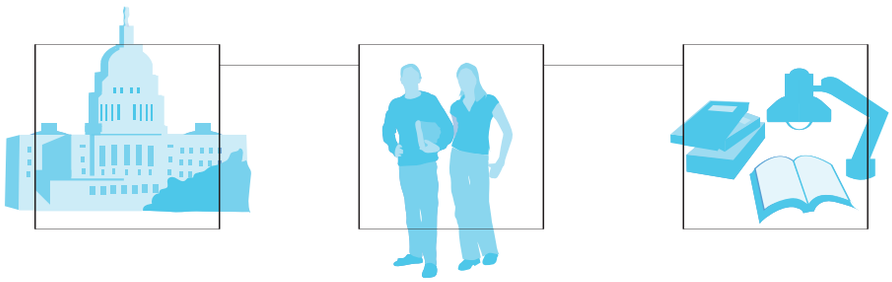
The Link between High School Reform and College Access and Success for Low-Income and Minority Youth

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2005

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AMERICAN YOUTH POLICY FORUM
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EXECUTIVE SUMMARY

The mission of the Pathways to College Network (PCN) is to focus on improving college preparation, access, and success for underserved populations, including low-income, underrepresented minority, and first-generation students. To ascertain where we currently stand with respect to achieving our mission, this updated paper—originally written in 2002—identifies and analyzes school reforms that present evidence of college preparation for all students.

Although greater numbers of students are enrolling in college today than they were 20 years ago, the rates of college enrollment for African American and Latino students remain considerably lower than those of White and Asian students. Most disturbing perhaps, is the lack of preparedness or readiness of high school graduates for postsecondary education. Multiple reports have documented that students who enter postsecondary education are academically ill-prepared. Some of the reform efforts of the last 20 years have helped increase the number of students—minority and low-income minority students in particular—who are prepared to enroll in college or other postsecondary institutions. Yet, for high school reform to effectively address the issue of college access for all students, efforts must intentionally focus more on how to address the predictors of college enrollment through the best components or practices of existing school reform efforts.

In this paper, we examine the predictors of college-going behavior and how they have been addressed within the school reform movement. We then extrapolate the promising practices from existing reform initiatives and make recommendations for the future. To do this, we reviewed the literature on school reform, college access, and the predictors of college-going behavior, and analyzed research and materials pertaining to a set of school reform designs. We found that among the predictors of college-going behavior, academic rigor and strong social and academic support were the most crucial predictors of a student's successful enrollment in, and completion of, postsecondary education. A variety of reform initiatives have been created to address both rigor and support, such as efforts focused on providing an academically rigorous core curriculum; providing opportunities for students to earn college credit in high school through Advanced Placement, the International Baccalaureate Program, and dual enrollment; providing academic and social support by restructuring how a high school is organized; and aligning curricula, standards, and assessments to higher education requisites.

In reviewing reform models, we limited our analysis to pre-packaged school reform designs, that is, to restructuring plans based on a vision of how schools should be. Numerous institutions of higher education and education organizations have developed school reform designs or models that can be implemented to help schools and school districts restructure to increase student achievement. The following models were reviewed: America's Choice, Advancement Via Individual Determination (AVID), Coalition of Essential Schools, First Things First, High Schools That Work, Talent Development High Schools, GE Foundation College Bound, and small learning environments. Many of the reforms we examined base their efforts to restructure high schools on the provision of rigorous curricula, as well as on the creation of more personalized learning environments so that students receive both academic and social support.

We also reviewed programs that align curricula with college entry requirements, including EQUITY 2000, Urban Systemic Initiative, Advanced Placement, and International Baccalaureate, as well as programs that align secondary and postsecondary systems, such as dual enrollment, Middle College and Early College High Schools, Tech Prep and 2+2 Articulation, Project GRAD, and GEAR UP.

More than a decade ago, *All One System* (Hodgkinson, 1985) demonstrated the dependency of the higher education system on the quality of the graduates from the K-12 system. Many new ideas and initiatives now are designed to link the systems, or at least recognize the value that should be placed on college preparation. These more recent reform initiatives must be evaluated and then expanded as their current impact is more local than national.

Through our review and analysis, we have identified four practices that are most commonly

given credit for the success of low-income and minority high school students:

- Access to a rigorous academic common core curriculum for all students.
- The prevalence, in structure or climate, of personalized learning environments for students.
- A balance of academic and social support for students in developing social networks and instrumental relationships.
- Alignment of curriculum between various levels, such as high school and postsecondary, and between levels within the K-12 system.

We conclude that high school reform efforts that integrate these practices have the greatest potential to improve college access and success for underserved minority and low-income students. Finally, we make seven recommendations concerning the future of high school reform:

1. Schools should implement a common core curriculum that includes requirements for students to complete advanced work in mathematics. Tracks that are not academically rigorous should be eliminated.
2. Schools should create a system for the identification of academically-unprepared high school freshmen so as to help accelerate their learning.
3. High schools should alter their organizational structures to facilitate the development of supportive and instrumental relationships for students. Such relationships will ensure that students do not get lost in the system and that they have access to valuable information.
4. K-12 and postsecondary systems should work together closely to align high school curricula and college enrollment requirements.
5. State education agencies and colleges and universities should work together to ensure that high school students, their parents/guardians, and their school counselors have good information about college entrance requirements, placement tests, and the costs associated with going to college.
6. Model developers, universities, and foundations should evaluate the relationships between their reform initiatives and college preparedness. Outcome measures should continue to assess high school achievement and graduation rates, as well as the proportion of students applying to college, the proportion of students who attend two- and four-year colleges and, if possible, the proportion of students who persist in higher education.
7. Stakeholders should review College Readiness for All, a toolbox developed by the Pathways to College Network to help school and college outreach practitioners increase college preparation and access for all students. The toolbox contains strategies, tools, resources, and stories about successful schools and programs that represent a research-based approach to increasing the number of students preparing for postsecondary education.

INTRODUCTION

Few American institutions have a greater impact on the quality of life of American citizens than the public high school. High school is a pivotal institution that lays the foundation for adult participation in the American economy and civil society. The technological and scientific advances of the 21st century demand that high school graduates be both competent in high-level skills and prepared to attain postsecondary education. Consequently, greater demands have been placed on high schools to prepare adolescents for both the workforce and higher education.

Although greater numbers of students are enrolling in college today than 20 years ago, the rates of college enrollment for African American and Latino students remain considerably lower than those of White and Asian students. In 1998-2000, the college participation rate of 18- to 24-year-old White high school graduates was 46 percent, compared with 40 percent of African Americans and 34 percent of Latinos. However, participation in postsecondary education does not necessarily equate to completion. Of the 75 percent of high school graduates who enroll in two- or four-year colleges, only about 35 percent complete a bachelor's degree (Carnevale & Fry, 2000). First-generation students (those whose parents did not attend college and who are most often African-American or Latino) also have a lower rate of postsecondary attainment than White students. Based on the National Education Longitudinal Study of 1988 (National Center for Education Statistics [NCES], 2005a), 43 percent of the first-generation students who enrolled in postsecondary education between 1992 and 2000 "left without a degree" and 25 percent had attained an undergraduate degree by 2000. In contrast, 20 percent of the students whose parents had a bachelor's degree or higher "left without a degree" from a postsecondary institution, while almost 70 percent attained an undergraduate degree by 2000.

The low rates of postsecondary persistence and attainment may be attributed to the general lack of preparedness or readiness of high school graduates for postsecondary education. Multiple reports have documented that students who enter postsecondary education are academically ill-prepared. According to Kirst and Bracco (2004), almost half of the students who enter higher education and slightly less than two-thirds of the students who attend community colleges must first enroll in remedial, non-credit-bearing courses and programs. Another study showed that 40 percent of entering college students had to take at least one remedial course, 37 percent had to take remedial mathematics courses, and 9 percent had to take remedial reading courses (NCES, 2005).

These findings are similar to a study conducted by ACT (2004) using their College Readiness Benchmark, a measure of the level of achievement necessary for students to be able to succeed in specific credit-bearing college courses, including algebra, biology, and English. Using these benchmarks, ACT found that only 40 percent of ACT-tested high school graduates were ready for their first credit-bearing course in college algebra, 26 percent of ACT-tested high school graduates were ready for their first credit-bearing college course in biology, and 68 percent were ready for college coursework in English Composition. The remediation rate is more severe for minority students. Of ACT-Tested high school graduates, only 5 percent of African American high school graduates and 12 percent of Latino high school graduates were ready for their first credit-bearing college course in Biology, 11 percent of African American high school graduates and 24 percent of Latino high school graduates were ready for their first credit-bearing college course in algebra, and 38 percent of African American high school graduates and 48 percent of Latino high school graduates were ready for English Composition. Research shows that those who take fewer remedial courses are more likely to earn a baccalaureate degree (NCES, 2003a).

Some of the reform efforts of the last 20 years have helped to increase the number of students, minority and low-income students in particular, who are prepared to enroll in college or other postsecondary institutions. Yet, for high school reform to effectively address the issue of college access for all students, efforts must focus more intentionally on how to address the predictors of college enrollment through the best components or practices of existing school reform efforts.

College preparedness, also called college readiness, is addressed by a wide range of pro-

grams and activities, but this review is limited to reform efforts that focus on the organizational structure of the high school and address two main college predictors: academic preparation and social support. Although high school restructuring efforts have not been designed to explicitly improve college preparation, many aspects of these efforts are congruent with the predictors of college-going and could be utilized to improve access to college for underrepresented minority and low-income students. Not included in this discussion are other components of college preparation, such as teacher quality, early readiness and pre-high school college preparation, family participation, and financial aid, although these also are crucial to student success.

This analysis begins with a review of the literature concerning the predictors of college enrollment so as to identify which high school restructuring efforts have the most potential for improving enrollment and persistence to complete college education among underrepresented minority and low-income students. Based on these findings, this report makes specific recommendations for reforming the high school structure so that it can better prepare students for success in higher education.

BACKGROUND

The comprehensive high school was created in the early 20th century to provide access to secondary education for an increasingly diverse population (Conant, 1959). It served as a "terminal institution" from which students could enter the workforce directly (Hammack, 2001), instead of serving exclusively as an academic training ground, as had been the case previously. For this reason, the comprehensive high school began to offer a variety of educational and vocational options, or tracks. Throughout the early and mid-20th century, this was accepted as the best way to educate and prepare all students for adult life. However, by the late 1970s, it became evident that comprehensive high schools were failing to prepare American students either for the workforce or for postsecondary education.

In the 1980s, heralded reports by the National Commission on Excellence in Education (1983), the Carnegie Foundation for the Advancement of Teaching (Boyer, 1983), and the National Association of Secondary School Principals in conjunction with the Commission on Educational Issues of the National Association of Independent Schools (Sizer, 1984) called for high school reform. These reports concluded that schools were not providing students with enough academic rigor, guidance, or support, and that radical changes were needed to improve the comprehensive high school. Their focus was on the failure of schools to prepare students adequately for participation in economic and civic life after graduation. What these reports lacked was explicit attention to the academic needs and low college enrollment rates among economically disadvantaged and minority students. Although the reports viewed college attendance as an educational step toward democratic participation, none suggested that high schools return to their prior function as college preparatory institutions, nor did they specify ways in which college access could be improved or even made possible for minority and poor students. Instead, their plans focused on redefining goals and practices to transform the comprehensive high school into a place devoted to improved student performance, at least as measured by test scores.

Predictors of College-Going Behavior

Multiple research studies (Adelman, 1999; Alexander, Pallas & Holupka, 1987; Cabrera & La Nasa, 2000a and 2000b; Horn & Kojaku, 2001; Kane & Spizman, 1994; McDonough, 1997; Stage & Rushin, 1993) have shown the following to be the strongest predictors of college attendance and completion, particularly for minority and low-income students:

- academic preparation,
- social support,
- access to information,
- parental involvement and knowledge about college, and
- financial aid.

This review will focus on these predictors, especially the first two, and their relationship to high school reform.

Academic preparation is the most significant predictor of college success. Adelman (1999) concluded that college completion is most likely when students take academically intense and high-quality coursework during high school. He suggested that high-quality coursework provides students with the information and skills that higher education institutions will expect of them prior to entrance. Such coursework includes Advanced Placement courses and mathematics classes beyond algebra II. In a follow-up study, Adelman (U.S. Department of Education, forthcoming) confirms that the curriculum is the strongest predictor of postsecondary education completion, even more than class rank, grade point average, or test scores. This study also shows that the combination of a student's academic background, coursework, class rank, and senior year test scores has a stronger relationship to bachelor's degree completion than does socioeconomic status.

Taking a high-level math course is the one consistent course predictor of college prepared-

ness and success. For instance, Adelman (1999) found that the single greatest predictor of successful college completion was the taking of high-level mathematics courses during high school. The work of Robert Moses with the Algebra Project has demonstrated that if students do not successfully complete algebra, they are unlikely to succeed in institutions of postsecondary education (Checkley, 2001). Of first-generation students enrolled in four-year colleges, 64 percent completed advanced math, regardless of their ethnic background, and completed a bachelor's degree (Tierney, Colyar, & Corwin, 2003). Another study demonstrated that taking pre-calculus and calculus produced positive effects on postsecondary completion for White and Latino students (Swail, Carbera, Lee, & Williams, 2005). Students whose highest levels of mathematics in high school were trigonometry, pre-calculus, or calculus-level courses had bachelor's degree completion rates above 60 percent. For students who completed a calculus course in high school, the bachelor's degree completion rate was 83 percent (NCES, 2003c). "The threshold for the contribution of math to academic momentum now lies solidly beyond algebra 2" (U.S. Department of Education, forthcoming, p. xv).

Although Adelman and others have verified that a strong academic program is the single greatest predictor of academic achievement and college success for African American and Latino students, these students are overrepresented in non-college preparatory programs (Berkner & Chavez, 1997; Gamoran, 1987; Oakes, 1985; Oakes & Lipton, 1992). Students, including minorities, who are higher achievers in high school, also are more likely to enroll in college and complete postsecondary education. In addition to enrollment in a rigorous academic program, college-going behavior can be predicted based on high achievement as defined by grade point average, class rank, and test scores (Cabrera & La Nasa, 2000a, 2000b; Horn & Kojaku, 2001; McDonough, 1997).

