# Effective Practices for Promoting the Transition of High School Students to College

## A Review of Literature with Implications for California Community College Practitioners

January 2009

# Effective Practices for Promoting the Transition of High School Students to College

## A Review of Literature with Implications for California Community College Practitioners

January 2009


Prepared by a team of researchers, faculty, and administrators of


The Center for Student Success


The Research and Planning Group
for California Community Colleges

The Academic Senate
for California Community Colleges



Funded by the Chancellor's Office of the California Community Colleges


**Special Thanks...**

This document was compiled by a project team of the Center for Student Success (CSS) of the Research and Planning (RP) Group of the California Community Colleges, under contract from the Chancellor's Office of the California Community Colleges (CCC) through the English as a Second Language (ESL)/Basic Skills (BS) Professional Development Grant. The authors surveyed published literature and other sources to compose this document, which was then reviewed by members of the faculty review panel.

# Contents

## Acknowledgements

This project is part of the Basic Skills Initiative aiming to build a toolkit for community college practitioners in basic skills. The series of literature reviews began in 2007 with the publication of *Basic Skills as a Foundation for Student Success*. This review is one of a number of follow up projects to the original literature review. The authors surveyed published literature and other sources to prepare this report, which was then read by members of the faculty review panel identified below.

**Dr. Robert Gabriner** coordinated the project. He is Director of the RP/Center for Student Success.

**Rene Ciria-Cruz** was the editor for this project. He is a free-lance editor and writer whose articles have appeared in the *San Francisco Chronicle*, *San Francisco Examiner* (Hearst), *Japan Today*, *Alternet*, *Berkeley Daily Planet*, *AsianWeek*, and the *National Catholic Reporter*. He was an editor/reporter at New America Media/Pacific News Service and the longtime editor of the Filipino American monthly, *Filipinas Magazine*

Other people who read drafts include Sharon Seymour, author of another Center project on Transitions from Adult Education to Community College; Kate Frankel and Cyndie Snyder, project assistants from UC-Berkeley working on a PACE sponsored study of transition issues from high school to post-secondary education.

### About the Authors

**Dr. Deborah Boroch** is the Dean of Instructional Services, Mt. San Antonio College. She previously served as Project Coordinator for the college's Title V grant targeting improved student success in developmental mathematics. She also chairs the college's Developmental Education Studies Team. Dr. Boroch is one of seven co-authors of *Basic Skills as a Foundation for Student Success in California Community Colleges* (2007), published by the Center for Student Success/the RP Group. She also conducted a review of literature relating to California high school conditions as part of the 2005 environmental scan commissioned for the California Community Colleges Systemwide Strategic Plan.

**Ms. Laura Hope** is a professor of English, the Success Center Coordinator at Chaffey College, and a co-author of *Basic Skills as a Foundation for Student Success* (2007). In addition to her work in the classroom and Success Centers, she is the co-chair of the student learning outcomes initiative at Chaffey and coordinates the instructional program at the California Institution for Women at Chino. She is currently working toward a doctoral degree in Community College Leadership.

### Faculty Review Panel

**Dr. Jan Connal** is a Counselor and Educational Psychologist at Cerritos College. She also coordinates the campus' SLO activities, Title V Program Evaluation, and various Scholarship of Teaching and Learning Projects.

**Mr. Wade Ellis, Jr.** has taught mathematics at West Valley College for over 30 years. He earned degrees in mathematics from Oberlin College and The Ohio State University. He is a co-author of over 30 books on the learning and teaching of mathematics using technology and speaks regularly at region, national, and international conferences. He is the recipient of the American Mathematics Association of Two-Year Colleges Teaching Excellence Award recognizing his lifetime achievement. He currently is a Project Coordinator for the California Basic Skills Initiative.

**Dr. Anniqua Rana** is professor of ESL/English and Reading/Writing Lab Coordinator at Cañada College. She is also a Project Coordinator for the Basic Skills Initiative. Currently she is doing research on the impact of Supplemental Instruction on ESL students at community college. She has also worked as a consultant with the Higher Education Commission of Pakistan.

**Ms. Nancy Ybarra** is a Professor of English at Los Medanos College (LMC) and co-chairs the Developmental Education Committee and Teaching and Learning Assessment Project. She chaired the Academic Senate Developmental Education Task Force at LMC, which wrote a long-term plan for institutional change based on researched effective practices in basic skills. She earned a certificate in developmental education from the Kellogg Institute at Appalachian State University and a postsecondary reading certificate at San Francisco State. She has also served on the Basic Skills Committee of the Academic Senate for California Community Colleges.

### The RP Group and Center for Student Success (CSS)

The Research and Planning (RP) Group is the organization representing California community college research, assessment, and planning professionals. The RP Group provides leadership in research, analysis, and planning issues for California community colleges. Through liaisons with other professional groups including the California Community College System Office, the Academic Senate for California Community Colleges, the Community College League of California and others, the RP Group provides support for institutional and system-wide decision-making and policy development related to research, planning, and assessment. The RP Group also supports faculty and staff development in a variety of areas including research, assessment, and evaluation.

The Center for Student Success (CSS) is the research and evaluation organization of the RP Group. Founded in 2000, the Center provides research and evaluation services for community college organizations and programs. Among the Center's many contributions to the California community colleges are research to identify the performance measures for the AB 1417 Performance Accountability project; the environmental scan data for the California Community Colleges Strategic Plan; numerous research studies on effective practices for recruiting, retaining and graduating community college students in nursing and allied health care professions; and evaluations of community college technology training programs. The Center's website serves as an easy-to-use archive for effective practices in the areas of healthcare training programs, student success, learning assessment, planning, evaluation, and diversity practices. (http://css.rpgroup.org).

## Introduction

**Enrolling more than two million students** annually, California community colleges serve as the primary gateway to higher education for a large percentage of the state's population. To provide affordable access for all Californians, the community college mission includes support for basic skills instruction as a key mechanism to prepare students for workforce and advanced educational opportunities, as well as in developing foundational literacy skills essential for an educated citizenry.

In 2007, the Basic Skills Initiative (BSI) was launched in California's 109 (now 110) community colleges. This initiative responds to an increasing awareness that state policies favoring "open access" also result in the enrollment of large numbers of students who are underprepared to succeed in college-level work. Identified as a key focus of the California Community College System Strategic Plan, the effort to systematically improve students' basic skills has subsequently received substantial redirected funding as colleges seek to evaluate their programs and services in alignment with effective practices that are documented and supported by research and published literature (Center for Student Success, 2007).

As a follow-up to the initial summary of literature contained in *Basic Skills as a Foundation for Success in California Community Colleges* (Center for Student Success), this report reviews effective practices for the successful transition of students from high school to college entry as documented in research-based literature. A significant body of literature has addressed various aspects of the high school to college transition. Much of the research has centered on defining the barriers or obstacles impeding successful transitions, with corresponding recommendations for strategies for overcoming these obstacles. The effective practices tend to be programmatic as opposed to isolated interventions; therefore, it is difficult to assess the impact of any single aspect within a program. Instead, the research implies that a combination of strategies working together tend to have the greatest impact. Practitioners should view the interventions as "packages" when considering implementation and weighing which strategies are most useful.

The effective practices identified in the body of this report represent a synthesis of consistent findings and recommendations identified through the analysis of the published literature. While the collective wisdom of practitioners and/or expert opinion is occasionally referenced in this document, the general standard applied in selecting practices for inclusion is that they are supported by evidence gathered through rigorous, controlled research methods, and that claims of significant impact or correlation are well-substantiated.

Some of the strategies presented may be seen as largely within the purview of the secondary schools rather than the postsecondary partners, leaving community college practitioners to perhaps feel disengaged from the topic. However, the importance of early preparation and communication of appropriate expectations for college readiness cannot be overemphasized and must actively involve higher education participants. For this reason, the research related to high school course-taking and pre-college preparation is included.

Community college practitioners, the primary audience for this report, need a deep understanding of the factors affecting the college-going and readiness of incoming high school graduates. This same body of knowledge affects our understanding of delayed-enrollment adults who exited the preparatory pipeline in high school, many of whom later present themselves for college entry through adult education transition points. Moreover, this paper seeks to inform the development of cross-segmental practitioner dialogues at many levels, to address the issues that impede the successful college transition of nearly two-thirds of California's high school students.

### The Current Status of the Secondary to Postsecondary Pipeline

There were 382,183 public and private high school graduates in California in 2006, of which 195,470 enrolled in a public postsecondary institution that same year. Of these, 116,840 went to California community colleges (CPEC, Online Data Generator, 2008). This latter statistic gives a public college-going rate of approximately 51%, but it ignores the nearly one-third of high school freshmen statewide who drop out of school. When measured as the rate of high school freshmen that enter postsecondary education within four years, California's college-going rate is only around 35% (Shulock & Moore, 2006). This grim statistic places California 40$^{th}$ out of the 50 states, with the highest states achieving post-high school college-going rates above 50%. Moreover, California's rate of college enrollment directly after high school has been steadily declining for every racial/ethnic group over the past ten years (Shulock & Moore, 2006.)

Although today's adults have more opportunities for accessible pathways to higher education, research indicates that so much opportunity may, in fact, support the "perception that there are no consequences for postponing college since there are so many points of entry" (Bozick & DeLuca, 2005, p. 528). Despite these opportunities, delaying college enrollment has a negative impact on an adult's likelihood of finishing a baccalaureate degree.

Using data from the National Education Longitudinal Study of 1988 collected by the National Center for Education Statistics, Bozick and DeLuca (2005) designed a longitudinal research model examining the effects of delayed postsecondary enrollment on degree completion. The study revealed that whites and Asian Americans were more likely to enroll immediately after high school completion, while African Americans and Hispanic Americans were more likely to delay enrollment

or not enroll. The study also showed that delaying enrollment had an adverse impact on degree attainment, indicating that students who postponed college enrollment a year after high school were approximately 64% less likely to complete their baccalaureate degrees than those who enrolled immediately after high school.

The importance of high school graduation relative to postsecondary outcomes is supported by research, which finds that GED recipients generally do not do as well in postsecondary education as those with high school diplomas. Fewer than 2% of GED holders complete four or more years of postsecondary education, compared with 36% of high school graduates (Pennington & Vargas, 2004).

While timely postsecondary enrollment continues to be a statewide challenge, research shows no shortage of college-going aspirations among students. Studies report that 88% of 8th graders across the nation expect to seek postsecondary education. This aspiration cuts across racial and ethnic boundaries (Venezia, Kirst & Antonio, 2003). However, due to lower rates of high school completion and college preparation among historically underrepresented racial/ethnic groups, the expectation-versus-attainment gap is wider for them compared with whites. Additionally, data show that a low-income student who achieves in the top quartile is less likely to enter college than a bottom-quartile, high-income student (Digest of Educational Statistics, 2001).

The challenges of secondary to postsecondary transition continue to be reflected in persistence data for the first college year as well as in postsecondary completion rates. Nationally, only 53% of first-time freshmen attending two-year colleges in 2005 returned for their sophomore year (with a corresponding persistence rate of 76% at four-year institutions). Only 29% of the 2002 freshman class at two-year colleges graduated within three years (Bottoms & Young, 2008). First-generation college students are also about twice as likely as those with college-educated parents to leave a four-year college before their second year. Again, racial and ethnic minority groups are particularly underrepresented in completion outcomes: African Americans (who represent 16% of the 15- to 18-year-old population) earn only 10% of the nation's associate degrees, and Hispanics (who represent 14% of the population) earn only 7% of all associate degrees (Hoffman, 2003).

As indicated above, the relevant statistics clearly demonstrate several key issues associated with secondary to postsecondary transitions:

- High school graduation followed by immediate post-high school college enrollment is positively correlated with eventual degree attainment and a variety of personal and economic benefits, yet many students either drop out of high school or do not enroll in college.
- Attrition rates for the first college year potentially reflect student transition issues, including inadequate academic preparation or misunderstanding of college expectancies or environments.
- Underrepresented groups (including racial/ethnic minorities, low-income, and first-generation students) are particularly at risk in terms of low rates of high school graduation and college-going, as well as of first-year college attrition.

The effective practices listed on the next page address these primary issues.

## Effective Practices For Promoting The Transition Of High School Students To College

- **Rigor:** While in high school, students take and complete a rigorous curriculum of college-preparatory courses.
- **Relevance:** High school course content and delivery are made relevant to students' lives, with clear applications for how high school work is connected to postsecondary education and career opportunities.
- **Alignment:** High school exit standards and skills align with college-level entry requirements.
- **Realistic expectations:** Accurate and timely information is communicated to students and families regarding expected knowledge, performance standards, attitudes, and behaviors that students will need in order to be successful in college.
- **Support for transitions:** Secondary and postsecondary partners create bridge programs and activities that provide both academic and non-academic support during the transition period.
- **Articulated pathways:** Secondary and postsecondary partners collaborate to provide integrated and articulated programs to facilitate student transitions.

### I. RIGOR: WHILE IN HIGH SCHOOL, STUDENTS TAKE AND COMPLETE A RIGOROUS CURRICULUM OF COLLEGE-PREPARATORY COURSES.

**A solid research base confirms that** the courses and curricula students take while in high school are strongly connected to the likelihood of college enrollment and success. While high schools must serve a variety of students with individual goals and learning needs, there is overwhelming evidence that a strong, academically focused curriculum best serves the needs of all students, including those preparing to enter the workforce.

Recent occupational forecasts for 2004 to 2014 project that 80% of the fastest-growing occupations will require a minimum of an associate degree, and only 37% of new jobs will be accessible by those with a high school diploma or less (Hecker, 2005). Postsecondary education is also associated with substantially higher wages, greater productivity in the workplace, better health, greater civic involvement, and greater job satisfaction (Organisation for Economic Cooperation and Development, 2005). Clearly, student preparation to succeed in postsecondary education is in the best interest of students, schools, and society at large.

A number of studies have examined the relationship between high school course-taking and measures of student achievement, college participation, and college outcomes. Adelman (2006) used a large national data set that tracked students who were in the 8th grade in 1988 through eventual educational outcomes as of December 2000. He wanted to determine which aspects of the students' formal schooling contributed to completion of a baccalaureate degree by their mid-twenties. Although this extensive research summarizes the role of many key elements, Adelman found that *the most important predictor of bachelor's degree attainment was the academic intensity of a student's high school curriculum*. Similarly, summaries of research conducted by ACT (American College Testing) show that the strongest predictors of college persistence and degree attainment are prior academic achievement and pre-college course selection (Lotkowski, Robbins & Noeth, 2007).

According to Adelman, the biggest predictor of college completion was not how high students' school grades or SAT scores were, but how difficult their high school courses were. The harder the courses, the better they performed in college. This was particularly true for minority students (Hoffman, 2003). Articulated dual enrollment programs provide an opportunity for high school programming and instructional rigor to be designed to meet the precise expectations for college readiness, which will permit a seamless flow between high school and college coursework in the partnering programs. In these models, high school and college faculty interact regularly to create the linkages that will ensure continuity of rigor and relevance between high school and college learning.

The Academic Senate for California Community Colleges has published a report on necessary college "competencies" articulated in *Academic Literacy: A Statement of Competencies Expected of Students Entering California's Colleges and Universities* (2002). The document stresses the importance of reading, writing, and critical thinking abilities, rather than "skills." These "habits of the mind" are likely to promote the kind of rigor supported in the national literature. Furthermore, the application of a rigorous, structured curriculum is consistent with effective practices identified in *Basic Skills as a Foundation* (Center for Student Success, 2007), including the following:

- sound principles of learning theory are applied in the design and delivery of courses in the developmental program;
- curricula and practices that have proved effective within specific disciplines are employed; and
- a high degree of structure is provided in developmental education courses.

**Recommended Academic Core Requirements**

The call for a consistent standard of high school curriculum was issued as early as 1983 with the publication of *A Nation At Risk*, commissioned by the then-U.S. Secretary of Education. The report led to a recommendation that high schools establish the Five New Basics as a core: four years of English; three years each of math, science, and social studies; one-half year of computer science. The report set specific standards for what should be emphasized in each of these subject areas and also recommended an increased emphasis on the preparation of the nation's teachers to be well qualified in the subject disciplines. A summary study conducted in 2001 reported that only about one-fifth of schools required students to fulfill the New Basics Curriculum in order to graduate (Roey, et al., 2001).

For more than two decades, ACT has advocated that all high school students complete a recommended core curriculum. It has also tracked outcomes for students who report completion of these courses. At a minimum, ACT recommends that students in high school complete:

- at least four years of English;
- at least three years of mathematics (typically Algebra I, Geometry, and Algebra II);
- at least three years of social studies (typically U.S. History, World History, and U.S. Government);
- at least three years of natural sciences (typically general science, biology, and chemistry).

A similar core of recommended high school requirements emerged from a 15-state coalition of educators and policymakers in 2005 ("High Schools That Work," see Bottoms & Young, 2008). One key recommendation of this effort was that schools and policymakers set the college-preparatory core as the graduation requirement for all high school students and require high schools to progress toward having 85% of all students completing the college-preparatory academic core.

More recently, ACT strengthened its recommendations based on further analysis of the impacts of particular advanced high school curricula. So-called "courses for success" have been added, based on research demonstrating that students who successfully complete these courses are the likeliest of all to achieve a standard of college readiness and avoid the need for remediation. These advanced courses include one or more advanced mathematics courses (e.g., trigonometry), as well as biology, chemistry, and physics.

In California, high schools are increasingly focusing on offering a comprehensive curriculum that will allow students to meet the minimum eligibility requirements for admission to the University of California (UC)/California State University (CSU) systems. These so-called "A—G" requirements reflect standards adopted by the Intersegmental Committee of the Academic Senates

for recommended high school preparation for success in college and university coursework. These include:

- two years history/social science;
- four years college preparatory English (including reading in a discipline);
- three years college preparatory mathematics;
- two years of laboratory science;
- two years of a language other than English;
- one year visual/performing arts;
- one additional year-long elective course in one of the above areas.

