

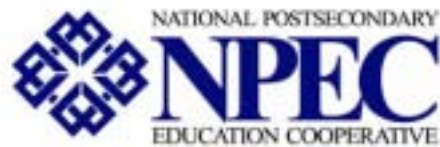
What Matters to Student Success: A Review of the Literature

**Commissioned Report for the
National Symposium on Postsecondary Student Success:
Spearheading a Dialog on Student Success**

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1. INTRODUCTION, CONTEXT, AND OVERVIEW

Creating the conditions that foster student success in college has never been more important. As many as four-fifths of high school graduates need some form of postsecondary education (McCabe 2000) to prepare them to live a economically self-sufficient life and to deal with the increasingly complex social, political, and cultural issues they will face. Earning a baccalaureate degree is the most important rung in the economic ladder (Bowen 1978; Bowen and Bok 1998; Boyer and Hechinger 1981; Nuñez 1998; Nuñez and Cuccaro-Alamin 1998; Pascarella and Terenzini 2005; Trow 2001), as college graduates on average earn almost a million dollars more over the course of their working lives than those with only a high school diploma (Pennington 2004). Yet, if current trends continue in the production of bachelor's degrees, a 14 million shortfall of college-educated working adults is predicted by the year 2020 (Carnevale and Desrochers 2003).

The good news is that interest in attending college is near universal. As early as 1992, 97 percent of high school completers reported that they planned to continue their education, and 71 percent aspired to earn a bachelor's degree (Choy 1999). Two-thirds of those high school completers actually enrolled in some postsecondary education immediately after high school. Two years later, three-quarters were still enrolled (Choy). Also, the pool of students is wider, deeper, and more diverse than ever. Women now outnumber men by an increasing margin, and more students from historically underrepresented groups are attending college. On some campuses, such as California State University Los Angeles, the City University of New York Lehman College, New Mexico State University, University of Texas at El Paso, and University of the Incarnate Word, students of color who were once "minority" students are now the majority; at Occidental College and San Diego State University, students of color students now number close to half of the student body.

The bad news is that enrollment and persistence rates of low-income students; African American, Latino, and Native American students; and students with disabilities continue to lag behind White and Asian students, with Latino students trailing all other ethnic groups (Gonzales 1996; Gonzalez and Szecsy 2002; Harvey 2001; Swail 2003). There is also considerable leakage in the educational "pipeline." According to the National Center for Public Policy and Higher Education (2004), out of every 100 ninth graders, 68 graduate from high school, 40 immediately enter college, 27 are still enrolled their sophomore year, and only 18 complete any type of postsecondary education within 6 years of graduating high school. These figures probably underestimate the actual numbers of students who earn high school degrees, because they do not take into account all the students who leave one school district and graduate from another (Adelman 2006). Even if the estimates are off by as much as 10–15 percent, far too many students are falling short of their potential.

Another issue is that the quality of high school preparation is not keeping pace with the interest in attending college. In 2000, for example, 48 percent and 35 percent of high school seniors scored at the basic and below basic levels, respectively, on the National Assessment of Educational Progress. Only five states—California, Indiana, Nebraska, New York, and Wyoming—have fully aligned high school academic standards with the demands of colleges and employers (Achieve 2006). Just over half (51 percent) of high school graduates have the reading skills they need to succeed in college (American College Testing Program (ACT) 2006). This latter fact is most troubling, as 70 percent of students who took at least one remedial reading course in college do not obtain a degree or certificate within 8 years of enrollment (Adelman 2004).

In part, college costs that are increasing faster than family incomes are to blame. From 1990 to 2000, tuitions rose at private universities by 70 percent, at public universities by 84 percent, and at public

2-year colleges by 62 percent (Johnstone 2005). Those hit hardest by cost increases can least afford it. Charges at public institutions increased from 27 percent to 33 percent between 1986 and 1996 for families in the bottom quartile, but only from 7 percent to 9 percent for families in the top income quartile. This means for each \$150 increase in the net price of college attendance, the enrollment of students from the lowest income group decreases by almost 2 percent (Choy 1999). Because tuition and fees have been rising faster than family income, there are also more students today with unmet financial need (Breland et al. 2002; Choy). As Levine and Nidiffer (1996, p. 159) observed 10 years ago:

The primary weakness of both colleges for the poor and financial aid programs is their inability to help poor kids escape from the impoverished conditions in which they grow up.... The vast majority of poor young people can't even imagine going to college. By the time many poor kids are sixteen or seventeen years old, either they have already dropped out of school or they lag well behind their peers educationally.

Once in college, a student's chances for graduating can vary widely. For example, about 20 percent of all 4-year colleges and universities graduate less than one-third of their first-time, full-time, degree-seeking first-year students within 6 years (Carey 2004). Data from students enrolled in Florida community colleges as well as institutions participating in the national Achieving the Dream project suggest an estimated 17 percent of the students who start at a 2-year college either drop out or do not earn any academic credits during the first academic term (Kay McClenney, personal communication, April 20, 2006). Only about half of students who begin their postsecondary studies at a community college attain a credential within 6 to 8 years. An additional 12 percent to 13 percent transfer to a 4-year institution (Hoachlander, Sikora, and Horn 2003). Only about 35 percent of first-time, full-time college students who plan to earn a bachelor's degree reach their goal within 4 years; 56 percent achieve it within 6 years (Knapp, Kelly-Reid, and Whitmore 2006).

Three-fifths of students in public 2-year colleges and one-quarter in 4-year colleges and universities require at least 1 year of remedial coursework (Adelman 2005; Horn and Berger 2004; U.S. Department of Education 2004). More than one-fourth of 4-year college students who have to take three or more remedial classes leave college after the first year (Adelman; Community College Survey of Student Engagement (CCSSE) 2005; National Research Council 2004). In fact, as the number of required developmental courses increases, so do the odds that the student will drop out (Burley, Butner, and Cejda 2001; CCSSE). Remediation is big business, costing at least \$1 billion and perhaps as much as \$2 billion annually (Bettinger and Long 2005; Camera 2003; Institute for Higher Education (IHEP) 1998b). At the University of Nevada Reno, for example, 454 of the 2,432 first-year students took remedial mathematics at a per-student cost of \$306 (Jacobson 2006). For these and related reasons, the American College Testing Program (2005) declared that the nation has "a college readiness crisis."

Of the 45 percent of students who start college and fail to complete their degree, less than one-quarter are dismissed for poor academic performance. Most leave for other reasons. Changes in the American family structure are one such factor, as more students come to campus with psychological challenges that, if unattended, can have a debilitating effect on their academic performance and social adjustment.

Consumerism colors virtually all aspects of the college experience, with many colleges and universities "marketizing" their admissions approach to recruit the right "customers"—those who are best prepared for college and can pay their way (Fallows et al. 2003). In a recent examination of college admissions practices, both 2-year and 4-year institutions appear to have deemphasized the recruitment of underserved minorities (Breland et al. 2002), and many state-supported flagship universities are admitting students mainly from high-income families (Mortenson 2005). This trend will have deleterious

consequences for American society at a time when more people than ever before are enrolling in colleges and universities and the country is becoming more racially and ethnically diverse.

Whatever the reasons many students do not achieve their postsecondary educational goals or benefit at optimal levels from the college experience, the waste of human talent and potential is unconscionable. What can colleges and universities do to uphold their share of the social contract and help more students succeed?

Purpose and Scope

This report attempts to address this set of critical issues by synthesizing the relevant literature and emerging findings related to student success, broadly defined. Our goal is to develop an informed perspective on policies, programs, and practices that can make a difference to satisfactory student performance in postsecondary education.

The presentation is divided into eight sections along with supporting materials including a bibliography and appendices. As does Swail (2003), we take a cumulative, longitudinal view of what matters to student success, recognizing that students do not come to postsecondary education *tabula rasa*. Rather, they are the products of many years of complex interactions with their family of origin and cultural, social, political, and educational environments. Thus, some students more than others are better prepared academically and have greater confidence in their ability to succeed. At the same time, what they do during college—the activities in which they engage and the company they keep—can become the margin of difference as to whether they persist and realize their educational goals.

We used the following questions to guide our review:

- What are the major studies that represent the best work in the area?
- What are the major conclusions from these studies?
- What key questions remain unanswered?
- What are the most promising interventions prior to college (such as middle school, high school, bridge programs) and during college (such as safety nets, early warning systems, intrusive advising, required courses, effective pedagogical approaches)?
- Where is more research needed and about which groups of students do we especially need to know more?
- How does the work in this area inform a theory about student success?

Throughout, we use a “weight of the evidence” approach, emphasizing findings from high quality inquiries and conceptual analyses, favoring national or multi-institutional studies over single-institution or state reports. Of particular interest are students who may be at risk of premature departure or underperformance, such as historically underserved students (first generation, racial and ethnic minorities, low income). We are also sensitive to changing patterns of college attendance. For example, more than half of all students start college at an institution different from the one where they will graduate. Increasing numbers of students take classes at two or more postsecondary institutions during the same academic term. Equally important, most institutions have nontrivial numbers of undergraduate students

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who are underperforming, many of whom are men. Identifying and intervening with these students are essential to improving achievement and persistence rates.

As we reviewed the literature, we were sensitive to identifying policies and practices that would be relevant to various entities. That is, in terms of promoting student success:

- What can the federal government do?
- What can states do?
- What can the for-profit postsecondary institutions do?
- What can not-for-profit public and private postsecondary institutions do?
- What can families do?
- What can high schools do?
- What can and should students themselves do?

2. DEFINITIONS AND CONCEPTUAL FRAMEWORK

Given the strong demand from various quarters to demonstrate evidence of student success in postsecondary education, we should not be surprised that multiple definitions of the construct exist. Among the more commonly incorporated elements are quantifiable student attainment indicators, such as enrollment in postsecondary education, grades, persistence to the sophomore year, length of time to degree, and graduation (Venezi et al. 2005). Many consider degree attainment to be the definitive measure of student success.

For the 2-year college sector, rates of transfer to 4-year institutions are considered an important indicator of student success and institutional effectiveness. Indeed, transfer rates will become even more important for all sectors with students increasingly attending multiple institutions, as we explain later (de los Santos and Wright 1990; McCormick 1997b). At the same time, it is important to note that students attending 2-year institutions are pursuing a range of goals (CCSSE 2005; see also Cejda and Kaylor 2001; Hoachlander, Sikora, and Horn 2003):

- To earn an associate's degree, 57 percent;
- To transfer to a 4-year school, 48 percent;
- To obtain or upgrade job-related skills, 41 percent;
- To seek self-improvement and personal enjoyment; 40 percent;
- To change careers, 30 percent; and
- To complete a certificate program, 29 percent.

Student success can also be defined using traditional measures of academic achievement, such as scores on standardized college entry exams, college grades, and credit hours earned in consecutive terms, which represent progress toward the degree. Other traditional measures of student success emphasize postgraduation achievements, such as graduate school admission test scores, graduate and professional school enrollment and completion rates, and performance on discipline- or field-specific examinations such as the PRAXIS in education and CPA tests in accountancy. Still other measurable indicators of success in college are postcollege employment and income.

Some of the more difficult to measure aspects of student success are the degree to which students are satisfied with their experience and feel comfortable and affirmed in the learning environment. Astin (1993b) proposed that satisfaction should be thought of as an intermediate outcome of college. Taken together, students' impressions of institutional quality, their willingness to attend the institution again, and overall satisfaction are precursors of educational attainment and other dimensions of student success (Hossler, Schmit, and Vesper 1999; Strauss and Volkwein 2002), and are proxies for social integration (Tinto 1993), or the degree to which a student feels comfortable in the college environment and belongs to one or more affinity groups.

Student success is also linked with a plethora of desired student and personal development outcomes that confer benefits on individuals and society. These include becoming proficient in writing, speaking, critical thinking, scientific literacy, and quantitative skills and more highly developed levels of

personal functioning represented by self-awareness, confidence, self-worth, social competence, and sense of purpose. Although cognitive development and direct measures of student learning outcomes are of great value, relatively few studies provide conclusive evidence about the performance of large numbers of students at individual institutions (Association of American Colleges and Universities (AACU) 2005; National Center for Public Policy and Higher Education 2004; Pascarella and Terenzini 2005).

All of these measures of student success have been explored to varying degrees in the literature, and there is wide agreement on their importance. In recent years, a handful of additional elements of student success have emerged, representing new dimensions, variations on common indicators, and harder to measure ineffable qualities. Examples of such indicators are an appreciation for human differences, commitment to democratic values, a capacity to work effectively with people from different backgrounds to solve problems, information literacy, and a well-developed sense of identity (AACU 2002; Baxter Magolda 2001, 2004).