Increasing academic rigor alone will not raise college-going rates; students also need a variety of forms of social support from the school (King, 1996; McDonough, 1997). Often students of color, those from low-income families, and students whose parent(s)/caretaker(s) did not attend college do not have the knowledge, information, or social and cultural capital to understand the academic work and college application processes needed to plan and pursue postsecondary education (Noguera, 2001;Wimberly & Noeth, 2004). Of critical importance is a student's access to the information necessary to plan and attend a higher education institution. According to McDonough (1997), this includes access to information about the college application process and help in course selection throughout high school. For example, being able to effectively use counselors, teachers, and college representatives as information sources is associated with a higher degree of knowledge needed to plan and prepare adequately for postsecondary education (Tornatzky, Cutler, & Lee, 2002). Cabrera and La Nasa (2000b) identify three steps in the college preparation process, the first of which involves students developing college and career aspirations. They argue that developing students' aspirations to attend college should begin early to ensure that their course-taking is aligned with their occupational and educational aspirations.

Another form of social support is the prevalence of strong social networks that support a student's academic and emotional development; this also can determine the student's likelihood of going to college (Berkner & Chavez, 1997; Cabrera & La Nasa, 2000a; McDonough, 1997). Students who have stronger beliefs in their ability to succeed and are more pro-school, who have higher aspirations, and who attend in schools in which relationships with teachers are developed and teachers appear as caring and supportive, are more likely to attend college (Bryk & Driscoll, 1988; Bryk, Lee, & Holland, 1993; Lee & Burkham 2003; Croninger & Lee, 2001; Fine, 1991; Lee, Ready, & Ross, 1999; MacLeod, 1987; McLaughlin, 2000). However, Goodenow and Grady (1993) found that many urban adolescents do not feel they have strong social and personal connections to others in school. In this study, more students from urban high schools than suburban high schools indicated that they did not believe "others in the school were there for them." (p. 67)

Peers also serve as a support for education. They may support their peers' academic achievement (Epstein & Karweit, 1983), participation in school activities, personal decisions to stay in school, and development of career or college identities and aspirations (Rumberger, 1991; Gandara, 1999; Romo & Falbo, 1996). At the same time, peer groups most often mirror tracking: low-track students gravitate to one group and college-bound students to another, and rarely do the differently tracked students interact with each other (Oakes, 1983). Kulik and Kulik (1982) found that students

grouped by high ability not only performed better academically than their counterparts in ungrouped classes, but also had better attitudes about their courses and toward school in general. Tracking not only denies some students access to intense coursework, but also influences their identities and aspirations. The high school setting – the structure and climate – provides the context for the social situations, networks, daily activities, and systems of support that students will encounter from teachers and peers and must be addressed.

Thus, the predictors of college-going behavior can be embedded in high school reform strategies aimed at increasing student achievement, college preparedness, and success for underserved students. In fact, these same predictors comprise many of the high school restructuring elements that have evolved during the past two decades. Many school restructuring efforts at the high school level have centered on the reorganization of academic and social structures to ensure academic press (a strong organizational push with a normative emphasis on academic success and conformity to high standards of achievement, also considered an academic culture) and social support. This may be seen in a variety of strategies that focus on the following structural elements:

- curricular offerings,
- academic norms and expectations,
- availability of human and physical resources that support students' academic achievement,
- quality of relationships among teachers and staff, and
- quality of social relations between students and teachers.

The key education reform recommendations and restructuring strategies that emerged during the 1980s have served as the foundation for a variety of reform strategies during the past two decades. However, it is unclear whether significant progress has been made in improving academic achievement, particularly for students of color and those from low-income families. Of particular concern is the dearth of data that suggests that, as a result of school reform, these students have experienced dramatic changes in student achievement and/or college preparedness.

In the sections that follow, this report analyzes a number of current high school reform initiatives and the ways in which they address the predictors of college-going behavior. These reform strategies are divided into three types:

- those that primarily address the academic rigor of the curriculum,
- those that address the academic and social structure of the school, and
- those that specifically address the alignment of curriculum between high school and postsecondary levels and among levels within the K-12 system.

This information is used to draw out practices that should be integrated consistently into high school reform efforts so as to enable all students, especially low-income and minority youth, to enter college and succeed.

INCREASING ACADEMIC RIGOR THROUGH THE CURRICULUM

The rigor of courses taken in high school is the most powerful predictor of academic achievement, high school graduation, and enrollment in postsecondary education (ACT, 2004; Adelman, 1999; Braddock, 1990; Gamoran, 1987; Oakes, 1987). This is consistent with research that shows that academic press, defined as the strong presence of pressure grounded in a school's culture and climate that encourages the pursuit of rigorous academic goals, consistently improves student achievement (Shouse, 1996; Phillips, 1997). More important, a strong academic program is particularly significant for college enrollment among African American and Latino students (Adelman, 1999). Additionally, research has demonstrated that students who take more intense academic programs in high school attend and persist in higher education at a greater rate than students who take less difficult programs of study (ACT, 2004; Adelman, 1999; Fry, 2004; Herold, 2003). For example, a study of postsecondary attainment (NCES, 2003a) found that students who took a high school curricular program that fell in the highest quintile of intensity earned nearly twice as many credits in the first year of college as students from the lowest quintile of high school program intensity.1 More striking is that even when compared to students in the second highest quintile of academic intensity, students from the highest group earned nearly 10 more credits in their first year of college. A study conducted by Fry (2004) supported these findings as specific to Latino high school students. Fry found that the best academically-prepared Latino high school graduates enroll in top tier four-year colleges and universities at a rate similar to that of White students. These studies demonstrate the importance to minority and first-generation students of enrolling in high-intensity programs of study in high school.

In spite of this research and years of critical review, tracking, the practice by which students are separated into classes based on perceived ability, is prevalent in American public comprehensive high schools, which undermines academic press within a school. Racial and ethnic minority students are disproportionately distributed among these lower academic tracks and ability groups (Braddock, 1990; Berkner & Chavez, 1997; Gamoran, 1987; Oakes, 1985; Oakes & Lipton, 1992; Thomas, 2000). According to a study conducted by the U.S. Department of Education (2005a), first-generation college students, who are more likely to be African American or Latino and from low-income families, have lower rates of taking higher-level mathematics courses in high school. This study shows that completing low-level mathematics courses only decreased all students' likelihood of obtaining a bachelor's degree and increased their likelihood of leaving college without a degree.

A common restructuring strategy is to focus on increasing access to rigorous courses through the availability of a "core" academic curriculum. A core curriculum is a set of common academic courses that provides all students with the same academic knowledge. A core curriculum offers less variability in course-taking patterns by students, thereby ensuring that all students experience the same emphasis on academic success and conformity to high standards of achievement. The initiatives discussed in this section highlight curricular reforms designed to increase academic press, particularly the academic rigor of the high school curriculum, so as to pave the way for students to succeed in postsecondary education.

It is difficult to capture the degree to which local schools and districts offer access to rigorous courses for all students. For this reason, this review will discuss how standards-based reform has been used as a strategy to increase academic rigor, and how two national programs—EQUITY 2000 and the Urban Systemic Initiative—have demonstrated the efficacy of providing increased access to rigorous courses for low-income and minority youth.

[1]Academic intensity in high school curriculum includes number of mathematics credits and level of mathematics; total number of Advanced Placement courses; and number of English, foreign language, science, core laboratory science, social science, and computer science credits. The highest observed levels were mathematics at the calculus, pre-calculus, or trigonometry level; more than one Advanced Placement course; any Carnegie units in computer science; 3.75 Carnegie units each in mathematics and English; more than 2 Carnegie units each in science, foreign languages and social sciences; and no remedial courses in core subjects. Level 2 drops the computer science criterion and lowers the Advanced Placement to one course.

The move to establish an academically rigorous core curriculum in all high schools across the United States evolved in the early 1980s as a result of national education reform efforts to increase academic requirements for all students (National Commission on Excellence in Education [NCES], 1983). These efforts also initiated standards-based reform, the most significant reform effort in 20 years, to improve student achievement. The underlying principle of the standards movement is that, because schools and school districts have allowed students to be promoted and to graduate without substantial attainment of knowledge and skills, an outside authority is needed to create guidelines for promotion and graduation. The standards movement attempts to provide a legislated means for establishing common expectations for all students and an enforceable policy for creating equitable education among diverse schools and student populations. Standards-based reform has four overall components:

- The standards, usually in the form of a framework, are developed by an overseeing authority,
- The curriculum is taught in the classroom,
- The assessment is provided by the overseeing authority, and
- The accountability component rewards and sanctions schools and teachers according to students' performance (Howard, 1995; Meier, 2000a).

The standards movement originally called for students to take courses that met the recommendations set forth in 1983 in the New Basics Curriculum as defined in *A Nation at Risk* (NCES, 1983). The New Basics Curriculum includes four years of English; three years each of math, natural science, and social studies; and a half-year of computer science. It also suggests that college-bound students take two years of a foreign language and a course in the arts.

Despite these recommendations, the majority of American high school students do not take course loads that meet these standards. According to one study, only about one-fifth of schools require students to fulfill the New Basics Curriculum to graduate (Roey et al., 2001). Only 64 percent of the graduates in the Class of 2004 who took the ACT exam had taken the recommended core curriculum for college preparation: four years of English, and three years each of math, natural science, and social science (ACT, 2004). Consequently, researchers and education leaders have called on policymakers to make the components of the New Basics Curriculum (or any other college preparatory curriculum originally thought to be only for the "college bound") the default curriculum for all students (Wimberley & Noeth, 2004; Barth, 2003; Center for State Scholars, 2003; NCES, 2003a).

The fact that students still are not enrolling in rigorous course curricula may be one of the reasons students continue to perform poorly on national evaluations. For instance, the 2004 National Assessment of Educational Progress (NAEP) scores for reading show that 12th grade achievement has remained "at almost the same level as it was in 1971" (NAEP, 2004) and there was no statistically significant difference between average scores in 1999 and 2004. White 12th graders scored an average of two points lower (293 from 295) in 2004, while Latino 12th graders scored an average of six points lower (264 from 271) and African American 12th graders scored the same (264) (NAEP, 2004). The 2004 NAEP scores for mathematics show that 12th grade achievement "did not show a significant change when compared to the score in either 1973 or 1999". In 2004, White 12th graders scored an average of one point lower (98 from 99), while Latino 12th graders scored an average of two points lower (92 from 94). African American 12th graders scored an average of three points higher (92 from 89) (NAEP, 2004). The lowest reading and mathematics scores were those of African American 12th grade students.

Currently, most assessments measure minimum competencies or knowledge among high school students. That is, the assessments that are designed to determine whether students have met the appropriate standards for graduation are often administered during the 10th grade year and cannot measure the cumulative knowledge acquired by the completion of high school. In fact, a 2004 study published by Achieve, Inc., found that the math tests used to determine whether students are ready to graduate from high school measure skills and knowledge comparable to what is taught in 8th grade in other countries. The study also found that in Florida, the skills tested on the English Language Arts (ELA) high school state exit exam are comparable to the skills and knowledge con-

tained in the 8th and 9th grade test given by ACT.

Other studies demonstrate that many of the state assessments are not well-aligned to college entrance requirements (Somerville & Yi, 2002; Venezia, Kirst, & Antonio, 2003; Kirst, 2001; National Commission on the High School Year, 2001). The above-mentioned Achieve study regarding content knowledge of state exit exams also showed that the tests do not adequately address the type of mathematics and English language skills that students need for college and workplace readiness. Somerville and Yi (2002) also compared state graduation requirements to college admissions standards for each state's higher education system and concluded that few of the states have aligned their systems' requirements, particularly when examined by topic rather than number of courses. Somerville and Yi noted that none of the states expect as much from students graduating from high school as they do from students entering college. This gap in expectations inhibits students' efforts to obtain entry to college or achieve success upon enrollment in college, and particularly affects underrepresented students who are more likely to attend schools that just meet the minimal standards (Kirst, 2001). According to Kirst, the difference between what the standards were designed to achieve and what they do achieve makes it impossible to declare them successful.

Because standards are designed to increase student participation in academically rigorous classes and create common high expectations for all students, the standards movement has been seen as a potential vehicle to improve student achievement and presumably their preparation for postsecondary education. However, inadequate content standards and alignment to grade level coursework and to college entrance requirements have limited the usefulness of the standards movement in improving student achievement and college preparedness.

ALIGNING CURRICULA WITH COLLEGE ENTRY REQUIREMENTS

In describing the K-12 standards, Kirst (2001) says, "[T]hese reforms ... have ignored the lack of coherence in content and assessment standards between K-12 and higher education ... The current scene is a Babel of standards rather than a coherent strategy." (p. 5) However, this could change as states establish stricter graduation requirements and begin to create K-16 systems or high school exit exams that align high school graduation requirements with state university entrance requirements.

In Ohio, for example, the Ohio Board of Regents and the Ohio State Board of Education designed *Common Expectations* to define what students should know and be able to do upon high school graduation to succeed in higher education and careers (Tafel & Eberhart, 1999). This initiative has served as the basis for developing content standards that describe what students should know and be able to do in each subject and at each grade level, and which serve as benchmarks for students, teachers, parents, and schools to measure student progress (Ohio Department of Education, 2001).

New York has aligned its exit exams, the New York State Regents Examinations (Regents), to postsecondary education. Regents exams were traditionally required of students who wanted to attend state universities and also were used for course placement in community colleges. Now, all students are required to take the Regents to graduate from high school. The elevation of the Regents exams to a statewide graduation requirement has led to increased focus on academic preparation and increased opportunity for all students to be eligible to attend four-year universities in New York. Furthermore, students who choose to attend the City College of New York (CUNY) can use a score of 75 or better on the English and Mathematics Regents exams to demonstrate that they have met the CUNY basic skills requirements (See http://portal.cuny.edu/cms/id/cuny/documents/informationpage/002144.htm, 2003).