**Results of Research**

**Completion of the academic core improves student outcomes.** ACT has conducted extensive research over a period of many years to document the foundational benefits of academic preparation in the high schools. This research compared students who complete a rigorous core of college preparatory subjects in high school with peers who did not complete these courses. Results show that students who complete the college preparatory core are more likely to avoid dropping out of high school, score higher on the ACT test, enroll in college (12% more likely), be prepared for credit-bearing college courses, avoid remedial courses in college, achieve a first-year college GPA of 3.0 or higher (9% more likely), persist in college (7% more likely), and earn a college degree (8% more likely) (Lotkowski, Robbins & Noeth, 2007). The positive relationship between core curriculum completion and ACT score has been demonstrated across African American, Hispanic American, Asian American and Native American groups, as well as whites. Other studies have reported that students who completed 18 or more academic units in core high school subjects achieved a mean score of 1,066 on the 2006 SAT test administration compared with a mean score of 922 for those who completed fewer than 18 units (Bottoms & Young, 2008).

A study conducted by ACT, Inc. in collaboration with the Council for Great City Schools (CGCS, a coalition of 66 of the nation's largest urban public school systems) further supported the relationship between high school preparation and college outcomes (ACT/CGSC, 2007). Students enrolled in CGCS high schools account for about 15% of the nation's secondary school students, including 29% of all minority students. The study examined outcomes for 107,000 ACT-tested students in the CGCS population, who graduated from high school in 2006. Findings indicated the following:

- Students in CGCS schools who took the recommended core curriculum scored higher on the ACT on average than those that did not.
- Taking higher-level courses beyond the core was associated with increased achievement for all students after controlling for prior academic experience.
- Students who took the core were more likely to enroll in college than those who did not (63% versus 54%).
- Students who took the core were more likely to return to their same postsecondary institution for their second year than those who did not (72% versus 65%).

**Specific advanced courses are linked to student success.** Of particular note in the results above is the finding that taking higher level coursework beyond the recommended academic core resulted in higher achievement (as measured by ACT scores) after controlling for prior academic experience. Without such statistical controls, it might be argued that those students who opted to complete higher-level courses were simply more advanced to begin with, and that differences in achievement could be attributed to students' academic history rather than to enrollment in higher-level courses per se. However, the controlled study suggests that all students (not just "high achievers") may benefit from taking higher-level coursework. In addition, student persistence to the second year of college is also improved by taking higher-level courses in high school (ACT/CGCS, 2007).

A number of sources have particularly reported on the relationship between the level of high school mathematics completed and college success. Students who completed high school mathematics courses beyond Algebra II are reported to have substantially increased their chances of enrolling in a four-year college (Horn, Nunez & Bobbit, 2000). Additionally, Adelman (2003) states that students who complete a mathematics course beyond Algebra II are twice more likely to complete a bachelor's degree than those who do not. There is also evidence that accelerated mathematics tracks lead to higher-level course-taking in high school. When students take algebra in 8th grade, for example, they are more likely to complete an advanced mathematics course in high school.

One study reported that 83% of first-generation 8$^{th}$grade algebra students completed higher mathematics, compared with only 63% of first-generation students who did not enroll in 8$^{th}$-grade algebra. These rates of participation in higher mathematics compared favorably with those of students whose parents were college graduates, and the positive effects held even while controlling for students' prior mathematics proficiency (Horn, Nunez & Bobbitt, 2000).

**Not all students receive the recommended core.** Even with a preponderance of research demonstrating the benefits of completing a rigorous college preparatory curriculum, many students are not completing such a core. Haycock and Huang (2001) reported that only about half of high school students nationwide take college preparatory coursework. Data from ACT show that, of students taking the ACT test nationwide, only about 56% reported that they had taken all the courses in the ACT-recommended core curriculum (ACT, 2004). In California, recent data show that 35.9% of all 2005-06 high school graduates have completed the recommended courses for UC/CSU admissions (California Department of Education, 2008).

The longstanding practice of tracking in high schools (separating students into classes based on perceived ability) runs counter to the notion of a rigorous curriculum for all students. Despite a solid research base refuting the value of this practice, it is reportedly still prevalent in American public comprehensive high schools (Martinez & Klopott, 2005). Moreover, tracking is associated with racial and ethnic disparities, with minority students disproportionately distributed among the lower academic tracks (Braddock, 1990; Oakes & Lipton, 1992). Additionally, it is often true that schools in the highest poverty areas are the least likely to offer an academically rigorous core curriculum or to have the faculty resources to teach advanced subjects. As a result, low-income students and those from historically underrepresented racial/ethnic minority groups are less likely than other students to have access to a college preparatory curriculum in high school (ACT/CGCS, 2007).

**Libraries have a role to play.** One way to address the curriculum is through partnerships among librarians and educators from high schools, community colleges, and universities to share instructional practice. The literacy gap between high school and college transition is widely noted in the literature, particularly information literacy (the ability to find, retrieve, analyze, and use information). Educators often cite gaps in research and critical thinking skills as a barrier to student success.

In Illinois, for instance, several community college libraries collaborated with area high school teachers in a project funded by the Institute of Museum and Library Services. The project included an information literacy needs assessment for all incoming freshmen, as well as intensive instruction in library skills and information literacy. The project designers also integrated approaches that would appeal to the "unique learning styles and needs of at-risk students" (Institute of Museum and Library Sciences, 2005, p. 1). Though the research is not yet concluded, the project reinforces the kind of creative collaboration that can support high school to college transition since "high school library use has been found to be a predictor of college library use, thus reinforcing the importance of literacy programs in secondary schools" (Jackson & Hanson, 2006, p. 579).

### Implications for Practice

Based on effective and promising practices from the literature, community colleges and college practitioners should incorporate these strategies:

- Reinforce the value of a rigorous, academically focused curriculum with secondary partners in their local districts.
- Counterbalance the emphasis on open access with that of the performance standards required of students if they expect to avoid remediation upon enrollment in college.
- Conduct ongoing secondary/postsecondary faculty dialogues within disciplines to convey the level of course rigor required to achieve appropriate student proficiency and preparation. Since advanced mathematics and science courses have been shown to be strong predictors of college entry and performance, faculty discussions in these areas are of particular importance.
- Create partnerships between educators and librarians across both educational segments to determine ways that libraries can be used to facilitate greater development of information literacy in pre-collegiate students.
- Ensure that community college outreach efforts occur early, and stress strong academic preparation in high school. Presentations should emphasize results of research demonstrating improved postsecondary outcomes connected with taking advanced coursework in high school. These messages need to reach schools, students, and parents.
- Consider investing resources to create permanent, fully functioning high school outreach teams. The advisors should meet a substantial portion of their assignment with regularly scheduled hours on their assigned high schools sites, where they meet with students, staff, and parents to supplement K-12 advising programs, emphasizing the courses and rigor needed for successful postsecondary preparation.

- Emphasize the importance of the senior high school year as an opportunity to address weaknesses in postsecondary preparation, and to engage students in dual enrollment opportunities. Instead of allowing an untimely lapse in academic gains, the senior year must be reframed as a vital bridge to the first year of college, setting appropriate expectations for postsecondary performance and instilling confidence that students will succeed when they transfer.
- Conduct internal research comparing the postsecondary performance of students entering with advanced-level high school coursework versus those lacking such courses. Results could be disaggregated by K-12 district and shared with the district leadership to emphasize the case for higher graduation standards (i.e., A-G requirements), development of academic enrichment programs, and/or stronger student advisement.
- Partner in efforts to create academic enrichment programs and activities to supplement the curriculum available in high schools, including after-school and summer programs. Colleges can also support dual enrollment of students in college coursework as a means of providing enhanced or accelerated learning opportunities.
- Extend academic assistance from the college to students in high school, where possible. In some cases, colleges have established non-credit CAHSEE (California High School Exit Exam) support classes and tutorial assistance. If the college supports lower-division education majors for teacher preparation or has student clubs for future teachers, these may be excellent areas from which to recruit volunteer tutors for high school students. Likewise, service learning courses or clubs may be able to provide tutors or mentors.
- Support "detracking" at all levels. This should include strong messages from college career technical education (CTE) faculty that separate and less academically challenging tracks are a disservice to vocationally oriented students who need substantial preparation for career ladders offered via postsecondary education.
- Provide dual enrollment opportunities in which students experience college-level rigor, and create corresponding expectations in articulated high school courses. Students are more likely to realize the financial and time benefits to their academic efforts when they are carefully articulated and sequenced. Moreover, some students seem to be more motivated when they are able to enroll in more advanced academic work through articulation sequences.

**II. RELEVANCE: HIGH SCHOOL COURSE CONTENT AND DELIVERY ARE MADE RELEVANT TO STUDENTS' LIVES, WITH CLEAR APPLICATIONS FOR HOW HIGH SCHOOL WORK IS CONNECTED TO POSTSECONDARY EDUCATION AND CAREER OPPORTUNITIES.**

**While access to challenging and rigorous** high school coursework is clearly connected with positive postsecondary transitions, rigor alone is not enough. The relevance and applicability of the content learned is no less important for engaging and motivating students. In a recent analysis of reasons for high school non-completion, Bridgeland, Dilulio, and Morison (2006, p. 7) stated that, for the vast majority of high school dropouts, "dropping out is not a sudden act, but a gradual process of disengagement," and a major reason for this is a lack of clear connection between schoolwork and personal goals. In their survey of over 400 racially and ethnically diverse dropouts representing various geographic locations in the United States, these authors found that the number-one reason given for dropping out was that high school classes were not interesting (47% of respondents). Many students were unable to see the connections between their high school courses and "real life."

Effective programs have been described as "educational experiences that are student-focused and project-based," which help students "connect with the learning process and stay connected over time" (Bragg, 2002, p. 4). Some colleges, for instance, integrate highly technical coursework with interdisciplinary transitional courses in English or reading, integrating competencies and technical experiences. A similar approach can be taken at the high school level. According to Jenkins (2003), "integrating instruction in basic academic and soft skills with technical content drawn from college-level coursework gives students a taste of college-level work, and helps them see the value and connection of the academic fundamentals to field of interest to them" (pp. 7-8). Contextual learning also creates opportunities for team-teaching and interdisciplinary coordination. By contrast, students exposed to instruction that emphasizes drill and practice are likely to see school as a "developmental dead-end" (Jenkins, 2003, p. 13).

Imparting meaning and motivation through pedagogies that make connections and establish relevance is supported by effective practices noted in *Basic Skills as a Foundation* (Center for Student Success, 2007). In that document, the authors establish the theoretical framework for employing methods of contextualizing learning and cite the results obtained (see sections D.2 and D.6).

**Contextualized Teaching and Learning (CTL)** is a mechanism that has been proposed for addressing the "disconnect" between academic and applied learning. CTL has been characterized as a three-part approach:

- reforming curriculum and individualizing it to students' interests;
- reforming instructional practices to include high expectations, enhanced student/teacher interactions, and collaborative work; and
- supporting organizational and professional development structures for delivery of CTL (Hoachlander, quoted in Brand, 2003, p. 77).

The six most common approaches are collaborative and cooperative learning, curriculum integration, project-based learning, problem-based learning, work-based learning, and service learning

(Calderon, quoted in Brand 2003, p. 77). CTL also emphasizes authentic assessment strategies, including portfolios to document progress and acquired competencies.

Contextualized Teaching and Learning is typically delivered in one of three formats. In linked or clustered courses, student cohorts typically take two or more courses with aligned curricula, as is commonly done with "learning communities." Infused academic courses are single-course offerings in reading, writing or mathematics that teach basic skills using career-related content in connection with an occupational theme. The reverse occurs in infused occupational courses, wherein instruction in academic skills (e.g., writing, mathematics) is incorporated within a single vocational course. Research and practitioner consensus seems to support the claim that infused curricular models (either academic or occupational) work best for educationally and economically disadvantaged students (Mazzeo, 2008).

Proponents of CTL believe that it works by motivating students, accelerating their education through integration of academic and career-oriented content, and improving the transfer and application of learning. Mazzeo (2008) notes that CTL design is consistent with what is known about learning theory. However, specific research data on CTL are not abundant, and the research designs employed often do not control for students' prior academic achievement or motivation or for teacher preparation. Much of the CTL research has focused on individual strategies rather than on a comprehensive approach. Research on CTL in secondary schools is more prevalent than that focused on higher education, and generally finds moderate to strong evidence of impact. Medrich (quoted in Brand, 2003, p. 78) offers the following summary of what is known from CTL research:

- There is considerable evidence that CTL helps engage and motivate students.
- There is little evidence to show a connection between CTL and enhancement of critical thinking abilities.
- There is some evidence that CTL increases school attendance and reduces drop out rates.
- CTL appears to contribute to higher grades and student achievement.

A 2001 review of studies on work-based learning in high schools found that these programs helped to decrease dropout rates. These programs also correlated with increased student attendance, engagement with school, and improved GPA (Medrich, Calderon & Hoachlander, 2003).

Strong support for the value of CTL has recently come from an experimental study of an infused mathematics intervention in high school CTE programs at five high schools (Stone, Alfeld, Pearson, Lewis & Jensen, 2006). After one year of CTL mathematics lessons (taking up about 10% of occupational class time), students in the experimental group performed significantly better on two standardized exams (including the ACCUPLACER, commonly used by California community colleges for mathematics placement).

One learning community model that employs CTL has been examined at the Community College of Denver (Mazzeo, 2008). This program also involved an accelerated program of courses in which students completed two levels in a developmental program sequence, compared with a control group that completed only one. The CTL group had slightly higher retention rates and GPAs. Caution, however, is advised in interpreting the results of this new program, particularly since participants

undergo initial screening and selection, such that existing differences in motivation between the CTL and control groups may be a factor in the results reported.

Diploma Plus is an interesting CTL program that focuses on intensifying the senior year of high school, which is often underutilized by students, resulting in a loss of academic momentum. Diploma Plus targets students who have been unsuccessful in high school and are at risk of dropping out. It emphasizes the use of project-based learning and portfolios, with assessments tied to competencies and state and national standards. The program involves three complex projects including community action and an 80+hour internship with dual enrollment in a community college. It seems that the use of authentic assessments may translate into higher aspirations among the students, with 70 to 80% reported as going on to college. This competency-based approach is particularly successful with overage youths who have few high school course credits. These students also do better with portfolios or other alternative assessments compared with traditional assessments (Grobe, quoted in Brand, 2003, p. 80).

Career academies are a common approach to contextualizing high school instruction across a variety of courses organized around a specific occupational area. One large-scale, random-assignment research study assessed the impact of high school career academies on student outcomes, with separation of students into high-risk, medium-risk, and low-risk groups. Career academies were shown to significantly cut dropout rates as well as increase attendance rates, credits earned, and postsecondary preparation for high-risk students. Low-risk students in career academies increased their likelihood of graduating on time (compared with non-academy peers), while medium-risk students had no significant differences in the outcomes studied (Kemple & Snipes, 2000).

Further descriptions of selected career academy programs and their results are included in the Appendix.

Bottoms and Young (2008, p. 8) call for the "design of ninth grade career-exploration classes that combine career-based, authentic projects with challenging and rich academic content to help students master grade-level mathematics, science and literacy standards." These authors emphasize that waiting until 11th or 12th grades to provide students weak occupational curricula is too late to infuse the coordinated academic and technical courses with mutual relevance. They suggest that the 9th grade offerings should "incorporate opportunities to interact with members of the local business and postsecondary education communities" to foster the development of essential skills.

### Implications for Practice

Based on effective and promising practices from the literature, community colleges and college practitioners should:

- Support efforts of their secondary partners to connect academic learning with students' career and life goals.
- Assist in the development and support of fully articulated career pathways beginning with entry-level courses taught by the high school, continuing to dual enrollment opportunities in college courses during the high school years, and culminating with advanced-level

transfer to complete remaining technical courses at the community college after high school graduation.

- Embrace opportunities for college faculty to establish and attend articulation dialogues with their high school counterparts centered on student learning outcomes, effective pedagogy, and the building of shared assessment strategies. Strong administrative support should follow to ensure the formalization of articulation agreements and establish or modify existing procedures to implement seamless and streamlined articulation protocols.
- Avoid restricting articulation dialogues to CTE faculty only, as has often been the tradition. It is equally important that faculty in the basic skills disciplines meet with the high school faculty to develop methods for contextualizing concepts in their disciplines, to impart a greater sense of relevance to students and better engage their interests. Adding CTE faculty to these dialogues to focus on applications of basic skills in career fields should generate an even richer curriculum.
- Develop collaborative summer enrichment and/or bridge programs focused on direct application of student learning acquired in the high school classes. These might include opportunities for field excursions or laboratory workshops in science, extending to selected student research internships in the senior year. Similarly, students could engage in job shadowing or other work-based experiences for early exploration of career fields. If carefully constructed, these experiences can be used intentionally to emphasize how classroom-based learning is applied and why it is essential.
- Establish and support a "speaker's bureau" for local high school partners. Faculty, college students, business professionals, and members of college CTE advisory boards can be recruited to speak at high school career events or classes about their experiences and academic preparation. These individuals can personalize how academic learning relates to applications in their daily lives and serve as role models for students who are just beginning to explore career interests.

## III. ALIGNMENT: HIGH SCHOOL EXIT STANDARDS AND SKILLS ALIGN WITH COLLEGE-LEVEL ENTRY REQUIREMENTS.

**Misalignment between high school exit standards** and requirements for entry-level success in college is a key issue that impedes student transition and progress. This point has been made repeatedly by numerous sources, recognizing the independent development of the current standards. State and national efforts to reform K-12 public education have increasingly strengthened uniformity and accountability for a prescribed set of learning objectives at each grade level, with documentation of performance outcomes provided via high-stakes testing.

Higher education institutions were not represented when California completed its K-12 academic content standards in 1997 (Kirst, Antonio & Bueschel, 2004). Similarly, although work has been done within the postsecondary sectors to develop a common understanding of course standards and curricular alignment, there has been little involvement of secondary stakeholders in shared communication of these expectations. Consequently, knowledge and skills achieved by high school graduates do not always align well with those needed for success at the postsecondary level.