Novel definitions are borne out of ingenuity and necessity and often require measures of multidimensional constructs. In part, their emergence is due to the increased complexity of the postmodern world and the need for institutions to be more inclusive of a much more diverse student population. Indeed, greater attention to diversity—race/ethnicity, socioeconomic status, age—has led to more nuanced, alternative understandings of student success. For example, although the educational progress of women and minority groups has long been an important policy concern, trend analyses by gender or race have tended to mask important within-group differences with regard to *access to* and *participation* (as distinguished from enrollment) rates in postsecondary education. That is, enrollment rates are often calculated as the percentage of high school graduates who are currently in postsecondary education. To more accurately reflect the educational progress of the nation, the proportion of a *total age cohort* enrolled in postsecondary education or who have completed at least 2 years of postsecondary education should be calculated. Such analyses better represent racial and ethnic differences in educational progress, because the lower high school completion rates of minorities are taken into account (U.S. Department of Education 1997, 2003a).

In addition, student success indicators must be broadened so that they pertain to different types of students, such as adult learners and transfer students, and acknowledge different patterns of participation by including measures such as course retention rates and posttransfer performance. Adult learners pursue postsecondary education for a range of reasons, such as wanting to be better educated, informed citizens (49 percent), enhancing personal happiness and satisfaction (47 percent), obtaining a higher degree (43 percent), making more money (33 percent), and meeting job requirements (33 percent) (Bradburn and Hurst 2001; The Education Resources Institute and Institute for Higher Education Policy (IHEP) 1996). For this reason, academic and social self-confidence and self-esteem are other important student outcomes that are receiving more attention. In fact, Rendon (1995) found that the most important indicators of Latino student success include believing in one's ability to perform in college, believing in one's capacity as a learner, being excited about learning, and feeling cared about as a student and a person. Such transformational changes—from being a repository for information to becoming a self-directed, lifelong learner—are important for all students, especially those who have been historically underserved by postsecondary education.

Student persistence research is another area where new conceptions have emerged about the factors that influence students' ability and commitment to persist. Studies of nontraditional students, commuters, and other underrepresented populations have identified external factors that affect student persistence, such as parental encouragement, support of friends, and finances (Braxton, Hirschy, and McClendon 2004; Cabrera et al. 1992; Swail et al. 2005). Studies of first-generation students suggest the important role that student characteristics and behaviors, including expectations and student effort, play in student

persistence and other measures of success in college (Pascarella, Pierson et al. 2004; Pike and Kuh 2005; Terenzini et al. 1996).

Broadened definitions of student success also are influenced by economic realities and workforce development needs. Due to the changing nature of society and the demands of a knowledge-based economy (Carnevale and Desrochers 2002), there is a growing awareness that what was once an appropriate high school education is no longer sufficient to succeed in college and the workforce in the 21st century (American Diploma Project 2004). Some state postsecondary coordinating agencies, such as the Kentucky Council on Postsecondary Education, have increased the pressure on educational systems to demonstrate that students have gained knowledge and skills that employers expect of successful students and workers. Some of these workforce requirements are aligned with general education outcomes, such as fostering an orientation for inquiry, developing democratic values, and cultivating problem solving skills.

For reasons we will discuss later, student engagement is another indicator of student success that has received considerable attention in recent years (Kuh 2001, 2003; Pascarella and Terenzini 2005). As mentioned earlier, a substantial body of research indicates that once students start college, a key factor to whether they will survive and thrive in college is the extent to which students take part in educationally effective activities.

A broad, holistic definition of student success must include all of these indicators and speak to three questions:

1. What do we want and need of students, before and after they enroll in postsecondary education?
2. What happens to students during their postsecondary studies?
3. What are the implications of these definitions for informing policy and practice and improving student and institutional performance?

For the purposes of this report, student success is defined as *academic achievement, engagement in educationally purposeful activities, satisfaction, acquisition of desired knowledge, skills and competencies, persistence, attainment of educational objectives, and postcollege performance.*

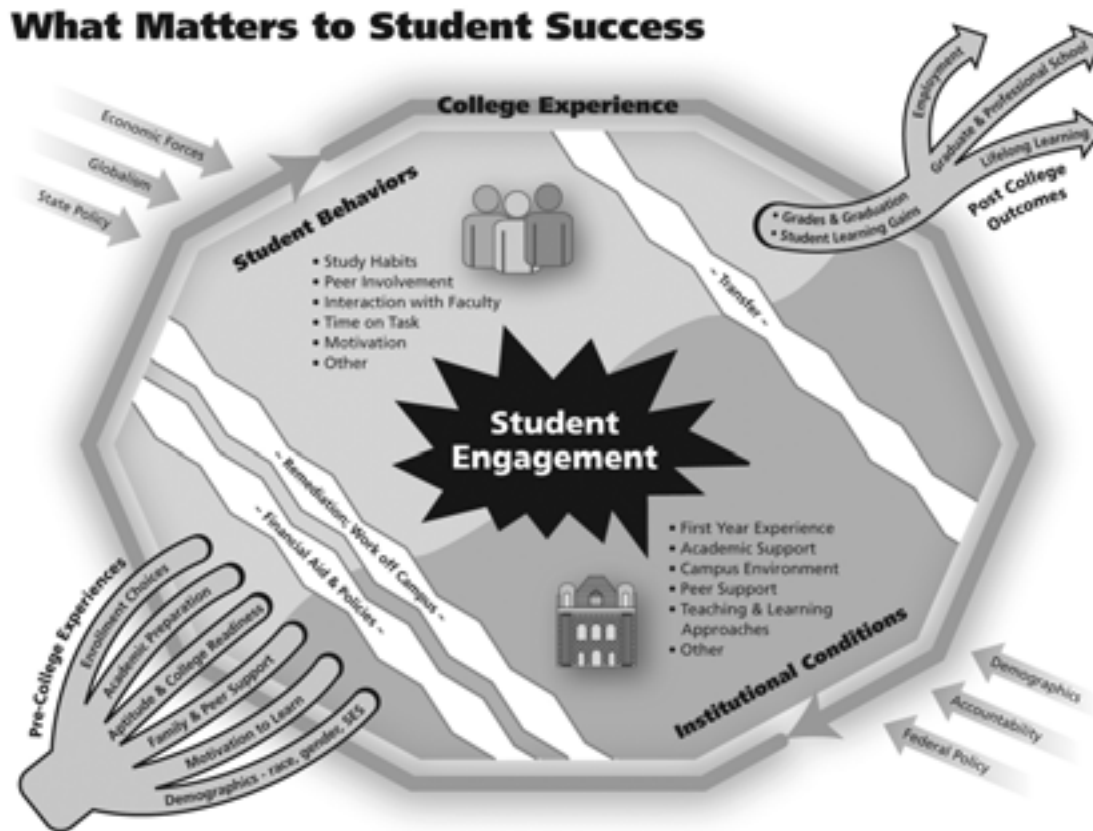
Framework for Student Success

Figure 1 is the guiding framework for our analysis. Instead of the familiar “pipeline” analogy depicted by a direct route to educational attainment, a more accurate representation is a wide path with twists, turns, detours, roundabouts, and occasional dead ends that many students may encounter during their educational career. As we shall see, this figure is a more realistic portrayal of contemporary postsecondary education.

The first section of the path represents students’ *precollege experiences*. We summarize the effects of academic preparation in K–12 schools, family background, enrollment choices, and financial aid and assistance policies on various dimensions of student success. These and related factors and conditions affect the odds that students will do what is necessary to prepare for and succeed in college. In figure 1, mediating conditions are represented as transitions that students must successfully navigate to continue their education. They include remediation courses that do not count toward graduation but which are necessary to acquire college-level academic skills, financial aid policies that facilitate or hinder their

continued enrollment, and the need to work many hours off campus which can prohibit students from fully engaging in the college experience. If students are not able to successfully find their way through these screens, they may be either temporarily or permanently separated from the college experience.

Figure 1. What matters to student success



The next part of the path—the college experience itself—includes two central features: *students’ behaviors* and *institutional conditions*. Student behaviors include such aspects as the time and effort students put into their studies, interaction with faculty, and peer involvement. Institutional conditions include resources, educational policies, programs and practices, and structural features.

At the intersection of student behaviors and institutional conditions is *student engagement*. We focus on student engagement because it represents aspects of student behavior and institutional performance that colleges and universities can do something about, at least on the margins, whereas many other factors such as precollege characteristics are typically beyond the direct control of the student or the college or university. Equally important, high levels of student engagement are associated with a wide range of educational practices and conditions, including purposeful student-faculty contact, active and collaborative learning, and institutional environments perceived by students as inclusive and affirming and where expectations for performance are clearly communicated and set at reasonably high levels (Astin 1991; Chickering and Gamson 1987; Chickering and Reisser 1993; Kuh et al.1991; Pascarella 2001; Pascarella and Terenzini 1991, 2005). These and other student behaviors and institutional conditions discussed in more detail later are related to student satisfaction, persistence, educational attainment and learning and development across a variety of dimensions (Astin 1984, 1985, 1993b;

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Bruffee 1993; Goodsell, Maher, and Tinto 1992; Johnson, Johnson, and Smith 1991; McKeachie et al. 1986; Pascarella and Terenzini; Pike 1993; Sorcinelli 1991).

Finally, we briefly summarize the literature on the desired *outcomes and post-college indicators* of student success. Among the many functions of postsecondary education in a knowledge-based economy is preparing students to live productive, satisfying, responsible and economically self-sufficient lives. Indeed, given the massive investments of public and private resources in building and sustaining postsecondary educational institutions, knowing how individual students and the larger society benefit is, perhaps, the most important barometers of the degree to which students succeed in college.

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3. MAJOR THEORETICAL PERSPECTIVES ON STUDENT SUCCESS IN COLLEGE

As Kurt Lewin once said, there is nothing more practical than a good theory. Given the importance of student success in college, using instructive perspectives to guide research and practice is essential. Fortunately, a handful of sound approaches are available, though as we shall see no single view is comprehensive enough to account for the complicated set of factors that interact to influence student and institutional performance, what Braxton, Sullivan, and Johnson (1997) call “the student departure puzzle.”

The most often cited theories define student success in college as persistence and educational attainment, or achieving the desired degree or educational credential. These perspectives emphasize to varying degrees the importance of academic preparation and the quality of student experiences during college. This section is organized around an adaptation of Tinto’s (1986) and Braxton’s (2003) frameworks of college student departure. The theoretical perspectives we summarize are sociological, organizational, psychological, cultural, and economic, all of which contribute to our understanding of student success in college.

Sociological Perspectives

Tinto’s (1975, 1987, 1993) interactionist theory is the dominant sociological perspective, having attained near paradigmatic status (Braxton, Sullivan, and Johnson 1997; Pascarella and Terenzini 2005). Grounded in Van Gennep’s (1960) anthropological model of cultural rites of passage, Tinto postulates that students first must *separate* from the group with which they were formerly associated, such as family members and high school peers, undergo a period of *transition* “during which the person begins to interact in new ways with the members of the new group into which membership is sought” (Tinto 1993, p. 93), and *incorporate* or adopt the normative values and behaviors of the new group, or college. For Tinto, students who leave college are those who are unable to effectively distance themselves from their family or community of origin and adopt the values and the behavioral patterns that typify the environment of the institution they are attending.

Tinto advances academic and social integration as complementary but independent processes by which students adjust to college life. Academic integration represents both satisfactory compliance with explicit norms, such as earning passing grades, and the normative academic values of the institution, such as an engineering school that values the physical sciences over the arts. Social integration represents the extent to which a student finds the institution’s social environment to be congenial with his or her preferences, which are shaped by the student’s background, values, and aspirations. Social integration is often measured as a composite of peer-to-peer interactions and faculty-student interactions, while academic integration reflects satisfaction with academic progress and choice of major (Kuh et al. 1994). Thus, student persistence is a function of dynamic relationships between the individual and other actors within the college and their home community.

Tinto proposed that increased levels of academic and social integration will lead to greater commitment to the institution and to the goal of graduation (Bean 1983). These commitments in turn increase the likelihood a student will persist and graduate. Further, he asserts that families pass on advantages of their social position to their children via a process of expectation development, an idea consistent with status attainment theories and the literature on first-generation students.