Oregon has created a two-tiered alignment program, which is somewhat akin to the New York State Regents. While students work toward their high school diplomas, they may take additional certification tests or provide certification work samples and earn a Certificate of Initial Mastery (CIM) or a Certificate of Advanced Mastery (CAM). Students may earn a CIM by meeting specific standards on state tests and providing classroom work samples in English/language arts, mathematics, and science. To earn a CAM, students must demonstrate application and extension of academic and career-related knowledge and skills in new and complex situations appropriate to the student's personal, academic, and career interests and post-high school goals. Completing these certificates demonstrates that the students have completed work beyond what is necessary for a high school diploma and helps students with the University of Oregon's admissions exam, the Proficiency-based Admissions Standard System (PASS). Although the CIM and CAM are not required for high school graduation, the state hopes that the introduction of the high school certification program, along with a quasi-aligned university admissions exam, will compel high schools to alter their course content so that students are prepared for the CIM/CAM tests and hence the PASS.

Other states, such as Arkansas, Indiana, Oklahoma, and Texas, are planning or have established a core curriculum, or a "default course of study," compulsory for all students, in an effort to align college and workplace expectations (Achieve, 2004). The minimum high school curriculum in Texas and Arkansas includes three credits of math, mandating one unit each of algebra I, algebra II, and geometry; two units of science that include biology, chemistry, or physics; four units of English; two units of a foreign language; and three units of social studies. Texas also requires one unit of economics. Indiana enacted legislation that replaces its general curriculum with a college preparatory core curriculum (Core 40) that will enable all students to be successful in both college and the workforce (See http://www.indiana.edu/~iuadmit/freshmen/as_standards.shtml). Beginning in the 2006-07 school year, Oklahoma will require all students to complete a college-bound curriculum.

Alignment initiatives such as those in Ohio, New York, Oregon, and Indiana have the potential to help underserved students enroll in postsecondary education. They compel schools to provide access to more rigorous coursework than might have been offered to low-income and minority

students previously, and ensure that every student will be eligible for college. While some states have made great strides toward improving college access through alignment, much work remains to be done in this area (Kirst & Venezia, 2004).

EQUITY 2000

National programs, such as EQUITY 2000, also have been used as a means of providing increased access to a rigorous course curriculum for low-income and minority youth. An initiative of the College Board, EQUITY 2000 was designed specifically to provide access to advanced mathematics courses for minority and low-income students. The program, piloted in 1990 in Fort Worth, Texas, expanded to 33 sites in 13 states by 2000 (College Board, 2000a). In 2000, the College Board stopped expanding the program and began incorporating the aspects of EQUITY 2000 into its larger program.

In EQUITY 2000 schools, students are expected to complete algebra by 9th grade and geometry by 10th grade. Teachers in EQUITY 2000 schools use the standards developed by the National Council of Teachers of Mathematics as a basis of instructional practice. To facilitate this, the program provides content area professional development. Professional development also is provided to guidance counselors and principals so as to facilitate their roles as college advisors and academic/instructional leaders. EQUITY 2000 provides supports to build student skills and expose students to the rigorous expectations of college while also working to include parents in the process.

According to the College Board, EQUITY 2000 has resulted in improved outcomes for students. For 1990-2000, there was an increase at the pilot sites in the number of students who successfully completed algebra; enrolled in higher-level mathematics courses such as algebra II, trigonometry, pre-calculus, calculus, or a higher level math course; and took college entrance exams and AP courses and tests. Furthermore, after six years of implementation, more students reported that they intended to attend college than had done so before the introduction of EQUITY 2000 (College Board, 2000a).

Urban Systemic Initiative

Like EQUITY 2000, the Urban Systemic Initiative (USI) is designed to provide low-income and minority youth with increased access to rigorous curricula in mathematics and science. USI was launched by the National Science Foundation (NSF) in 1991 in 28 cities with the highest number of children living in poverty and was designed to establish policies that enable more students to enroll in "gate-keeping" and higher-level mathematics (algebra II, geometry, calculus, and integrated mathematics II-IV) and science (biology, chemistry, physics, and integrated science I-III) courses. It also aims to build strong partnerships and relationships to provide support for schools, their faculties, staff, and students (Kim, et al., 2001; *Education Week*, 2001).

USI has increased access to math and science for minority students. As a result of USI implementation, the disparity decreased between African American and White student enrollment, and between Latino and White student enrollment in gate-keeping and higher-level mathematics courses. Similar results were found for gate-keeping and higher-level science classes. The disparity between African American and White student enrollment and between Latino and White student enrollment in biology, chemistry, physics, and integrated science I-III also decreased (Kim et al., 2001).

Additionally, the number of minority students who took the AP mathematics test in USI schools increased in 1997-1998. The 1993 cohort (the year in which the students began the program) exceeded the national test-taking rate (22.9/1,000) by 2.1 test-takers per 1,000. In science, the 1994 cohort showed even better results: in the 1997-1998 school year, they exceeded the national rate (26.0/1,000) by 3.8 test-takers per 1,000.

Similar results were found for SAT and ACT test-taking. Almost all cohorts showed increases in the number of minority students taking the SAT or ACT, and nearly all exceeded the national test-taking average (Kim et al., 2001).

EQUITY 2000 and USI are examples of programs that provide a means for schools to offer high-level, rigorous mathematics courses, thereby improving students' preparedness for college.

Another way in which high schools attempt to increase access to a rigorous curriculum for low-

income and minority youth is by offering students the opportunity to participate in college-level coursework. Advanced Placement and the International Baccalaureate Program are two programs commonly used in high schools to provide these opportunities. The knowledge and skills these programs provide are particularly important for students from communities traditionally underrepresented in postsecondary institutions.

Advanced Placement

The College Board-administered Advanced Placement (AP) program began in the mid-1950s with the goal of preparing students for college through early exposure to the academic rigor and content of college freshmen-level courses (College Board, 2001). The AP program is structured around 35 full- and half-year courses and exams across 20 subject areas. For each course, the College Board provides teachers with a framework that details what students need to know and what they should be able to do upon course completion. AP courses conclude with an exam composed of multiple choice and free response questions that correspond to the standards set forth by the College Board. The exams test students' knowledge and ability to analyze complex ideas within each subject's core disciplinary framework (College Board, 2001a). Taking Advanced Placement courses is considered a strong predictor of college-going behavior because they are representative of academic rigor or intensity (Adelman, 1999; U.S. Department of Education, forthcoming). Research shows that strong correlations exist between AP success and college success: students who succeed on one or more AP exams are much more likely than their peers to complete a bachelor's degree in four years or less (Camara, 2003). In addition, successful completion of AP courses and AP exams allows students to enter college with exemptions from entry-level college course requirements.

The Advanced Placement program and its courses and tests have gained popularity in high schools. According to the College Board (2005), in 2004, 11,196 public schools participated in the AP program, an increase of 417 since 2003. This is almost 70 percent of all public schools, a statistic that is corroborated by a recent report from the U.S. Department of Education (NCES, 2005b). According to the U.S. Department of Education, approximately 1.8 million students were enrolled in AP courses in 2003.[2] However, in general, access to AP courses is still limited. That is, a small proportion of students in a school take AP courses and exams. AP courses are offered more commonly in large- and medium-sized high schools and in high schools located in urban fringe areas (NCES, 2005b). Only 40 percent of small schools and only 50 percent of rural schools offer AP courses. This same report also showed that schools with the highest minority enrollment were the most likely to say that they did not offer exam-based courses (which could include AP or International Baccalaureate).

Many of the students who take AP courses subsequently take the exam. The mean AP Exam grade for the class of 2004 was 2.96. AP exam grades of 3 are deemed equal to a range of mid-level B to mid-level C in college. Most colleges and universities grant college credit or advanced placement for AP exam grades of 3 or higher. Thirteen percent of students in the class of 2004 achieved a score/grade of 3 or higher on an AP exam (College Board, 2005). A recent report by the College Board (2005) showed that the proportion of White and Latino students that were exam-takers matched the proportion of White and Latino students enrolled in U.S. public schools (67.5 percent and 12.8 percent, respectively). For the class of 2004, almost 65 percent of White students and 13.1 percent of Latino students were AP exam-takers. In contrast, African American students comprise 13.2 percent of the students in the U.S. public schools but only 6 percent of AP exam-takers, and Native Americans make up 1.1 percent of the student population but only 0.5 percent of the AP exam-takers. A previous report showed that a significantly lower proportion of African American and Latino students take AP calculus AB classes than White students (Gonzalez, O'Conner, & Miles, 2000). This report noted that 67 percent of White students were enrolled in AP Calculus AB classes, whereas 4 percent of African American students and 5 percent of Latino students took these classes.

Beyond disparities in enrollment, there is also a lack of consistency in AP teachers' qualifications, preparation, and experience in teaching AP courses. Although the College Board offers training for AP teachers, it is not required. Consequently, not all AP teachers participate in professional development activities and, therefore, may not be well-prepared to teach AP classes. Teachers are dependent upon receiving release time and remuneration for AP profes-

[2]Enrollments may include duplicated counts of students in that "if a student was enrolled in multiple courses, schools were instructed to count the student for each course in which he or she was enrolled." (p. 4).

sional development. Most AP teachers have a Master's in the academic discipline they are teaching, but ethnic minority teachers are severely underrepresented as AP teachers (Milewski and McGille, 2002). A recent study of the effect of teachers on minority students' AP success showed that AP teachers most successful at teaching minority students had: (1) the lengthiest tenures, both as teachers in general, and with regard to AP in particular; (2) a major in the discipline that they taught; and (3) attended AP-specific professional development. Another positive factor was that the school and/or teacher encouraged all students to take AP courses (Burton, 2002). Because schools with high minority enrollment tend to have the least-prepared teachers in general (Education Trust, 2000) and high teacher turnover, students in these schools have the least-prepared AP teachers.

As a consequence of poor student preparation and inadequate teacher preparation, a disproportionate number of African American and Latino students score lower on AP exams than do White students. According to the College Board (2003), the national mean AP exam score for the class of 2003 was 2.95 (out of 5) for all students. The breakdown is as follows: 3.03 for White, 2.11 for African American, and 2.72 for Latino students. This disparity between ethnic groups is highlighted most prominently by the AP calculus exams. While 21 percent of White students score 3 or higher on AP calculus exams, only 2 percent of African American and 6 percent of Latino students do so. This scoring pattern across different ethnic groups is the same for other exams (Gonzalez, O'Conner, & Miles, 2000; NCES, 1999a).

These differences in the scores are even more pronounced for minority students in urban school districts. Students in the national sample of all AP test-takers consistently score higher than their peers in urban schools, regardless of race or income (Eisner, 2001). For example, on the AP calculus AB exam, African American, Latino, and White students from urban schools in the Great City Schools (GCS) sample earned an average of 1.8, 2.1, and 2.9, while the national sample scored 2.0, 2.4, and 3.0, respectively. Similarly, the AP calculus AB mean score was 2.1 for students from the GCS whose family incomes were under $10,000, while it was 2.4 from the national sample. At every income level, and for every exam, there is a similar gap between GCS students and the national sample.

The positive impact of the AP program on students' academic success is widely recognized. By providing necessary knowledge and skills, AP courses have helped to raise students' levels of awareness and preparation for the future challenges of higher education, thus improving access and success at the postsecondary level. Enrollment in an AP class has been found to be among the most significant predictors of college-going behavior (Adelman, 1999; NCES, 2003a; Camara, 2003). Whether or not students earn college credit through the program, the AP courses offer the rigorous advanced-level curricula that students need to prepare for work at the postsecondary level.

The structure and teaching skills common among AP programs as they are implemented in high-performing schools can serve as a good model for what an academically rigorous core curriculum should look like. Nonetheless, a program such as Advanced Placement is not necessarily designed as a foundation for a schoolwide restructuring intended to increase all students' achievement in a low-performing school. Although it may be possible to create a blueprint for schoolwide improvement using the principles embedded in the Advanced Placement or a similar program, in most cases these programs are being implemented to serve a select portion of students in a given school or district.

The International Baccalaureate

The International Baccalaureate (IB) program has evolved into a worldwide exemplar of high achievement, rigorous secondary education, and college preparation. Many public and private schools across the United States have adopted the program, although it was originally designed by the International Baccalaureate Organization (IBO) in Geneva, Switzerland, to prepare children of international diplomats and business people for university enrollment while moving between countries and schools. The IB program is designed around three features:

1. The Theory of Knowledge, an interdisciplinary curriculum designed to help students connect their experiences in and out of the classroom;
2. Service learning; and
3. An independent research project.

The program is implemented in the 11th and 12th grades. All students complete coursework in six academic subjects (first language, second language, individuals and societies, experimental sciences, mathematics, arts, and electives). The program requires students to select at least three (but no more than four) areas for higher-level work, while they take the remainder of their courses at the standard level. Upon completion of the IB curriculum, students take exit exams and complete their individual research projects. All grades and exams are based on criterion-referenced rubrics that are the same for students throughout the world (International Baccalaureate Organization, n.d.). The U.S. Department of Education reports that 2 percent of public high schools offered IB courses in the 2002-03 academic year, and an estimated 165,000 students enrolled in IB courses (NCES, 2005c). To put this in perspective, 13,736,000 students were enrolled in public high schools during this same time (Snyder, Tan, & Hoffman, 2004).

In its roughly 30 years of existence, the IB program has consistently produced students who are prepared for university-level work (International Baccalaureate Organization, n.d.). At least 80 percent of the students who apply for graduation each year succeed (based on exit exams). A scan of the IB high schools in the United States suggests that, while the majority are located in wealthy communities, a growing number are located in urban districts with the goal of offering rigorous programs to traditionally underserved, low-income, and minority students (Gehring, 2001b; International Baccalaureate Organization, n.d.). A further examination of individual schools' Web sites also indicates that their IB graduates are accepted at prestigious universities around the United States. (See Baltimore City College Web site at: http://baltimorecity-college.org and Schenectady High School Web site at: www.schenectady.k12.ny.us/IB/homepage.htm.) Evidence of the value placed on this type of college preparatory program can be seen in some state initiatives. To encourage participation in the IB program, states such as Florida offer full scholarships to state universities to students who receive IB diplomas.