Countless state and independent policy advisors have noted the lack of secondary/postsecondary alignment. In 2005-06, the High Schools That Work (HSTW) initiative convened a cross-section of nearly 500 educators and policymakers in 15 state-level forums. Forum participants noted cases of students performing well on the SAT or ACT but failing to meet standards on college placement exams because of misaligned curricula or assessments. Participants pointed to the lack of a common set of readiness standards for reading, writing, and mathematics for high school graduates as the key issue (Bottoms & Young, 2008).

The American Diploma Project Network (ADP) is a network of 32 states, including California, that work with Achieve, Inc., to align high school graduation requirements to college-readiness standards. The ADP Network established English and mathematics benchmarks for high school graduation via a dialogue including secondary, postsecondary, business/industry, and state government officials. These standards were published in a 2004 document *Ready or Not: Creating a High School Diploma That Counts* (The American Diploma Project, 2004). Since that time, various levels of progress have been reported. In most states, the benchmarking effort has been led by representatives of the four-year universities, with community college and CTE leaders mostly absent from the dialogue about college and career readiness (Bottoms & Young, 2008).

### Issues Confounding Alignment

**There is a lack of content alignment.** Researchers have found that high school assessments often stress different knowledge and skills than do college entrance and community college placement requirements (Kirst, Antonio & Bueschel, 2004). Achieve, Inc., examined more than 2,000 questions from college admissions and placement exams to determine how well they measured the college readiness benchmarks created by the American Diploma Project (ADP) Network. Instruments examined included the SAT, ACT, Accuplacer, and COMPASS tests, as well as a number of other independent placement instruments. The findings showed that the tests varied considerably from one another, and that they did not fully measure the ADP benchmarks. In general, the placement tests more accurately reflected the kind of reading and writing students would be asked to do in

college than did the admissions tests. Institution-developed placement tests matched most strongly with the ADP benchmarks. As for mathematics, placement tests were generally more focused on algebra (including pre-algebra and basic algebra concepts) while admissions tests measured a broader range of topics (e.g., data analysis, geometry, statistics) (Achieve, Inc., 2007).

Brown and Niemi (2007) illustrated concerns about content alignment between college assessment instruments and the California Standards Tests (statewide high school performance testing). These authors conducted an extensive content analysis to compare the concepts and depth of knowledge in mathematics and English tested by California Standards Tests (CSTs) with those assessed by common CCC placement tests (Accuplacer, COMPASS, MDTP, CTEP). Results showed that while the 11th grade CST in English Language Arts (ELA) was sufficiently aligned with CCC test-content, (according to a standard defined in the study), alignment was not as strong for mathematics. Some of the mathematics topics covered in the California Community College (CCC) placement exams were simply absent from the CST tests.

Brown and Niemi also observed that, even with "acceptable" alignment in ELA, large numbers of students are still placing into developmental English at the colleges. The answer to this puzzle lies in the level of proficiency achieved on the CSTs. Only 36% of students taking the Grade 11 ELA test in 2006 achieved a rating of Proficient or better, 24% scored at the Basic level, and 40% scored at a level Below Basic. "These results suggest that alignment between high school tests and community college placement examinations may be a *necessary but insufficient condition* (emphasis added) to adequately prepare students for the transition from secondary to postsecondary education" (2007, p. 27).

**There are multiple placement instruments and processes.** A further concern is the great variety of placement tests used in public colleges in California, specifically at the 110 California community colleges. The California Community College Chancellor's Office reported that 94 assessment instruments were administered to students enrolled in the 2005-06 academic year. As noted by the Research & Planning Group for the California Community Colleges, "the existence of 109 assessment processes has made it difficult, if not almost impossible, to consider aligning placement in community college basic skills courses with the exit standards for the secondary system" (2004, p. 1). Moreover, the high remediation rates for new community college students suggest that the multiple, independently defined standards at the colleges are not being adequately communicated to the high schools.

There is a wide range of practices with respect to college placement testing and advisement for ESL courses, but these also generally do not align with processes in the high schools. Bunch (2006) found that of 15 UC campuses he studied regarding ESL or English placement, none explicitly used scores from either the California English Language Development Test (CELDT, a test for English proficiency given in high schools), high school language designations, or from any other mandated high school assessment.

**Areas emphasized by high school and college faculty differ.** Greater insight into the roots of secondary/postsecondary misalignment is provided by findings from the National Curriculum Survey, conducted every three to five years by ACT (ACT, 2007). This instrument surveys thousands of middle school, secondary, and postsecondary teachers in reading, writing, mathematics, and

science to determine what skills/knowledge are currently being taught that are considered to be important for success at each grade level. ACT uses the results to adjust its curriculum-based assessment instruments. Across all subjects, high school teachers consistently rate more topics as being "important" or "very important" than do postsecondary instructors: "What postsecondary instructors expect entering college students to know is far more targeted and specific than what high school teachers view as important" (ACT, 2007, p. 4). The long list of topics taught in the high school may derive from the state standards, but this creates an impossible pressure to teach all topics effectively, and may impair adequate preparation for college success.

The National Curriculum Survey also points out disparate views of secondary versus postsecondary faculty with regard to topics in specific areas (ACT, 2007). In writing, postsecondary faculty ranked writing mechanics as important more frequently than did high school faculty, who ranked idea/topic development more frequently as being important. While high school faculty often assigned greater importance to more advanced mathematics topics, postsecondary faculty prioritized a rigorous understanding of the fundamentals. High school faculty tended to de-emphasize reading strategies after 10$^{th}$ grade, but reading strategies were still emphasized in postsecondary remedial courses. In science, high school teachers consistently rated science content as more important, while postsecondary faculty focused on inquiry and the understanding of science processes. Additionally, most high school teachers believe that meeting their state's standards prepares students well for postsecondary work, but most postsecondary instructors disagree: 65% of them responded that their state's high school standards poorly or very poorly prepared students in their content area (ACT, 2007). Clearly, there is work to be done in the alignment of expectations and topical concurrence between teachers in the two segments.

**Efforts to Improve Alignment**

What can be done to improve alignment and provide a seamless transition from high school coursework completion to enrollment in credit-bearing college courses? The most common call is for the adoption of a single set of college- and career-readiness standards for reading, writing, and mathematics, with an agreement on common assessment instruments to be used across all segments (Bottoms & Young, 2008). A related statement of effective practice "Programs align entry/exit skills among levels and link course content to college level performance requirements" is identified in *Basic Skills as a Foundation* (Center for Student Success, 2007, p.59).

Although multiple state and local projects currently support inter-segmental dialogue and partnerships, few have resulted in alignment and assessment consensus, and fewer still have been implemented long enough to examine results. A recent report ("Quality Counts," *Education Week*, 2007) indicated that only 11 states have aligned their high school assessments with postsecondary education. One state where alignment is in progress is Kentucky. State educators in 2004 defined a list of knowledge and skills in reading, writing, and mathematics that would accrue to all students graduating from the state's high schools, and the Kentucky Council on Postsecondary Education adopted statewide public secondary standards for college readiness in these subjects. Additionally, all public colleges, including community colleges, are required to guarantee placement in credit-bearing courses to incoming students who achieve specified levels of English and mathematics proficiency as demonstrated by scores on the corresponding portions of the ACT (Bottoms & Young,

2008). In this respect, the ACT serves as a commonly accepted placement instrument, as well as a target for content-learning objectives statewide.

In California, various recommendations have been advanced and several efforts are under way. The CSU system has created the Early Assessment Program (EAP) in collaboration with the California Department of Education. This program encourages 11th grade students to take an augmented CST (California Standards Test) in English-Language Arts, Algebra II, and Summative High School Mathematics, which includes additional questions to assess readiness for college-level English and mathematics. Based on test results, students have the opportunity to enroll in enhanced English classes or take additional mathematics in 12th grade to extend their level of college preparation. The program also provides web-based tutorials that students may access for supplemental instruction. The program, supported by all 23 CSU campuses, exempts students with qualifying EAP scores from the need to take additional placement exams upon enrollment at the CSU. Wider adoption of the EAP has been recommended, including making the augmented CST mandatory for all students and encouraging other higher education institutions to honor EAP results (Campaign for College Opportunity, 2007).

It has also been suggested that individual community colleges establish test score ranges on the CSTs that are likely to place students in or out of remediation, and then disseminate this information to prospective students as they receive their CST results (Kirst, Antonio & Bueschel, 2004). These authors also recommend that California community colleges examine the CSTs to see if they should be added to the approved list of CCC placement instruments. The recommendation to link the CST data to community college placement processes recently received support from the Legislative Analyst's Office, as did a proposal to expand the CSU's Early Assessment Program to community colleges (State of California Legislative Analyst's Office, 2008).

A new study conducted by the California Partnership for Achieving Student Success (Cal-PASS) examined the extent to which CST results and high school course grades could be used to predict the level of mathematics and English first attempted in community college and the college-course grades obtained. The mathematics data set for this study included 3,743 students from 24 high schools enrolled at 31 community colleges, while the English data set included 4,700 students from 24 high schools and 47 community colleges. Findings demonstrated that, compared with high school mathematics grades obtained, 11th grade mathematics CST scores were better predictors of both college first-course enrollment and college-course grade. For English, CST scores were better predictors of initial college-level enrollment but were less predictive of college-course grade than were high school English grades (Willett, 2008). This study also found no consistent CST "cut score" that correlated strongly with college success across levels and across the various community colleges. The author concludes that CST scores may be useful in making community college placement recommendations, but that these decisions should be strongly informed by local considerations.

As a clearinghouse for student and institutional data across much of the K-16 system in California, Cal-PASS has also initiated an effort to improve alignment via establishing inter-segmental Professional Learning Councils (PLCs). These regional consortia bring together discipline-based faculty from K-12, community colleges, and university segments to examine Cal-PASS data relating to their collective students and identify alignment and instructional issues that impact cross-segmental performance. The councils then initiate projects such as content deconstruction for

curricular alignment, summer bridge programs, common assignments or assessment instruments, inter-segmental faculty development, or other locally developed solutions designed to address issues of common concern. Initiatives can then be tracked via Cal-PASS data for further evaluation.

The Board of Governors of the California Community College System recently acknowledged the obstacle of multiple, locally approved placement processes and is investigating the feasibility of common placement instruments applied at the system level. Recommendations of a Consultation Council Assessment Task Force included support for the following:

- development of a statewide network for the sharing of assessment data across the colleges;
- compatibility tables for the limited number of commercially produced placement instruments most commonly used in community colleges;
- a statewide ESL assessment test;
- enhanced resources to administer assessment tests in the high schools and provide increased information dissemination;
- a pilot project to explore alignment of course outcomes across colleges for Freshman Composition, one-level below, and the course commonly known as English 1B/101B;
- increased funding and resources to implement mandatory assessment, particularly for counseling and student services

(Consultation Council Assessment Task Force, 2007).

Others have recommended more generally that California community colleges outline expected levels of preparation incoming students need in order to succeed in credit-bearing coursework, and how these preparations relate to courses a student must take in high school (Brown & Niemi, 2007). In addition, many community colleges are working directly with their local secondary feeder schools to publicize entry-level expectations and develop a consensus- understanding of college readiness standards. Community colleges might also expand the administration of their placement instruments so that these occur at feeder high school sites, with the results shared with both students and school personnel to inform instructional efforts in key content areas.

**Implications for Practice**

Based on effective and promising practices from the literature, community colleges and college practitioners should:

- Clearly document and disseminate the performance standards representing the skills and abilities that students need to succeed in the entry-level course in each discipline. To the extent that a department lacks expressed standards or lacks uniformity in implementation across course sections, internal work must be done regularly to ensure that standards are developed, communicated, and consistently applied.
- Ensure that all placement instruments used are aligned in content and rigor to the course expectations. Periodic review of content alignment and placement/course success comparison data is critical in ensuring that placement instruments and curriculum are kept parallel.

- Develop research protocols and use Cal-PASS data to track incoming student placement and course success data by feeder district. This information can be shared as trend data with high school faculty, counselors, and administrators as a catalyst for local cross-segmental conversations about student entry-level performance versus expectations.
- Facilitate an ongoing dialogue between community college, university, and high school faculty to explore the specifics of any content or assessment misalignment that exists, with administrative support for changes recommended as a result of such discussions. Establishment of Professional Learning Councils (PLCs) also facilitates the monitoring of proposed solutions via the use of Cal-PASS data.
- Administer college placement tests to secondary school students in 10th or 11th grade at the high school sites. Preliminary placement results at these key levels may be useful in strengthening advisement toward supplemental coursework in the remaining high school years, including the effective use of the senior year to advance preparation and avoid potential remediation in college.
- Explore the extent to which existing California Standards Tests or the CSU's Early Assessment Program could be useful in informing placement decisions.
- Maintain strong alignment and articulation of dual enrollment programs. Researchers stress the importance of "transparency for curricular pathways" in order for students, programs, and faculty to integrate effectively and provide students with a superior experience. Constant and rich institutional communication is necessary to ensure that this experience occurs.

### IV. REALISTIC EXPECTATIONS: ACCURATE AND TIMELY INFORMATION IS COMMUNICATED TO STUDENTS AND FAMILIES REGARDING EXPECTED KNOWLEDGE, PERFORMANCE STANDARDS, ATTITUDES, AND BEHAVIORS THAT STUDENTS WILL NEED IN ORDER TO BE SUCCESSFUL IN COLLEGE.

**Related to the issue of inter-segmental** misalignment is an acknowledged gap in the way expectations for college work are communicated to K-12 students and their families. A key issue is that no collective and widely accepted standard exists to establish the skills and knowledge required for students as a group (let alone as individuals) to be successful in college. Some evidence suggest that, in many instances, postsecondary faculty are conceptually aligned in their understanding of these elements, but reference standards are not commonly published and disseminated. Students transitioning from high school need as much information as possible about the college environment and their role in it, yet research confirms that most high school graduates have many incorrect perceptions, resulting in poorly developed notions of what to expect when they enter college. In addition, students need help understanding the variety of issues surrounding college choice, admission requirements, and procedures related to application, placement tests, financial aid, and other aspects of their transition.

Many of the effective practices in *Basic Skills as a Foundation* are connected with providing accurate information and assistance and managing expectations appropriately. These include:

- Institutions manage faculty and student expectations regarding developmental education.
- Counseling support provided is substantial, accessible, and integrated with academic courses and programs.
- A comprehensive system of support services exists, and is characterized by a high degree of integration among academic and student support services.

A variety of academic and non-academic factors have been examined as predictors of college participation and success. Among those most strongly predictive of college enrollment are the following features:

- academic achievement;
- parental involvement, expectations and support;
- financial aid;
- student socioeconomic status;
- participation in college preparatory classes;
- student academic aspirations;
- peer and school expectations;
- access to guidance counseling

(Cabrera, La Nasa & Burkum, 2001).

A brief examination of this list shows that, although some factors are associated with individual student characteristics, many have to do with environmental factors and opportunities to receive information. Students who do not view themselves as “college material” may be dealing with a lack

of information or encouragement that can potentially be alleviated by stronger communication links. Being able to effectively use counselors, teachers, and college representatives as information sources has been associated with a higher degree of knowledge needed to prepare and plan for postsecondary education (Martinez & Klopott, 2005).

**There is a lack of information about college.** First-generation students (the first in their immediate family to attend college) are particularly at risk of having little or no helpful information or encouragement in navigating their postsecondary transitions. Without parental or other family role models to rely on, these students do not have the same resources as others in their schools, and so may suffer from reduced expectations for themselves. For example, parental involvement has been strongly associated with taking algebra in 8th grade, taking advanced mathematics in high school, and enrollment in postsecondary education (Horn, Nunez & Bobbitt, 2000). First-generation students have been shown to be less likely to have parental encouragement for these actions, and are subsequently less likely to participate in higher mathematics curricula and planning for and enrollment in college, even when they demonstrated appropriate qualifications for college admission (Horn, Nunez & Bobbitt, 2000).

Although various sources of information about college are available to students, they are not uniformly accessed. Upper-income students typically use a wider variety of resources, including parents, peers, catalogs, college representatives and others; but research has shown that low-income students rely almost exclusively on high school counselors for formal advisement (Cabrera & La Nasa, 2000). Reliance on this source is especially problematic in California, where K-12 counselor-to-student ratios are the lowest among the 50 states (Kirst, Antonio & Bueschel, 2004). Additionally, research suggests that historically underrepresented students as a group may be reluctant to use high school counselors because of perceptions that these individuals are uninformed about minority issues or have reputations for tracking minority students into low-level classes (Atkinson, Jennings & Livingston, 1990). Early access to guidance and information can be critical, since research indicates that most students develop occupational and educational expectations as early as the 9$^{th}$ grade, and that these are overwhelmingly unfavorable among low-socioeconomic status students compared with their more affluent peers (Terenzini, Cabrera & Bernal, 2001).

High school students are often poorly informed about potential careers and the educational pathways required to enter them. Evidence from the Alfred P. Sloan Study of Youth and Social Development, which surveyed over 8,000 students, indicated that many adolescents underestimated or overestimated the amount of education they would need to pursue particular careers. Low-income minority students were particularly unclear about the type of work they might pursue as adults, often basing their perceptions of occupations on media images. The most common career aspired to by low-income males was professional athletics, while females often aspired to careers in the entertainment field. While "physician" was mentioned more often than any other professional occupation, students were generally unable to describe the educational trajectory for becoming a medical doctor (Schneider, 2007).

**Access to college advising is important.** High school teachers and staff play an important role in providing needed information and promoting college attendance. In addition to parent involvement in college preparation activities, help from school personnel on college applications processes was also shown to increase high school students' chances of enrolling in college. (Horn,

Nunez & Bobbitt, 2000). High school teachers were found to be important advisers for many students, with 79% of students in a California sample reporting having spoken with a teacher about college admission, compared with 62% who had spoken with a counselor (Venezia, Kirst & Antonio, 2003). Many teachers, however, report that they lack up-to-date information about college admission requirements and are concerned about the accuracy of their advice. Moreover, those teachers who were the most active advisers tended to teach honors or college prep courses, leaving many other students without faculty assistance.