Observations About the Tinto Model

Despite its popularity, Tinto's theory has only modest empirical support. For example, only 8 of the 11 multi-institutional studies that attempted to link academic integration and persistence provided support for the relationship. Single institution studies examining the relationship between academic integration and persistence are less clear. Nineteen of 40 studies Braxton et al. examined did not indicate a link between persistence and academic integration. Support for social integration as a predictor of persistence is more robust than for academic integration (Braxton, Sullivan, and Johnson, 1997), suggesting that increasing social integration leads to greater institutional commitment, and thus greater likelihood of persistence to graduation. Another promising proposition is that a high level of commitment to the goal of graduation from college can compensate for a low level of commitment to the specific institution, and vice versa.

Braxton and others concluded that the operational definitions for academic and social integration are inadequate and methodologically flawed (Braxton and Lien 2000; Braxton, Sullivan, and Johnson 1997; Hurtado and Carter 1997). For example, Tinto's specific conceptualization of academic integration may not be equally applicable to all students (Berger 2000), nor have the links between the stages of separation, transition, and incorporation been empirically verified (Nora 2001–02). Although Elkins, Braxton, and Glenn (2000) found some support for the separation stage of the model, Nora speculated that because students may leave college at any time, the stages are less distinct in real-life settings than they are presented conceptually. One reason for the absence of empirical support for the academic integration construct is that the model artificially separates student experiences that may be part of one broad social integration construct (Kuh and Love 2000). This suggests more refined measures are needed: "Perhaps survey items developed to measure these constructs do not capture the complexities and subtleties of the interactions between students and institutions that affect persistence" (Kuh and Love, p. 197).

Social Networks

Although there is some disagreement about how to best operationalize various components of the Tinto model, most agree that for students to succeed in college, they must learn to negotiate foreign environments and interact effectively with strangers (Kuh and Love 2000). Thus, interpersonal relationships both on and off campus play a role in mediating student success in college. Also, the different sets of values and norms represented by home life and college need to be taken into account when studying various aspects of student success. This view is consistent with a social networks perspective that college students' relationships with faculty and staff and peers as well as family, friends, and mentors contribute to student satisfaction, persistence, and what students gain from college (Astin 1977, 1993b; Kuh et al. 2005b; Kuh et al. 1991; Pascarella and Terenzini 1991, 2005; Tinto 1975, 1987, 1993).

Social networks are "structures of relationships linking social actors" (Marsden 2004, p. 2727). The nature of these relationships and the extent to which they support students in their college-based activities or present obstacles to academic progress can vary along multiple dimensions. For example, Berger and Milem (1999) found that the students most likely to persist are those whose values, norms and behavior are already congruent with dominant patterns on campus. They, along with Attinasi (1989), emphasized the importance of making connections early on with peers and faculty members. Skahill (2002–03) found that commuters were less likely to persist and had fewer friends attending the college; in contrast, residential students made more new friends, were more tightly connected with the institution, and were more likely to persist. Similarly, Kenny and Stryker (1996) found that social adjustment to college for racially and ethnically diverse students was primarily a function of their family support

networks; for White students, however, social adjustment was more strongly tied to college friendship networks.

Pescosolido (1994, p. 276) likened social networks to a psychological safety net: “When individuals exist in social structures which are too regulated or too integrated, the safety net closes up. There is no flexibility or ‘give’ to the social safety net. When they experience a crisis, in essence they hit a wall which shatters rather than supports.” At the other extreme, insufficient integration and or regulation may leave an individual without enough support during difficult times or without information needed to deal with problems or who to turn to for help, and they fall through holes in the safety net. “It is only in the center of the net, where social networks are balanced and moderate in their provision of integration and/or regulation, in which individuals can be safely ‘caught’” (Pescosolido p. 276). Social networks help explain why social integration is more difficult for certain groups of students, while the family influence is all the more influential (Chamberlain 2005).

Organizational Perspectives

Organizational perspectives emphasize the institutional structures and processes that are thought to affect student performance. Among the more important features are institutional size, selectivity, resources, and faculty-student ratios. The most frequently cited organizational perspective, Bean’s (1983) student attrition model, posits that beliefs shape attitudes, attitudes shape behaviors, and behaviors signal intents. A student’s beliefs are affected by experiences with the institution, which then evolve into attitudes about the institution, which ultimately determine a student’s sense of belonging or “fit” with the institution. Thus, students’ perceptions of the fairness of institutional policies and the responsiveness of faculty and staff presumably affect decisions to persist or leave the institution. Similarly, the leadership and decisionmaking approaches favored by senior administrators are also thought to have some affect on student satisfaction and adjustment (Berger and Braxton 1998). Pike and Kuh (2005a) lend some support to this view by suggesting that negative perceptions of the campus environment are associated with a variety of general institutional characteristics, including size, control, mission (i.e., Carnegie classification), and location (urban, suburban, rural). Nonetheless, the links between these features of institutional functioning and student behavior are not well explicated and, in Braxton’s (2003) judgment, lack explanatory power.

Psychological Perspectives

Bean and Eaton (2000) used attitude-behavior theory to emphasize the importance of student characteristics to success in college. They proposed that personality traits such as self-efficacy help a student persevere when faced with academic and social challenges; those with a strong, better developed self-concept are more confident about their ability to succeed, while those who are less confident are more likely to founder and give up when encountering difficult circumstances. Similarly, students guided by an internal locus of control believe they can work their way through situations, while those who are externally controlled may conclude that fate has determined their course, especially when facing trying times; as a consequence they may give up and leave college prematurely.

Consistent with this view is Dweck’s (2000) work on self-theories about intelligence. According to Dweck, most students tend to hold either an entity view or an incremental view of their ability. In the former, intelligence is essentially fixed; in the latter, intelligence is something that can be expanded through continued learning and experience. It is possible, Dweck discovered, that students’ views of their abilities can be altered by structuring early learning experiences in a new subject by starting with what students are good at. “Those who are led to believe their intelligence is a malleable quality begin to take

on challenging learning tasks and begin to take advantage of the skill-improvement opportunities that come their way” (Dweck, p. 26). This has powerful implications for many historically underserved students who have doubts about their abilities to do college-level work and persist to graduation (Kuh et al. 2005b). This information can be used to help faculty members understand the consequences of prematurely judging the talents and abilities of their students.

Expectancy theory, self-efficacy theory, and motivational theory suggest that students are predisposed to seek out certain kinds of activities during college (Kuh 1999; Olsen et al. 1998), such as how to spend time, which, in turn, affects their performance inside and outside the classroom (Bandura 1982; Dweck and Leggett 1988). Psychological contract theory (Rousseau 1995) holds that students have certain beliefs about the appropriate nature of relationships with peers, faculty, and staff. A key feature of this psychological contract is that there is an implicit agreement between the student and the institution as to how one is to respond to the other. These understandings rarely become explicit or orally articulated by the student, though the institution may set forth expectations in catalogues and other such materials as codes of conduct. When the student perceives the contract is breached, the student may lose trust in the institution as represented by peers or faculty. Thus, what students generally expect to have happen when they start college shapes their behavior, which, in turn, affects their academic performance and social adjustment to college life (Howard 2005; Kuh 1999).

Cultural Perspectives

Cultural perspectives suggest that many historically underrepresented students encounter challenges when they get to college that make it difficult for them to take advantage of their school’s resources for learning and personal development. Student perceptions of the institutional environment and dominant norms and values influence how students think and spend their time. Taken together, these properties influence student satisfaction and the extent to which students take part in educationally purposeful activities (Astin 1977, 1993b; Kuh et al. 2005b; Kuh et al. 1991; Kuh and Whitt 1988; Pascarella and Terenzini 1991, 1995). With this in mind, one school of thought is that student-institution fit models of adjustment such as Tinto’s may be framed by culturally biased assumptions about what is necessary to survive and thrive in college (Attinasi 1989, 1992; Gonzalez 2000–01; Kuh and Love 2000; Rendon, Jalomo, and Nora 2000; Tierney 1992, 1993). The point of contention is whether students *need* or *should be expected to conform* to prevailing institutional norms and mores if they conflict with those of their family of origin (Tierney 1992). Jalomo (1995) found, for example, that Latino community college students were able to successfully operate in the multiple contexts of home and school, but the transitions were challenging. Successfully navigating dual environments of home and college, Rendon, Jalomo, and Nora argue, is the responsibility of, and demands effort by, both the individual and institution; students should not be left to manage and resolve these differences on their own, especially when the college environment values conventions and traditions that students perceive to be alien or antithetical to their own.

Gonzalez (2000), Ortiz (2004), and Torres (2003) describe the tensions first-generation Latino students feel between college and home life. Students who are first in their families to be raised in the United States seem to experience a greater degree of conflict between home life and college life (Torres 2003). This tension (often stronger for Latinas, traditionally expected to remain at home) stems not just from simply leaving home, an experience that may not seem as significant to them as actually *being away* from home. Many Latinos wrestle with this tension and various cultural issues throughout their college experience. Similarly, Turner (1994) likened the experience of students in the cultural minority to that of being a guest in someone’s home; one never achieves a sense of ownership or feeling like a full member of the academic community. These students are lonely and do not perceive that faculty, staff, and administrators are interested in their well-being and academic success.

To London (1989), first-generation students stand on the margin of two cultures: that of their friends and family at home contrasted with the college community. Compared with students whose parents attended college and socialized them from a young age to consider college an inevitable rite of passage London (1989), and and Nuñez and Cuccaro-Alamin (1998) believe that many first-generation students experience college-going as severing important relationships at the same time they are trying to resolve the conflicts generated by the pressures to succeed educationally and family perceptions that they are rejecting traditional family norms and values by being in college.

Although many first-generation students are White, the disproportionate representation of racial and ethnic minorities within this group merits special consideration for two reasons. One is that these students may face educational challenges associated with their racial or ethnic minority status in addition to those related to being first-generation college students. Even well-meaning primarily White institutions (PWIs) often maintain culturally biased policies and practices that contribute to cultural alienation for minority students that blunts their socialization because students get mixed messages about what is expected of them (Torres 2003; Swail 2003). As Cuyjet (1997) pointed out, group membership in various campus subcommunities may appear to be nominally open, but in practice minority students may see them as unwelcoming. It is also possible that White first-generation students—especially those from low-income family backgrounds—experience conflicts and challenges similar to those of first-generation ethnic minority students.

Bourdieu's construct of habitus provides an instructive lens for understanding the complexities and nuances of the experiences of first-generation and ethnic minority students. Habitus refers to a system of enduring dispositions that incorporates previous experiences that can impose unconscious limits on an individual's educational and career aspirations (Bourdieu and Passeron 1977). Habitus also shapes individual actions, such as choosing a major field, or perceiving opportunities that are available to them, such as doing research with a faculty member or studying abroad. Habitus is also a heuristic for exploring the complex and deep-rooted patterns that have limited access of historically underserved students to postsecondary educational opportunities. The construct is especially useful when combined with the social networks view for understanding individual behavior in a specific institutional setting and the meaning that students make of college life (Horvat 2003; Lareau and Horvat 1998).

Although habitus can perpetuate self-conceptions of low status and may predispose students to use less productive educational strategies, it also has a dynamic component that allows the possibility that students can adopt new approaches to managing academic and social challenges. Developing new ways of responding can be triggered in different ways, such as encounters with new situations, exposure to the habitus of others, or interacting with people who originate from very different backgrounds, all of which occur with regularity in the college environment (Harker 1984; Lamont and Lareau 1988). One of the more desirable outcomes of such experiences is developing higher aspirations for academic achievement and personal development.

Economic Perspectives

One more way of viewing the factors that influence student departure decisions is to weigh the costs and benefits of staying in college and participating in various activities. That is, if a student perceives that the cost of staying in school or becoming involved in a certain activity—such as orientation, a first-year seminar, internship, or study abroad—outweighs the return on investment, they will forgo the opportunity and leave college prematurely (Braxton 2003). Costs are thought to include tuition and fees as well as lost income; benefits represent future earnings and other less tangible outcomes

such as obtaining additional knowledge and skills and enjoying a higher overall quality of life (Goldin, Katz, and Kuziemko 2006). Consistent with a human capital model (Becker 1964), colleges can help create additional economic incentives for students to persist by making them aware of the benefits they will realize in their knowledge, critical thinking abilities, and sensibilities and dispositions that support lifelong learning (discussed later in Part 7), and how these benefits increase their chances to obtain a desirable job and live a satisfying life after college.