IB is well aligned with college curricula and expectations. The entire program, from its curriculum and instruction to its theory of action, strives to develop students into civic-minded, critical-thinking adults who are prepared for postsecondary education. This is significantly different from the nature and function of the traditional comprehensive high school's mission, which is diffuse and offers a plethora of extraneous courses. The IB program provides more than an academically demanding curriculum: it exemplifies academic press by establishing a demanding climate (setting rigorous demands with regard to course content and coverage, setting high work standards for students, and treating students similarly). Teachers and students experience a normative emphasis on academic excellence and conformity to specified academic standards, while also recognizing the need to address individual and unique talents through personalized and relevant learning.

Each of the curricular programs discussed above addresses key restructuring elements specific to the academic organization of high schools. They aim to increase student achievement and address the academic predictors of college-going behavior that relate to access and success in postsecondary education. Components of these initiatives demonstrate that equal learning opportunities narrow the achievement gap and increase education attainment.

REFORMS THAT ADDRESS ACADEMIC AND SOCIAL SUPPORT

While some of the reports and efforts of the 1980s were concerned solely with increasing academic achievement, others called for efforts to reorganize both the academic and social structures of high school. The academic restructuring component addresses academic rigor as a college predictor. It includes those features of schools that support strong academic achievement, such as a common and demanding curriculum, high expectations for learning, and pedagogy that engages students in relevant learning and critical thinking. The social restructuring component addresses the college predictor concerning adult guidance and access to critical information that will help direct students toward college. The social structure includes the mechanisms that emphasize and enhance social relationships among students and staff. Such relationships create a system through which students are able to develop strong networks of adults and peers to support them throughout their high school careers. While the intent of restructuring the academic and social organization of a high school was not to increase college-going rates and the preparedness of underserved students per se, it does offer the potential to do so.

To help with restructuring, many institutions of higher education and educational organizations have developed models that can be implemented in schools and school districts. These models provide restructuring plans based on the developers' visions or definitions of an effective high school. While some models simply provide a set of principles around which the school faculty can redesign a school (e.g., Coalition of Essential Schools), others provide a highly prescriptive set of curricula for schools to implement (e.g., Talent Development). Models have been implemented with resources provided by the Comprehensive School Reform Demonstration project authorized by the U.S. Congress in 1997, New American Schools, the federal Small Learning Community program, and an array of philanthropic and state initiatives targeted at improving low-performing schools. Such initiatives to improve schools have created a market and financial support for the proliferation of school reform models.

The models below alter the academic structure of high schools to ensure the prevalence of academic rigor in the curriculum and high academic expectations for student achievement. They also change the social structure to provide increased support for students. For each initiative designed to restructure the high school, this study gives an overview of the program, provides data to demonstrate its success, examines the factors that contribute to that success, and discusses the relationship between the restructuring efforts and the predictors of college-going behavior.

America's Choice

America's Choice was designed by the National Center for Education and the Economy to raise academic achievement and prepare all students for college through a rigorous standards-based curriculum and the provision of safety nets (Supovitz, Poglinco, & Snyder, 2001). It is designed to help students reach internationally accepted standards in English, mathematics, and science. To do this, America's Choice integrates a standards-based curriculum focused on basic skills and knowledge, as well as concepts and applications. A key component of the model is a process that quickly identifies students who are falling behind and helps them to make gains.

Although America's Choice was originally designed for K–12 schools, it recently was funded by the U.S. Department of Education to focus on high schools. The high school model incorporates small schools or *house* systems, a core academic curriculum, and strong college- and work-based technical preparation programs. Not only does America's Choice aim to increase the rigor of students' course loads, it also seeks to inculcate students, through a changed school culture, with the expectation that they will attend college (National Clearinghouse for Comprehensive School Reform & Northwest Regional Educational Laboratory, 2001).

Currently, there is no data to show the success of America's Choice in high schools. However, the evaluators at the Consortium for Policy Research in Education (CPRE) have indicated that

students at elementary and middle schools implementing the model are performing at higher levels than their peers in non-America's Choice schools, and perform better than the state average on state assessments (Supovitz et al., 2001). In fact, a study that examined the effects of America's Choice on student learning in the Rochester (NY) School District showed that students in America's Choice schools gained significantly more in reading and mathematics test performances than did students in other Rochester schools. The differences were moderate in the early elementary grades (1-3) and stronger in the later grades (4-8). In grades 4-8, students in America's Choice schools averaged slightly more than two months of additional learning per year, in comparison to students in other district schools (May, Supovitz, & Perda, 2004). These findings engender hope that, in time, the high school model also will create gains for students. Forthcoming research on this model will be available by the end of 2004 (Corcoran, forthcoming).

America's Choice has the potential to increase college access among high school students. The focus on academic rigor and the provisions for extra help and support for students who lag behind academically enable school staff to concentrate their efforts on helping all students to graduate, with each student having completed the requirements for college attendance. Moreover, by including the expectation that all students will attend college as one of its goals, America's Choice enables students to plan early and compels schools to provide the information necessary for students to make good curricular and college application decisions.

AVID

The Advancement Via Individual Determination (AVID) program was developed to prepare underachieving students, defined as those with a C average, for a four-year college education. The program aims to restructure high school curriculum and pedagogy so that all students receive a college preparatory program (AVID Center, n.d.). The program reflects the belief that if students are given strong academic and social support, they can complete higher level course work.

AVID can be implemented as a pullout program or a whole school change model. In either case, teachers are trained to use pedagogical tools that support AVID principles and practices, such as heterogeneous grouping. The AVID program is centered on an AVID class, where students learn basic skills, such as note-taking, test-taking, study skills, time management, effective textbook reading, research skills, and college entrance exam preparation (Walker James, Jurich, & Estes, 2001). Students also are given instruction in an AVID-developed writing-to-learn process, critical inquiry, and techniques for collaborating with other students (Swanson, 1994).

The class also helps students prepare for college by fostering strong social support. In AVID classes, students, teachers, and tutors get to know each other well, and students form strong peer networks. These networks also provide information regarding the college application process. Students in an AVID program ultimately take college preparatory classes that fulfill four-year college entrance requirements. In addition, they are tutored by those trained in AVID teaching techniques, attend assemblies and discussions with speakers from educational institutions and businesses, participate in educational and cultural field trips, and receive help with college and financial aid applications (AVID Center, 2003).

Two recent studies of the AVID program have found that AVID students take high school courses that are more rigorous in high school than those students who do not participate in AVID (AVID Center, 2003; Watt et al., 2004). For instance, seniors who participated in AVID in both Texas and California took AP courses and exams and college entrance exams at far greater rates than seniors in those states who did not participate (AVID Center, 2003; Watt et al., 2004). In fact, the study conducted by the AVID Center (2003) found that more than 25 percent of seniors enrolled in AVID programs in California, Texas, and Nevada took AP or IB English, foreign language, and history or government courses. The study also found that 92.7 percent of the seniors who participated in AVID in Texas and 89.8 percent of the seniors who participated in California completed the course requirements for attending a four-year college. Similar results were found in a subsequent study. In Texas, seniors who participated in AVID took AP exams in science and upper-level science classes at nearly double the rate of the seniors not participating. In English and history, the seniors who participated in AVID took AP exams at three times the rate of non-AVID seniors (Watt, 2004).

In addition, data provided by AVID (www.avidonline.org) shows that AVID students in the class of 2004 in the San Diego City Schools passed the California High School Exit Exam (CAHSEE) in math and reading at higher rates than non-AVID students. The data show that the improvement was especially significant for African American and Latino students. African American students who participated in AVID passed the CAHSEE in math and English at a rate of 75.5 percent, while African American students who did not participate passed at a rate of 48.3 percent. Similarly, Latino students participating in AVID passed at a rate of 77.3 percent, while the Latino students who did not participate passed at a rate of 48.4 percent. Similar results were found for the Class of 2005 in all of the districts for which AVID provided data.

These recent findings support an earlier study focused on increased student performance as measured by state test scores, grades, attendance, and retention. In 1999, 26 Texas middle and high schools implemented AVID as part of the Comprehensive School Reform Demonstration program. A year and a half into implementation, AVID students were scoring higher on state-mandated year-end exams, had higher overall GPAs, and had much better attendance than students not enrolled in the AVID elective. Moreover, these students improved their Texas Assessment of Academic Skills (TAAS) scores by more than 2.5 percent in mathematics and almost 2.5 percent in reading compared to the results of the previous administration of the exam. Students enrolled in the AVID elective were overwhelmingly from low-income, minority families where the parents had only an 8th-grade education. Although such students might be considered at risk for school failure, the students in the AVID program performed at the 80th percentile or higher in core academic classes and were overwhelmingly on target for a recommended graduation plan that requires students to complete 24 credits. They also passed biology and algebra at rates far exceeding the Texas average: 65.7 percent versus 47.5 percent for biology and 29.8 percent versus 20.8 percent for algebra (Watt & Yanez, 2001). A follow-up study of these schools, undertaken a year later, found that TAAS passing rates rose 15 percent in math and 7 percent in reading for students who were enrolled in AVID for two years. In addition, attendance rates for the students participating in AVID rose more than 2.5 percentage points, compared to non-participants (Watt, Yanez, & Cossio, 2003).

According to AVID, the program enables students to attend four-year colleges at a rate that far exceeds the four-year college-going rate of minority students. The AVID Center reports that 100 percent of seniors who were in the AVID program of study graduated from high school on time and that nearly 77 percent of those students were attending a four-year college the fall after graduation (AVID Center, 2003). Again, the results were particularly notable among African American and Latino AVID participants who enrolled in four-year colleges at rates of 86.5 percent and 73 percent, respectively. In comparison, only 13.1 percent of African American seniors and 10.5 percent of Latino seniors in California were enrolled in four-year colleges in the fall following high school graduation (AVID Center, 2003). A different study showed that, of the AVID students who enroll in college, 89 percent persist through at least the first two years, and 85 percent of them expect to graduate within five years (AVID Center, 2003).

Because AVID proactively seeks to raise achievement and increase college preparedness for students at risk, it deliberately addresses the predictors of college-going behavior and uses college entrance and completion as measures of its success, making it unique among the reform models examined in this study. AVID achieves its goals by providing students with tremendous amounts of social and academic support. It seeks to create a network of caring and informed adults around each student, establishes high expectations for students, and provides a means by which they can meet these expectations. The strong focus on providing academic support enables AVID students to take high-quality and high-intensity courses and to succeed when doing so. For students who otherwise would be enrolled in a non-college preparatory track, AVID develops their social-psychological strengths and propels them toward completing high school and enrolling in college, making college attendance a reality for underserved students. In addition, recent data shows that AVID benefits all students to some degree in schools in which AVID is implemented, regardless of students' enrollment in the program (Watt, Powell, & Mendiola, 2004).

Coalition of Essential Schools

In 1984, Ted Sizer published *Horace's Compromise* as part of the *Study of High Schools* (Sizer, 1984). This seminal report indicated that high schools were not providing students with strong intellectual or emotional development. Sizer began to visualize schools that would address the failures of the comprehensive high school. He focused on creating schools that would teach students to think well. These schools became the basis for the Coalition of Essential Schools (CES). Coalition schools are designed to create strong relationships between and among students and adults. Although Coalition schools take a variety of forms and implement the common principles in ways that best meet their needs, they all seek to create relationships that can provide strong academic and social support to students (CES, 2001). CES principles also emphasize the value of family participation and teacher collegiality in the education of children and adolescents. Largely due to this emphasis on personal relationships, urban schools such as Central Park East, The Met, Urban Academy, and others have been successful in increasing student learning and college attendance, particularly among low-income and minority students (Raywid, 1994).

Many of the conceptual features of CES are inherent in numerous newly developed, non-traditional public schools. For instance, in the late 1990s, because of the success of Central Park East High School, a number of smaller high schools in New York City implemented the Coalition's basic principles. The culture, structure, curriculum, instructional practices, and forms of assessment in such schools are dramatically different from those used in traditional comprehensive high schools (e.g., students typically study fewer but more in-depth topics, work closely with adults in and outside of the school, and are assessed on performance rather than standardized tests).

Among both large and small schools that implement the common principles across the board (referred to as high-implementing schools), there seems to be a significant increase in college access for students, especially underserved students. In snapshots of data from Massachusetts and Maine, CES noted that in CES Comprehensive School Reform Demonstration project schools, the percentage of students passing the state achievement tests rose dramatically from the base year of testing (CES, 2002a). A survey of 41 high-implementing schools involving 1,010 students revealed that 84 percent of graduates enrolled in two- or four-year colleges immediately upon graduating from high school (www.essentialschools.org, 2002), compared to 63 percent of high school students nationally who enrolled in postsecondary institutions. Furthermore, 82 percent of African American and 84 percent of Latino CES graduates were enrolled in college, compared to national averages of 59 percent and 42 percent, respectively (CES, 2001).

In their study of the Julia Richman Complex in New York City, which houses five small CES schools, Darling-Hammond, Ancess, and Wichterle Ort (2002) found that in the first five years of implementation, graduation and college-going rates in CES schools were significantly higher than they were citywide. In addition, dropout rates were considerably lower than in similar schools citywide. Seventy-three percent of the 1994 9th grade cohort graduated from the schools in the Julia Richman Complex, in comparison to 49.7 percent of students from the same cohort citywide. Within six years of their freshman year, 84.6 percent of the 9th grade 1994 Julia Richman cohort had graduated, in comparison to approximately 70 percent of the cohort citywide. In 1998, 91 percent of the Julia Richman graduates went to college. The researchers attribute the success of these schools to their small size, the small size of the classes, the personalization afforded by the size, formal advisement structures, and the intense focus on curriculum and instruction, including an emphasis on explicit teaching of academic skills—all key principles of the CES model (Darling-Hammond, Ancess, & Wichterle Ort, 2002).

