Kaufmann, P., Bradby, D., & Teitelbaum, P. (2000). *High Schools That Work and whole school reform: Raising academic achievement of vocational completers through the reform of school practice*. Berkeley, CA: National Center for Research in Vocational Education.
- Kemple, J. J. (2001). *Career academies: Impacts on students' initial transitions to postsecondary education and employment*. New York, NY: MDRC.
- Kemple, J. J. (2008). *Career academies: Long term impacts of labor market outcomes, educational attainment and transitions to adulthood*. New York, NY: MDRC.
- Kemple, J. J., & Rock, J. L. (1996). *Career academies early implementation lessons from a 10-site evaluation*. New York, NY: MDRC.
- Kerckhoff, A. C. (1993). *Diverging pathways: Social structure and career deflections*. Cambridge, MA: Cambridge University Press.
- Kerckhoff, A. C. (1995). Institutional arrangements and stratification processes in industrial societies. *Annual Review of Sociology*, 21, 323–347.
- Kerckhoff, A. C. (2001). Education and social stratification processes in comparative perspective. *Sociology of Education, Extra Issue*, 3–18.
- Kulik, J. A. (1998). Curricular tracks and high school vocational education. In A. Gamoran (Ed.), *The quality of vocational education: Background papers from the 1994 National Assessment of Vocational Education* (pp. 65–131). Washington, DC: U.S. Department of Education.
- Laird, J., Chen, X. X., & Levesque, K. (2006). *The postsecondary educational experiences of high school career and technical education concentrators: Selected results from the nels:88/2000 postsecondary education transcript study (PETS) 2000* (NCES 2006-309rev). Washington, DC: National Center for Education Statistics. Retrieved from <http://nces.ed.gov/pubsearch>
- Levesque, K., Lauen, D., Teitelbaum, P., Alt, M., & Librera, S. (2000). *Vocational education in the United States: Toward the year 2000* (NCES 2000-029). Washington, DC: U.S. Department of Education.
- Levesque, K., Laird, J., Hensley, E., Choy, S. P., Cataldi, E. F., & Hudson, L. (2008). *Career and technical education in the United States: 1990 to 2005* (NCES 2008-035). Washington, DC: National Center for Education Statistics.
- Levy, F. S., & Murnane, R. J. (1992). U.S. earnings levels and earnings inequality: A review of recent trends and proposed explanations. *Journal of Economic Literature*, 30, 1333–1381.

- Lewis, M. V., Kosine, N. R., & Overman, L. (2008). *What will be the impact of programs of study? A preliminary assessment based on similar previous initiatives, state plans for implementation, and career development theory*. Louisville, KY: National Research Center for Career and Technical Education, University of Louisville. Retrieved from http://136.165.122.102/UserFiles/File/pubs/POS_Study_Morgan.pdf
- Light, A. (2002). High school employment, high school curriculum and post-school wages. *Economics of Education Review*, 18, 291–309.
- Long, B., & Kurlaender, M. (2009). Do community colleges provide a viable pathway to a baccalaureate degree? *Educational Evaluation and Policy Analysis*, 31(1), 30–53.
- Lucas, S. R. (1999). *Tracking inequality*. New York, NY: Teachers College Press.
- Lucas, S. R. (2008). Constructing equal pathways in and effectively maintained inequality society. In J. Oakes & M. Saunders (Eds.), *Beyond tracking: Multiple pathways to college, career, and civic participation* (pp. 233–250). Cambridge, MA: Harvard Education Press.
- Lynch, R. L. (2000). High school career and technical education for the first decade of the 21st century. *Journal of Vocational Education Research*, 25, 155–198.
- MacAllum, K., Yoder, K., Scott, K., & Bozick, R. (2002). *Moving forward: College and career transitions of LAMP graduates*. Washington, DC: Academy for Educational Development.
- Mane, F. (1999). Trends in the payoff to academic and occupation-specific skills: The short and medium run returns to academic and vocational high school courses for non-college-bound students. *Economics of Education Review*, 18, 417–437.
- Marcotte, D. E., Bailey, T., Borkoski, B., & Kienzl, G. S. (2005). The returns to education at community colleges: Evidence from the national education longitudinal survey. *Educational Evaluation and Policy Analysis*, 27, 157–175.
- Maxwell, N. (2001). Step to college: Moving from the high school career academy through the four-year university. *Evaluation Review*, 25, 619–654.
- Maxwell, N., & Rubin, V. (2002). High school career academies and postsecondary outcomes. *Economics of Education Review*, 21, 137–152.