Summary

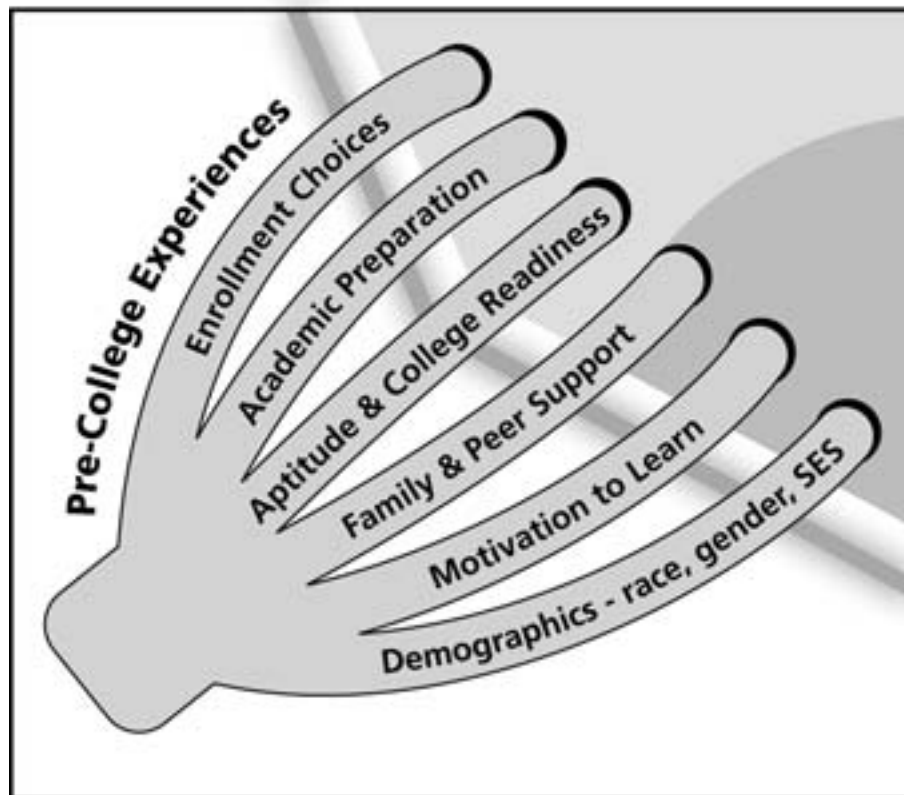
As noted at the outset of this section, no one theoretical perspective is comprehensive enough to account for all the factors that influence student success in college. For example, after comparing Tinto's (1987) model of student integration and Bean's (1983) model of student attrition, Cabrera et al. (1992) determined that Tinto's student integration model was more robust than the student attrition model based on the number of hypotheses validated. That is, 70 percent of student integration model hypotheses were validated as compared to 40 percent of the student attrition model hypotheses. At the same time, the student attrition model accounted for more variance in student intent to persist (60 percent vs. 36 percent) and persistence (44 percent vs. 38 percent), a finding these researchers attributed to parental and peer encouragement and support, and finances. They concluded that these two dominant perspectives are not mutually exclusive, but rather are complementary.

Taken together, the different theoretical perspectives on student success and departure provide a holistic accounting of many of the key factors that come into play to shape what students are prepared to do when they get to college and influence the meanings they make of their experiences. In their review of the theoretical perspectives on educational attainment and persistence, Pascarella and Terenzini (2005, p. 425) concluded that the theories emphasize "a series of academic and social encounters, experiences, and forces ... [that] can be portrayed generally as the notions of academic or social engagement or the extent to which students become involved in (Astin 1985) or integrated (Tinto 1975, 1987, 1993) into their institution's academic and social systems." This observation is important, as we shall see in Part 5.

4. THE FOUNDATION FOR STUDENT SUCCESS: STUDENT BACKGROUND CHARACTERISTICS, PRECOLLEGE EXPERIENCES, AND ENROLLMENT PATTERNS

Who students are, what they do prior to starting their postsecondary education, and where and how they attend college can all make a difference in their chances for obtaining a baccalaureate degree or another postsecondary credential. This section distills the major findings from the literature about the student background characteristics and precollege experiences related to student success in various postsecondary settings, such as 2-year and 4-year colleges and special mission institutions. The literature is all but silent on the student experience at private, for-profit institutions, so this growing segment of postsecondary education is not addressed. As introduced in figure 1 and shown in figure 2, the variables of interest include gender, race and ethnicity, academic preparation, educational aspirations, socioeconomic status (SES), motivation to learn, and the college choice process, which are mediated by college costs and financial aid availability.

Figure 2. Student background characteristics and precollege experiences



Student Background Characteristics and Precollege Experiences

Gender

The numbers of male and female undergraduates were roughly equal from 1900 to 1930. As a result of the GI Bill, male enrollments jumped dramatically following World War II so that by 1947, men outnumbered women 2.3 to 1 (Goldin, Katz, and Kuziemko 2006). Since then, women have been gaining on men. Between 1959 and 2002, the college participation rate of women increased from 39 percent to 68 percent, a jump of 29 percent, while the proportion of men going on to college increased only by about 8 percent, from 54 percent to 62 percent (Mortenson 2003). During this same period, the percentage of women high school graduates grew more than the percentage of male high school graduates (84 percent vs. 80 percent respectively) (Mortenson). In terms of degree completion, in 1970 men received a majority of bachelor's degrees in all 50 states, a trend that tipped in the opposite direction in 2001 when women earned a majority of such degrees (Mortenson). Goldin, Katz, and Kuziemko offer several reasons why more women than men are enrolling in college. A major factor is that women outperform men on the proximate determinants of college going—high school grades, test scores, and college preparatory coursework. Women made especially striking gains since 1972 in terms of achievement test scores (widening their advantage in reading and narrowing the gap in mathematics) and in taking high school math and science courses. These factors, coupled with changing societal attitudes toward the role of women in the workplace and marriage and relatively greater economic benefits of college for females, appear to contribute to the larger number of women attending college.

Race and Ethnicity

There are large differences at every grade level between Whites and Blacks and Whites and Latinos in terms of being college ready, with no narrowing of these gaps from 1990 to 2000 (Braswell et al. 2001). Only 21 percent of African American high school graduates, 33 percent of Hispanics, and 33 percent of students from families with annual incomes below \$30,000 have college-level reading skills (ACT 2006). Underrepresented populations have lower odds of completing high school and enrolling in college (Carter and Wilson 1997; Social Science Research Council Project 2005). The high school completion rates of African Americans (77 percent) and Latinos (57 percent) trailed Whites (82 percent). Latino and African American college participation rates were equal at 35 percent, whereas the White participation rate was 43 percent (Carter and Wilson). If these trends continue, educational attainment in the United States could actually decline over next 15 years if we are unable to close the gap between education levels of Whites and other racial and ethnic populations (National Center for Public Policy and Higher Education 2005).

The gender and race and ethnicity differences in college participation and completion are more pronounced when examined by socioeconomic status. King (2000) found that White upper and middle class men achieved similar academic attainment as women of similar race and SES. In contrast, among lower income students, only 7 percent of African American males as compared to 17 percent of females and 11 percent of White males as compared to 14 percent of females completed the “New Basics” high school curriculum. Also, all low SES high school graduating men regardless of race were less likely to immediately enroll in postsecondary education (White males 25 percent vs. females 35 percent, African American males 32 percent vs. females 51 percent, Hispanic males 45 percent vs. females 51 percent, and Asian American males 59 percent vs. females 75 percent). The greater high school dropout/noncompletion rates among African American and Hispanic males as compared with their similar race female counterparts may also contribute to this phenomenon. Hamrick and Stage (2004) discovered a similar gender disparity when investigating college predisposition among ethnically and racially similar eighth graders who attended high-minority, low-income schools. African American females were

significantly more likely to earn higher grades, which affected parental expectations for college and directly influenced students' college predisposition. Likewise, White females were more likely to have parents who expected their child to attend college, which was the strongest predictor among White eighth graders' predisposition to college. These pronounced differences in attainment among men of color and students of moderate or economically disadvantaged means are issues that warrant further consideration (King).

Academic Intensity in High School

The quality of the academic experience and intensity of the high school curriculum affect almost every dimension of success in postsecondary education. Indeed, those students who are best prepared coming out of high school are best positioned to do well in college, regardless of who they are, how much money they have, or where they go (Florida Department of Education 2005; Gladieux and Swail 1998, Horn and Kojaku 2001; Martinez and Klopott 2003; Warburton, Bugarin, and Nunez 2001).

High school grades have consistently been a strong predictor of first-year college grades, accounting for 25 percent to 33 percent of the variance (Pike and Saupe 2002). About 9 of 10 (87 percent) students who complete 4 years of math, science, and English in high school stay on track to graduate from college compared with a 62 percent persistence rate among those who do not complete that coursework (Adelman 1999; Warburton, Bugarin, and Nuñez 2001). Completing high-level mathematics classes in high school—algebra II, precalculus, trigonometry, calculus—is the single best high school predictor of performing well academically in college (Adelman 1999, 2006). Although completing high school mathematics is important, such opportunities are not equally distributed. For example, Latino students and those from any SES quintile other than the highest are less likely to attend high schools that offer calculus. Thus, the course-taking patterns of Latinos are concentrated in classes below algebra II (46 percent), whereas Whites are concentrated at algebra II and trigonometry (45 percent). At the highest math levels, 27 percent of Whites took precalculus and calculus compared with only 15 percent of Latinos. Swail et al. (2005) found that taking precalculus and calculus increased the chances of college completion of Latinos by 12 percent. These low participation rates may explain why college dropout rates of certain racial, ethnic, and socioeconomic groups remain relatively high.

Hoffman, Llagas, and Snyder (2003) reported a similar pattern for African American students, who are more likely to attend public high schools with high minority concentrations from low socioeconomic communities. They were less likely than White students to take advanced mathematics and science courses, and were less likely than White or Hispanic students to take advanced placement exams. According to O'Brien and Zudak (1998), segregated neighborhoods usually equate to inferior resources, which eventually results in inferior levels of education for minority groups. Gonzalez et al. (1996) further supported this finding by examining the combined effect of family and neighborhood influences on the school performance of African American high school students. They found that family SES was less predictive of academic achievement as compared to neighborhood SES factors. Neighborhood factors related to lower grades and moderated parenting support, which may be the result of having financially weaker neighborhood schools that struggle to attract and keep qualified teachers (Wenglinsky 1998), an issue addressed again in the discussion of socioeconomic status.

Family Educational Background

Approximately one in three college students come from families where neither parent had any postsecondary education (National Survey of Student Engagement (NSSE) 2005). First-generation students are more likely to be female, to be older, to have lower incomes, to be married, and to have

dependents (Nuñez and Cuccaro-Alamin 1998). Racial and ethnic minority groups are also disproportionately represented among first-generation students, with Latino students being most heavily represented (Nuñez and Cuccaro-Alamin; Warburton et al. 2001). More than two-fifths (42 percent) of Latino students had parents whose highest level of education was less than high school, contrasted with only 18 percent of Whites (Swail et al. 2005).

Enrollment and graduation rates suggest that the odds are stacked against first-generation students succeeding in college (Baum and Payea 2004). For example, in 1996 high school completers' enrollment rates in postsecondary education ranged from 45 percent for those with parents who had less than a high school education to 85 percent for those students with parents with a bachelor's degree or higher (Choy 1999). First-generation students were less likely to take advanced math and advance placement classes, were less knowledgeable about how to apply for college and financial aid, had lower grades, and were less engaged overall in high school (High School Survey of Student Engagement (HSSSE) 2005; Terenzini et al. 1996). Forty percent of first-generation students score in the lowest quartile of ACT or SAT (Choy). They are also more likely to enroll at public universities and attend part time (Choy), and were twice as likely to take remedial courses (21 percent vs. 10 percent) after controlling for high school rigor (Warburton, Bugarin, and Nuñez, 2001).

First-generation students and students from the lowest income quartile are also less likely to transfer to 4-year institutions (Bailey, Jenkins, and Leinbach 2005). Cejda and Kaylor (2001) found that faculty encouragement is a strong positive influence on whether community college students transfer, and many students do not intend to do so until encouraged by faculty members and, to a lesser degree, by peers. They also concluded that institutional barriers, such as the difficulty of transferring credits, precluded students from transferring.