CES emphasizes "equity, personalization and intellectual vibrancy" (Coalition of Essential Schools, 2002b) which helps prepare students to participate successfully in postsecondary education. Coalition schools have universally high expectations that are articulated clearly to all students. For example, the majority of CES schools (78 percent) require students to take rigorous course loads. They include three or more years of each core curricular area (English, math, science, and social studies), whereas nationally, only 18 percent of schools have similar graduation requirements (CES, 2002b).

Such requirements not only emphasize the school's expectations for students, but also com-

pel students to take courses that will prepare them for college, such as mathematics beyond algebra II. CES schools encourage students to take college preparatory classes. Students also are urged to prioritize the development of critical thinking skills beyond the basic skills found in comprehensive high school curricula. Finally, by involving the community and parents in the development of the school and its practices, these schools integrate the curricula with students' experiences. The schools assist in the development of strong adult networks that can provide social and academic support for students.

First Things First

The Institute for Research and Reform in Education (IRRE) developed First Things First (FTF) to improve educational outcomes for all students, particularly students in high-poverty areas. The FTF model is based on principles of developmental psychology that address the need for humans to feel competent, autonomous, and related and the premise that meeting such needs in social contexts promotes positive development (Quint, 2001). The model calls for improving the human dimensions of schooling by creating more personalized relationships among teachers, students, and students' families as a means to improve student achievement.

FTF aims to change school structures, pedagogical practices, teacher accountability, and governance to create environments in which students and adults are engaged in learning. To achieve this goal, students and teachers are grouped in small learning communities (SLC), which students select based on their interest in the SLC's thematic focus. The same group of students and teachers stays together for multiple years, and staff is redistributed during core instruction (initially language arts and math) so there is a student-to-adult ratio of 15:1 for as much time as possible.

FTF uses a family advocacy system in which every student is assigned a staff member who works with the student, family, and teachers throughout the four years of high school. This system is designed to ensure closer monitoring of and greater support for students as they work toward accomplishing their academic goals. The model also implements high, clear, and fair standards for academic achievement and behavior. It requires schools to provide multiple ways for students to learn, perform, and be recognized (Institute for Research and Reform in Education, n.d.).

FTF is operating in more than 70 schools in nine districts. Longitudinal research has been conducted in Kansas City, Kansas, where FTF was piloted in every school in the district. Using quantitative data from teacher and student surveys, in combination with qualitative data gathered from classroom observations and teaching, Quint and her colleagues (2005) showed that student attendance, graduation rates, and academic achievement increased in Kansas City middle and high schools that implemented FTF. More students scored at levels considered "proficient" or above on the state reading test, but there was no clear pattern in the percentage of students who scored "proficient" or above on the state math test. According to Quint (2005), FTF both increased rates of proficiency in specific subjects as well as reduced rates of unsatisfactory performance. While there has been some improvement in student outcomes in this city, research results in four other districts where FTF has been implemented are less consistently positive. At the same time, these schools have only implemented FTF for up to three years as opposed to the five years in Kansas City.

One of FTF's strength is the degree to which it provides academic and social support to individual students through the family advocacy system. FTF's focus on improving the affective relations within the school through the family advocate system is unique, bringing adults (at home and at school) into more longstanding, respectful, and mutually accountable relationships with students. Through such relationships, FTF affords students the academic support and access to social networks that are recognized as key to high achievement and college preparedness. FTF has focused more recently on improving and enriching the core curriculum with high-quality standards-based learning activities and instructional strategies that engage all students. This focus conceivably can ensure the presence of rigor and academic press that will, in turn, contribute to students being prepared for postsecondary education. FTF's combination of strategies has the potential to improve student achievement and college preparedness.

High Schools That Work

High Schools That Work (HSTW), sponsored by the Southern Regional Education Board, is

designed to "improve the communication, mathematics, science, technical, and problem-solving skills of career-bound youth" and "to close, by one-third, the gap in reading, mathematics and science achievement between career-bound students and college-preparatory students nationally" (Southern Regional Education Board, n.d; Bottoms & Mikos, 1995).

Although HSTW does not work expressly toward increasing college enrollment, it is designed to improve students' opportunities for further education by increasing the rigor of the curriculum. HSTW's central practices include holding students to high expectations,[3] increasing the rigor of vocational and academic studies, basing students' course-taking on an academic core and a vocational major, integrating work-based learning and academic curricula, providing students and their families with guidance and extra help in accomplishing their goals, and using assessment data to help students stay on track to graduation.

The HSTW curriculum integrates vocational and academic knowledge, thereby providing access to a relevant and rigorous curriculum for all students. It includes four credits of English and math, including geometry and algebra II, and three credits each of science and social studies. In each academic area, students complete college preparatory level work and take four credits in an academic or vocational major and two credits in a related field, including at least half a credit in computers.

HSTW measures progress in a variety of ways, including standardized tests (NAEP assessments), student surveys, class enrollment, student persistence to graduation, the taking of college entrance exams (ACT and SAT), and the successful completion of the HSTW program. Based on these assessments, schools and students who participate in the HSTW program are improving their performance. More students are enrolled in higher-level mathematics and science classes; NAEP reading, math, and science scores have improved dramatically; more students have taken the SAT and ACT and are performing better than previous classes; postsecondary enrollment rates are increasing; daily attendance and graduation rates are increasing; and dropout rates and discipline referrals are decreasing. More important, vocational students completing a major at HSTW schools are outscoring similar students in other schools on achievement tests (Southern Regional Education Board, n.d.; Bottoms & Mikos, 1995).

Despite the student gains in HSTW schools, the minority achievement gap still exists. African American students, while enrolling in college preparatory classes at the same rate as White students, were meeting HSTW achievement goals at nearly half the rate of White students over 10 years of implementation (Bottoms & Presson, 2000). This gap was attributed to lower expectations and a poorer quality of instruction for African American students within the schools. In response to this, Gene Bottoms, the program's founder and director, developed a plan to improve instruction and support for students in schools that are not meeting HSTW goals. He believes that if schools undertake the process of change set forth in the HSTW design, they will be able to provide all students, particularly those who have traditionally been underserved, with a high-quality education that will prepare them for postsecondary education and the workforce (Bottoms, 2001).

Studies by the U.S. Department of Education affirm the value of students taking vocational and college preparatory courses. One study showed that students in both college preparatory and vocational tracks (like students in HSTW schools) enrolled in college at nearly the same rate as students who were enrolled only in the college preparatory track, and at significantly higher rates than students in vocational-only or general tracks. Students enrolled in both college preparatory and vocational tracks made gains on mathematics and reading test scores between 8th and 12th grade that were similar to those enrolled only in a college preparatory program (NCES, 1999b).

The goals and restructuring components of HSTW are well aligned to increase college access and address the college-going predictors regarding academic rigor and access to social networks and information. Of particular importance is that HSTW serves students who previously were tracked in vocational and general education programs. For this reason, its success is magnified for students of color and those from low-income families who are disproportionately enrolled in lower, non-college preparatory tracks (Lee & Bryk, 1988).

[3]High Schools That Work defines high expectations as implementing at least four of five actions: teachers (1) state the amount and quality of work necessary for a student to earn an "A" or "B"; (2) are available to help students with their studies; (3) require one or more hours of homework per day; (4) insist on several revisions to improve the quality of students' work; and (5) expect students to work hard to meet high standards.

By linking vocational and academic curricula, HSTW schools enable students not only to prepare for a career, but also to gain a greater understanding of core academic subjects and to succeed at the postsecondary level, even if attending college was not their original intent. The academic component of HSTW ensures access to postsecondary education and limits the possibility that students will have to take remedial courses once enrolled. In addition to a relevant and rigorous curriculum, HSTW incorporates high expectations and early planning, both of which are necessary for students to develop the ability to apply and gain admissions to institutions of higher education.

Talent Development High Schools

The Talent Development High Schools (TDHS) model was developed by the Johns Hopkins Center for Research on the Education of Students Placed at Risk (CRESPAR). The program was designed to help schools prepare all students to succeed in a high-standards curriculum and in their careers. TDHS primarily targets schools that face serious problems with student attendance, discipline, achievement scores, and dropout rates.

Smaller learning communities are a central feature of TDHS; these communities create more personalized learning environments, foster close relationships between students and adults, and provide focused and relevant learning opportunities that promote student success. Because many 9th graders entering large urban high schools are not prepared academically for high school-level work, the TDHS design includes Ninth Grade Success Academies that give students the social and academic support and opportunities they need to transition to high school.

The TDHS 9th-grade curriculum includes double doses of mathematics and English; students take a transition to advanced mathematics class paired with algebra I, and a strategic reading course paired with English I. They also take a freshman seminar course to learn study and social skills, and participate in education planning and career exploration. After 9th grade, all students enter one of several career academies that integrate occupational curricula and provide work-based learning opportunities. In the career and Ninth Grade academies, all students enroll in a common core curriculum consisting of college preparatory courses that are supported by instructional techniques and extra learning opportunities to help students successfully complete these courses (Philadelphia Education Fund, 2001).

Other components of TDHS designed to increase student achievement include extended instructional periods of 80 to 90 minutes in a 4x4 block schedule and "Twilight School." In the 4x4 block schedule, students take four classes a semester and move together from class to class, providing students with a small core of teachers and peers with whom they interact consistently. The Twilight School is an after-hours program offered to disruptive or truant students, or to students returning from incarceration, in an effort to keep them in school.

The TDHS program has demonstrated positive effects on school climate and student attendance, achievement, promotion, and dropout rates (McPartland, Balfanz, Jordan, & Legters, 1998). For example, in two Philadelphia TDHS programs, the percentage of first-time freshmen passing their core courses (English, algebra I, and science) jumped from 24 percent to 56 percent after the first year of TDHS reforms. Matched control schools saw an increase of only five percentage points (from 34 percent to 39 percent) during the same period. Consequently, a greater percentage of students in TDHS sites were promoted to 10th grade, with more credits, than the previous year's class. Promotion to the 10th grade increased by 47 percent at one school and by 65 percent at the other. Matched control schools saw a decrease in their promotion rates over the same time. Also, 9th graders tested in TDHS programs improved their 8th-grade Stanford 9 mathematics scores by an average of 3.5 NCEs (normal curve equivalents), while scores of students in the control schools fell by an average of 0.2 NCEs.

Studies that focused on schools in Baltimore also showed increased student achievement by various measures. Ninth graders who took the Talent Development double-dose sequences of English and mathematics made average gains of one grade equivalent in reading and more than half a grade equivalent in mathematics over a four-month period, as measured by the Comprehensive Test of Basic Skills. They compared favorably to students in control schools who took non-Talent Development double-dose classes and gained less than one-third of a grade equivalent. The first class involved in Talent Development in Baltimore's Patterson High

School also showed dramatic improvement in persistence toward graduation (reduced drop-out rate and increased passing to next grade), compared to earlier classes (McPartland, et al., 1998).

Recent studies of TDHS showed similar results (Kemple, Herlihy, & Smith, 2005; Kemple & Herlihy, 2004; Balfanz, Legters, & Jordan, 2003). Like the 2004 study (Kemple & Herlihy), the most recent MDRC study (Kemple, Herlihy, & Smith, 2005), found that Talent Development produced an increase in attendance, academic course credits earned, and promotion rates during students' first year of high school. The study also showed that "improvements in credits earned and promotion rates for 9th graders were sustained as students moved through high school." (ES-1) Talent Development increased the percentage of students completing a basic academic curriculum by approximately eight percentage points beyond the non-Talent Development High Schools and increased the proportion of students who earned a credit in algebra by almost 25 percentage points (Kemple, Herlihy, Smith, & 2005). In addition, the study showed that the promotion rates from the 9th to 10th grade improved for students attending Talent Development Schools. Moreover, the rate at which students were promoted to the 11th grade and the proportion of course completions were sustained as first-time 9th graders progressed through high school. Finally, the likelihood of students graduating on time improved by eight percentage points in the two schools that had implemented the model for five years (Kemple, Herlihy, & Smith, 2005).

The study conducted by Balfanz, Legters, and Jordan (2003) also looked at the impact of TDHS on 9th graders, this time focusing on instruction in reading and mathematics. By comparing pre- and post-test results of TDHS and matched schools, it found that students in Talent Development schools significantly outperformed students in the matched schools in both reading and algebra. In addition, students in Talent Development high schools gained a half year more in grade equivalents in mathematics and seventh months more in grade equivalents in reading than did students in the matched control schools. Furthermore, the study showed that the positive effect of TDHS held true for students from all levels of prior achievement, suggesting that Talent Development benefits all 9th grade students, not just those who are furthest behind (Balfanz, Legters, & Jordan, 2003).

While addressing the needs of low-resource schools, TDHS also deals with the predictors of college attendance. The number of credits earned during freshmen year is a strong predictor as to whether a high school student will graduate on time (Allensworth & Easton, 2005). Among the most challenging problems facing large urban high schools is the high proportion of high school students who are disaffected by high school and who subsequently drop out. TDHS has some evidence that it addresses this issue. By placing students in smaller learning communities, particularly the Freshman Academy and subsequent career academies, the model ensures that students have a consistent network of teachers and peers from which to draw support and guidance, which is especially necessary for low-income, first-generation college attendees, and minority youth who have not had strong enough support or guidance at school. In addition, the model works with schools on how to develop a curriculum that it is relevant and offers a college-preparatory sequence for all students. Finally, the model provides for extending learning and support opportunities. It is clear that the model works to develop a strong organizational push for all students to succeed, and this sustained academic and social support enables students to make academic gains.