- Mihalic, S. W., & Elliott, D. (1997). Short- and long-term consequences of adolescent work. *Youth and Society*, 28, 464–498.
- Mortimer, J. T. (2003). *Working and growing up in America*. Cambridge, MA: Harvard University Press.
- Staff, J., & Mortimer, J. T. (2007). Educational and work strategies from adolescence to early adulthood: Consequences for educational attainment. *Social Forces*, 85, 1169–1194.
- National Center for Education Statistics. (1999). *1998 Revision of the Secondary School Taxonomy* (Working paper no. 1999-06). Washington, DC: U.S. Department of Education.
- National Center for Education Statistics. (2001). *Features of occupational programs at the secondary and postsecondary education levels* (NCES 2001-018). Washington, DC: U.S. Department of Education.
- National Center for Education Statistics. (2003). *Remedial education at degree-granting postsecondary institutions in fall 2000*. Washington, DC: U.S. Department of Education.
- National Center for Higher Education Management Systems. (2007). *Adding it up: State challenges for increasing college access and success*. Boston, MA: National Center for Higher Education Management Systems and Jobs for the Future, Making Opportunity Affordable. Retrieved from http://www.cpec.ca.gov/CompleteReports/ExternalDocuments/Adding_It_Up.pdf
- National Research Council, and Institute of Medicine. (2004). *Engaging schools: Fostering high school students' motivation to learn*. Washington, DC: National Academy Press.
- Newman, K. S. (1999). *No shame in my game: The working poor in the inner city*. New York, NY: Alfred A. Knopf and Russell Sage.
- Oakes, J. (1985). *Keeping track*. New Haven, CT: Yale University Press.
- Oakes, J., & Saunders, M. (2008). *Beyond tracking: Multiple pathways to college, career, and civic participation*. Cambridge, MA: Harvard Education Press.
- Orfield, G., Marin, P., & Horn, C. L. (Eds.). (2005). *Higher education and the color line: College access, racial equity, and social change*. Cambridge, MA: Harvard Education Press.
- Orr, M. T., Hughes, K., & Karp, M. (2002, April). *A quality transition: Career academy seniors' improved preparedness and alumni's career and educational success*. Paper presented at the annual meeting of the American Educational Research Association, New Orleans, LA.

- Parsad, B., & Lewis, L. (2003). *Remedial education at degree-granting postsecondary institutions in fall 2000*. Washington, DC: U.S. Department of Education, National Center for Education Statistics. Retrieved from <http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2004010>
- Perna, L. W. (2006). Studying college choice: A proposed conceptual model. In J. C. Smart (Ed.), *Higher education: Handbook of theory and research, XXI*: 91–157. New York, NY: Springer.
- Person, A. E., & Rosenbaum, J. E. (2006). Chain enrollment and college enclaves: Benefits and drawbacks of Latino college students' enrollment decisions. *New Directions for Community Colleges, 133*, 51–60.
- Plank, S., DeLuca, S., & Estacion, A. (2008). High school dropout and the role of career and technical education: A survival analysis of surviving high school. *Sociology of Education, 81*, 345–370.
- Pittman, R. B. (1991). Social factors, enrollment in vocational/technical courses, and high school dropout rates. *Journal of Educational Research, 84*, 288–295.
- Prager, C. (1988). The other transfer degree. In C. Prager (Ed.), *Enhancing articulation and transfer. New directions for community colleges, 61* (pp. 77–88). San Francisco, CA: Jossey-Bass.
- Rose, M. (2008). Blending “hand work” and “brain work”: Can multiple pathways deepen learning? In J. Oakes & M. Saunders (Eds.), *Beyond tracking: Multiple pathways to college, career, and civic participation* (pp. 21–35). Cambridge, MA: Harvard Education Press.
- Rosenbaum, J. E. (1976). *Making inequality: The hidden curriculum of high school tracking*. New York, NY: Wiley.
- Rosenbaum, J. E. (2001). *Beyond college for all: Career paths of the forgotten half*. New York, NY: Russell Sage.
- Rosenbaum, J. E., Deil-Amen, R., & Person, A. E. (2006). *After admission: From college access to college success*. New York, NY: Russell Sage.
- Rosenbaum, J. E., DeLuca, S., Miller, S. R., & Roy, K. (1999). Pathways into work: Short and long term effects of personal and institutional ties. *Sociology of Education, 72*, 179–196.