Although Billson and Terry (1982) found no differences in the educational aspirations of first- and second-generation students, more recently Terenzini et al. (1996) reported that first-generation students had lower educational aspirations than their second-generation counterparts. Data from the HSSSE show that students whose fathers completed college were three times more likely than their classmates to indicate that achieving a college degree was their educational goal; respondents whose mothers completed college were twice as likely (McCarthy and Kuh 2006). Race, ethnicity, socioeconomic background and parental education all affect students' educational aspirations (Hamrick and Stage 2004). Among African American and Latina eighth graders in low-income minority schools, parental college education had a direct positive influence on students' predisposition to attend college. However, for Hispanic male and White students in similar school environments, parental college education had only indirect positive effects. For Hispanic males, parental education directly influenced parents' expectations for their child's college attendance, which had a significant positive effect on students' predispositions to college. For White students, parental college education had a significant positive influence on parents' expectations for college and composite grades, which positively influenced students' college aspirations. Thus, parental education is an important variable for predicting college predisposition among all low socioeconomic status students, but the strength of this relationship depends on students' race and gender, rather than having the same effects for all.

A rigorous high school curriculum can narrow the college persistence gap for first-generation students (Nuñez and Cuccaro-Alamin 1998; Warburton, Bugarin, and Nuñez, 2001), especially if they graduate high school in the top quartile. These students perform pretty much like other students in terms of their college grades (3.0 to 3.1 GPA) and remedial coursework (only 4–5 percent take such course). But on balance, even after controlling for socioeconomic status, institution type, and enrollment patterns, first-generation status still has a negative effect on degree completion. In fact, “students whose parents held a bachelor's degree or higher were five times more likely to earn a bachelor's degree than were similar first-generation students (50 percent versus 11 percent)” (Pascarella and Terenzini 2005, p. 590).

The priorities of first-generation students are also different. They are, for example, more likely to want to be well off financially (Nuñez and Cuccaro-Alamin 1998). Their choice of educational institutions is also more heavily influenced by the nature and amount of financial aid awards, perceptions of the amount of homework required, and being able to live at home and to work while going to school. They are also more likely to delay enrollment after high school, attend 2-year institutions, attend part time and work full time, and live off campus, all of which contribute to their being less likely to get involved with campus organizations and to have more difficulty adjusting to college (Choy 2001; Pascarella et al. 2004; Pike and Kuh 2005; Richardson and Skinner 1992; Terenzini et al. 1994, 1996; Tym et al. 2004; Warburton, Bugarin, and Nuñez, 2001). Managing college tuition costs may underlie these aforementioned decisions, as working during college is not a “choice” but a means of survival for many first-generation students. As a result, they are less likely to finish their degrees within 5 years—if they finish.

If these obstacles were not enough, first-generation students typically have less well developed time management and other personal skills, less family and social support for attending college, less knowledge about higher education, and less experience navigating bureaucratic institutions (Attinasi 1989; London 1989; Nuñez and Cuccaro-Alamin 1998; Terenzini et al. 1996; York-Anderson and Bowman 1991). Students who enter a college environment where the predominant racial, ethnic, or religious culture differs from their own may encounter an additional set of adjustment challenges (Allen 1992); these dynamics are to a certain degree similar for first generation, low-income White students because of their low socioeconomic status. For this host of reasons, no wonder first-generation college students are more likely to drop out (73 percent to 60 percent) or to stop out of college for a period of time (19 percent to 8 percent) (Warburton, Bugain, and Nuñez, 2001).

First-generation status also has a negative influence on pursuing a doctoral degree (Chen 2005). African American males and females remain underrepresented in most doctoral programs, especially in the sciences and engineering (Solorzano 1995). Students’ chances of obtaining a post-baccalaureate degree appear to be enhanced by interactions with faculty, academic achievement, and academic involvement (Fischer 1995; Pascarella and Terenzini 2005).

Persistence

Persistence studies tend to focus on institutional factors and programs that promote continuous student enrollment. However, a key factor is the *effort* students put forth, especially the amount of time they spend studying (Astin 1993b; Bailey, Jenkins, and Leinbach, 2005). As noted earlier, first-generation students are less likely to graduate because they earn fewer credits in their first year, take more remedial courses, are more likely to repeat courses, tend to major in vocational and technical fields, are less likely to choose a major in the first year of college (Choy 2001; Chen 2005), and are less likely to live on campus (Pike and Kuh 2005).

Race, which is closely associated with and complicated by SES, also appears to play a role in persistence and retention. White and Asian American students are more likely to persist toward a degree than their African American and Hispanic counterparts (U.S. Department of Education 1997). Swail (2003) concluded that the combination of factors associated with persistence are for the most part similar for White students and students of color: academic preparedness, the openness of the campus climate to diversity, students’ commitment to their educational goals and the institution, social and academic integration, and the availability of financial aid.

Educational Aspirations and Family Support

Aspirations and family support foreshadow student success (Perna and Titus 2005). Planning for college and postsecondary activities as early as the eighth grade increases the prospects for completing college (Swail et al. 2005). In fact, parental expectations were the strongest predictor of predisposition to college among White eighth graders who attended low-income, high-minority schools (Hamrick and Stage 2004). Naumann, Bandalos, and Gutkin (2003) found that for first-generation students, educational aspirations were the best predictor of first semester GPA. Although the overwhelming majority (97 percent) of students of all races expects to enroll in some form of postsecondary education, many do not follow through (U.S. Department of Education 2003b). Only 60 percent take the minimum coursework recommended for college (Venezia, Kirst, and Antonio 2003). High school teachers may diminish students' aspirations as teachers' expectations for their students were lower than those of parents and students themselves. Many teachers apparently believe that certain groups of students are limited in what and how much they can learn, and they lower their performance expectations for these students (U.S. Department of Education 2004).

Studies of the influence of Latino students' educational aspirations have resulted in mixed findings. One study showed that Latino parents of high school seniors place nearly twice as much emphasis on the necessity of a college education for success compared to African American and White parents. Even so, the reality of participation falls far short of the expectation (Immerwahr 2000). Another study showed that Latino parents were less likely to have postsecondary expectations for their children, with less than three-fifths (58 percent) expecting their children to go to college compared with more than four-fifths (82 percent) of White parents. Similarly, more White students (79 percent) aspired to a postsecondary degree compared with Latinos (63 percent) (Swail et al. 2005). Regardless of whether this occurs less frequently, parents' expectations are a strong direct indicator of Latino eighth graders' predispositions for college, particularly among students at low-income, high-minority schools (Hamrick and Stage 2004).

Parents and peers seem to influence both student enrollment (Perna and Titus 2005) and persistence decisions (Bank, Slavings, and Biddle 1990), though African American students apparently benefit less than others from conversations with their parents about college (Perna and Titus). In a related finding, the parents of African American eighth graders, who attended low-income, high-minority schools, had higher expectations for college attendance when their children achieved high grades as well as participated in cocurricular activities (Hamrick and Stage 2004). It may be that parental encouragement hinges on these prerequisite student achievements and behaviors under certain environmental conditions and challenges. On balance, it appears that students perform better and are more likely to succeed when their families affirm their students' choices and encourage them to stay the course; this is especially important for underserved populations (Gutierrez 2000; Pathways to College Network 2004; Tierney, Corwin, and Colyar 2005). Thus, an appropriate amount of parental involvement and support can help offset negative impacts of poverty to a degree (Chrispeels and Rivero 2001).

Socioeconomic Status

Rigorous academic preparation, high educational aspirations, and family support are easier to come by if the family has economic resources. Put another way, the chances that a student will enjoy these advantages increase as family income increases, because family SES sets the stage for students' academic performance by directly providing resources at home and indirectly providing the social capital necessary to succeed in school (Coleman 1988). Family SES determines the kind of school and classroom environment to which the student has access (Reynolds and Walberg 1992), because nearly half of all public school funding comes from property taxes, the most important determinant of school financing (National Research Council 1999). Although states compensate districts with limited local funds, this

outside financial support often fails to create financial equity between school districts. In a nationwide study of more than 17,000 school districts, Parrish, Matsumoto, and Fowler (1995) found that higher neighborhood SES, as measured by the value of owner-occupied housing or by residents' educational attainment, is significantly related to greater school expenditures per student. Wenglinsky (1998) compared low SES schools with higher SES schools and found several important differences in terms of instructional arrangements, materials, teacher experience, and teacher-student ratios. In addition to the quality of instruction, family SES also influences the quality of the relationship between school personnel and parents (Watkins 1997). Demonstrating the long-term impact of income on college student success, Astin (1993a) found that students' socioeconomic status was the best predictor of earning a bachelor's degree after controlling for academic ability.

In 1996, high school completers from low-income families (bottom 20 percent SES) were less likely to attend a 2- or 4-year college or university immediately after high school (49 percent) than peers from middle-income (63 percent), and high-income (78 percent) families (Choy 1999). The income level gaps between those who do and do not go to college are as wide today as they were three decades ago. In fact, some argue that low-income students may be worse off if they go to college because they are less likely to earn a degree, yet they still will have student loan debt repay (Gladieux and Swail 1998).

The higher the family income, the more likely it is that a student will aspire to earn a bachelor's degree, intend to enroll in college, complete an application, and gain college admission. SES also dictates high school students' curricular preparation for college. In 1992, 53 percent of low-income children (from families earning less than \$25,000) were college qualified, compared with 68 percent of middle-income children (\$25,000 to 74,999) and 86 percent of high-income children (over \$75,000) (Choy 1999). Further illustrating this point, middle-income Latinos had a 17 percent higher probability of earning a bachelor's degree compared with low-income Latinos (Swail et al. 2005). Unfortunately, higher economic need is concentrated in populations already underrepresented in postsecondary education. For example, Latino eighth graders were more likely to have low-income backgrounds; 46 percent had family incomes less than \$25,000 as compared to 17 percent of White children (Swail et al.).

Where a student enrolls is also related to family income. For example, low-income high school graduates who were academically qualified and took steps necessary for admission were less likely than high-income students to enroll in a 4-year institution (83 percent vs. 92 percent) (Choy 1999). Students with family incomes of \$60,000 or more were less likely to enroll in public 2-year institutions (34 percent) than students with family incomes between \$30,000 and \$59,999 (47 percent) and students with family incomes of less than \$30,000 (43 percent) (Choy). Among 1992 high school seniors in the highest achievement test quartile, students whose families were also in the highest SES quartile were considerably more likely than those in the lowest SES quartile to attend a 4-year college within 2 years of graduating high school (86 percent vs. 56 percent) (Choy).

Financial Aid

During the past 15 years, the number of students attending college with unmet financial need increased dramatically (National Center for Public Policy and Higher Education 2002), which is not surprising given the rising costs in tuition and related college expenses described earlier. In 1995–96, the average net price of full-time undergraduate enrollment was \$5,700 at public 2-year institutions (price minus aid for a dependent), \$7,300 at public 4-year colleges, and \$11,200 at private, not-for-profit institutions (Choy 1999). The average unmet need (net price minus expected family contribution and financial aid) for low-income full-time undergraduate enrollment at public 4-year institutions was about \$3,800, and the average unmet need at private, not-for-profit 4-year institutions was \$6,200 (Choy). These

figures are important to consider in light of the total family expected contribution to students' educational expenses.

Among a sample of full-time dependent undergraduates enrolled during 1995–96, 35 percent were lower income (\$34,999 or below), 37 percent were middle income (\$35,000 to \$69,999) and 28 percent were higher income (\$70,000) (Presley and Cleary 2001). Almost all low-income students (99 percent) had some financial need as compared to 79 percent of middle-income students and 33 percent of high-income students (Presley and Cleary). Further, 87 percent of low-income students had unmet financial need, which was on average \$4,915 and close to three times their average expected family contribution (\$1,617). This gap of unmet financial need was considerably greater than that of middle-income students. The financial challenges of attending a 4-year school as compared to enrolling in a 2-year community college and living at home may make matriculation at such institutions unrealistic for low-income students and may also explain why highly qualified lower SES students were less interested in attending 4-year institutions as tuition and distance from home increased (National Center for Public Policy and Higher Education 2002), demonstrating how the availability and type of financial aid can affect students' college attendance and their persistence (Gladioux and Swail 1998).

Financial aid appears to play different roles in promoting student success based on its source and students' SES. A substantially higher proportion of students, especially those from middle-income families, receive financial aid at private, not-for-profit 4-year institutions than any other institutional types (National Center for Public Policy and Higher Education 2002). This suggests that institutional aid may primarily function to promote choice for private, not-for-profit 4-year institutions, which tend to be most expensive (National Center for Public Policy and Higher Education). Federal need-based financial aid is expected to foster student access because calculated need increases as family ability to pay decreases; it is also expected to encourage student choice because need increases as a student's price of attendance increases. However, a study that examined the patterns of full-time dependent undergraduates' financial aid from all sources and the average financial aid received by institutional type and family income found unequal educational opportunities for students with different family incomes, particularly if choice was defined as the ability to attend institutions other than the lowest priced schools (National Center for Public Policy and Higher Education).