High school students who declare through their actions an intention of attending a university (i.e., they take the college preparatory core, often including a number of Advanced Placement (AP) or Honors courses) get clearer signals about college preparation than their peers who may plan to attend a community college. Middle- and lower-level high school students are often passed over by postsecondary outreach efforts, and the low numbers of high school counselors available to serve a large student population means these students often receive less intensive academic advising (Kirst, Antonio & Bueschel, 2004).

Researchers stress the importance of early assessment and access to counseling services to ensure appropriate placement and career readiness. "Ideally, the various student support services—assessment, financial aid, academic advising, counseling, and career services—should be coordinated to provide the full range of support that many students need, and to identify and assist students who are struggling before they drop out" (Jenkins, 2003, p. 8). Counseling provides a valuable link to success, both for keeping students on track as well as informing parents, when applicable, of students' progress. As important as this support is, high schools are challenged to provide adequate services due to the prevalence of high student-counselor ratios.

Some institutions, like Santa Monica College, provide a human development course as an orientation to higher education. Taught by the high school counselor, this course gives students a safe surrounding to acquire the necessary tools to negotiate the new academic environment (Andrews, 2000). At LaGuardia's Middle College High School program, "A key contributing factor toward the success of [the students] was the support they received from their early college high school. They attended seminars about study skills and received counseling and tutorial services, all of which contributed to their academic achievement" (Glick, 2006, p. 3). Such support services are a fundamental feature of what has been termed "enhanced comprehensive programs" (Bailey & Karp, 2003, p. ix).

**Misunderstandings and misconceptions are common.** In many cases, there can be confusion about the open admission message transmitted by community colleges. This message is meant to convey the accessibility of the colleges, but it does not speak to the need to prepare for coursework. Admission to a community college does not necessarily mean that a student will not have to remediate before being eligible for credit-bearing courses, and the common perspective that "anyone can go to community college" puts students at a disadvantage. Community colleges often do not advertise their academic standards and placement procedures, so Bottoms and Young (2008) recommend that institutions' promotional materials should try to distinguish readiness from access. Additionally, they recommend that community and technical colleges assign itinerant advisers to high school campuses to explain the readiness standards and requirements that will make students eligible for credit-bearing, versus remedial, tracks.

Research indicates that student knowledge of curricular requirements, college costs, and other vital information about higher education is often sporadic and inaccurate. The Bridge Project, conducted between 1996 and 2002, studied 25 high schools in six states to determine what students knew about college (Venezia, Kirst & Antonio, 2003). Nationally, only about a quarter of high school students sampled had attended a college night and only a quarter of non-honors 9th-graders had ever heard of the SAT. In a sample of 9th grade students in California undertaken as a part of this large, multistate project, only 2.5% knew the A—G requirements, and only about a third could identify the A—G mathematics requirement for admission to the state's public universities. This study also found that high school students were generally unaware of the content and format of UC, CSU, and California community college placement exams. Focus groups of newly enrolled community college students revealed that, prior to college enrollment, they were unaware that they would be required to take placement exams. California students also grossly overestimate the costs of attending college in all three of the state's higher education segments: Students on average estimated the fees for attending a California community college at $10,000 per year, compared with the actual average at that time of $300 per year (Kirst, Antonio & Bueschel, 2004).

In their summary of the Bridge Project findings, Venezia, Kirst, and Antonio (2003, p. 31) document a list of the "top ten" student misconceptions about college:

- I can't afford college *(most students regularly overestimated the actual cost to attend).*
- I have to be a stellar athlete or students to get financial aid *(most students do receive some form of financial aid).*
- Meeting high school graduation requirements will prepare me for college *(adequate preparation generally requires going beyond the minimum high school requirements)*
- Getting into college is the hardest part *(for most students, completing college is the hardest part).*
- Community colleges don't have academic standards *(students usually must take and pass placement tests to qualify for college-level work).*
- It's better to take easier classes in high school and get better grades *(getting good grades in lower-level courses is not as beneficial as taking a rigorous preparatory core).*
- My senior year in high school doesn't matter *(senior year classes often determine which college classes a student is prepared to enter and succeed in when they arrive at college).*
- I don't have to worry about my grades or the kind of classes I take until my sophomore year *(a well-thought out series of courses needs to be planned and taken beginning with the early semesters in high school).*
- I can't start thinking about financial aid until I know where I'm going to college *(students need to file federal aid forms prior to when most colleges send out acceptance letters).*
- I can take whatever classes I want when I get to college *(courses available may be limited by a student's level of preparation as demonstrated by passing placement tests.)*

Correcting common misconceptions is an essential component of preparing students to enroll and succeed in college, and effective practices for secondary to postsecondary transition must address these issues.

**State-level initiatives promote college awareness.** Some states have initiatives aimed at assessing high school student readiness for college and providing mechanisms to assist students with setting appropriate expectations. The Kentucky Department of Education and the Kentucky Community and Technical College system are working together to assess college readiness in the 10th grade and devising mechanisms to identify academically at-risk students earlier, so that they can use the junior and senior year to become college-ready. Similarly, North Carolina has designed a specialized 12th grade mathematics course for students identified in the Early Math Placement testing program, which administers college placement tests in high school. The Montana University system encourages high school juniors to take its Writing Assessment, and provides a supplemental online course called Strategies for Improving High School Writing. Minnesota's "Get Ready" program, established by its Higher Education Services Office, encourages college preparation starting as early as 4th grade and sponsors a comprehensive web site of online advising tools, college preparation and selection resources, and information about financial aid. Two other notable informational projects are Indiana's Career and Postsecondary Advancement Center (ICPAC) and Florida's College Reach Out Program (CROP), both of which have invested substantial resources in developing data and delivery systems to help students and parents access student records and information about college requirements.

### Implications for Practice

Based on effective and promising practices from the literature, community colleges and college practitioners should:

- Maintain an informed understanding of the common misconceptions, attitudes, and beliefs prevalent among K-12 students and their parents, which negatively impact college preparation and enrollment.
- Develop initiatives to address common obstacles faced by students in the transition pipeline.
- Organize joint professional development opportunities for college and high school faculty and counselors to acquire accurate and timely information about college. Since research indicates that high school teachers commonly advise students about college, efforts should particularly focus on educating these important advisors as well as the high school guidance personnel.
- Develop targeted campaigns to address information, assistance, and communication of expectations, including:
    - academic preparation required for college success and the importance of early educational planning for high school coursework (these efforts should begin in middle schools);
    - early career exploration, advisement and connections with corresponding high school, and postsecondary educational planning;
    - information dissemination and assistance with college admissions processes, financial aid, etc.;
    - information regarding admission and/or placement tests for college;

- special emphasis on information and assistance to first-generation students and their parents.

- Create mentoring opportunities that connect college students, staff, or faculty with high school students to assist in developing firsthand knowledge of college as well as providing actual assistance for navigating application and enrollment procedures.
- Encourage stronger support of community college faculty and staff participation in K-12 district-sponsored college nights to improve direct communication with students and parents.
- Sponsor formal and informal activities such as a "senior day" (or "junior day"), inviting feeder high schools to spend a day on the college campus with structured events and presentations mixed with opportunities to explore the campus. Although this one-shot approach to informing college expectations may be brief in duration, powerful messages can be embedded through this opportunity to be with students, faculty, and staff who share information and answer questions.
- Conduct Free Application for Federal Student Aid (FAFSA) and college application workshops, scholarship search workshops, high school onsite placement testing, and college career fairs to provide opportunities for improved assistance and information dissemination.
- Consider investing resources to create permanent, fully functioning high school outreach teams (see description under Practice #I). These teams provide frontline dissemination of accurate information about college preparation and matriculation and will serve as important vehicles for communicating expectations and addressing misconceptions. By having permanently assigned staff that have an ongoing relationship with individual feeder high schools, these individuals come to know the programs, students, and parents and can be more proactive in engaging them.

**V. SUPPORT FOR TRANSITIONS: SECONDARY AND POSTSECONDARY PARTNERS CREATE BRIDGE PROGRAMS AND ACTIVITIES THAT PROVIDE BOTH ACADEMIC AND NON-ACADEMIC SUPPORT DURING THE TRANSITION PERIOD.**

**Since the transition from high school** to college is recognized as a period of significant change requiring the adjustment of students' cognitive and affective strategies, a variety of programs have been designed to address obstacles and provide support for entry into postsecondary education. These "bridging" efforts take many forms but are generally theory-based, with components designed to address issues proven or perceived to affect student enrollment, persistence, or success in the college environment. While many interventions and support activities are logically derived from research linking particular student attitudes and behaviors with successful college-going, far fewer controlled research studies have been conducted to document effectiveness in achieving the desired student outcomes. This observation should lead to appropriate caution in assigning the term "effective practice" to such programs, but it is also important to recognize the inherent complexity of assessing comprehensive, highly integrated efforts and the variable nature of student populations served by particular programs. With these caveats, there is a sufficient literature base to describe and defend approaches that promote student success in bridging to postsecondary education.

Transition programs are generally comprehensive efforts that address a wide variety of academic and non-academic student needs. These programs contain some elements that correspond to nearly all of the practices identified in *Basic Skills as a Foundation* (Center for Student Success, 2007). Effective practices that are particularly connected with transition programs are:

- A comprehensive system of support services exists and is characterized by a high degree of integration among academic and student support services.
- Faculty and advisors closely monitor student performance.
- Culturally Responsive Teaching theory and practices are applied to all aspects of the developmental instructional program and services.
- The developmental education program holistically addresses the student's growth.
- Programs provide comprehensive academic support mechanisms, including the use of trained tutors.

### Student Expectations, Attitudes, and Beliefs

A successful program design must first understand the students being served. A number of authors have described the generational characteristics of traditional-age students today, known as "millennials" (Howe & Strauss, 2000; Keeling, 2003; Newton, 2000; Pryor, et al., 2005). Some researchers describe this group as being civic-minded and moral, with a deep regard for social responsibility and diversity and having high expectations. They are facile with technology and able to access information, though they may not evaluate it. They prefer to work in teams but also have a tendency toward excessive collectivism and homogeneity of thought, often preferring to follow rather than to lead. While they feel a pressure to excel in all aspects of the college experience, they may also exhibit a lack of focus on schoolwork and possess lofty career goals without an understanding of the effort and preparation needed to achieve them. Programs intended to assist these students

should be aware of their prevailing attitudes and preferences in order to design effective support mechanisms and develop methods to challenge non-adaptive behaviors.

**Student expectations are an important factor.** Student expectations and early experiences in the college environment are also important in understanding barriers that transition programs must address. Asked about their expectations for college, new students did not initially feel a need to seek outside help to succeed and expressed the view that instructors would teach them the study skills they needed as a part of the class (Hicks, 2003). They also predicted that they would be "less involved" in college than they had been in high school. Another survey showed that students expected to devote less time to their studies than the faculty advised as necessary for success (Schilling & Schilling, 1999). Since longitudinal studies of student behavior indicate that patterns of time allocation established during the first year persist throughout their time in college (Schilling & Schilling, 2005), the critical importance of early habits is magnified. Students also express both an expectation and a preference for prescriptive advising over developmental counseling, expecting that advisors would hand them a schedule of classes to take and likening the role of college advisors to their high school guidance personnel (Smith, 2002).

Studies have shown that those who enter college with unrealistic expectations are less academically successful than those with lower but more realistic expectations (Weissberg, Owen, Jenkins & Harburg, 2003). Unrealistic expectations also affected adjustment (Jackson, Pancer, Pratt & Hunsberger, 2000). The so-called "freshman myth" derives from the belief among incoming college students that they will dramatically improve their social status, make lasting friendships, and be much more successful in college than they have previously been in high school. One study compared student expectations with their actual experiences at the end of the first semester and the end of the first year on both an academic and a social rating scale. The study found a steady pattern of decline moving from high expectations to lower adjusted realities on both scales as students progressed. While neither academic nor social expectations had a statistically significant effect on GPA in this study, both showed that students with lower academic expectations tended to perform better than those with unrealistically high expectations, and higher social expectations were associated with a trend toward lower first-year GPAs (Smith & Wertlieb, 2005).

**Student attitudes and social support play a role.** While unrealistic student expectations potentially may have a detrimental effect on college success, other studies point to positive outcomes associated with certain beliefs and attitudes. In a meta-analysis of studies to date, student characteristics such as academic self-confidence, general determination, academic discipline, communication skills, goal striving, study skills, commitment to college, and emotional control were all shown to be positively correlated with first-year college GPA (Robbins, et al., 2004). Several studies also have documented the positive impacts of student self-efficacy on academic performance (Zajacova, et al., 2005; Chemers, Hu & Garcia, 2001; Hoover, 2003), noting additional benefits in terms of stress reduction (Zajacova, et al., 2005), personal adjustment (Chemers, Hu & Garcia, 2001), and locus of control (Hoover, 2003). The effect of personality and other pre-college student characteristics on quality of effort, critical thinking, and academic performance has also been confirmed (Bauer & Liang, 2003; O'Connor & Paunonen, 2007).

Martin et al. (1999) determined that academic self-confidence, positive attitude toward the institution, and faculty and student support were significant predictors of successful adjustment to

college. In a similar study, self-perception of intellectual ability and support from instructors were shown to have a positive influence on adjustment, while self-perception of creativity and importance to men of close friendships were negatively associated with successful adjustment (Boulter, 2002).

Other student-related factors may inform the way data on transition programs are interpreted. For example, a recent study determined that the "at risk for attrition" factors of full-time college students differ substantially from those of part-time students (Stratton, O'Toole & Wetzel, 2006). The authors interpret these findings to mean that two separate attrition models are needed to explain observed differences in persistence patterns between full-time and part-time students. Since nearly two-thirds of students attend college part-time, with over 80% working at least part-time, such considerations deserve attention (Jenkins, 2003).

Research has also investigated the role of social networks and social support in successful postsecondary transitions, particularly for first-generation and urban students. Students from urban high schools were reported to have fewer strong social and personal connections to others in their schools and were less likely to believe that "others in the school were there for them" than their counterparts in suburban schools (Goodenow & Grady, 1993). Martinez and Klopott (2005) assert that low-income, first-generation students do not have the "social and cultural capital" to encourage and guide them in their adjustment, often lack college-going peer communities, and need a variety of forms of social support. One study in the United Kingdom concluded that the emphasis on social integration should be equal to that given to academic support. Although this study was done at a residential university that is demographically different from most of California (90% white, 80% female), the study concluded that failure to develop satisfactory social support networks was a principle theme in decisions to leave college (Wilcox, Winn & Fyvie-Gauld, 2005).

**Elements of transition programs vary.** Considering the variety of academic and non-academic factors involved in successful transition from high school to college, it is not surprising that there is no single "best" design for an effective transition program. While there is substantial variety in the structures and emphases of different programs, most attempt to provide some level of comprehensive support, taking into account both the academic and non-academic needs of students. In an in-depth review of 33 national, state, and local K-12 to postsecondary bridge programs, Gandara (2001) determined that the most common elements incorporated into them were counseling, academic enrichment, parental involvement, personal enrichment and social integration, mentoring, and scholarships. Another source offered the following components as being typical of comprehensive programs:

- academic enrichment activities that enhance the curriculum, including tutoring, summer school, after-school programs, and extra coursework;
- information-sharing to educate students and parents about college options, testing and admission requirements, financial aid procedures, and campus life;
- mentoring by a peer or adult that provides educational and social support; and
- social enrichment activities that provide students with the opportunity to learn leadership skills, set goals, visit college campuses and explore the arts (Office of Vocational and Adult Education, 2004, p. 2).

A somewhat dated survey conducted by the U.S. Department of Education in 1994 found that approximately one-third of sampled postsecondary institutions said they operated a transition program (Chaney, Lewis & Farris, 1995). Additionally, a number of state and federal programs have emerged to address the need to enhance postsecondary preparation and enrollment, including such well-known efforts as Upward Bound, GEAR-UP, and California's Puente Project. A large national study using National Educational Longitudinal Study data (NELS:88) concluded that moderate- to high-risk students that participated in transition programs had nearly twice the odds of enrolling in a four-year college as did non-participants, confirming the value of such programs overall (Horn & Chen, 1998).

Formal mentoring is a common component included in many student support programs. An assessment offered in three TRIO programs found that formal mentoring relationships forged prior to college positively influenced students' decisions to attend college and remained important resources during their initial integration and adjustment (Wallace, Abel & Ropers-Huilman, 2000). In her examination of state and national programs supporting K-12 to college transition, Gandara found that "the single most important feature of those that purported to be successful with individual students was a close, caring relationship with a knowledgeable adult who monitors the student's progress" (2001, p. 36). She notes, however, that there is a lack of research on formal mentoring and its impact on academic performance per se, despite its being highlighted as a main component of many programs. Both formal and informal mentoring had beneficial impacts on behavioral indicators.

**A variety of transition programs have been developed to serve students while still enrolled in high school.** These programs incorporate various approaches to meeting students' needs and are often tailored to serve specific target populations of students. Research on the effectiveness of the plethora of college transition programs has been limited, with very few programs undergoing a rigorous external evaluation. Although there are many claims of success, much is based on anecdotal information or studies that do not conform to scientific, evidence-based research methodologies. Although not specific to any particular outreach or intervention program, one aforementioned national study, *Toward Resiliency: At Risk Students Who Make It To College*, used the National Education Longitudinal Study (NELS: 88) data to compare high school students who reported involvement in some sort of transition program/college outreach activity with similar students who did not participate. Findings revealed that moderate- to high-risk students in transition programs were nearly twice as likely to enroll in a four-year college as non-participants, and 1.5 times more likely to enroll in any postsecondary institution (Horn & Chen, 1998). This finding supports the general contention that transition programs may positively affect college participation and outcomes, but results vary due to the diverse nature of individual program structures.

A few examples of well-known transition programs and their outcomes are described in the Appendix (Upward Bound, GEAR-UP, Puente Project, AVID, Project GRAD, Compact for Success).