GE Foundation College Bound

While some reform models aim to change high schools around the country, others work in their communities to change local high schools. One such program is the General Electric (GE) Foundation College Bound program. It is designed to encourage underperforming schools located near GE facilities to use whole-school change to increase significantly the college-going rate (Brandeis University, 2000). The program is based on the concept that targeted, comprehensive change can lead to changes in curriculum and instruction that directly affect the college-going rate of graduates. Similar to the other reform model developers, the GE Foundation operates under the belief that, for staff, students, and communities to be fully invested in whole-school change, the primary stakeholders within the school must design the change. Therefore, the GE Foundation provides continued financial and personnel support for schools to create their own reform programs.

The programs are designed to change fundamentally the school structure and create condi-

tions for sustained improvement. Some of the more common features of change include partnering with a university, improving and enhancing the curriculum and instruction, such as adding new AP classes, rearranging staff to create teams and student advisories, creating new business partnerships, and acquiring additional computer and science lab equipment. In addition to providing the funding to alter structural factors, the GE Foundation supports networking and best-practice sharing sessions within and between the schools in the program (Brandeis University, 2000).

Overall, studies indicate that GE Foundation College Bound has been successful. Seven of the 10 sites have shown significant increases in college-going rates, ranging from 22.7 percent to 159.1 percent. In addition, 76 percent of all GE Foundation College Bound graduates attend college, compared to approximately 71 percent of students nationwide who enroll within two years of high school graduation. The difference is particularly profound among students whose parents have little or no college education, and among Latino students. Among those graduates who enrolled in college, 87 percent of GE Foundation College Bound students finished the first year of college; in comparison, only 70 percent of college freshman nationally did so. Graduates of GE Foundation College Bound high schools also were 27 percent less likely than non-College Bound students to drop out of college without completing a degree (Brandeis University, 2000). Results of further research will be available in 2005 (Brandeis University, forthcoming).

The success of GE Foundation College Bound can be attributed to the program's focus on structural changes aimed at preparing students for college. The program focuses on providing high-quality instruction in quality courses. Schools are encouraged to restructure in ways that provide more social support and increased individual attention to students both in and out of the school, features often lacking in high schools, particularly those attended by low-income and minority youth (McDonough, 1997; Powell, Farrar, & Cohen, 1985). In doing so, the GE Foundation College Bound program addresses those factors that most crucially affect college attendance.

Smaller Learning Environments

Evident in many of these reform initiatives is the provision of small or personalized learning environments. Smaller learning environments have become a primary strategy to improve the nature and structure of high schools so as to increase student achievement. Advocates of smaller learning environments argue that, in large schools, students and teachers do not have the opportunity to build strong relationships that are crucial to the academic success of minority and low-income students (Nathan & Febey, 2001; Wasley et al., 2000). In contrast, smaller and more personal environments foster close relationships and stronger academic achievement (Ancess & Ort, 1999; Raywid, 1994). There are three major forms of small or personalized learning environments:

1. Schools-within-schools (SWS) are established by dividing an existing school into small units. This is the most common approach taken by districts or schools that want to provide a small learning environment. These schools-within-schools often are developed around themes and have their own administrators who report to a building principal. Students remain in the same SWS during a period of two or more years, and are taught by a team of teachers with common planning time.

2. Subschools are individual schools within one building. Each subschool has its own principal and staff as well as its own portion of the building.

3. Freestanding small schools are those that enroll fewer than 600 students. They typically focus on core academic courses only, rather than offering the multitude of diverse and elective courses found in comprehensive high schools.

Schools-within-schools. One of the most common forms of SWS is the career academy. Career academies focus learning on a specific career-related subject, such as health sciences. Originally designed as an alternative for educating non-college-track students, career academies have evolved into schools designed to provide students with high-quality, rigorous, and relevant courses, as well as experiential opportunities in their fields of interest (Elliot, Hanser, & Gilroy, 2002). In a career academy, teachers not only work together, but also in partnership with local businesses to

relate core academic material to the specific field. The business partners serve as curricular advisors, mentors, suppliers of work opportunities, and financial supporters.

Structurally, career academies are designed to be flexible to maximize academic learning time for students. This includes providing time for students to participate in work-based learning. They also provide common planning time for teachers, a critical step in restructuring schools to provide greater academic support (Lee & Smith, 1994; Lee, Smith, & Croninger, 1995). By implementing strong college preparatory curricula and expectations, career academies also provide students with crucial aid in the college planning process (Trybus & Li, 1998).

Early studies of career academies suggested that they raise academic achievement, significantly reduce dropout rates, and increase both attendance rates and the number of credits earned toward graduation among students considered most at risk (Kemple & Snipes, 2000; Southern Regional Education Board, n.d.). For example, in one study of nine high schools and their career academies, academy students had a daily attendance rate of 82 percent versus 76 percent in the non-academy portion of the school; 40 percent of academy students earned credit toward graduation, while just 26 percent of those in the remainder of the school did so; twice as many academy students completed the basic core curriculum (four English, three social studies, and two mathematics and science courses) as did students in the rest of the school; and 51 percent of academy seniors applied to college, compared to 35 percent of non-academy students. Another study found that career academy students' grade point averages were between one-quarter and one-half point higher than those in the non-academy control schools, and their graduation rates were twice that of the control schools (Elliot, Hanser, & Gilroy, 2001). Finally, the early studies showed that, in comparison to students in the same high schools' general academic programs, students in career academies attended school more frequently and had higher grades and graduation rates (Elliot, Hanser, & Gilroy, 2002).

In 2004, Kemple followed up an earlier study on career academies (Kemple & Snipes, 2000) by examining the impact of career academies on students' educational attainment and labor-market experiences four years after they were scheduled to have graduated from high school. The study found that career academies have a more significant impact on labor market outcomes, particularly financial earnings, and increase the likelihood that students who do enroll in postsecondary education (either college or technical training) will persist longer. For instance, male students who participated in a career academy and enrolled in postsecondary education had lower attrition from postsecondary programs than did male students who did not participate in an academy. The study also found that career academies were most effective for students who entered the school at medium and high risk of dropping out of high school. As Kemple suggests, "the findings demonstrate the feasibility of improving labor market preparation and successful school-to-work transitions without compromising academic goals and preparation for college." (p. iii)

Brand (2004) believes that the elements of a career academy can provide students with a learning experience that is rigorous, relevant, and relational. The common core academic college preparatory curriculum inherent in career academies enhances students' ability to attend and succeed in college (rigor). Students apply acquired classroom knowledge during their internships, linking the purpose and role of academic coursework to the world of work (relevance). Finally, the interpersonal supports created by the small learning communities, as well as the relationships with mentors and other people in the business community who support academic endeavors, improve student outcomes (relationship) (Elliot et al., 2001; Kemple & Snipes, 2000; Trybus & Li, 1998).

Subschools. Like schools-within-schools, subschools are small in size, and often theme-based to match the vision and mission of the school. A theme can serve as an organizing principle for the school and gives the faculty a basis on which they can develop curricula and arrange activities. For example, a school dedicated to creating a better future through democratic participation might organize its curriculum based on the theme of social justice or democratic process. Subschools are individual schools that share a building with other schools, each with its own administration, staff, and space. They typically share large spaces, such as the gym and auditorium, and some resources, such as custodial staff (Ancess & Ort, 1999; Gladden, 2000). They also may share the building with non-school services.

The Julia Richman Complex in New York City (formerly Julia Richman High School) is perhaps one of the best examples of a complex of subschools. The high schools in the Julia Richman Complex enroll low-income and minority students. Within the complex, four high schools share the building with a medical center, an arts center, a day care center, an elementary school, a professional development center, and a teen parent center. A building manager and leaders from each school serve on the building council that manages the campus. Although each is an autonomous entity, the subschools come together for sports and student activities, which would not be feasible within each individual school. The four high schools within the complex have the highest graduation rates among the New York City reform models and an 89 percent college-going rate among graduates (Ancess & Ort, 1999). In addition, the dropout rate at Vanguard, one of the schools in the complex with the most "challenging" students, is only 4 percent, compared to 20 percent citywide (Toch, 2003).

Like career academies, the small size of the subschools (as developed at the Julia Richman Complex) facilitates student learning. Many of the schools use innovative organizational principles to create environments in which the school policies, practices, expectations, norms, and rewards, generated by both staff and students, demand high achievement and provide coherence. Teachers have the chance to work with each student individually, find a niche where students can enter the curriculum and become engaged, and follow students' progress. Fundamental to these schools is the professional community that exists among the staff to ensure that teachers can develop networks and learn from one another, thus creating more effective learning communities (Ancess & Ort, 1999).

The academic support for students that comes from teachers knowing them well is crucial to students' success and their ability to complete rigorous coursework. Concomitantly, the support provided to students through the relationships they form with their peers gives them the strength to persevere through challenging academic and personal experiences. The coherence and support inherent within a subschool have significant implications for improving students' success in higher education.

Freestanding small schools. Similar to other small learning environments, freestanding small schools focus on personalizing students' educational experience by enrolling 600 or fewer students. They are fundamentally different from the traditional comprehensive high school, since they are premised on the belief that all students should learn the same thing and that a common core curriculum for all students is the enabling force for greater academic gains (Wasley et al., 2000). By enrolling all students in a common set of classes, these schools alleviate the problem presented by Powell et al. (1985) in *The Shopping Mall High School*, which described the comprehensive high school as a place where students could experiment in a little of anything they wanted, without direction or cohesion to their curricular program. Powell et al. argued that the result of such *test tasting* was that students graduated from high school ill-prepared for college and the workforce.

In addition to offering a common curriculum, freestanding small schools typically are designed to provide all students with strong social supports. They often are structured to give teachers a role in governance and decision-making and to provide a variety of means for community involvement (Gladden, 2000). While small schools vary in size and conception, they frequently are part of a choice system in which students and parents can opt to enroll in one of a number of schools, thus providing more incentive for active student engagement (Meier, 2000b).

In a large literature review of the effect of small schools on students, Cotton (1996) found that students in small schools participated in a wider range of activities, took on more responsibility, and enjoyed their participation more than students in large schools. This same review also showed that SAT scores and college-acceptance rates of students from small schools were equivalent or superior to those at large schools. In a study of small schools in Chicago, Wasley et al. (2000) found that while the mean dropout rate in large schools was 7.82 percent, it was only 5.14 percent in freestanding small schools; students in freestanding small schools had slightly higher grade point averages (1.98 vs. 1.96) than students in large schools; and students in freestanding small schools gained .06 more grade equivalents in reading, although they lost .21 more grade equivalents in mathematics than students in large schools. In a review of the evolution of five new small schools, Huebner (2005a) found that atten-

dance rates increased and the number of suspensions and expulsions decreased. In addition, students in all five schools showed improvement on their state academic achievement exams. At the one school that had a senior class, 100 percent of the seniors applied to and were accepted to college. Similarly, Huebner (2005b) found that attendance rates increased and were higher than the citywide attendance average in five New York City small schools. In addition, she found that 92 percent of 9th graders in the five schools advanced to 10th grade, compared to the citywide average of 68 percent. These findings indicate that small schools can increase student engagement and student achievement.

All varieties of small schools address the predictors of college-going. Each seeks to provide students with more personalized learning experiences, increased rigor, increased relevancy, and more social support. Smaller learning environments in which teachers are able to know their students well prevent students from falling through the cracks, both academically and socially. The opportunity for teachers to personalize learning experiences enables them to focus on the individual learning styles and needs of each student and to engage them in learning. Furthermore, when teachers have the time to focus on individual students, each student can be given help in areas that would otherwise prevent him or her from succeeding in academically rigorous courses. These characteristics of small schools seem ideal for preparing minority and low-income students for success in postsecondary education. It is worth noting, however, that there are concerns that if small schools, regardless of their form, do not address the underlying racism and classism that have prevented minority and low-income students from succeeding in large schools, these schools will not remediate the academic achievement and educational attainment gaps (Perry, 2003; Wasley, 2003).

ALIGNING SYSTEMS

Some reform models and initiatives also have been designed to restructure the academic and social supports for students, but with the explicit purpose of aligning curriculum between high school and postsecondary levels, and sometimes between levels within the K-12 system. Aligning curricula across school levels creates more seamless education and ensures that students are prepared for each subsequent grade. Aligning K-12 and postsecondary education also reduces the number of students who arrive at college needing remedial coursework (Kirst, 2001). The following programs and models primarily focus on aligning curricula across levels to prepare students for college.

Dual Enrollment

Schools in nearly every state use dual enrollment to encourage college preparedness and help reduce the cost of higher education and the number of remedial enrollments in state university systems (Martinez & Bray, 2002). Dual enrollment is also known as "dual credit," "concurrent enrollment," and "joint enrollment." In this paper, the term "dual enrollment" will be used, and is defined as opportunities where high school students can earn college credits for courses taken through a postsecondary institution. Dual enrollment allows high school students to enroll in college courses, offering them the opportunity to experience academically rigorous curricula while earning college-level credit. Credit for college courses can be earned at both the high school and college levels; usually only high school juniors and seniors are eligible to participate (NCES, 2005c). Dual enrollment programs vary greatly, but generally are based on five principles:

1. Education is a continuum in which the basics must be learned before proceeding.
2. Courses offered through the programs should augment, not replace, high school curricula.
3. Programs are most effective when they are physically accessible to students.
4. Programs should provide financial support when necessary.
5. The secondary-postsecondary partnership should be supplemented with academic support in the form of academic advising, pre-college counseling, financial aid planning, study skills workshops, and assessment (Robertson, Chapman, & Gaskin, 2001).

Dual enrollment has become very popular, in part as an effort to prepare high school students for college, and in part as a way to help students save time and money in earning a college degree while enhancing admission to postsecondary education (NCES, 2005c). For the 2002-03 academic year, approximately 5 percent of all high school students were dual enrolled in postsecondary education. Fifty-seven percent of Title IV degree-granting institutions had high school students who took courses. Almost half of the institutions offering dual enrollment report that students enroll in one course per semester. Dual enrollment opportunities are most prevalent at public two-year colleges. Almost all of the public two-year institutions in the study (98 percent) had high school students taking courses for college credit during that year compared to 77 percent of public four-year institutions, 40 percent of private four-year institutions, and 17 percent of private two-year institutions. Likewise, larger institutions had more students taking courses for college credit than medium and small institutions.