Academic preparation and applying to college appear to be more important than socioeconomic status in choosing a college. Berkner and Chavez (1997) found that among 1,988 eighth graders who graduated from high school, low-income students were able to attend 4-year colleges at the same rate as students from middle-income families *if* they became college-qualified by taking college prep classes, entrance exams, and applying to college. College-qualified, low-income students who were accepted for admission to public and private 4-year institutions were just as likely to enroll as middle- and upper income students (Berker and Chavez). On the other hand, low SES and minority students were less likely to take those steps and, therefore, less likely overall to enroll in 4-year institutions (National Center for Public Policy and Higher Education 2002).

Gift aid in the form of scholarships and grants and work-study as contrasted with loans are associated with higher retention and graduate rates (The Pell Institute 2004), especially for low-income and minority students (St. John 2002; Swail 2003). Fifty-five percent of students who receive financial aid persist, which is greater than nonrecipients and about even when controlling for academic ability (Murdock 1990; Pascarella and Terenzini 2005; Porter 1991). Grants have a strong effect on low-income and minority student performance. For example, African American students are highly sensitive to college costs in terms of choosing and persisting in college (St. John, Paulsen, and Carter 2005). At the same time, there is considerable economic diversity within the African American population, so SES is a key factor. Loans seem to be more effective for Whites, though they are also price sensitive because of the great range in family income. Providing an African American or Hispanic student with an additional

\$1,000 in grant funds decreased the probability of dropping out by 7 percent and 8 percent respectively (General Accounting Office 1995). Loans are associated with higher persistence rates only for White students (General Accounting Office). Other institutional policies to improve time to degree rates combine financial assistance and course scheduling benefits such as “four-year completion guarantees” (i.e., insuring courses needed to graduate will be available during a 4-year period) (Illinois State Board of Higher Education 2003).

Although working and going to school are sometimes seen as competing goals, limited on- or off-campus work do not appear to seriously inhibit student success (Pascarella 2001). Among students seeking a bachelor’s or associate’s degree who considered themselves primarily students working to pay their expenses, those who worked 15 or fewer hours were more likely than students who worked more to attend for the full year, suggesting that working more than 15 hours may negatively affect persistence (Choy 1999). On-campus, or work-study, employment is more often associated with student success, since working on campus provides a channel of communication to students and helps students use the educational system effectively (Institute for Higher Education Policy 2001; Kuh et al. 2005b), and also is linked with higher transfer rates for community colleges students (Turner 1988). Work-study positions for students in the third year of study and beyond are particularly beneficial to student persistence and learning when the positions are aligned with students’ academic interests and career goals (IHEP).

However, unmet financial need and insufficient amounts of institutional aid provided by public institutions may force students to work considerable hours in order to finance their college education. In 1995–96 among undergraduates who considered themselves primarily students working to pay for college expenses, the more time students worked the more likely they reported that employment limited class schedules, reduced choices of classes, and limited the number of courses taken (Heller 2002). Those who worked full time (35 hours or more) while enrolled at least half-time reported all of these negative effects (Heller). Reducing weekly employment hours diminishes the negative effects of working, indicating that a modest amount of work is positively related with full-time enrollment, enhanced self-esteem (Gleason 1993), integration within the campus environment (Murdock 1990), and persistence (Heller; Pascarella et al. 1998).

Precollege Encouragement Programs

Prior to the 1990s, much of the discussion regarding access and educational attainment focused on the academic preparation of students and financial aid policies (St. John 2003; Tierney, Corwin, and Colyar 2005; Tierney and Hagedorn 2002; Wilkinson 2005). More recently, it has become clear that too many students, especially those from historically underserved backgrounds, lack accurate information about postsecondary options. They are confused about expectations for academic work, actual tuition costs, and the content of college entrance and placement tests (Venezia, Kirst, and Antonio 2003).

Considerable information is now available about how postsecondary encouragement programs can address some of these concerns and help improve access for students from low- and moderate-income families, as well as first-generation students (Hossler, Schmit, and Vesper 1999; Tierney, Corwin, and Colyar 2005; Tierney and Hagedorn 2002). Such initiatives have emerged in every state in recent years (Tierney and Hagedorn). Parental involvement and college outreach programs seem to be particularly effective. For example, several high profile programs in California that serve largely Hispanic populations, such as the Parent Institute for Quality Education and the Puente Project, have successfully brought together Latino families, students, teachers, and counselors to learn more about postsecondary options and financial aid (Chrispeels and Rivero 2001; Pathways to College Network 2004).

GEAR UP, one of the largest and best funded initiatives, provides information about financial aid, family support and counseling, and tutoring, among other things (Hossler and Schmit 1995; St. John 2003; Tierney and Hagedorn 2002). The Indiana early encouragement program, Twenty-First Century Scholars (TFCS), was one of the models on which GEAR UP was based (Hossler, Schmit, and Vesper 1999). The TFCS program provides financial assistance and support to students from lower income families to encourage participation in postsecondary education. However, despite the fact that TFCS pays the tuition and fees at 4-year public institutions for students who complete the program, many eligible students do not enroll in TFCS, and less than 60 percent of those who enroll matriculate to postsecondary institutions after high school graduation. There are many reasons related to status attainment, social reproduction, and habitus (described in Part 3) that explain in part this disappointing number, ranging from reluctance to leave home by students from small, rural communities, to neighborhood violence, to a lack of confidence and competence in moving to another world (D. Hossler, personal communication, March 11, 2006). In short, money, better preparation, and some information about college cannot make up for years of relative cultural, educational, and social deprivation.

Other promising encouragement initiatives include many of the TRIO programs funded under Title IV of the Higher Education Act such as Upward Bound, Upward Bound Math/Science, Student Support Services, Talent Search, Educational Opportunity Center, and McNair Program (IHEP 1995; 2001; Pathways to College Network 2004). For example, students in the Upward Bound program are four times more likely to earn an undergraduate degree. Students in TRIO Support Services programs are more than twice as likely to remain in college as those students from similar backgrounds who did not participate in the program (<http://www.trioprogams.org/abouttrio.html>). Students with the lowest educational aspirations tend to benefit the most as do those who participate longer. For example, for each additional year of Upward Bound completed, the chances increase by 9 percent that the student will attend a postsecondary institution (Meyers et al. 2004; Muraskin 1997). Programs with a strong residential component are among the more effective, allowing students to become familiar with the physical, social, and cultural environments of the campus where they will matriculate, such as the Intensive Freshman Seminar and Groups Program at Indiana University Bloomington (Barovick and Baron 2001).

Credit-based transition programs such as tech-prep, dual or concurrent enrollment, International Baccalaureate, and middle college high schools programs allow high school students to take college-level classes for college credit (Hughes et al. 2005). Nationally, approximately 57 percent of postsecondary institutions in 38 states have dual enrollment programs (Hoffman 2005; Kleiner and Lewis 2005). Some of these are geared to talented students, others to students who need academic enrichment, and others open to anyone who is interested in getting a head start on college. Pennington (2004) suggests a number of other innovative interventions such as accelerating progress through grades 11 through 14 by moving toward competency-based models; introducing more choice and competition in the system where high schools, private schools, community colleges, and universities compete for students; and expanding learning options during the summer. Terenzini et al. (1996) also suggested such work- or high-school-to-college transition programs can provide the types of validating experiences first-generation students need for a successful college transition.

Another precollege intervention that shows promise is supplemental education—formal and informal learning and development opportunities that occur outside the regular school day (Bridglall and Gordon 2002). Gordon (1999) found that this type of approach—whether from home computers, parents and siblings, libraries, mentoring and tutoring programs, peer-based study groups, or faith-based activities—created an experience similar to that of an engaging learning community.

Enrollment Patterns

Enrollment patterns are important because it matters where and when one starts college—immediately or some years following high school, or at a 2-year or 4-year school. The upwards of three-quarters of high school graduates that eventually go on to some form of postsecondary education sort themselves into five types of institutions: 2-year colleges (46 percent), public 4-year colleges (26 percent), private 4-year colleges (15 percent), for-profit entities (10 percent), and other types of schools (3 percent).

The research consistently shows that delaying postsecondary enrollment, for whatever reason, reduces the likelihood that the student will persist and complete a degree program (Adelman 2006). Indeed, figure 3 shows that delayed entry is one of the seven major risk factors that threaten persistence and graduation (Berkner, Cuccaro-Alamini, and McCormick 1996; Carroll 1989; Horn and Premo 1995; McCormick and Horn 1996). Students with two or more of these characteristics are more likely to drop out than their peers (Choy 2001; Muraskin and Lee 2004; SHEEO 2005; Swail 2003).

Figure 3. Factors that threaten persistence and graduation from college

<p>Risk Factors:</p> <ul style="list-style-type: none">• Being academically underprepared for college-level work;• Not entering college directly after high school;• Attending college part-time;• Being a single parent;• Being financially independent (i.e., students who rely on their own income or savings and whose parents are not sources of income for meeting college costs);• Caring for children at home;• Working more than 30 hours per week; and• Being a first-generation college student.

SOURCE: Community College Survey of Student Engagement 2005.

The conditions associated with premature departure from college partially explain the low baccalaureate attainment rates of certain groups of students, such as community college students and many ethnic minorities. For example, almost 50 percent of all first-time community college students (and in some settings significantly more) are assessed as underprepared for the academic demands of college-level work. This is another major reason why about half of community college students do not return to college for their second year of studies (CCSSE 2005). Just over half of Latino students attended postsecondary institutions part time (52 percent) as compared to 37 percent of White students. While almost two-thirds (64 percent) of Whites attend postsecondary institutions continuously, only two-fifths of Latinos attended postsecondary institutions without stopping out (Swail et al. 2005). Latinos were more likely to delay enrollment to postsecondary education as 77 percent of Latinos compared to 82 percent of Whites entered postsecondary education within 7 months of graduating high school. In addition, African American and Hispanic community college students are also less likely to earn baccalaureate degrees because they are overrepresented in certificate programs (Bailey, Jenkins, and Leinbach 2005).

Two-year colleges have either a “warming” (more likely to earn a degree—Swanson 2002) or “cooling” (more likely to drop out of college—Pascarella et al. 1998; McCormick 1990; 1997a) effect, depending on the comparison group (Pascarella and Terenzini 2005). That is, full-time enrollment at a 2-year college increases one’s odds of earning a baccalaureate degree compared to students that never enrolled in postsecondary education, but students who initially enroll at a 4-year college are more likely to graduate compared with their counterparts who start at a 2-year college. In large part, this is because 2-

year colleges enroll a disproportionate number of high-risk students who exhibit several of the risk factors in figure 3. In fact, students attending community colleges are *three to four times more likely* than their counterparts in 4-year colleges and universities to reflect *four or more* of these risk factors (CCSSE 2005). For example, more than half (55 percent) of nontraditional-age women attending 2-year colleges compared with only 15 percent of their counterparts spend more than 30 hours per week caring for dependents who live with them. Yet twice as many nontraditional-age women in 2-year colleges spend more than 21 hours per week studying (13 percent nontraditional age and 6 percent traditional age)!

In addition, interruptions in enrollment can also reduce one's chances of earning a degree. According to Pascarella and Terenzini (2005, p. 381):

“Stopping-out” not only increases time-to-degree, but also reduces the likelihood of degree completion, whether an associate or baccalaureate degree (Carroll, 1989; Ganderton & Santos, 1995; Guerin, 1997; Hanniford & Sagoria, 1994; Horn, 1998a; Porter, 1990). Even transferring from one four-year institution to another reduces the odds of degree completion. Among students beginning at a four-year college or university, those who do not transfer are significantly more likely to earn their bachelor's degrees in five years than are “horizontal” transfers who move to another four-year school (McCormick, 1997b).

Multiple Institution Attendance

Much of the research on students attending multiple institutions has focused on those who make a permanent transition from one institution to another (Bradburn and Hurst 2001; McCormick 1997b), traditionally described as starting at a community college followed by transferring to a 4-year institution within a 5-year period (Bradburn and Hurst). Determining transfer rates is a complex process as Bradburn and Hurst demonstrated by identifying eight different ways to calculate the denominator when estimating transfer rates: (1) expecting to complete a bachelor's degree or higher, (2) enrolling in an academic program, (3) enrolling continuously during the first year of college, (4) enrolling anytime in the second year, (5) pursuing an academic major or taking courses towards a bachelor's degree or both, (6) enrolling for 12 or more credit hours, (7) taking courses toward a bachelor's degree in the first year, or (8) pursuing academic major and taking courses towards a bachelor's degree.