- Rothstein, R. (2002). Out of balance: Our understanding of how schools affect society and how society affects schools (Essay, 30th Anniversary Conference, Traditions of Scholarship in Education). Chicago, IL: The Spencer Foundation.
- Royster, D. (2003). *Race and the invisible hand: How White networks exclude Black men from blue collar jobs*. Los Angeles, CA: University of California Press.
- Rumberger, R. W. (1981). The rising incidence of over education in the U.S. labor market. *Journal of Human Resources, 1*, 293–314.
- Schneider, B., Swanson, C., & Riegle-Crumb, C. (1998). Opportunities for learning: Course sequences and positional advantages. *Social Psychology of Education, 2*, 25–53.
- Staff, J., & Mortimer, J. (2007). Educational and work strategies from adolescence to early adulthood: Consequences for educational attainment. *Social Forces, 85*, 1169–1194.
- Stern, D., Dayton, C., & Raby, M. (2000). *Career academies: Building blocks for reconstructing American high schools*. Berkeley, CA: University of California at Berkeley.
- Stern, D., Finkelstein, N., Urquiola, M., & Cagampang, H. (1997). What difference does it make if school and work are connected? Evidence on co-operative education in the United States. *Economics of Education Review, 16*, 213–229.
- Stern, D., Raby, M., & Dayton, C. (1992). *Career academies: Partnerships for reconstructing American high schools*. San Francisco, CA: Jossey-Bass.
- Stern, D., Stone, J. III., Hopkins, C., McMillion, M., & Crain, R. (1994). *School-based enterprise: Productive learning in American high schools*. San Francisco, CA: Jossey-Bass.
- Stoll, M. A. (2008). Can multiple pathways link vulnerable groups to changing labor markets? In J. Oakes & M. Saunders (Eds.), *Beyond tracking: Multiple pathways to college, career, and civic participation* (pp. 113–130). Cambridge, MA: Harvard Education Press.
- Stone, J. R. III. (2000). Editor's notes. *Journal of Vocational Education Research, 25*, 85–91.
- Townsend, B. K. (2001) Blurring the lines: Transforming terminal education to transfer education. In D. Bragg (Ed.), *New Directions for Community Colleges, 115*, 63–72.
- Townsend, B. K., & Wilson, K. B. (2006). The transfer mission: Tried and true, but troubled? In K. Dougherty & B. Townsend (Eds.), *New directions for community colleges, 136*, 33–41.
- U.S. Bureau of Labor Statistics. (2001). *Office, administrative support largest occupation*. Washington, DC: Author. Retrieved from <http://www.bls.gov/opus/td/2001/Nov/wk4/art01.htm>

- U.S. Bureau of Labor Statistics. (2006). *Occupational employment and wages, 2006. Figure 1 Largest occupations in the United States, May*. Washington, DC: Author.
- U.S. Bureau of Labor Statistics. (2007). *A profile of the working poor, 2005, Report 1001 Table 3.2*. Washington, DC: Author. Retrieved from <http://www.bls.gov/cps/cpswp2005.pdf>
- U.S. Department of Education. (2004). *National Assessment of Vocational Education. Final report to Congress*. Washington, DC: Author. Retrieved from <http://www.ed.gov/rschstat/eval/sectech/nave/navefinal.pdf>
- U.S. Department of Education. (2006). *A test of leadership: Charting the future of U.S. higher education*. Washington, DC. Retrieved from <http://www.ed.gov/about/bdscomm/list/hiedfuture/reports/final-report.pdf>
- Valentine, J. C., Hirschy, A. S., Bremer, C., Novillo, W., Castellano, M., & Banister, A. (2009). *Systematic reviews of research: Postsecondary transitions—Identifying effective models and practices*. Louisville, KY: National Research Center for Career and Technical Education, University of Louisville. Retrieved from http://136.165.122.102/UserFiles/File/pubs/Valentine_Postsecondary_Transitions.pdf
- Vanfossen, B., Jones, J., & Spade, J. (1987). Curriculum tracking and status maintenance. *Sociology of Education*, 60, 104–122.
- Vargas, J. (2004) *College knowledge: Addressing information barriers to college*. Boston, MA: Education Research Institute.
- Venezia, A., Kirst, M. W., & Antonio, A. L. (2003). *Betraying the college dream: How disconnected K–12 and postsecondary education systems undermine student aspirations*. Palo Alto, CA: Bridge Project, Stanford University.
- Zwerling, S. (1976). *Second best: The crisis of the community college*. New York, NY: McGraw-Hill.