**College bridge programs are the next step.** Beyond programs that work with students while in high school to increase their secondary outcomes and college awareness, another key point in the transition chronology is the actual initial enrollment in college. Most colleges have high awareness of the special needs of new high school graduates entering for the first time, and therefore create a variety of support services and structures to facilitate adjustment and support learning. Common

structures include various sorts of orientation activities, bridge programs offered in the summer preceding the first regular fall term, and often a "first year experience" program that extends services and support through the first college year.

Although most colleges offer some form of orientation to new students, there are few broad-based studies on the impact of attending an orientation. One longitudinal study of students who attended orientation at Stephen F. Austin State University in Texas revealed that they had a significantly higher GPA (2.11) than those who did not attend (1.73) and they also persisted at significantly higher rates (Busby, Gammel & Jeffcoat, 2002). This study rigorously matched groups for gender and performance on standardized test scores, but since its cohort was taken from a single institution, the results may not generalize to other orientation programs.

Summer bridge programs often address multiple aspects of new student adjustment and integration. Examples of some typical, institution-based summer bridge programs are described in the Appendix. The particular examples chosen are for showing some common approaches and include reports of results, where available. Inclusion of these sample programs is not meant to imply their superiority over many others, nor should the reader infer effectiveness without consideration of the duration and scale of these initiatives. They are included simply to describe the nature of some current efforts.

**First-year experience programs and services have been launched.** Not all first-time college freshmen are able to take advantage of summer bridge activities, and yet their need for similar support services remains. In response to what is known about both academic and non-academic adjustment factors, many institutions have launched structures to support students through their first semester or first year of college. John Gardner is credited with starting the "First Year Experience" movement, at the University of South Carolina in 1972, with the teaching of his freshman seminar course, University 101. Other colleges also offered similar courses, and the first national meeting on freshman seminars created the National Center for the Study of the Freshman-Year Experience in 1987 (Kelly, 2006).

The First-Year Experience is defined as a composite of many efforts, structures and processes, both intentional and non-intentional, that are common on American college campuses yet reflect the uniqueness of individual schools (Gardner, Barefoot & Swing, 2001). There is no single specific type or universally successful model. Among the most common activities are new student orientations, first-year seminar classes, academic advising, supplemental instruction, learning communities, student activities, and residence halls for first-year students only. Themes common to first year programs include:

- increasing interaction between students and faculty;
- increasing student involvement on campus;
- linking the curriculum and the co-curriculum;
- increasing academic engagement;
- success for all students, but particularly the academically underprepared (Barefoot, 2000).

Other elements of a structured freshman year have been identified as staff input on students' initial course selections, student participation in summer bridge programs, and intrusive academic and social advising (Muraskin, 1998). John Gardner himself observes that colleges have often put too great an emphasis on casting students as independent learners, letting them "sink or swim" on their own, when they could benefit more from structured guidance and prescribed activities (Schroeder talks with Gardner, 2003). Finally, Cuseo (2003) concludes that first-year support programs are most effective when they are intrusive, proactive, and collaborative.

Because first-year experience programs are complex and bridge multiple academic disciplines and student services, the need for personnel with assigned responsibility for the programs is crucial, according to Barefoot (2005). Surveys of colleges that reported having first-year experience programs showed that curricular and co-curricular responsibilities were often widely scattered at the institutions, with the most commonly identified person being the chief academic officer and/or chief student affairs officer. Only 6% of respondents reported having a director of the first-year as the person with primary responsibility. This is noted as a "central problem" by Barefoot, who laments that the first-year experience becomes "just one more in a long list of important responsibilities" (2005, p. 51).

Without question, faculty must be engaged in first-year experience programs. "Without support of a meaningful number of faculty, first-year efforts will inevitably suffer a kind of second-class citizenship in the academy" (Barefoot, et al, 2005, p. 388). Moreover, student/faculty interaction is positively related to the amount of effort that students devote to educationally purposeful activities (Kuh & Hu, 2001). Faculty attitudes and behaviors can also affect student retention. The three faculty attitudes/behaviors that students reported as being the most predictive of their desire to leave an institution were 1) seeming to be unsupportive, 2) not returning phone calls or e-mails in a timely manner, and 3) seeming to be unapproachable (Lundquist, et al, 2002). Not surprisingly, teaching skills also matter. Instructor organization, preparation, and clarity were all found to positively impact social integration, institutional commitment, and intent to re-enroll (Braxton, Bray & Berger, 2000). Since student persistence is at stake, these authors support the notion that first-year students should be taught by instructors identified as having the strongest teaching skills.

The incorporation of a freshman support course of some kind is commonly associated with first-year experience programs. Variously known as "freshman seminars," "success courses," or "orientation courses," the format and content of these efforts vary, but all are intended to provide extended support and tools for academic and/or social survival in college. A recent analysis conclusively confirmed the value of "student life skills" courses taught throughout colleges in the Florida Community College system over a five-year period. These academically focused courses are designed to teach fundamentals such as time management, study skills, and test-taking strategies. Using system data, researchers concluded that students who enrolled in these courses were 17% more likely to succeed academically and 16% more likely to be retained at the institution, with similar impacts for both basic skills students and those who were college-ready. Additionally, these courses had the greatest impact for African Americans, and disaggregated data showed that every ethnic group improved success at least 1.5 times compared with students that did not complete the life skills courses (Florida Dept. of Education, 2006).

Though not universal, another feature commonly associated with first-year experience programs is learning communities. Studies of learning communities have generally shown strong and positive

correlations with retention and graduation (Bailey & Alfonso, 2005), along with higher first-year grades, greater intellectual and social development, appreciation for interdisciplinary education, and increased interactions with faculty (Laufgraben, 2005). Data from a large sample of students at 365 four-year universities showed that learning community participation had a significant effect on students' grades (controlled for previous level of academic achievement), and on various measures of student engagement with curriculum, co-curriculum, faculty, and other students (Zhao & Kuh, 2004). This study also confirmed gains in personal and social development, and demonstrated that the range of positive effects remained strong through the students' senior year in college.

Various studies have examined the relationship between first-year experience program participation and desired student outcomes. Longitudinal data from the 2000 Freshman Survey and the 2001 Your First College Year survey demonstrated a statistically significant relationship between first-year seminar participation and interaction with professors, academic interactions with other students, class attendance, co-curricular involvement, and developing close friendships (Keup & Barefoot, 2005). Additional data from subsequent administrations of this survey revealed that first-year courses with a service learning component had positive indirect impacts on first-year retention, with student participation in both first-year seminars and learning communities being the largest positive predictor of re-enrollment (Keup, 2005).

In another study of the long-term effects of participation in a first-year seminar, retention rates were tracked over a four-year period. This study determined that students who had enrolled in the seminar were retained in greater numbers than those in a matched comparison group who did not participate (Schnell & Doetkott, 2002). Finally, in a large analysis of multiple institutions that examined 39 case studies in depth, researchers concluded that the majority of studies included evidence of a relationship between enrollment in first-year seminars and retention, GPA, student satisfaction and engagement, and student achievement of course goals (Tobolowsky, Cox & Wagner, 2005).

Students' first-year experiences on college campuses must be considered as the logical extension of successful transition from high school to postsecondary education. While many of the factors associated with a successful transition are less directly within the sphere of influence of the postsecondary partner, these programs are most certainly the primary responsibility of the colleges. Lessons learned about student integration and adaptation through these programs can be shared back with K-12 interests to strengthen pre-college advisement and inform support efforts.

To the extent that bridge and/or first-year experience programs demonstrate effectiveness, it is incumbent on colleges to explore the feasibility of bringing efforts to larger scale. Many of these programs initially operate at a small scale and affect limited numbers of students. Colleges should research barriers to expansion of successful programs, and make purposeful commitments to overcoming them. In many cases, efforts to scale up must address significant issues beyond the allocation of financial resources. Other more significant obstacles may include campus culture and readiness for change, lack of administrative support or commitment, and established governance protocols that may interfere with targeted program improvement. Examples of the latter would be inflexibility dictated by student registration priority protocols, or inability to preferentially hire faculty or counselors in selected disciplines to meet the needs of a first-year experience program. Faculty and administrative leaders must work collaboratively to achieve consensus toward authentic

support, even in the face of competing interests, if such programs are to grow to serve significantly larger proportions of incoming students.

### Implications for Practice

Based on effective and promising practices from the literature, community colleges and college practitioners should:

- Develop and support participation of students in established transition programs (such as GEAR UP, Puente, etc.) while they are concurrently enrolled in high school. Many of these federal and state programs require the involvement of postsecondary partners to provide instruction, mentoring, or support services. In addition, colleges might look at building individual K-12/ college programs based on locally identified needs and effective practices.
- Develop or expand summer bridge programs centered on supporting students' academic, social, and psychological integration with the college environment upon entry. Based on the research, such programs are most effective when they seek to develop student engagement and self-efficacy, as well as academic skills.
- Establish bridge programs for specific populations or student needs. For example, programs may target services for students who need placement into basic skills courses upon initial assessment or may focus on those who identify a particular academic interest or career strand.
- Incorporate bridge programs in the last year of high school as part of an articulated dual enrollment pathway. "Introduction to college" courses or "strategies for college success" should be an early part of these students' programmatic pathways while still in high school.
- Establish a dedicated "early college" office and bridge program activities for seniors who are increasingly spending portions of their high school day taking courses on the college campus. Support the integration of these students in activities and events on campus.
- Consider the first college year as an important extension of the high school transition. Developing and implementing a comprehensive, well- integrated "first-year experience" provides incoming students with structured support as they develop the skills to engage and succeed in the college environment. The particular elements and integration of programmatic elements should be based on documented effective practices informed by the local context and should have broad-based faculty involvement.
- Assign the institution's best faculty to entry-level courses commonly taken by new students in their first year. Establishing personal relationships with faculty and staff and promoting overall student engagement with the college are key elements associated with student persistence.
- Regularly evaluate transition programs with appropriate research methods to convincingly demonstrate impacts and provide data for ongoing improvement.
- Widely publicize the availability and results of the transition programs they establish.
- Explore the feasibility of bringing successful efforts to larger scale. Faculty and administrators must commit to collaboratively identifying resources and overcoming internal obstacles that keep efforts small and deny students access to known effective models.

## VI. ARTICULATED PATHWAYS: SECONDARY AND POSTSECONDARY PARTNERS COLLABORATE TO PROVIDE INTEGRATED AND ARTICULATED PROGRAMS TO FACILITATE STUDENT TRANSITIONS.

**Fully integrated and carefully articulated programs** exemplify all of the previously listed effective practices in comprehensive ladders or pathways to early enrollment and accumulation of college credits for high school students. These efforts are collectively referred to by a variety of terms such as credit-based transition programs, dual enrollment, or concurrent enrollment programs. This broad category of dual enrollment programs includes efforts, such as Tech Prep, Advanced Placement (AP), International Baccalaureate (IB), Middle College High Schools (MCHS), and Early College High Schools (ECHS).

The potential benefits of dual enrollment as a pathway to college are widely touted in the literature. "Students in Dual Enrollment programs remain in high school but take college courses, taught by high school or college faculty in their high school or on a college campus" (Hoffman, 2003, p. 2). The concept capitalizes on the philosophy of a seamless experience or transition for students. The anticipated benefits of dual enrollment programs include increasing student aspirations, reducing high school dropout rates, and decreasing the need for remediation in college.

The perceived advantages of dual enrollment programs relate to many of the effective practices discussed previously in this paper. The inclusion of college courses that are aligned and laddered with high school curricula serves to intensify academic rigor and establish relevance. Dual enrollment programs on college campuses can offer a wider array of courses than would otherwise be available at the high schools, especially in laboratory, studio, or technical disciplines requiring specialized facilities. Carefully integrated dual enrollment programs also ease the psychological transitions to college, demystifying the experience and helping students set realistic expectations. They also provide needed social support networks, and do so in low- or no-cost environments that help students avoid expensive "false starts" upon entry into college.

As the most highly developed and coordinated models of high school to college transition programs, dual enrollment programs align with many of the effective practices from *Basic Skills as a Foundation* (Center for Student Success, 2007). Among those most applicable are these components:

- Institutional policies facilitate student completion of necessary developmental coursework as early as possible in the educational sequence.
- Institutions manage faculty and student expectations regarding developmental education.
- Developmental education courses provide a high degree of structure.
- Programs align entry/exit skills among levels and link course content to college-level performance requirements.
- Developmental education faculty routinely share instructional strategies.
- Programs provide comprehensive academic support mechanisms, including the use of trained tutors.

Research indicates that these programs are growing in size and scale. A statistical report for 2002-03 found that 71% of U.S. public high schools offered some sort of dual enrollment program, with 57% of postsecondary institutions allowing high school students to enroll in college courses. That same year, 1,162,000 students participated in dual enrollment (Klekotka, 2005). Forty-two states, by 2006, had policies on dual enrollment (Karp, Calgagno, Hughes, Jeong & Bailey, 2008), but dual enrollment programs are now reported to exist in all 50 states, even in the absence of state policy (Lerner & Brand, 2006).

Despite the popularity of the dual enrollment model, programs vary widely in both philosophy and practice. Bailey and Karp (2003) classify programs in these three categories:

- Singleton programs consist of stand-alone college courses, primarily to supplement the curriculum. These programs typically appeal to high- achieving students who can challenge themselves with the rigor of college work. AP programs are an example.
- Comprehensive programs offer students an articulated series of courses resembling an authentic college experience. Many Tech Prep programs, for instance, fit into this category, offering intensive programming and rigor as well as an opportunity to earn college credit.
- Enhanced Comprehensive programs provide rigorous programming and exposure to the college experience while also integrating support such as counseling and tutoring. The Early College High School model is an enhanced comprehensive structure.

Researcher Margaret Terry Orr (2002, quoted in Bailey, Hughes, Karp p. 17) categorizes the distinguishing features among dual enrollment programs as follows:

- Course Content: Some colleges enroll students in identical courses while others tailor course content to high school students.
- Location: Dual enrollment may be offered on the college or high school campus.
- Instructors: Course may be taught either by college faculty or by high school instructors certified as appropriate.
- Student Mix: Students may be integrated in the college classrooms, while others may be segregated.
- Credits Earned: Students may earn college credit or high school credit exclusively; others may earn both. Some colleges offer "credit in escrow" and students must enroll in college in order to be awarded their units.

**Advanced Placement (AP)**

Advanced Placement (AP) programs have traditionally provided an opportunity for high school students to enroll in college courses and earn college credit through their high school sites. AP courses are typically taught by appropriately trained or qualified high school instructors, and the courses follow the curriculum outlined by the College Board.

Advance Placement operates in 14,000 public and private high schools in the United States. Thirty-one AP courses in 19 subject areas are offered. As the most widely used mechanism for accelerating college credit, AP is regarded as a national standard of learning with guaranteed rigor and as an

indicator of a student's ability to successfully complete college work. A Texas study with excellent controls for a variety of observed student characteristics found that low-income students who took and passed an AP exam graduated from college at a higher rate (46%) than students who took an AP course without the exam (21%) or students who had not participated in AP (7%) (Lerner & Brand, 2006).

An additional study conducted by City College of San Francisco (CCSF) compared outcomes for 1998-2000 San Francisco Unified School District graduates who entered the college with or without prior credits from CCSF. The results showed that students with prior credit (i.e., dual enrollment credit) earned a significantly higher average GPA (2.33) than their peers without prior credit (2.10). Additionally, students with prior credit passed 58% of their classes compared with peers without prior credit who passed only 53% of classes. (Spurling & Gabriner, 2002).

**Tech Prep**

Funded by the U.S. Department of Education, Tech Prep programs are authorized by federal legislation in the Carl D. Perkins Vocational and Technical Education Act. Tech Prep consists of a sequenced program of study combining at least two years of secondary and two years of postsecondary education, leading to an associate degree or certificate in a specific career field. High school courses are articulated with college courses in ways that may allow students who complete the high school components to directly access the college courses, bypassing certain other introductory requirements. In some cases, high school students can apply for college credit (via credit by exam, for example) upon completion of the high school part of the curriculum.

Tech Prep consortia are groups of feeder high schools with particular career technical education (CTE) pathways and their community college partners. A dated report from 1995 suggests that, although Tech Prep was potentially available to 88% of secondary school students, only about 8.4% (740,000 students) were participating nationwide (reported in Bailey, Hughes & Karp, 2002). These authors report that participation in Tech Prep is hampered by a perception that it is a high school vocational program, which has historically been viewed as a pathway for low-achievers needing to access job training.

Although this program has the capacity to strengthen connectivity between the high schools and higher education, Bragg (2001) indicates that students are often unaware that their high school courses could generate college credit. Increasingly, however, colleges are tapping into the potential of "integrating academic and vocational education as a means of facilitating secondary to postsecondary transition" (Bragg, 1999, p. 2).

Misconceptions about Tech Prep are unfortunate, given that an abundance of research data confirms its value. Krile and Parmer (2002) compared college outcomes for Tech Prep participants in Ohio with those of non-Tech Prep peers between 1997 and 2001. Their study found that Tech Prep students scored significantly higher on college entrance examinations, earned higher GPAs and were more likely to return for a second year of study. Another very large study incorporating five years of data with over 3.4 million student records (247,778 were Tech Prep) looked at Tech Prep participant outcomes in Texas (Brown, 2000). This study found that Tech Prep participation was associated with slightly reduced dropout rates and improved attendance and graduation rates. A third significant

study using four years of longitudinal data from eight Tech Prep consortia confirmed similar results. At least 65% of Tech Prep participants enrolled in college within one to three years after high school graduation, though a slightly higher percentage of these went to two-year versus four-year schools compared with non-Tech Prep peers (Bragg, 2001).

**Early College Programs**

Early College Programs (including Middle College High School and Early College High School) allow high school students to enroll in college courses, providing them credits in both high school and college. Historically, these programs were designed to provide high-achieving students an alternative to traditional high school curriculum and the opportunity to engage in more challenging course material. Additionally, they were designed to expose students to the college culture and prepare them psychologically for the shift in expectations. Some educators see these programs as a way to encourage students, who might otherwise "slack off," to engage in demanding coursework during their final year of coursework and promote college to students with average achievement (Bailey, Hughes & Karp 2002).