Race and the number of required development or remedial education courses are linked to transferring from a 2- to a 4-year institution within 6 years of first enrollment. For example, African American and Hispanic community college students who take remedial courses are far less likely as noted earlier to complete their degrees or transfer than their peers who do not (Bailey, Jenkins, and Leinbach 2005). This is in marked contrast to White community college students, for whom remedial course enrollment does not seem to significantly decrease their likelihood of completing a credential within 6 years. Attending a Tribal college seems to have a positive impact on encouraging Native American community college graduates to pursue baccalaureate degrees (American Indian Higher Education Consortium (AIHEC), IHEP, and Sallie Mae Education Institute 2000).

An increasingly common pattern is attending two or more institutions—sometimes two or more during the same academic term—on the road to the baccalaureate degree without any definitive pattern of type of institution attended (Adelman 2006). Sometimes called “swirl” (de los Santos and Wright 1990; Borden 2004), this meandering from one institution to another (Adelman) can include co-enrollment (i.e., attending more than one institution simultaneously, also called “overlapping enrollment” or “dual enrollment”) and attending another institution without transferring from the first institution (Borden).

Understanding the dynamics and consequences of swirl is not just an academic exercise, given that nearly three-fifths of students from the 1992 high school graduating class who earned a baccalaureate degree by December 2002 attended more than one institution. More than a third (35 percent) attended more than two colleges or universities. Even among 1999–2000 bachelor’s degree recipients who started college at a 4-year institution, about 47 percent had attended another institution at some point with or without transferring (Adelman 2006). More important, while transferring from one college to another (whether from a 2-year school to a 4-year institution or vice-versa) is positively related to degree completion, swirling is not (Adelman; see also Peter and Cataldi 2005). In addition, swirling appears to dampen student engagement, as shown later in this report.

Summary

The major themes from this section underscore the complex ways that student background characteristics and precollege experiences interact to influence enrollment patterns and, subsequently, student success.

- The quality of high school academic preparation strongly predicts chances for postsecondary success, measured by enrollment, persistence, grades, and educational attainment.
- Family education background is related to students’ higher postsecondary aspirations and greater likelihood of enrollment, persistence, and attainment.
- Socioeconomic status influences prior academic preparation, pursuing steps to postsecondary enrollment and admission, enrollment, and degree completion.
- The availability and type of financial aid significantly affects students’ college attendance and persistence.
- Enrollment patterns (full time or part time, 2-year or 4-year institution, direct or delayed enrollment) all influence students’ long term attainment and success.

Understanding what the factors are and how they work together provide information that various groups can use to help better prepare students for collegiate and postcollegiate success. Students from at-risk populations face additional challenges, some of which can be ameliorated by the activities in which they engage in college and the programs and practices institutions provided for their enrichment.

July 2006

5. WHAT STUDENT BEHAVIORS, ACTIVITIES, AND EXPERIENCES IN POSTSECONDARY EDUCATION PREDICT SUCCESS?

As demonstrated in the previous section, student characteristics and precollege experiences influence to a nontrivial extent whether and where students will enroll in postsecondary education and how they will perform academically, and whether they will persist and attain their educational objectives. In fact, the best predictor of college grades is the combination of an individual student's academic preparation, high school grades, aspirations, and motivation.

Once students start college, however, another key factor in their success—broadly defined—is “student engagement,” or the extent to which they take part in educationally effective practices. In their landmark publication, *Principles of Good Practice for Undergraduate Education*, Chickering and Gamson (1987) underscored seven categories of effective educational practices that directly influence student learning and the quality of their educational experiences. They are student-faculty contact, cooperation among students, active learning, prompt feedback, time on task, high expectations, and respect for diverse talents and ways of learning. Generally speaking, the more students engage in these kinds of activities, the more they learn and the more likely they are to persist and graduate from college.¹

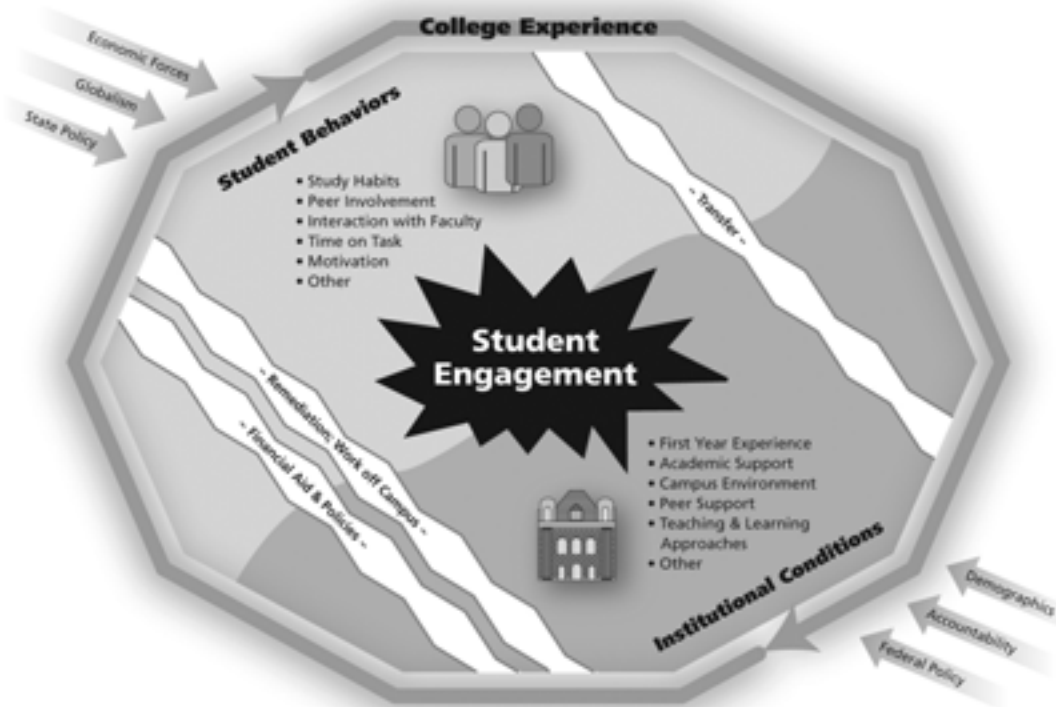
At institutions where faculty members use these and other effective educational practices more frequently in their classes, students are more engaged over all and gain more from college (Pascarella and Terenzini 2005). Thus, the nature and quality of first-year students' experiences in the classroom, with faculty, and with peers are better predictors of desired educational outcomes than precollege characteristics (Gerken and Volkwien 2000). Also important to student learning are institutional environments that are perceived by students to be inclusive and affirming, and where expectations for performance are clearly communicated and set at reasonably high levels (Education Commission of the States (ECS) 1995; Kuh 2001; Kuh et al. 2005b; Kuh et al. 1991; Pascarella 2001).

Student engagement represents two critical features. The first is the amount of time and effort students put into their studies and other educationally purposeful activities. "Learning is strongly influenced by the degree to which an individual is invested in the learning process" (Alexander and Murphy 1994, p. 12). The second component of student engagement is how the institution deploys its resources and organizes the curriculum, other learning opportunities, and support services to induce students to participate in activities that lead to the experiences and desired outcomes such as persistence, satisfaction, learning, and graduation (Kuh 2001). As Pascarella and Terenzini (2005, p. 602) concluded, “the impact of college is largely determined by individual effort and involvement in the academic, interpersonal, and extracurricular offerings on a campus...”

As depicted in the top left portion of figure 4, this section reviews research on the student behaviors aspect of student engagement—what students do with an institution's resources for learning. As in previous sections, we are especially interested in what the literature offers in terms of the relationships between engagement and success in college for students who may be at risk of premature departure or underperformance, such as first-generation students, transfers, and students from historically underserved backgrounds.

¹ The relationship between engagement and desired outcomes of college is well documented: (Anaya 1996; Astin 1984, 1993b; Banura et al. 2000; Berger and Milem 1999; Braxton, Sullivan, and Johnson 1997; Carini, Kuh, and Klein, in press; Chickering and Reisser 1993; Goodsell, Maher, and Tinto 1992; Hurtado and Carter 1997; Hu and Kuh 2003b; Jones and Watt 1999; Kuh 1995, 2001, 2003; Kuh and Hu 2001b; Kuh, Hu, and Vesper 2000; Kuh et al. 2005b; Kuh and Pascarella 2004; Kuh et al. 1991; Liddell and Davis 1996; NSSE 2001, 2002, 2003, 2004, 2005; Pascarella and Terenzini 1991, 2005; Pike 1993; Pike and Kuh 2005b; Stage 1989; Stage and Hossler 2000; Zhao and Kuh 2004).

Figure 4. Student behaviors and student engagement



Expectations for College

Understanding what students expect of and from their college experience is crucial for faculty members to employ instructional approaches to help students become “intentional learners” (AACU 2002) and for institutions to fashion policies and practices that effectively address students’ learning needs (Miller et al. 2005). When students’ expectations and experiences are appropriately aligned and match the reality they encounter, students are more likely to be satisfied with their college experience and to persist to graduation, a happy outcome for both students and institutions (Braxton, Vesper, and Hossler 1995). But as Schilling and Schilling (1999) concluded from their analysis of College Student Expectations Questionnaire results, many students enter college with uninformed expectations that diverge substantially from those of the faculty.

Another reason it is important to learn more about the degree to which college expectations and experiences are congruent is because the increasing number of first-generation students pursuing higher education have less tacit knowledge about what college is like. As a result, if their perceptions and expectations are off the mark, they will be less well prepared to deal with the challenges they encounter, which will make it more difficult to perform well academically, adjust socially, and persist to graduation.

To paraphrase English professor Richard Turner (1998, p. 4), student success in college today may require that professors explain more things to students today that were once taken for granted—that is, “you must buy the book, you must read it and come to class, you must observe deadlines or make special arrangements when you miss one.”

One more reason expectations are important is because so many traditional-age students appear to start college already “disengaged” from the learning process, having acquired a cumulative deficit in terms of attitudes, study habits, and academic skills (Levine and Cureton 1998; McCarthy and Kuh 2006; Marchese 1997, 1998; NSSE 2005). For example, in the mid-1990s high school seniors reported studying only about 6 hours per week on average, well below the amount that is traditionally assumed necessary to do well in college. More recent studies (McCarthy and Kuh) show similar findings. Compared with their counterparts of a decade earlier, high school seniors were more frequently bored in class and missed more classes due to oversleeping or other obligations (Sax et al. 2003). Even so, record numbers reported B+ or better high school grades and expected to earn at least a B average in college. Because behavioral patterns established in elementary and secondary school tend to persist through the college years (Schilling and Schilling 1999), we should not be surprised that the majority of first-year students—about 70 percent—report working just hard enough to get by (NSSE).

Assuming many students matriculate with an entitlement mentality, what they expect to do in college and what faculty members and postsecondary institutions provide could result in a problematic mismatch of sizable proportion, a potentially debilitating condition in light of the theoretical perspectives on student success reviewed in Part 3. This mismatch arises because expectations can be either a psychological catalyst or a deterrent to certain types of behavior, serving as a filter through which students compare what is unfolding with what they think should happen and decide whether certain activities are appropriate, meaningful, relevant, and worth their time, and what opportunities and activities to ignore (Bandura 1982; Cantor and Mischel 1977; Dweck and Leggett 1988; Feldman 1981; Snyder and Swann 1978). For example, if a student does not expect to do research with a faculty member, take part in cultural events, or study abroad, chances are that opportunities to pursue these activities will be overlooked or dismissed out of hand. Expectations, therefore, shape subsequent behaviors and experiences (Feldman).

Precollege characteristics and experiences shape expectations to varying degrees. For example, Olsen et al. (1998) found that students with strong academic high school records were more likely to get involved in a range of activities during college. Student demographic and background characteristics had small, almost negligible effects on their collegiate experiences and outcomes. Students whose expectations for college were relatively low were more likely to report college experiences congruent with these low expectations, compared with students with relatively high expectations. Finally, those students who indicated a desire to participate in a wide range of intellectual, social, and cultural activities during the first year of college were more likely to do so, compared with others whose expectations were more narrowly defined. As a result of their somewhat broader range of interests, these students also were more likely to subsequently participate in activities that are predictors of academic success and persistence.