According to the U.S. Department of Education (NCES, 2005c) 80 percent of the postsecondary institutions with dual enrollment programs offer courses on the campus, while 55 percent offer courses at a high school location. A greater proportion of public two-year than public four-year and private four-year institutions offer the courses on a high school campus (NCES, 2005c). Students in dual enrollment courses may receive instruction from college faculty on the college campus, or from college-accredited teachers based at the high school (Gehring, 2001a). Of those courses taught on a high school campus, a majority (42 percent) are taught by both college and high school instructors, one-third of the courses are taught by high school instructors, and 26 percent are taught by college instructors only.

Some dual enrollment programs are designed specifically to increase access to higher education for minority or low-income students. In Phoenix, Arizona, the Achieving a College Education (ACE), and its sister program, ACE Plus, are designed for this purpose. ACE recruits the majority of its students as sophomores from high schools that enroll predominantly low-income, minority, and potential first-generation college students and are feeder schools for local community colleges (Van Buskirk & McGrath, 1999). All students take classes that enhance their high school curricula and "focus on the competencies the students need to succeed in college—critical reading and writing skills, oral expression, mathematics and computer skills" (Van Buskirk & McGrath, 1999, p. 32).

ACE courses are taught on Saturday mornings and during the summer on the college campus. Students are granted some of the privileges of college students and are held to college-level standards and expectations regarding homework, attendance, and preparedness (Van Buskirk & McGrath, 1999). The ACE program also works closely with parents, high school faculty, and guidance counselors in an effort to maintain contact with the students, help guide their academic pursuits, and provide access to information and counseling about higher education, scholarship opportunities, and available financial aid. The ACE Plus program reports that 96 percent of its students graduate from high school (Achieving a College Education, 2001), compared to a district dropout rate of nearly 50 percent (American Council on Education, 2000).

Another model of dual enrollment is College Now, based at Kingsborough Community College in New York and now part of the entire City University of New York (CUNY) system. College Now tests students during their junior year of high school to determine if they are ready for credit-bearing college courses or if they still need help in reading, writing, or math. Students deemed in need of help are enrolled in remedial courses. College Now courses are taught by college faculty, but are designed specifically for high school students (Bailey & Karp, 2002). This program exposes students to college-level work prior to enrollment and helps them become academically prepared to undertake credit-bearing college courses upon enrollment. Kleiman (2001) found that College Now graduates were less likely to need remediation when they entered CUNY schools than were other CUNY students. They also were twice as likely to graduate from college.

Perhaps as an indication of its success, College Now has been expanded to all of the undergraduate institutions in the CUNY system, including the four-year colleges, and is now being piloted as the College Now Nine program, beginning in the 9th grade. The College Now Nine program targets students who attend school regularly but seem likely to fail their Regents exams. In addition to working with students in small groups and focusing services to meet their needs, it provides an opportunity for high school and CUNY faculty to work together to improve instruction (Kleiman, 2001).

Although there is growing trend for high school students to earn college credits while still in high school (Adelman, 2004; Clark, 2001), a significant concern is opportunity: Which students are taking advantage of this? Is this a growing trend among all students, or is it limited to certain students looking for enrichment? Among the institutions estimated to have dual enrollment programs, only 5 percent had dual enrollment programs specifically geared toward high school students at risk of education failure (NCES, 2005b). Data from local program evaluations show that dual enrollment programs predominantly serve White, middle-class students, with the exception of a few programs that specifically target minority or low-income students (Crossland, 1998; Windham, 1997).

A study conducted by Clark (2001) showed that four-year college students who participated in a high school dual enrollment program have, on average, a higher college GPA and a higher four-year graduation rate than students who did not participate. A more recent study showed that students who have participated in dual enrollment have higher postsecondary aspirations, enter postsecondary education at higher rates, and are retained at slightly higher rates than non-participating students (Bragg, 2001; Brodsky, Newman, Arroyo, and Fabozzi, 1997; Plimpton, 2004; Florida Department of Education, 2004). Other studies support this, finding that students who entered postsecondary with prior college credit earned more credit or passed more units than those entering without college credit. In addition, they had a higher grade point average and higher retention rates (Delicath, 1999; Mullen, 2003; University of Arizona, 1999).

There is a dearth of research on the effectiveness of dual enrollment for students; particularly those at risk of education failure. The American Youth Policy Forum (AYPF) is currently reviewing the research conducted on 50 dual enrollment programs to determine individual program outcomes as well as the common outcomes and strategies (AYPF, 2005). Nonetheless, it is clear that specific programs such as ACE and College Now can expose students to the rigor and experience of college life by offering a combination of college preparatory classes, college courses, and networks for academic and social support. Programs that are based on the five principles of dual enrollment enable students to take more rigorous courses than would otherwise be offered at their schools and allow community colleges to provide valuable skills and knowledge to students prior to their enrollment, thus decreasing the likelihood of remediation (Robertson, Chapman, & Gaskin, 2001). More important, dual enrollment programs can provide a seamless transition for students, both academically and emotionally, between high school and college.

Middle College and Early College High School

The middle college high school, a form of dual enrollment, aims to increase college access for at-risk students by providing extensive academic and social support. The original middle college high school combined the last three years of high school with an associate's degree program at LaGuardia Community College in the New York City area (LaGuardia Community College, n.d.). The concept was developed in response to concerns that falling high school graduation rates and poor academic preparation for college-level study were preventing the New York City Public Schools from feeding a sufficient quantity or quality of students into the city college system. The goal of the program was to decrease the number of high school dropouts and provide a bridge between high school and postsecondary education by exposing at-risk students to advanced learning. Additionally, the founder, Janet Lieberman, asserted that adolescents in the later years of high school are developmentally closer to college students than to younger high school students and should be educated with college students (Wechsler, 2001).

Today, the concept of the middle college high school has been emulated across the country, but is more varied in its configurations. Nonetheless, the principles remain the same, as does the focus on addressing the needs of traditionally underserved students who have not been well served by comprehensive high schools. The middle college high schools movement uses interdisciplinary curricula, cooperation between schools, community organizations, and business, self-pacing, and a variety of measures designed to improve students' connections to the school, such as house systems and teacher-counselors who stay with students over several years (Lieberman, 1998). In addition to providing general guidance, teacher-counselors work with students to create course schedules, keep students on track to graduation, and help them with internship placements and career advising (Wechsler, 2001).

Early College High School (ECHS) is a different middle college configuration. It is a $60 million initiative funded by the Bill & Melinda Gates Foundation along with the Carnegie Corporation of New York, the Ford Foundation, and the W.K. Kellogg Foundation. ECHSs combine grades 9-14 into one institution. Whereas community college courses are optional for 11th and 12th graders in Middle College, ECHS is designed so that all students will achieve two years of college credit at the same time that they earn a high school diploma (within four to five years of entering as a 9th grade student). The original Early College was founded by Leon Botstein at Bard College in New York City, where 11th and 12th graders take four Great Books/critical reading and writing seminars in addition to college-level courses in subjects such as philosophy and math, graduating with an AA degree (Seal, 2004).

Like Middle College High Schools, ECHSs vary in size, location, and style. Nonetheless, they are designed to be small, autonomous high schools that blend high school and college into a coherent education program, especially for low-income and first-generation college-goers, English language learners, and students of color. Among the goals are "to eliminate time wasted on non-essential courses and activities during the junior and senior years of high school" and to eliminate the physical transition between high school and college for the first two years of college, including the application for admissions and the financial aid process (Hoffman & Vargas, 2005). At the same time, ECHSs provide students with a personalized environment, including guidance and support, through the first two years of

college. High expectations and the opportunity to take college courses are coupled with academic and social support.

The first annual evaluation report on the Early College High School Initiative (ECHSI) found that 22 ECHSs had been opened and were serving approximately 3,500 students, primarily from racial and ethnic minority groups and low-income families (American Institutes for Research and SRI International, 2005). Most of these schools had devised strategies by which to introduce "even 9th grade students to college courses and/or a college campus." (p. vi) ECHSs were evenly divided between "new schools starting from scratch and existing schools that were adopting ECHS Core Principles." (p. ii) A large proportion were charter schools that enrolled approximately 68 students per grade, and had enrolled only 9th or 9th and 10th grade students within the first year of operation. ECHSs were located at four types of facilities: facilities shared with other schools, on college campuses, in office buildings, and in their own school buildings. Some ECHSs offered college courses only for high school students, while a few mixed high school students with college students. For the 2005-2006 school year, 21 new early college high schools will open. This will bring the total in operation to 67, enrolling more than 12,000 students (Jobs for the Future, n.d.). By 2008, there will be more than 170 ECHSs (Jobs for the Future, n.d.)

Nationwide, middle college high schools have a high school retention rate of 85 percent, with 75 percent of those students graduating from high school. Of the graduates, 78 percent go on to college. In comparison to national data for similar at-risk students, these are positive gains (Lieberman, 1998). At the original middle college high school (LaGuardia Community College, n.d.), there is an 86 percent attendance rate, a 95 percent graduation rate, and 75 percent college attendance rate. These numbers alone are impressive, and are particularly strong in comparison to the data from the general New York City public schools where students would otherwise be enrolled. Within the small cohort of LaGuardia students who are enrolled in Early College, all are on course to graduate with college credit, and 23 students are on course to earn an Associate's degree (Seal, 2004). At San Pablo Middle College, students outscored the "highest ranking high school in the district (West Contra Costa Unified School District) on the Stanford Achievement Test, 9th edition, which California uses to assess students, by 17 percent in reading, 13 percent in math, and 8 percent in science." (p. 7) In addition, the daily attendance and graduation rates exceed 90 percent (Gehring, 2001a). There is some local evaluation data suggesting that these types of schools can improve student engagement, academic achievement, graduation, and college-going rates.

Additional evidence of the success of the middle college high school model comes from a 2002 study by the Appalachian Educational Laboratory (AEL) that examined five high schools located on college campuses. Four of these high schools could be classified as middle colleges, while one is more of a traditional dual enrollment program. At each of the schools, the researchers found that students and teachers benefited from the smaller environment and the location of the school on a college campus. The researchers noted that the high school students benefited from having increased freedom, and thus greater responsibility for themselves. They also benefited from having classes with older students, who served as role models and as an impetus for the students to behave more maturely, as they did not want to be recognized as high school students. In addition, students learned to participate in discussions and engage in academic debate, which helped them to develop critical thinking skills through enriched learning and improve the quality of their high school classes.

The researchers also found that teachers benefited from being able to work closely with college faculty, as this contact allowed them to align the content of their courses more carefully with postsecondary education curricula. Very little data is available to determine the effectiveness of these schools. However, using the California State Standardized Testing and Reporting Web site (http://star.cde.ca.gov), the researchers from AEL determined that higher percentages of students at two of the schools (Contra Costa and Delta) scored in the advanced, proficient, and basic ranges on the state English and algebra I assessments than did students in the rest of the district. In addition, students at Mott Middle College in Michigan drop out of high school at a significantly lower rate than other students in the same districts (Cavalluzzo, Jordan, & Corallo, 2002). Finally, data from the Middle College National Consortium show that, of the middle colleges reporting graduation rates, the majority had graduation rates between 85 percent and 100 percent, with all but two above 90 percent (MCNC, 2003).

By and large, these graduation rates are on a par with the best schools in their districts.

Although the middle college high school approach is sometimes reduced to dual enrollment, it can be used as a far more comprehensive approach to increasing student achievement. More important, the model can encourage, support, and prepare low-income and minority youth for college by providing multiple points for students to become engaged in the curriculum, allowing students to make academic gains at their own pace, which in turn encourages further learning, and providing strong support systems for students, both academically and socially. These components create a *holistic model* that raises aspirations, reduces fear and anonymity, provides a sense of future, and creates success where failure was previously the norm (Lieberman, 1998; Middle College, n.d.).

The design of the curriculum closely aligns high school and college coursework, ensuring that students are prepared for higher education. By placing students in a college environment, early and middle college high schools provide access to sources of information about college academic and financial requirements, which are critical components that enable students to develop future plans to go to college (McDonough, 1997; Cabrera & La Nasa, 2000a, 2000b). In these schools, a high priority is placed on supporting students so they can meet the high expectations and learn through an accelerated program.

Tech Prep and 2+2 Articulation

Articulation programs are another means by which high school and postsecondary curricula can be merged to create a seamless transition between high school and postsecondary education. Articulated Tech-Programs involve high school courses containing the same course content as equivalent college courses; in these situations, a postsecondary institution has agreed to award college credit if the student meets requirements outlined in the course articulation agreement, either through the Statewide Articulation Program or in a local articulation agreement. Tech Prep is federally funded through the Perkins Vocational and Applied Technology Education Act of 1990. The program is administered through state-sponsored initiatives that combine vocational subjects and rigorous academics and align the coursework for high school juniors and seniors to the necessary requirements for completing a technical or associate's degree. Beyond the articulation agreements between secondary and postsecondary schools and the integrated academic and vocational curricula, key elements of Tech Prep include career guidance, collaboration between educators and employers, common core curricula, and work-based learning experiences. Furthermore, Tech Prep utilizes common academic and participation expectations to keep all students on track to graduation and to enable willing students to go on to college (Bragg et al., 1997).

Due to its multifaceted nature, measuring success in Tech Prep is complicated. According to a study of New York State Tech Prep programs, Tech Prep students outperformed non-Tech Prep students in 11^{th} and 12^{th} grades, even when accounting for prior grade point average discrepancies. However, on the PSAT and SAT college admissions tests, non-Tech Prep students did better than Tech Prep students, particularly in mathematics (Brodsky, Newman, Arroyo, & Fabozzi, 1997). A 2001 study comparing Tech Prep students' transcripts with those of matched comparison groups, found that 65 percent of the Tech Prep students enrolled in postsecondary education within three years of high school graduation (Bragg, 2001 as cited in Bailey & Karp, 2003). The same study, however, also showed that the Tech Prep graduates were more likely to enroll in two-year colleges (as opposed to four-year colleges) or seek full-time employment than the comparison group.