Proponents increasingly point to the potential for underprepared students to achieve significant strides through dual enrollment programs (Adelman, 1999). Lords (2000, A45) argues that "under-achieving" students can perform at higher levels when presented with the challenges of rigorous and engaging courses. This supports the hypothesis that higher expectations promote increased motivation. Few colleges, however, support programs specifically geared toward at-risk students. The National Center for Education Statistics (2005) asserts that among approximately 2,000 dual enrollment programs, only 5% had programs specifically designed for students at risk for failure.

*Middle College High School Programs:* Middle College High Schools (MCHS) are secondary schools authorized to grant diplomas in their own name, located on college campuses. Generally, these programs support small populations of under-served or underrepresented students with a rigorous curriculum and a supportive environment. While enrolled in the Middle College, students have a chance to enroll in some college classes at no cost while completing their high school requirements.

Some research data show that these programs may be effective for at-risk students, but these studies are very dated (none published after 1991). In these reports, MCHS graduates performed better than students in other alternative high schools, did well on state assessment tests, and graduated from high school at higher rates than others in their districts, although they had relatively low rates of bachelor's degree attainment (Bailey & Karp, 2003). Another study showed students in two California middle college high schools having high test scores on state assessment tests in both mathematics and reading (although many scored at the "basic" rather than "advanced" levels).

*Early College High School Programs:* Early College High School (ECHS) programs share many characteristics with Middle College Programs. They are, however, designed to allow students to earn both a high school diploma and an associate degree simultaneously within four to five years. This is accomplished through structured, articulated programs in which students complete both high school and college courses concurrently from the time they enter the school in the 9$^{th}$ grade. Most

or all of the college courses also serve to meet high school graduation requirements, thus the benefit of dual enrollment.

The Early College High School Initiative, originally spearheaded by the Bill and Melinda Gates Foundation, now sponsors 160 schools across the nation (19 in California), with more being developed. A brief published by the Gates Foundation reports ECHS results, from the initiative's inception in 2000 through 2006, to be promising. This report states that within those years 95% of ECHS-entering 9th graders have graduated, over 57% have earned an associate degree, and over 80% have been accepted to a four-year college (Bill and Melinda Gates Foundation, 2008). Data for the nationwide implementation of the ECHS initiative are currently being evaluated by Jobs for the Future (JFF).

**Selected Dual Enrollment Programs and Their Outcomes**

*Tech Prep in Texas:* Texas has a long history of technical dual enrollment programs. Of more than 3.4 million student records examined, approximately 247,000 were Tech Prep students, with demographic statistics confirming a high degree of ethnic diversity. The Texas legislature mandated that any new Tech Prep program offered after September 1999 must incorporate the state's recommended high school graduation requirements, including a college-preparatory curriculum of 24 credits with higher-level courses in mathematics, science, English, and study of a language other than English. Research findings indicate that more students are graduating, having completed both the Tech Prep and college preparatory curricula, and that these students had lower dropout, slightly higher high school attendance, and higher graduation and college prep completion rates (Lerner & Brand, 2006).

*Academy of the Canyons at College of the Canyons in California*: Academy of the Canyons is a Middle College High School serving juniors and seniors who have at least average academic ability, demonstrate enough independence to leave the comprehensive high school campus, and have the desire and ability to work hard. Program participants can earn both high school and college credit for their work at a minimum of six units per semester. In addition, students utilize resources available at the college, including libraries, computers, counseling, and the career center. Key findings from the program's research include:

- Academy students had a 76% success rate in college level courses, which was 12% higher than their non-program peers.
- The retention rate for Academy students was 95%, compared with 90% for other high school students concurrently enrolled at College of the Canyons and 89% for traditional students.
- 76% of Academy students completed four or more transferable credits.

*College Now*: One of the largest dual enrollment programs is College Now at Kingsborough Community College in Brooklyn, New York. Between 2001-2006 College Now enrolled 113,796 students (Karp, Calgano, Hughes, Jeong & Bailey, 2008). Prospective enrollees must take a number of college entrance tests in Spring before enrollment. Those with passing scores may enter credit courses offered through the college. On the other hand, underprepared students may enroll in and complete foundation-level coursework prior to entering college. The program allows secondary school students to take college courses at their local high school. Seniors are permitted to enroll

in a maximum of six credits per semester. The curriculum, designed by college faculty, is modified specifically for high school students. Results indicate that students who participate in College Now demonstrate higher levels of success at CUNY (City University of New York) than those who did not participate. They were twice as likely to graduate on time and less likely to require remediation (Kleiman, 2001). While this is encouraging, it may not be a reflection of the program but rather an indicator of the students' tendencies and readiness since they must demonstrate proficiency in order to enter.

In one study (Karp, Calgano, Hughes, Jeong & Bailey, 2008), College Now participants were more likely to be female, black or Asian than non-participants. In both the long and short term, the program had a positive impact on student achievement. For instance, College Now students were more likely to pursue a bachelor's degree and more likely to enroll in college full-time than non-participants. In the long term, participation in College Now was positively correlated to unit completion rates.

*Florida State Dual Enrollment Programs*: One of the most comprehensive studies of dual enrollment to date (Karp, Calcagno, Hughes, Jeong & Bailey, 2008) definitively addresses concerns about the lack of evidence to support the effectiveness of dual enrollment programs. This study controlled for many student characteristics (high school achievement, socioeconomic status, race/ethnicity) and used large data sets representing the entire public high school enrollment for the state. It looked at the entire dual enrollment high school population (DE) and at a subset of CTE dual enrollment students. The researchers concluded that dual enrollment students were 4.3% more likely to earn a diploma compared with peers who did not participate. The DE students also exhibited a higher likelihood of enrolling in a four-year institution (7.7% more likely for the full DE population, and 8.6% more likely for the CTE subset) and persisting to a second semester in college (4.5% for all DE, 4.2% for the CTE students), and had statistically significantly higher GPAs one year after high school graduation. The DE students also earned more post-secondary credits after high school graduation and had higher cumulative GPAs three years after high school.

### Concerns About Dual Enrollment and the Need for More Research

Various constituencies have expressed concerns about dual enrollment programs. Among these are state and legislative issues with "double dipping"—the fact that, in some states, both high schools and colleges can claim apportionment for dual credit courses. While this is not the case in California, those states that allow cross-institutional claims are rightfully troubled about paying twice for the same educational services. There are also worries about the quality of dual enrollment programs in states where regulatory standards for them are not in place. A third concern is that research on participant outcomes is, in many cases, collected by the programs themselves, often without controls for student selection bias. Lastly,

> Although there is a growing trend for high school students to earn college credits while still in high school, 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? 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. (Martinez & Klopott, 2005, p. 29)

Although dual enrollment programs were originally designed to benefit students who already demonstrated a history of academic success, the trend is increasingly to open opportunities to a wider range of beneficiaries. While significant research indicates that dual enrollment programs enhance college success, this is an obvious conclusion when enrollment is limited to high achievers. However, because questions persist about quality and academic rigor, many states have limited program access to students who meet a minimum standard, either through GPA, proficiency exams, or standardized test scores. Researchers stress the importance of providing information about these programs to all students, as well as of active recruitment strategies for targeted groups, and making students aware of the benefits of participating (Hughes, Karp, Fermin & Bailey, 2005).

Because dual enrollment may have a modified curriculum, occur "off-site" from the college, and be taught by other faculty, the integrity of the programming is sometimes called into question. In response to these issues, some states have instituted "principles of good practice" for dual credit programs, outlining articulation agreements, teaching qualifications, curriculum standards, program structure, and student eligibility (Andrews, 2000). Johnstone and Del Genio (2001) indicated that when surveyed, a number of postsecondary institutions were suspicious of credit earned through transition programs and many refused to honor it.

Many researchers lament the scarcity of evidence-based evaluations (Karp, Calcagno, Hughes, Jeong & Bailey, 2008 being the notable exceptions, having definitive results with excellent statistical controls). As late at 2006, a two-year analysis of secondary-postsecondary learning options, which examined 22 models for dual enrollment, noted that only a limited number had longitudinal data, and that very few (approximately 15%) included outcome comparisons with control groups to determine statistical significance (Lerner & Brand, 2006). In 2005, Hughes, Karp, Fermin, and Bailey commented that research was needed to verify the "perceived benefits" (i.e., free college credit, better understanding of college, increased learner confidence) that are presumed to accompany dual enrollment programs. They encouraged data collection in order to confirm that students, particularly middle- and low-achieving ones, do gain these outcomes from program participation.

### Implications for Practice

Based on effective and promising practices from the literature, community colleges and college practitioners should:

- In collaboration with secondary partners, explore the development or expansion of well-constructed, thoroughly integrated dual enrollment programs.
- Make critical decisions regarding eligibility for enrollment. Will the program serve as enrichment for selected high achievers or be intentionally designed to serve all students?
- Develop and embed critical mechanisms for early assessment and intrusive student support services to ensure all students can maintain successful progress in college coursework without endangering the completion of the high school core.
- Provide information to students and parents about the benefits of the dual enrollment program, as well as the expectations for students. Even programs that do not impose qualifying examinations or test scores can still present "informal barriers to admissions" if students and their families are not well educated about the dual enrollment model (Hughes, Karp, Fermin & Bailey, 2005, p. 2).

- Engage in careful planning of resources for ongoing development and sustainability.
- Establish clear guidelines regarding financial responsibility. Concerns are often raised as to who pays for course fees, tuition, books, etc. Taxpayers also sometimes worry that they are paying twice to educate the same set of students.
- Support faculty and administration from both the high school and the college to engage in high levels of coordination and program quality oversight. Ensure that faculty and staff are appropriately trained and take advantage of collaborative professional development and shared curricular planning time. All constituent groups must monitor the academic integrity of the program.
- Formalize inter-institutional commitments and articulation agreements.
- Develop a cooperative and inclusive research strategy, with data used to evaluate and improve the program. Establish data-sharing protocols, as well as research designs that control for significant variables that can affect the research results. Data should also be disaggregated for comparison of program effects on historically underrepresented or underprepared groups.
- Bring effective programs to scale to serve more students. Commit to collaboratively identifying resources and overcoming internal obstacles that keep efforts small and deny students access to known effective models.

**Some Final Thoughts: Can Students "Make Up" for Lack of Preparation in High School?**

The successful transition of students from high school to college is clearly a shared responsibility of secondary and postsecondary stakeholders. To what extent, however, can lack of preparation in high school be overcome once students enter community college? Findings from a recent study (Roska & Calcagno, 2008) indicate that, although some students do achieve intermediate benchmarks of success in community college, the effects of inadequate high school preparation are long-lasting and not completely mitigated. Using a large data set of over 20,000 Florida community college students, this study compared the four-year university transfer rate of students who entered community college as college-prepared against those who lacked this level of academic readiness (based on threshold scores on standardized reading and mathematics tests.) Following students in the two comparison groups for 15 terms from their first date of enrollment, the college-prepared students transferred at the rate of 34%, while their academically underprepared peers transferred at only a 20% rate.

Further analysis of this same data sought to determine if completion of certain intermediate outcomes yielded significant differences among the two groups, and whether these showed correlation with transfer rates. The intermediate outcomes examined included success in first college-level mathematics and writing courses, earning of various credit thresholds, and completion of an Associate of Arts degree. Results found a consistent pattern; the academically underprepared students were significantly less likely to complete any of the intermediate outcomes. Moreover, even among those underprepared students who did achieve these outcomes, transfer rates still lagged considerably behind those of the college-prepared students. This latter finding is important as it suggests that students may be unlikely to entirely "make up" for poor academic preparation in high school by attending and succeeding in community college (Roska &Calcagno, 2008).

The implications of Roska and Calcagno's study are profound in terms of directing reform efforts. If the desire is to make the greatest impact, the preparation of students during the high school years cannot be ignored, and community college practitioners must work with high schools before students graduate from them. The study's findings, however, do not imply that "nothing can be done" once students enter college. It is important to note that its data set represents the entire statewide enrollment in community colleges and reflects the collective results of all schools and programs. Focused efforts (such as bridge and first-year experience programs and dual enrollment options) may be collectively represented within the data but are not specifically compared. Therefore, we do not know the comparative success rates of these efforts, but we do know that the current scale of any successful programs is not large enough to equalize existing gaps in four-year college transfer and other intermediate outcomes.

There is work to be done, both in collaboration with the high schools and within our own institutions.

# Appendix

## Part 1: Examples of selected career academies

The following examples describe selected career academies as reported in the literature. Research and evaluation data are presented where available. The selection of these particular examples for inclusion is intended only to represent a range of characteristic features of career academies.

### Career Edge Academy—Kirkwood Community College

One aspect of the CTE program at Kirkwood Community College is an "academy" model called the Career Edge Academy, offering ten different programs (Hughes, Karp, Bunting & Friedel, 2005, p. 250). Students are selected using an "eligibility rubric" that rates their potential for success in the following categories: student attendance, student behavior, prerequisite course completion, and academic assessments. Scores are shared with students and used to aid in the decision to enter the academy. Placement tests do not determine eligibility.

The program also enjoys a high degree of support and coordination, including department coordinators, professional development, funding of the programmatic needs, and student scholarships.

Over 1,100 area high school students from 40 neighboring schools enroll annually. Kirkwood Community College reports that 50% of Health Science Academy students enrolled in college immediately after high school. Overall, only 32% of all the high school students within the service area enroll in college after graduation. In addition, students appear well prepared to transition to college. Of the 20 students in the Engineering Technology and Local Area Networking Academies, none needed remediation for writing skills, and only two required some remediation in mathematics (Hughes, Karp, Bunting & Friedel, p. 252).

Program leaders recommend the following features for Career Technical Education:

1. Clearly communicate the roles and benefits of all of the partners to strengthen collaboration.

2. Align high school preparation with the needs of the Career Pathway program to reduce the need for remediation.

3. Simplify credit-earning opportunities so that students have maximum potential to earn college credit as soon as possible, thereby promoting an accelerated model.

### West Side Technical Institute—Daley College

Richard J. Daley College supports the West Side Technical Institute, which enrolls a population that is largely Hispanic (approximately 70%), with 25% African American. The program offers technical training certificates in manufacturing, office technology, computerized computer graphics, and

other technical fields. It also provides ESL instruction for a large non-native English population (Jenkins, 2003).

Approximately 1,500 students seek enrollment at the West Side Technical Institute. Among these students, fewer than 20% are able to pass the basic skills placement assessment in order to be eligible for advanced certificate programs (equivalent to approximately a 9th grade level in reading and mathematics). Students who need developmental remediation are offered a 10-week "refresher," but it fails to assist students in raising their skills sufficiently to pass the TABE.

More than 500 students enrolled in college-level certificate training programs. Many of them scored below the minimum 9.0 and were connected to one of three bridge programs where basic skills are taught within occupational contexts. As a result of these bridge opportunities, approximately 300 students were able to improve their basic skills sufficiently to enroll in an advanced certificate program (Jenkins, 2003).

West Side Technical Institute is expanding the program to include two other components: a life skills ESL course and intensive GED preparation. The GED program will run concurrently with the advanced certificate programs (Jenkins, 2003).

### The California Partnership Academies

Begun in 1984, The California Partnership Academies (CPAs) represent a high school reform effort now operating in more than 200 comprehensive high schools throughout the state. The initiative focuses on integrated academic and career-based instruction, connecting high school lessons with future employment scenarios. In 2004-05, CPAs served 2% of the state's enrolled high school population. Each CPA focuses its career program on one of 15 industry sectors (e.g., health sciences, finance/business, arts/media/entertainment, public services, education/child development/ family services, etc.) established for career and technical education by the California Department of Education. Reported results of CPA participation have been very positive. For example, CPA students posted an 84-percent pass rate on statewide ELA (English Language Arts assessment) versus a 76-percent pass rate for all students statewide, with comparable pass rates on mathematics exams of 80% versus 74%, respectively. In addition, 96% of CPA seniors graduated from high school compared with statewide average of 87%. Seventy percent of 2004-05 CPA graduates planned to earn a college degree and 23% planned to enter the workforce after high school. Moreover, half of the CPA seniors fulfilled A-G subject requirements compared with only 35% of graduates statewide. About 72% of CPA 11th-graders participated in mentorships, and 53% of seniors participated in work-based learning experiences. An important qualifier is that much of the data is self-reported from the CPAs, and there is little information about student selection variables. One report cautions that "where there are differences favoring academy students, it is impossible to determine the degree to which they are due to student selection versus program performance," although the models have been in existence for 22 years (ConnectEd, 2007, p. 3).

## Part 2: Examples of college transition programs for students while attending high school

The following examples are intended to provide an overview of various approaches and elements that commonly characterize high school transition programs. Research and evaluation data are presented

where available. The selection of these particular examples for inclusion does not necessarily imply that they are benchmark programs to be emulated.

### Upward Bound

One of the largest college transition programs, Upward Bound, has been the focus of numerous studies and rigorous evaluations over many years. Funded by the U.S Department of Education TRIO programs, Upward Bound's goal is to increase high school completion and college-going rates for underrepresented students whose family incomes are 150% below the poverty line. Most participants are also first-generation students. As a grant-supported program, individual projects vary, but nearly all provide academic enrichment in high school, including tutoring, weekend or after-school classes, exposure to cultural events, counseling and college/career advisement, and participation in a six-week summer program hosted on a college campus and designed to simulate an actual college experience.

Evaluation results for Upward Bound are mixed. The most comprehensive evaluation to date included the following findings:

- Upward Bound participants had higher education aspirations and earned more high school credits in mathematics and social science compared with similar students who did not participate.
- Upward Bound did not appear to influence students' in-school behavior, participation in extracurricular activities, high school grade point average, or high school credits earned in English or science.
- Upward Bound students were no more likely to attend a community college or baccalaureate institution than a comparison group of students, but they did earn more non-remedial credits from four-year colleges (Myers & Schirm, 1999).