Another study showed that, in a sample of 330 graduates from high schools that were paired with community colleges, 70 percent of Tech Prep students were either currently enrolled in a postsecondary program or had graduated and 30 percent had dropped out, while only 65 percent of non-Tech Prep students were currently enrolled or had graduated and 35 percent had dropped out (Brodsky et al., 1997). These data suggest that Tech Prep has the potential to improve academic outcomes and college enrollment for underrepresented students who benefit from academic programs that are tied to real-world learning experiences.

Although Tech Prep and 2+2 Articulation programs are not explicitly designed to increase academic opportunities for students, they do help at-risk students in the college-going process by making the transition from high school to postsecondary education less difficult and by preparing students for

the work that will be expected in postsecondary institutions. More important, Tech Prep and 2+2 Articulation programs create a systemized process to postsecondary enrollment and offer more rigorous coursework for students. As a result, they decrease duplication of coursework and reduce the need to take remedial courses. This saves money and time for students who intend to enroll in professional and technical postsecondary programs (2+2), as well as for those who want to pursue academic programs in community colleges (U.S. Department of Education, n.d.). However, within these programs, much of the responsibility for preparing students for postsecondary education is placed only on a higher education institution or system. The responsibility must be balanced so that impetus and direction for change comes from both the K-12 and higher education systems.

Project GRAD

Project GRAD (Graduation Really Achieves Dreams) is designed "to increase graduation and college attendance rates" of at-risk students (Project GRAD, 2003). Although it is now a K-12 program, it began as a scholarship program for high school students in Houston, Texas. The program has developed into a district-wide reform effort to align curricula and expectations among grade levels and between schools. It works with elementary and middle schools to prepare students for high school, and it provides high school students with support to graduate from high school and attend college.

Scholarships for students are a major component of the program's foundation. Students in Project GRAD schools are eligible for a $1,000 to $1,500 college scholarship for each year of college, provided they fulfill a number of requirements, including on-time high school graduation, maintenance of a 2.5 GPA in college preparatory courses, attendance at Summer Institutes, and enrollment in higher-level courses, including algebra II (Project GRAD, 2003).

The second component, the Summer Institutes, are created by Project GRAD and local college and university faculty to increase college awareness, develop skills and content-area knowledge, and expose students to college expectations. The Summer Institutes take place on college campuses and are taught by college professors.

The third component is the three-week Summer Bridge program, which teaches study skills that students will need during high school. This component is designed to ease the transition from middle to high school (Project GRAD, 2003).

The fourth component, Communities in Schools (CIS) and Parent University (PU), is used at all grade levels (K-12). CIS provides schools with social workers who work with students and their families, helping parents get more involved in their childrens' education, and addressing, together with the parents, problems that interfere with learning. This component includes an annual "Walk for Success" during which volunteers visit the homes of entering 9th grade students to explain the scholarship program and to encourage parents to sign a contract committing their children to the program. PU also provides the opportunity for parents to continue their own education through adult literacy and continuing education classes (Project GRAD, 2003).

Finally, Project GRAD utilizes a discipline management program, Consistency Management and Cooperative Development (CMCD), throughout the feeder school system. CMCD creates consistent rules and consequences for students, facilitates safe classrooms, and builds students' self-discipline and self-esteem (Project GRAD, 2003).

Project GRAD measures student success by increased graduation and college attendance rates. Furthermore, model developers work with schools to look at the academic predictors of college-going so as to assess its impact along the pathway to graduation and make any adjustments necessary for continuously improving student learning. At two high schools in Houston, Texas, student graduation rates have increased dramatically. Prior to implementation, the pilot site, Jefferson Davis High School, had an average of 175 graduates per year. In 2003, they had 308 graduates (Project GRAD, 2003). Similarly, Jack Yates High School has seen its graduation rate more than triple in the three years since implementation (Project GRAD, 2003). More impressively, at a time when the district has seen the number of graduates decline despite growing enrollment, both Davis and Yates have seen their four-year graduation rates increase from 37.1 percent (Davis) and 33.2 percent (Yates) in 1998 to 53.4 percent and 48.1 percent, respectively, in 2003. At Jefferson Davis, TAAS scores have nearly dou-

bled in mathematics and have improved significantly in reading, enrollment in algebra II has increased 55 percent in nine years, and the number of students taking the SAT I has nearly quadrupled in the 12 years since the scholarship program began, as has the number of students scoring 1000 or better on the SAT (Project GRAD, 2003). At Davis, nearly six times as many students used the Project GRAD scholarship to attend college in 2003 as had done in 1984-1985. More than three times the number of Yates students used the scholarship in 2003 as had done in 1998 (Project GRAD, 2003). Additional data will be available in winter 2005/6 (Doolittle, forthcoming).

With minimal changes in the structure of the high school, Project GRAD works to encourage high school graduation and early preparation for postsecondary education. It provides students with academic and social supports and gives individual incentives (scholarships) to encourage them to work toward college attendance. Unique to Project GRAD is the deliberate attempt to involve the students' families in the school and to help them support their children's academic pursuits. Rather than just another scholarship program, Project GRAD has developed into a multifaceted initiative designed to encourage students to attend college.

Project GRAD offers the possibility of overhauling failing school systems as it co-opts entire districts. The program addresses and values the fact that preparation for college starts earlier than high school. More important, Project GRAD achieves some degree of alignment among institutions within the K-12 pipeline. It provides a seamless transition through the K-12 system and within the community by ensuring that cultural norms among elementary, middle, and high schools are similar (Consistency Management), students enter the next level of education prepared (Summer Institutes), and parents are involved in and contribute to their education (CIS and PU). Such reform enables school systems to focus on college preparation rather than on stopgap measures.

GEAR UP

GEAR UP (Gaining Early Awareness and Readiness for Undergraduate Programs) is a federally funded early-intervention program designed to increase the number of low-income students who are prepared to enter and succeed in postsecondary education (GEAR UP, n.d.). GEAR UP works to achieve this goal by building the capacity of low-income middle schools to provide a rigorous curriculum, and by fostering a seamless continuum between secondary and postsecondary education.

GEAR UP grantees create local partnerships between low-income middle schools, institutions of higher education, businesses, and community organizations. Through a network of partnerships, the program coordinates access to mentoring, tutoring, and guidance focused on the college-going process for cohorts of low-income students, beginning no later than 7th grade. GEAR UP funding also is used for staff development, particularly to increase the content knowledge of middle school mathematics and science teachers. The program seeks to eliminate all forms of tracking. It embraces the implementation of rigorous core academic curricula aligned with expectations for entry-level readiness that have been set forth by local postsecondary institutions.

GEAR UP offers the opportunity to create curricular alignment and support for low-income students across the K-12 system, beginning primarily at the middle school, so that the pipeline to successful college graduation is as accessible to low-income students as it is to those from more privileged backgrounds. The program is designed to address multiple predictors of college-going behavior by creating partnerships that (1) enable schools to increase academic rigor, and (2) develop networks capable of providing social and academic supports to students in the form of tutors and mentors from the community who can offer information, support, and guidance.

Most important, GEAR UP begins its work with middle school students as opposed to federally funded TRIO programs, which have similar goals but start at the high school level. By starting in the middle grades, students and families gain the necessary information regarding college access prior to high school enrollment. Because course-taking decisions made in high school are critical to college entrance and success (McDonough, 1997; Cabrera, La Nasa, & Burkum, 2001), the early intervention provided through GEAR UP is critical.

More than a decade ago, the author of *All One System* (Hodgkinson, 1985) underscored the point that institutions of higher education depend on the quality of the K-12 system and the graduates it

produces. Many new ideas and initiatives are emerging to link the systems, or at least to recognize the value of higher education and prepare students for this endeavor if they choose to continue. As reform initiatives continue to expand, model developers and researchers will need to conduct impact studies and to evaluate continuously the success of the models.

CONCLUSIONS AND RECOMMENDATIONS

College preparedness is a vast topic. This study intentionally limited its investigation to reform efforts that address academic and social school structure at the high school level. To varying degrees, the reform initiatives discussed have successfully improved student achievement and increased enrollment in postsecondary education. Across all of the reform initiatives, four practices most commonly received credit for this success:

- Access to a rigorous academic common core curriculum for all students.
- The prevalence, in structure or climate, of personalized learning environments for students.
- A balance of academic and social support for students in developing social networks and instrumental relationships.
- Alignment of curriculum between various levels, such as high school and postsecondary, and between levels within the K-12 system.

Research on effective practices in high school restructuring aimed at increasing student achievement and equitable outcomes shows that these practices are consistent with predictors for college enrollment and success. Multiple studies on school reform consistently show that student achievement and equity improve with the prevalence of academic rigor (curriculum, expectations, etc.) and social support (Lee & Smith, 1995; Lee, Smith, & Croninger, 1997; Phillips, 1997).

Reforming high schools is complicated and requires fundamental institutional change. Implementation of such change is lagging. When high schools are engaged in restructuring practices focused on academic rigor and social support, they contribute to greater gains in student achievement, engagement, and equity (Lee & Smith, 1995).

The challenge now is to help all high schools restructure to ensure improved student learning and equitable outcomes specific to student achievement and educational attainment. The following recommendations should be discussed and considered by all stakeholders as the basis on which to introduce changes:

1. Schools should implement a common core curriculum that includes requirements for students to complete advanced work in mathematics. Tracks that are not academically rigorous should be eliminated.
2. Schools should create systems for the identification of academically-unprepared high school freshmen so as to help accelerate their learning.
3. High schools should alter their organizational structure to facilitate the development of supportive relationships for students. Such relationships will ensure that students do not get lost in the system and that they have access to information that helps them plan for and be prepared for postsecondary education.
4. K-12 and postsecondary systems should work together closely to align high school curricula and college enrollment requirements.
5. State education agencies and colleges and universities should work together to ensure that high school students, their parents/guardians, and their school counselors have good information about college entrance requirements, placement tests, and the costs associated with going to college.
6. Model developers, universities, and foundations should evaluate the relationships between their reform initiatives and college preparedness. Outcome measures should continue to assess high school achievement and graduation rates, as well as the proportion of students applying to college, the proportion of students who attend two- and four-year colleges and, if possible, the proportion of students who persist in higher education.
7. Stakeholders should review College Readiness for All, a toolbox developed by the Pathways

to College Network to help school and college outreach practitioners increase college preparation and access for all students. The toolbox contains strategies, tools, resources, and stories about successful schools and programs that represent a research-based approach to increasing the number of students preparing for postsecondary education.

APPENDIX: MODELS CHART

Model	Practices That Address College-going
Advanced Placement	• Rigorous curriculum • High expectations • Alignment with higher education
America's Choice	• Access to rigorous courses for all students • Early identification of struggling students to provide adequate support • Expectation that all students will enroll in college
AVID	• Elimination of remedial classes • Students taught academic skills necessary for success in rigorous courses and college • Close relationships between students and teachers, among students, and close ties to students' families ensure strong academic and social support
Coalition of Essential Schools	• Access to rigorous curriculum for all students • Individual attention and strong social support • Development of critical thinking skills • Personalized learning
Dual Enrollment	• Exposure to college expectations and experiences • Access to college information • Increased rigor of academic program • Alignment between K-12 and higher education
EQUITY 2000	• Increased rigor of mathematics classes • Increased availability of high-level mathematics classes • Increased academic support • Improved guidance
First Things First	• Close relationships between adults and students and between school and families lead to strong social support • Academic support in the form of low student-to-teacher ratios during core instruction • High academic standards for all students

Model	Practices That Address College-going
GEAR UP	• Early information to students regarding college application process • Expectation of college attendance is established early • Alignment between K-12 and higher education
GE Foundation College Bound	• Access to more rigorous courses • Increased counseling for students • Academic and social support provided by mentors
High Schools That Work	• High expectations • College-preparatory curriculum
International Baccalaureate	• Access to rigorous courses • High expectations • Alignment with higher education
Middle College and Early College High Schools	• High common expectations with accelerated learning opportunities • College-preparatory curriculum • Strong academic and social support for students • Alignment of high school and college curricula
Project GRAD	• Alignment of K-12 curricula to improve academic preparation • Financial assistance to students • Transition programs • Family included to increase support for students and to increase parents' access to college information
Smaller Learning Environments	• Mission-driven • Academic and social support for students • High common expectations
Talent Development	• High, common expectations • Family and community participation leads to strong social support • Small learning communities lead to strong social and academic support
TechPrep/2+2 Articulation	• Alignment of high school and college curricula • Increased rigor of academic coursework • Guidance for students with regard to postsecondary options
Urban Systemic Initiative	• Enrollment in gate-keeping and upper-level mathematics courses • Improved instruction in mathematics and science courses leads to increased rigor

Model	Rigorous Curriculum and High Expectations	Personalized Learning	Academic and Social Supports	Alignment of Secondary & Postsecondary
Advanced Placement	XX			XX
America's Choice	XX		XX	
AVID	XX		XX	
Coalition of Essential Schools	XX	XX	XX	
Dual Enrollment	XX			XX
EQUITY 2000	XX		XX	
First Things First	XX	XX	XX	
GEAR UP	XX		XX	
GE Foundation College Bound	XX		XX	
High Schools That Work	XX			
International Baccalaureate	XX			XX
Middle College and Early College High Schools	XX	XX	XX	XX
Project GRAD			XX	XX
Smaller Learning Environments	XX	XX	XX	
Talent Development	XX	XX	XX	
Tech Prep/2+2 Articulation	XX		XX	XX
Urban Systemic Initiatives	XX			

- Access to a rigorous academic common core curriculum for all students.
- The prevalence, in structure or climate, of personalized learning environments for students.
- A balance of academic and social support for students in developing social networks and instrumental relationships.
- Alignment of curriculum between various levels, such as high school and postsecondary, and between levels within the K-12 system.

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