In an extensive follow-up to this evaluation (Myers, et al., 2004), students were tracked for two years beyond their expected dates of high school graduation. This evaluation confirmed the earlier finding that Upward Bound participation did not substantially improve college enrollment for participants compared with non-participants, but it did make a difference for students who had the lowest educational expectations at the time they applied to the program. This group more than doubled the college-going rate of its matched, non-participant peers. These "low expectation" students also earned significantly more college credits than the comparison groups when they did enroll in college. Findings also showed that students who remained in the Upward Bound program longer could expect to achieve greater benefits.

Other sources have claimed positive long-term results. One study claims that Upward Bound participants are four times more likely to earn a baccalaureate degree than non-participant students with similar backgrounds (Kezar, 2001).

### Gear-Up

Created in 1998, Gaining Early Awareness and Readiness for Undergraduate Programs (GEAR UP) is another grant program of the U.S. Department of Education to increase the number of low-income

students who are prepared to enter and succeed in postsecondary education. Grants are awarded not only to states, but also to partnerships consisting of school districts, postsecondary partners, and community organizations to provide services to designated populations in high-poverty schools. These programs must begin no later than the 7th grade and continue through high school. The partnerships coordinate access to mentoring, guidance, parental education and involvement, individualized academic and social support for students, and school reform utilizing the resources of the community-based partnership. Projects work with a whole grade (or grade cohort) and seek to eliminate all forms of tracking. They also routinely support faculty and staff development in the interest of delivering a structured, rigorous academic curriculum, especially in mathematics and science.

Because GEAR UP is relatively new, a full national evaluation report has not yet been issued. A preliminary report summarizing the first two years of the program was released in 2003 but contains mainly descriptive information about the funded projects. However, reports of individual projects offer some promising early outcomes:

- In Hawaii, 45% of GEAR UP scholars earned a Board of Education (BOE) diploma (considered equivalent to a high school honor's diploma) in 2007, compared with the statewide average of 32% of students earning the BOE diploma in that same year. Fifty-one percent of GEAR UP high school graduates in 2006 enrolled in college that fall, compared with 46% of graduates statewide. Low-income GEAR UP students outperformed the statewide averages of non-low income students on both of these measures (GEAR UP success stories, U.S. Dept. of Education, <www.ed.gov/programs/gearup/performance.html> )
- Oregon has seen a 44-percent increase in GEAR UP students taking AP exams since the program began in 2002, and 63% more GEAR UP students took the PSAT in 2007 compared with 2002. Increases in the percentage of students meeting or exceeding the statewide standards in 10th grade reading and mathematics also have been observed (GEAR UP success stories, U.S. Department of Education, <www.ed.gov/programs/gearup/performance.html> )
- In 2005, North Hollywood High School saw a 74-percent increase in the number of 11th grade GEAR UP students taking the SAT compared with the previous year, with 44% of them scoring above the national average for high school seniors (Lerner & Brand, 2006).
- A GEAR UP project for school reform at El Sausal Middle School in Salinas, California, was coincident with a rise in the school's Academic Performance Index from 17 to 43% over the span of one year. (Lerner & Brand, 2006.)
- 8th grade students at a New York middle school GEAR UP showed a gain of 20% since 2001 on a state assessment for English/Language Arts, the highest of any middle school in their county (Lerner & Brand, 2006).
- In an East Texas GEAR UP project, the number of students taking 8th- or 9th grade algebra has increased from 63.4% of the population to over 90% since the inception of the GEAR UP program (Lerner & Brand, 2006).

### The Puente Project

California's Puente Project is currently implemented in 56 community colleges and 36 high schools across the state. The program's three-part model focuses on teaching, counseling, and mentoring. Puente trains school-level teams in the program's requirements and implements these with full integration into the existing curriculum (as opposed to after-school or other add-on instructional models). English teachers deliver a rigorous curriculum focused on writing and critical thinking, while counselors provide both intensive academic support and career counseling. Local community professionals also serve as mentors.

The Puente Project has been subject to external evaluation. On academic measures, no significant difference was reported on high school retention, GPA, or course-taking by the end of 12th grade, compared with non-Puente control groups. However, 84% of Puente students went on to enroll in college, compared with 75% of non-Puente peers, with a much larger proportion of the Puente students attending four-year colleges as opposed to two-year colleges. Student self-assessments indicate that Puente students feel significantly more prepared to enter college than their non-Puente counterparts, and these students scored more favorably on a variety of attitudinal measures (Gandara, 2001).

### AVID: Advancement via Individual Determination

Another school reform designed to smooth the transition between high school and college is the AVID (Advancement via Individual Determination) program. AVID features the following features: rigorous and relevant curriculum; academic and social support; college tutors for academic "middle" students. AVID students are typically challenged by lower socio-economic status, C-level work, average-to-high achievement test scores, a desire to enroll in college, ethnic and linguistic diversity, and untapped academic potential (Watt, Powell & Mendiola, 2004). The process of incorporating typically lower achieving students into rigorous and challenging classes with their high-achieving peers has been termed "untracking" (Mehan et al., 1992, p. 2).

AVID students are integrated into a challenging academic program and supported by coordinators who connect with them throughout their participation. In addition to traditional coursework, one academic period per day is devoted to AVID activities. This course is often taken in lieu of an elective and addresses learning strategies, such as how to interact with text, writing to learn, test-taking approaches, as well as interactive and collaborative learning techniques. These experiences provide students the academic and cultural capital necessary to succeed in high school and postsecondary education. In addition, aides or tutors, who support the students' achievement in discipline courses, bolster the program. This support, in addition to the socialization process, is central to overall student achievement (Mehan et al., 1992).

A recent comprehensive study in Texas indicates that the program could potentially improve student performance. Researchers examined 12 high schools from six districts that implemented AVID between 1999 and 2000. They collected data on 1,291 program students and found that the majority were female Hispanics and African Americans, compared with the general student group. Program students tended to attend school at a rate of almost 5% more than their classmates. Additionally, AVID participants tended to out-perform their classmates on the Texas Assessment of Knowledge

and Skills, scoring 10% higher respectively on the algebra and biology sections. Similarly, students outscored their counterparts in both reading and mathematics by 7 to 15% (p. 250-253).

In Texas, AVID students are significantly more likely to complete recommended or distinguished graduation plans compared with their counterparts. "In 2002, over 97% of AVID students were on track to graduate on either the recommended or distinguished plans, whereas only 62% of their classmates were on track" (Watt, Powell & Mendiola, 2004, p. 254). These improvements have been termed "The AVID effect" and indicate that such interventions have the potential to raise achievement for all student groups, while also improving overall school performance.

**Project GRAD**

Project GRAD, a state-level transition program, operates in Texas. Scholarships are a major component of the program, with all students in Project GRAD high schools eligible for a $1,000 - $1,500 college scholarship each year if they fulfill basic requirements in high school (i.e., enroll in higher-level courses, maintain 2.5 GPA, graduate on time, attend summer institutes). The project includes summer institutes that increase college awareness, build skills in content areas and develop accurate college expectations. A unique aspect of Project GRAD is the deliberate attempt to involve students' families; social workers are provided to work with families and help parents to become advocates for their children's academic pursuits. There is also a focus on school climate and the professional development of school staff. Results thus far have included higher graduation rates, increased enrollment in Algebra II in high school, a doubling of statewide performance test scores in mathematics for Project GRAD high schools, and a nearly four-fold increase in the number of students taking the SAT (Martinez & Klopott, 2005).

**Compact for Success**

Begun in 2000, The Compact for Success is a partnership between San Diego State University (SDSU) and the Sweetwater Union High School District that provides guaranteed admission to the university for all entering 9$^{th}$-grade students who complete specific program requirements. Financially strapped students also receive guaranteed scholarships. As a true partnership, both the district and the university engaged in creating a comprehensive and articulated curriculum designed to boost the completion of A-G requirements and create a college-going culture. Efforts begin in middle school with 7$^{th}$ grade student and parent visits to the campus and university student mentors and advisors making almost 10,000 contacts annually. In high school, every 9$^{th}$ grade student completes an individual four-year educational plan, and 10$^{th}$ graders make personalized visits to the college. High school students also participate in test preparation and financial aid workshops and are encouraged to take the CSU's Early Assessment Program. Bridge activities continue after enrollment at SDSU with comprehensive orientation and retention programs for these students.

Sweetwater's class of 2006 recently completed its freshman year at SDSU. Compared with the freshman class of 2000 from the district, this year's first Compact class saw a 99% increase in applications to SDSU, a 95.6% increase in admissions, a 104% increase in Sweetwater students enrolled in the first college semester, and a 192% increase in the number enrolled without the need for additional remediation (Campaign for College Opportunity, 2007). The district has also posted a

34% rise in the rate of completion of the A-G sequence over the past three years, and a one-year 40% increase in the number of district students attending four-year colleges in 2006.

### Part 3: Summer bridge programs in colleges

Descriptive information on a variety of summer bridge programs is presented below. The particular examples chosen are simply for showing common approaches and include reports of results, where available.

#### The Learning Edge Academic Program (LEAP)

LEAP is an optional six-week summer academic program open to all first- semester students at a large research university. Program components include group housing for the six weeks, mentoring from an upperclassman, enrollment in two linked academic courses required for general education, small "learning teams" of four to five students each for various instructional activities, and training in the use of library and technology-based campus resources. Students who participated in the LEAP program were shown to have a higher institutional persistence rate after two semesters than non-participants (Logan, Salisbury-Glennon & Spence, 2000).

#### The Kansas University Freshman Summer Institute

The Kansas University Freshman Summer Institute incorporates some similar elements. This optional, four-week summer residential program enrolls students in a discipline-based course plus an orientation course that includes awareness of campus resources, life/study skills, and major/career exploration. Three years of outcome data for participants were compared with that of a matched control group. Participation was not shown to significantly alter GPA or retention rates, but a significant increase in the academic and social self-efficacy among less academically prepared students was associated with program participation (Wolf-Wendel, Tuttle & Keller-Wolf, 1999).

#### Mt. San Antonio College (Mt. SAC) Summer Bridge Program

With steady growth since starting in 1998, the Mt. SAC Summer Bridge program now serves over 300 students each summer. Participants are recruited from the college's feeder high schools, with most falling into categories of first-generation, first-time college students who are economically and academically disadvantaged. The bulk of the program serves students who are placed into developmental levels of English, reading, and/or mathematics.

Participants are enrolled in linked or clustered classes taught in a cooperative environment between instructors. In addition, students are supported in a "community class" that is often team-taught by discipline faculty and counselors. The program incorporates highly integrated student support services provided by program staff, counselors, financial aid advisors, transfer and advising specialists, specially trained tutors and supplemental instructors, and peer advisors.

Course success data show a substantial advantage of Bridge over non-Bridge students enrolled in the same courses in the same term. Cumulative data for 2005-07 show a combined success rate for all courses of 86% for Bridge students, while their non-Bridge peers achieved a success rate of only 70% in these same courses. Longitudinal data over a five-year period also found that Bridge students had substantially higher transfer rates and average rates of degree attainment compared

with control groups of students who were eligible for Summer Bridge in each academic year but did not participate (Mt. San Antonio College Bridge Program Data, 2008). Summer Bridge students are encouraged to enroll in First-Year Experience links during fall or spring, which use a modified Summer Bridge model in the delivery of additional sequence courses in mathematics and English for the student's first year.

### Math Jam—Pasadena City College

The Math Jam at Pasadena City College is specifically targeted to enhance student preparation, community-building, and positive attitudes toward mathematics. Addressing the large number of entering students who place into Pre-Algebra (and the historical failure of such students to successfully traverse the pre-collegiate mathematics sequence), this program integrates accelerated mathematics instruction with active counseling and structured support to develop a "pedagogy of caring." Students participate in an intensive two-week, non-credit mathematics experience with creative instruction, competitions and games, guest speakers, community-building activities, and an emphasis on the benefits of tutoring and counseling to help students develop proficiency and comfort with both the mathematics class and their teachers and peers. Participation in the summer boot camp guarantees a seat in a fall mathematics class and also allows students to retake the placement exam following the Math Jam program. A follow-up component in the fall semester provides the incentive of a mathematics textbook loan for students who make required visits to a counselor, access tutoring, and visit instructor office hours at least twice during the semester. The program is quite new, but first-year results indicated an 89% retention in the summer program, with 56% of students jumping one level on the placement test. Ninety-one percent of participants reported feeling more connected to the college, 97% felt better prepared for their next mathematics class, and 100% reported that they would recommend the program to a friend (Campaign for College Opportunity, 2007).

### The Digital Bridge Academy

The Digital Bridge Academy (DBA) at Cabrillo College is another example of a program combining an intensive introductory summer experience with a structured first semester. A two-week summer foundation course engages students in examining their past learning experiences, increasing awareness of their personal learning styles and motivations, building commitment to pursue educational goals, and making strong relationships with each other and the faculty. This is followed by a fall semester of six linked courses in which students enroll as a cohort, with integrated learning objectives and assignments themed on a social justice research project. The first semester experience is designed to be intensive and accelerated, as opposed to remedial, and students can participate in optional DBA seminars or internships as they continue with studies in their individual majors following the introductory semester. External evaluation of the program found that 75% of students completed the accelerated bridge semester with 12+ units and grades of C or better. Among those students who had completed some college courses prior to enrollment, mean GPA increased from 1.61 to 3.02 after participation (Campaign for College Opportunity, 2007).

## References—High School To College

Academic Senate for California Community Colleges. (2002). Academic literacy: A statement of competencies expected of students entering California's colleges and universities. Sacramento, CA: Author. Retrieved July 7, 2008, from http://www.asccc.org/Publications/Papers/AcademicLiteracy/PubInfo.htm.

Achieve, Inc. (2007). Aligned expectations? A closer look at college admissions and placement tests. Retrieved April 3, 2008, from http://www.achieve.org/node/839.

The American Diploma Project. (2004) Ready or not: Creating a high school diploma that counts. Washington, D.C.: Achieve, Inc. Retrieved April 3, 2008, from http://www.achieve.org/node/552.

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

Adelman, C. (2003). Postsecondary attainment, attendance, curriculum, and performance: Selected results from the NELS:88/2000 Postsecondary Education Transcript Study (PETS), 2000. NCES Publication 2003394. Washington DC: U.S. Dept. of Education.

ACT, Inc./Council of Great City Schools (2007). Benefits of a high school core curriculum for students in urban high schools. Retrieved March 7, 2008, from http://www.act.org/research/policymakers/briefs.html#2007.

ACT, Inc. (2007) ACT National Curriculum Survey 2005-2006. Retrieved March 7, 2008, from http://www.act.org/research/curricsurvey.html.

ACT, Inc. (2004) Crisis at the core: Preparing all students for college and work. Iowa City, IA.

Atkinson, D., Jennings, R., & Livingston, L. (1990). Minority students' reasons for not seeking counseling and suggestions for improvement. Journal of College Student Development, 1, 42-50.

Bailey, T., & Alfonso, M. (2005). Paths to persistence: An analysis of research on program effectiveness at community colleges. New Agenda Series. Indianapolis: Lumina Foundation for Education.

Bailey, T., Hughes, K., & Karp, M. (2002). What role can dual enrollment programs play in easing the transition between high school and postsecondary education. Columbia, NY: Community College Research Center, Teacher's College, Columbia University.

Bailey, T., & Karp, M. (2003). Promoting college access and success: A review of credit-based transition programs. Washington, D.C: U.S. Department of Education, Office of Vocational and Adult Education.

Barefoot, B. (2005). Current institutional practices in the first college year. In: Upcraft, M.L., Gardner, J. and Barefoot, B. (eds.). Challenging and supporting the first-year student: A handbook for improving the first college year. San Francisco: Jossey Bass.

Barefoot, B., Gardner, J., Cutright, M., Morris, L., Schroeder, C., & Schwartz, S. (2005). Achieving and sustaining institutional excellence for the first-year of college. San Francisco: Jossey-Bass.

Barefoot, B. O. (2000). The first-year experience: Are we making it any better? About Campus 4: 12-18.

Bauer, K., & Liang, Q. (2003). The effect of personality and precollege characteristics on first-year activities and academic performance. Journal of College Student Development 44(3): 277-290.

Bill and Melinda Gates Foundation. (2008). All students college ready: Findings from the Foundation's education work, 2000—2006. Retrieved June 22, 2008, from http://www.gatesfoundation.org/UnitedStates/Education/defulat.htm.

Bottoms, G., & Young, M. (2008). Lost in transition: Building a better path from school to college and careers. Southern Regional Educational Board, Atlanta, GA. www.sreb.org.

Boulter, L. T. (2002). Self-concept as a predictor of college freshman academic adjustment. College Student Journal 36(2): 234-247.

Bozick, R., & DeLuca, S. (2005). Better late than never? Delayed enrollment in the high school to college transition. Social Forces 84 (1): 527–550.

Braddock, J.H. (1990). Tracking: Implications for student race-ethnic subgroups. Washington, D.C.: U. S. Department of Education, Office of Educational Research and Improvement (Report No. 1).

Bragg, D. (2001). Promising outcomes for Tech Prep participants in eight local consortia: A summary of initial results. Minneapolis, MN: National Research center for Career and Technical Education, University of Minnesota.

Brand, B. (2003). Essentials of high school reform: New forms of assessment and contextual teaching and learning. Washington, D.C.: American Youth Policy Forum.

Braxton, J., Bray, N., & Berger, J. (2000). Faculty teaching skills and their influence on the college student departure process. Journal of College Student Development, 41 (2): 215-227.

Bridgeland, J., Dilulio, J., & Morison, K. (2006). The silent epidemic: Perspectives of high school dropouts. Bill and Melinda Gates Foundation. Retrieved July 1, 2008, from www.civicenterprises.net/pdfs/thesilentepidemic3-06.pdf.

Brown, C. (2000). A comparison of selected outcomes for secondary Tech Prep participants and non-participants in Texas. Journal of Vocational Education Research 25(3): 273-295.

Brown, R., & Niemi, D. (2007). Investigating the alignment of high school and community college assessments in California. National Center for Public Policy and Higher Education, Report #07-3.

Busby, R., Gammel, H., & Jeffcoat, N. (2002). Grades, graduation, and orientation: A longitudinal study of how new student programs relate to grade point averages and graduation. The Journal of College Orientation and Transition, 10(1): 45—50.

Cabrera, A., & La Nasa, S. (2000). On the path to college: Three critical tasks facing America's disadvantaged. Center for the Study of Higher Education, Penn State University.

Cabrera, A., La Nasa, S., & Burkum, K. (2001). Pathways to a four-year degree: The higher education story of one generation. Center for the Study of Higher Education, Penn State University.

California Department of Education, 2008. Ed-Data website Retrieved March 14, 2008, from http://www.ed-data.k12.ca.us.

California Postsecondary Education Commission (CPEC). Online data custom report generator. Selected for 2006 public/private state high school graduates and post-secondary enrollment in all 3 public higher education sectors. 2008. http://cpec.ca.gov/OnLineData/GenerateReports.asp Accessed April 29, 2008.

Campaign for College Opportunity (2007). Practices with promise: A collection of working solutions for college opportunity. Retrieved April 14, 2008, from http://www.collegecampaign.org/practices/2007-pwp-archive.html.

Center for Student Success (2007). Basic skills as a foundation for student success. Sacramento, CA: Center for Student Success/RP Group.

Center for Student Success. (2007, February). Basic Skills as a Foundation for Success in California Community Colleges. Sacramento, CA: California Community Colleges Chancellor's Office. Retrieved January 25, 2009, from http://www.cccbsi.org/publications.

Chaney, B., Lewis, L., & Farris, E. (1995). Programs at higher education Institutions for disadvantaged precollege students. Washington, D.C.: Office of Educational Research and improvement, U.S. Department of Education, National Center for Educational Statistics Report no. 96-230.

Chemers, M., Hu, L., & Garcia, B. (2001). Academic self-efficacy and first-year college student performance and adjustment. Journal of Educational Psychology, 93 (1): 55—65.

Consultation Council Assessment Task Force (2007, September.) California Community Colleges, report to the Board of Governors. Retrieved April 18, 2008, from http://asccc.org/Events/sessions/fall2007/materials/AppendixE_F07.doc.

Cuseo, J. B. (2003). Comprehensive academic support for students during the first year of college. In: Student Academic Services: An Integrated Approach. Kramer, G. and Associates, eds. San Francisco: Jossey-Bass. Pages 271-309.

Digest of Educational Statistics, 2001. (2002). Washington, D.C.: National Center for Education Statistics.

Education Week (2007). Quality Counts Report: From cradle to career. Retrieved April 3, 2008, from http://www.edweek.org/ew/toc/2007/01/04/index.html.

Florida Department of Education. (2006). Taking Student Life Skills Course Increases Academic Success. Data Trend #31. Retrieved April 3, 2008, from http://natn.org/assets/files/FLALIFESKILLS.pdf.

Gandara, P. (2001). Paving the way to postsecondary education: K-12 intervention programs for underrepresented youth. Report of the National Postsecondary Education Cooperative Working Group on Access to Postsecondary Education. Washington, D.D.: National Postsecondary Education Cooperative.

Gardner, J., Barefoot, B., & Swing, R. (2001). Guidelines for evaluating the First-Year Experience at two-year colleges. 2nd Ed. Columbia, SC: The National Resource Center for the First-Year Experience and Students in Transition.

Glick, M. (2006). Teaching early college high school at LaGuardia Community College. Early High School Initiative. Boston, MA: Jobs for the Future.

Goodenow, C., & Grady, K. 1993). The relationship of school belonging and friends' values to academic motivation among urban adolescent students. Journal of Experimental Education 62 (1): 60-71.

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

Hecker, D. E. (2005). Occupational employment projections to 2014. Washington, D.C.: Bureau of Labor Statistics.

Hicks, T. (2003). First-generation and non-first generation precollege students' expectations and perceptions about attending college. Journal of College Orientation and Transition 11(1): 5—17.

Hoffman, N. (2003). Challenges, no remediation, the early college high school initiative. In: Double the Numbers: Increasing Postsecondary Credentials for Underrepresented Youth. (Kazis, R., Vargas, J., & Hoffman, N., eds.) p. 113-116. Cambridge: Harvard Education Publishing Group.

Hoover, K. (2003). The relationship of locus of control and self-efficacy to academic achievement of first-year students. Journal of the First-Year Experience and Students in Transition 15(2): 103-123.

Horn, L., & Chen, X. (1998). Toward resiliency: At-risk students who make it to college. Washington, D.C.: U.S Department of education, Office of Educational Research and Improvement.

Horn, L., Nunez, A., & Bobbitt, L. (2000). Mapping the road to college: First-generation students' math track, planning strategies, and context of support (NCES Publication No. 2000-153). Washington, D.C: U.S. Government Printing Office.

Howe, N., & Strauss, W. (2000). Milllennials Rising: The Next Great Generation. New York, NY: Random House.

Hughes, K., Karp, M., Bunting, D., & Friedel, J. (2005). Dual enrollment/Dual credit: Its role in career pathways. In: Career Pathways: Education with a Purpose (D. Hull, ed.) Cord Communications.

Institute of Museum and Library Sciences. (2005). IMLS National Leadership Grant: Information literacy for the 21st-century learner: Preparing students to learn for life. Retrieved July 7, 2008, from http://www.nilrc.org/IMLS/Project_summary_IMLS.pdf.

Jackson, L., Pancer, S. M., Pratt, M., & Hunsberger, B. (2000). Great expectations: The relation between expectancies and adjustment during the transition to university. Journal of Applied Social Psychology 30: 2,100—2,125.

Jenkins, D. (2003). The potential of community colleges as bridges to opportunity for the disadvantaged: Can it be achieved on a large scale? Paper presented at the Seminar on Access and Equity, Community College Research Center, Teacher's College, Columbia University.

Johnstone, D., & Del Genio, B. (2001). College-level learning in high school: Purposes, policies and practical implications. Washington, D.C.: Association of American Colleges and Universities.

Jordan, W., Cavalluzzo, L., & Corallo, C. (2006). Community college and high school reform: Lessons from five case studies. Community College Journal of Research and Practice 30(9): 729-749.

Karp, M., Bailey, T., Hughes, K., & Fermin, B. (2004). State dual enrollment policies: Addressing access and quality. Washington, D.C.: U.S. Department of Education, Office of Vocational and Adult Education.

Karp, M., Calcagno, J., Hughes, K., Jeong, D., & Bailey, T. (2007). The postsecondary achievement of participants in dual enrollment: An analysis of student outcomes in two states. Columbia, NY: Community College Research Center, Teacher's College, Columbia University.

Keeling, S. (2003). Advising the millennial generation. The Journal of the National Academic Advising Association 23(1): 30-36.

Kelly, J. (2006). The first-year college experience: Strategies for improvement. Retrieved March 29, 2008, from http://www.newfoudnations.com/OrgTheory/Kelly721Sp06.html.

Kemple, J., & Snipes, J. (2000). Career academies: Impacts on students' engagement and performance in high school. MDRC.

Keup, J. R. (2005). The impact of curricular interventions on intended second year re-enrollment. Journal of College Student Retention 17(1): 61-89.

Keup, J. R., & Barefoot, B. O. (2005). Learning how to be a successful student: Exploring the impact of first-year seminars on student outcomes. Journal of the First-Year Experience & Students in Transition 17 (1): 11—47.

Kezar, A. (2001). Understanding and facilitating organizational change in the 21st century: Recent research and conceptualizations. ASHE-ERIC Higher Education Report 28 (4): 1—162.

Kirst, M., Antonio, A., & Bueschel, A. (2004). Improving the transition from high school to postsecondary education. Berkeley, CA: Policy Analysis for California Education.

Kleiman, N. (2001). Building a highway to higher ed: How collaborative efforts are changing education in America. New York, NY: The Center for an Urban Future.

Kleiner, B. & Lewis, L. (2005). Dual enrolment of high school students at postsecondary institutions: 2002-03 (NCES 2005-008). Washington, D.C.: National Center for Educational Statistics.

Klekotka, P. (2005). Beyond high school: Improving transition programs for postsecondary education. Pathways to College Network. Retrieved April 14, 2008, from http://www.pathwaystocollege.net/pcnlibrary/ViewBiblio.aspx?aid=639

Krile, D., & Parmer, P. (2002). Tech Prep: Pathways to success? The performance of Tech Prep and non-Tech Prep students at a Midwestern community college. Dayton, OH: Sinclari Community College, Office of Institutional Planning & Research.

Kuh, G., & Hu, S. (2001). The effects of student-faculty interaction in the 1990s. The Review of Higher Education 24(3): 309-332.

Laufgraben, J. L. (2005). Learning communities. In: Challenging and Supporting the First-Year Student: A Handbook for Improving the First Year of College. Upcraft, M. L., Gardner, J, N. & Barefoot, B. O., eds. San Francisco: Jossey-Bass. Pages 371-387.

Legislative Analyst's Office, State of California. (2008). Back to basics: Improving college readiness of community college students. Retrieved August 1, 2008, from http://www.lao.ca.gov/2008/edu/ccc_readiness/ccc_readiness_0608.aspx.

Lerner, J. B., & Brand, B. (2006). The college ladder: Linking secondary and postsecondary education for success for all students. Washington, D.C.: American Youth Policy Forum.

Logan, C., Salisbury-Glennon, J., & Spence, L. (2000). The Learning Edge Academic Program: Toward a community of learners. Journal of the First-Year Experience and Students in Transition 12 (1): 77 –104.

Lotkowski, V.A., Robbins, S. B., & Noeth, R. J. (2007). The role of nonacademic factors in college readiness and success. Downloaded from ACT. Retrieved March 14, 2008, from http://www.act.org/path/policy/pdf/college_retention.pdf.

Lundquist, C., Spaulding, R. J., & Landrum, R. E. (2002). College students' thoughts abut leaving the university: The impact of faculty attitudes and behaviors. Journal of College Student Retention 4(2): 123-133.

Martin, W. E., Swartz-Kulstad, J. L., and Madson, M. (1999). Psychosocial factors that predict the college adjustment of first-year undergraduate students: Implications for college counselors. Journal of College Counseling 2: 121-133.

Martinez, M., & Klopott, S. (2005). The link between high school reform and college access and success for low-income and minority youth. Washington, D.C.: American Youth Policy Forum and Pathways to College Network.

Mazzeo, C. (2008). Supporting student success at California community colleges. Career Ladders Project for the Bay Area Workforce Funding Collaborative. http://www.careerladdresproject.org.

Medrich, E., Calderon, S., & Hoachlander, G. (2003). Contextual teaching and learning strategies in high schools: Developing a vision for support and evaluation. In: Essential Forms of High School Reform: New Forms of Assessment and Contextual Teaching and Learning. (B. Brand, ed.) Washington, D.C.: American Youth Policy Forum.

Mehan, H., et al. (1992). Untracking and college enrollment. Research Report: 4. ERIC Document Services. ED351403. Accessed May 7, 2008.

Mt. San Antonio College Bridge Program (2008). Summary of data from the bridge program, provided by Mt. San Antonio College Office of Research and Institutional Effectiveness.

Muraskin, L. (1998). A structured freshman year for at-risk students. Washington, D.C.: National Council of Educational Opportunity Associations.

Myers, D., & Schirm, A. (1999). The impacts of Upward Bound: Final report for Phase I of the national evaluation. Mathematica Policy Research. Educational Resources Information Center—ED432621.

Myers, D., Olsen, R., Seftor, N., Young, J., & Tuttle, C. (2004). The impacts of regular Upward Bound: Results from the third follow-up data collection. Washington, D.C.: U.S. Department of Education. Report #2004-13.

Newton, F. B. (2000). The New Student. About Campus 6: 8—15.

Oakes, J., & Lipton, M. (1992). Detracking schools: Early lessons from the field. Phi Delta Kappan 73:448-454.

O'Connor, M., & Paunonen, S. (2007). Big Five personality predictors of post-secondary academic performance. Personality and Individual Differences 43(5): 971—990.

Organisation for Economic Co-operation and Development. (2005). Education at a Glance 2005. Paris: OECD Publishing.

Pennington, H., & Vargas, J. (2004). Bridge to postsecondary success: High schools in the knowledge economy. Boston, MA: Jobs for the Future.

Pryor, J., Hurtado, S., Saenz, V., Lindholm, J., Korn, W., & Mahoney, K. (2005). The American freshman: National norms for Fall 2005. Higher Education Research Institute, UCLA: Los Angeles, CA.

Research and Planning (RP) Group for the California Community Colleges. (2004) Assessment and placement practices—RP Group recommendation to the State Chancellor's Office. Retrieved April 3, 2008, from http://www.rpgroup.org/publications/specialstudies.html.

Robbins, S., Lauver, K., Le, H., Davis, D., Langley, R., & Carlstrom, A. (2004). Do psychosocial and study skill factors predict college outcomes? A meta-analysis. Psychological Bulletin, 130(2), 261-288.

Roey, S., Caldwell, N., Rust, K., Blumstein, E., Krenske, T., Legum, S., Kuhn, J., Wakesberg-Westat, M., & Haynes, J. (2001) The 1998 high school transcript study tabulations: Comparative data on credits earned and demographics for 1998, 1994, 1987, and 1982 high school graduates (NCES 2001498). Retrieved March 7, 2008, from http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2001498 .

Roska, J., & Calcagno, J. C. (2008). Making the transition to four-year institutions: Academic preparedness and transfer. Community College Research Center, Teacher's College, Columbia University, NY. Working paper #13.

Schilling, K. M., & Schilling, K. L (2005). Expectations and performance. In: Challenging and Supporting the First-Year Student: A Handbook for Improving the First Year of College. M.L. Upcraft, J. N. Gardner & B. O. Barefoot, eds. San Francisco: Jossey Bass. Pages 108-123.

Schilling, K. M., & Schilling, K. L. (1999). Increasing expectations for student effort. About Campus 4: 4-10.

Schneider, B. (2007). Forming a college-going community in U.S. public high schools. Retreived April 3, 2008, from http;//gatesfoundation.org/United States/Education/ResearchAndEvaluation/Research/HSImprovement.htm.

Schnell, C., & Doetkott, C. (2002). First year seminars produce long-term impact. Journal of College Student Retention 4 (4): 377-391.

Schroeder, C. (2003). The first year and beyond: Charles Schroeder talks to John Gardner. About Campus 8: 9-17.

Shulock, N., & Moore, C. (2006). State of decline? Gaps in college access and achievement call for renewed commitment to educating Californians. Sacramento, CA: Institute for Higher Education Leadership & Policy.

Smith, J. S. (2002). First-year student perceptions of academic advisement: A qualitative study and reality check. The Journal of the National Advising Association 22(2): 39-49.

Smith, J. S., & Wertlieb, E.C. (2005). Do first-year college students' expectations align with their first-year experiences? NASPA Journal 42(2): 153-174.

Spurling, S., & Gabriner, R. (2002). The effect of concurrent enrollment programs upon student success at City College of San Francisco: Findings. San Francisco: City College of San Francisco, Office of Institutional Research. Retrieved March 7, 2008, from http://www.ccsf.edu/Offices//Research_Planning/pdf/ecepss02.pdf .

Stone, J., Alfeld, C., Pearson, D. Lewis, M., & Jensen, S. (2006). Building academic skills in context: Testing the value of enhanced math learning in career and technical education. St. Paul, MN: National Research Center for Career and Technical Education.

Stratton, L., O'Toole, D., & Wetzel, J. (2006). Are the factors affecting dropout behavior related to initial enrollment intensity for college undergraduates? Discussion Paper #1951. Bonn, Germany: Forshungsinstitut zur Zukunft der Arbeit (IZA).

Terenzini, P., Cabrera, A., & Bernal, E. (2001). Swimming against the tide: The poor in American higher education. College Board Research Report No. 2001-1. New York: College Entrance Examination Board.

Tobolowsky, B. T., Cox, B. E., & Wagner, M. T. (eds.) (2005). Exploring the Evidence: Reporting Research on First-Year Seminars, volume III. Monograph No. 42. Columbia, S.C.: University of South Carolina, National Resource Center for the First-Year Experience and Students in Transition.

U.S. Department of Education Office of Vocational and Adult Education (2003). College transition programs: Promoting success beyond high school. Issue Papers: Preparing America's Future: The High School Initiative. Washington, D.C.

Venezia, A., Kirst, M., & Antonio, A. (2003). Betraying the college dream: How disconnected K-12 and postsecondary education systems undermine student aspirations. Stanford, CA: Stanford Institute for Higher Education Research.

Wallace, D., Abel, R., & Ropers-Huilman, B. (2000). Clearing a path for success: Deconstructing borders through undergraduate mentoring. The Review of Higher Education 24(1): 87-102.

Watt, K., Powell, C., & Mendiola, I. (2004). Implications of one comprehensive school reform model for secondary school students underrepresented in higher education. Journal of Education for Students Placed At Risk 9(3): 241-259.

Weissberg, N., Owen , D., Jenkins, A., & Harburg, E. (2003). The incremental variance problem: Enhancing the predictability of academic success in an urban, commuter institution. Genetic, Social, and General Psychology Monographs 129 (2): 153-180.

Wilcox, P., Winn, S., & Fyvie-Gauld, M. (2005). '"t was nothing to do with the university, it was just the people": The role of social support in the first-year experience of higher education. Studies in Higher Education 30 (6): 707-722.

Willett, T. (2008). Cal-Pass releases new report on leveraging the California Standards Test: An early alert system for remediation needs of entering community college students. Perspectives (The RP Group), March-April 2008 Issue.

Wolf-Wendel, L. E., Tuttle, K., & Keller-Wolf, C. M. (1999) Assessment of a freshman summer transition program in an open-admissions institution. Journal of the First-Year Experience and Students in Transition 11(2): 7-32.

Zajacova, A., S., Lynch, S. M., & Espenshade, T. J. (2005). Self-efficacy, stress, and academic success in college. Research in Higher Education 46(6): 677-706.

Zhao, C., & Kuh, G. (2004). Adding value: Learning communities and student engagement. Research in Higher Education. 45(2): 115-138.

Academic Senate for California Community Colleges
916/445.4753 http://www.asccc.org

Funded by the Chancellor's Office of the California Community Colleges