Whether students’ expectations for college are well formed enough to be reliable predictors of persistence and success is a legitimate question (Pascarella and Terenzini 2005) that awaits a definitive empirical answer. Studies over the past several decades suggest that students have a fair understanding of many of the aspects of what they will experience in the first year of college. Students appear to be reasonably accurate in terms of how they will manage the transition to college (Baker, McNeil, and Siryk 1985; Berdie 1966, 1968; Stern 1970; Whiteley 1982), though some of this may be a function of self-fulfilling prophecy (Merton 1948). Therefore, in the absence of unequivocal information to the contrary,

it seems prudent to learn more about the relationships between what students expect and what they put into and get out of their college experience.

One area where students' expectations are less accurate is related to estimating what the campus environment will be like. Braxton, Vesper, and Hossler (1995) found that first-generation students' expectations about the college environment were less congruent with what they actually experienced. And there is evidence that what students actually do in the first year of college falls short of what they expected to do in many areas (Kuh 1999; Kuh, Gonyea, and Williams 2005; Olsen et al. 1998). That is, when starting out, most first-year students say they will engage in more academic and other educationally purposeful activities more frequently than they actually reported doing near the end of the first year. Though students may be somewhat idealistic in terms of what they can accomplish during college, some of their expectations are not unrealistic, at least when compared with the amount of reading and writing that faculty members assert is appropriate and some other important activities. For example, two-thirds think they will become acquainted with students from racial and ethnic backgrounds different than their own, but substantially fewer have "frequent" substantive discussions with such people during the first year (42 percent). A fifth "never" had such discussions, about four times the number (5 percent) who thought they would not do so when starting college.

Virtually everyone agrees that student-faculty interaction is an important factor in student success (Astin 1993b; Kuh et al. 1991; Pascarella and Terenzini 1991; Tinto 1993), and entering college students think so, too. For example, 94 percent say they will at least occasionally ask their instructor about their performance. However, less than two-thirds actually do so (Kuh 2005). The majority (69 percent) expects to socialize at least "occasionally" with faculty members outside the classroom, but only about two-fifths (41 percent) report doing so. More than three-quarters (77 percent) expect that they will "frequently" ask their teachers for information about the course (assignments and such), but only about half (54 percent) do so. Perhaps the difference is because students are not certain how often they will need to ask faculty members for information, so they err on the high side. The discrepancy between what students expect and experience in terms of interacting with faculty may also be partly due to reward systems and large first-year classes that discourage such contacts.

The expected and reported levels of engagement vary by certain student characteristics and in predictable ways by institutional type (Astin 1993b; Gonyea 2005; Pace 1990). For example, women expect to engage more frequently in educationally purposeful activities compared with men. And they do, except for recreational sports and science-related activities. As with women, students of color expect to more frequently participate in a range of educationally purposeful activities. They expect to have more interactions with students from different backgrounds than they subsequently experience. Students at smaller, selective colleges have greater expectations across the board, and they subsequently report being involved to a greater extent in more activities during college. They also, on average, expect and find their campus environments to be more supportive. However, as we shall soon see, some large schools outperform some small schools on these and other dimensions (Kuh 2001, 2003; NSSE 2005).

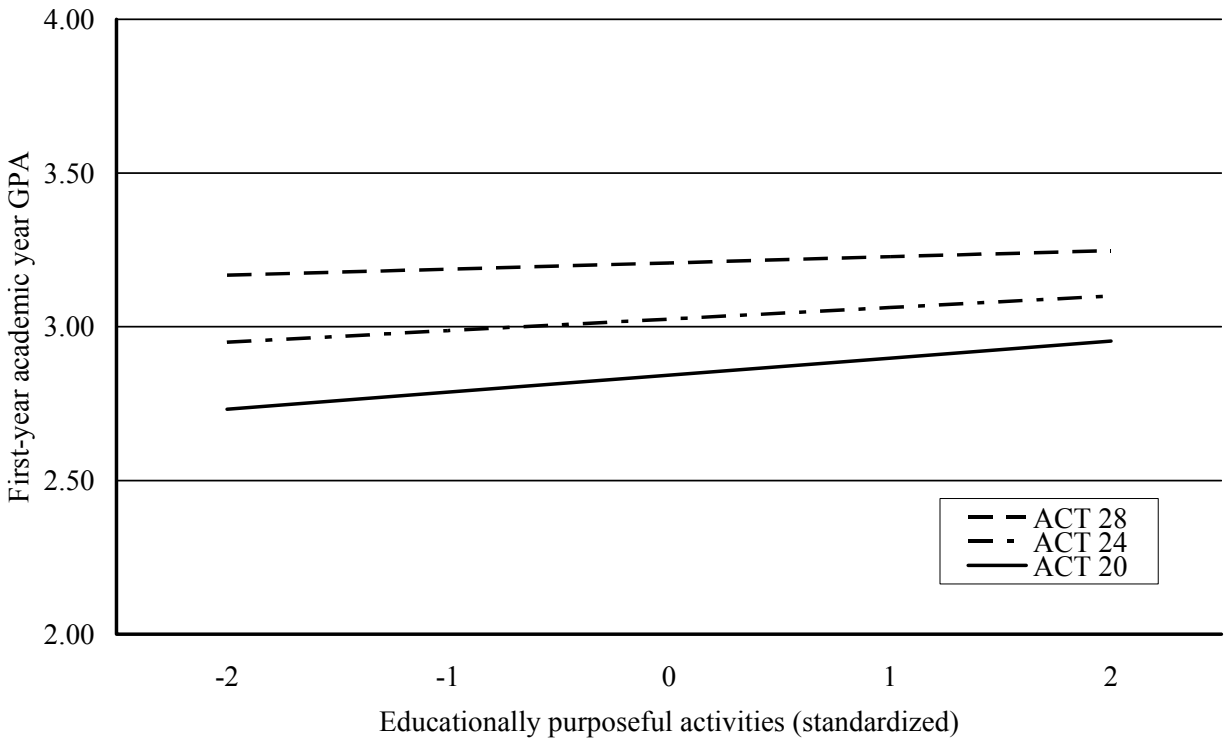
College Activities

The College Student Expectations Questionnaire (CSEQ), the National Survey of Student Engagement (NSSE), and the Community College Survey of Student Engagement (CCSSE) focus primarily on students' participation in activities that are associated with desired learning outcomes, persistence, and satisfaction. Taken together, the host of studies using these measures point to seven conclusions about student engagement as an intermediate outcome and as a proxy for student success.

1. *Student engagement in educationally purposeful activities is positively related to both grades and persistence.* NSSE annually obtains information from 4-year colleges and universities nationwide about student participation in programs and activities that institutions provide for their learning and personal development. Survey items represent empirically confirmed “good practices” in undergraduate education.

Figure 5 shows the effect of engagement (a global measure based on 21 NSSE items) on first-year college grades by precollege ability (composite ACT score). The data on which this display is based concern about 6,200 students at 19 diverse 4-year colleges and universities where student records and NSSE results were matched to estimate the relationships between engagement and college grades. The regression model included a term that captures the interaction between precollege achievement and engagement. Model coefficients and the descriptive statistics for the sample were used to estimate first-year GPA for the “typical” student. What is striking is that the grades of lower ability students are positively affected by engagement in educationally effective activities to a greater degree compared with higher ability students. Thus, engagement appears to have a conditional, compensatory effect on grades.

Figure 5. Impact of engagement in educationally purposeful activities on first-year GPA (by pre-college achievement level)



SOURCE: First-year GPA provided by 18 institutions with National Survey of Student Engagement data from 2001–03.

To examine the relationships between graduation rates and scores on the five NSSE clusters of effective educational practice, results from the NSSE standard administration of random samples of first-year students and seniors at 680 4-year institutions in 2004 and 2005 were analyzed. Table 1 shows that all but one of the correlations between the 4- and 6-year graduation rates and first-year student and senior NSSE benchmark scores at the institutional level are statistically significant ($p < .05$). The lone outlier is the 6-year graduation rate and active and collaborative learning. In fact, all but one of the correlations (graduation and senior active and collaborative learning) are significant at $p < .001$. Eleven of the 20

correlations exceed .37, suggesting a relatively strong positive relationship between student engagement and graduation at the institutional level.

Table 1. Correlations between institutional mean scores of NSSE clusters of effective educational practices and institutional graduation rates (N=680 4-year colleges and universities)

Educational practice	First-year students		Seniors	
	4-year rate	6-year rate	4-year rate	6-year rate
Academic challenge.....	.621***	.523***	.481***	.377***
Active and collaborative learning.....	.233***	.103***	.156***	.052
Student-faculty interaction.....	.261***	.090***	.427***	.299*
Enriching educational experiences.....	.503***	.458***	.617***	.539***
Supportive campus environment.....	.483***	.373***	.312***	.151***

NOTE: *p<.05, ***p<.001

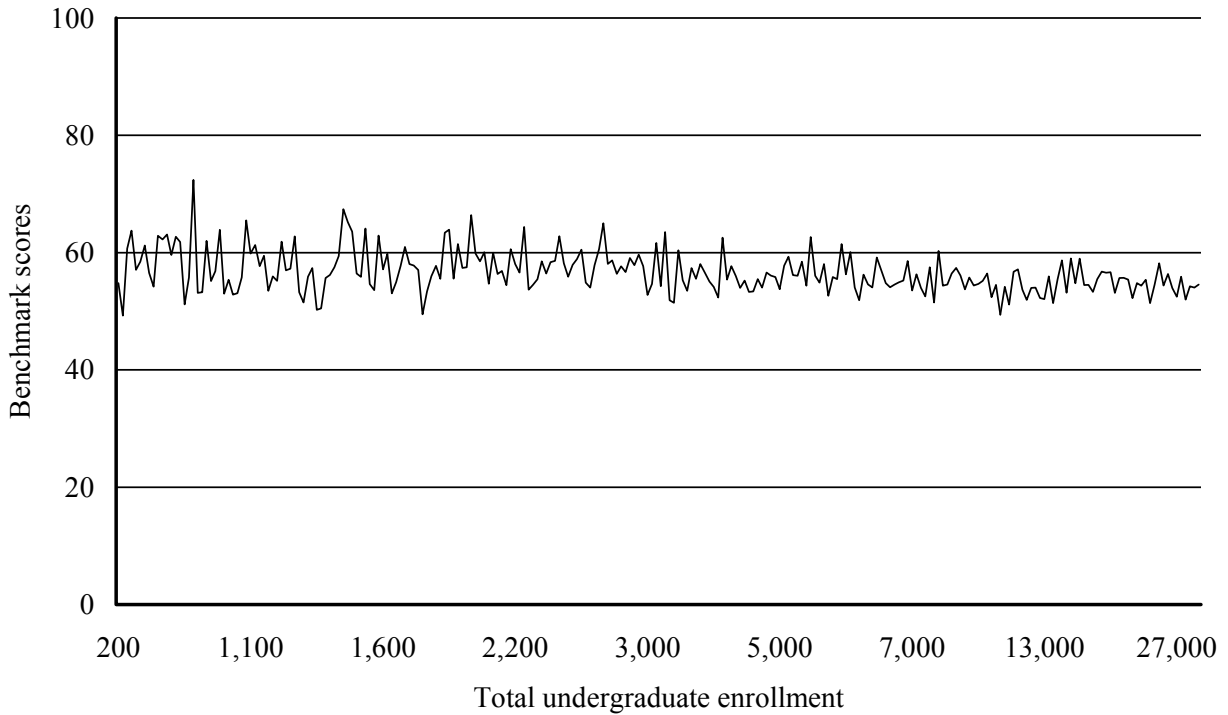
SOURCE: Graduation data,, IPEDS 2004 collection year tracking fall 1998 graduation cohort; Institutions, NSSE 2005 and 2004 institutions that fell into one of the five main Carnegie classifications and that were able to report graduation information to IPEDS in 2004.

Although these results indicate strong ties between engagement and persistence, it is wise to exercise some caution when making conclusive statements because the data were collected at different points in time. The institutional graduation rates reported in 2004 were the best, most complete data available at the time; thus, the graduation rates represent students who started college in 1998. The student engagement measures were collected in 2004 and 2005. Although institutional graduation rates do not change much from year to year, it is nonetheless the case that these graduation rate data and student engagement results represent different students.

At the same time, the magnitude of these correlations probably underestimates the strength of the relationships between student engagement and persistence. Because student engagement varies considerably within institutions, the relationships between NSSE benchmark scores and persistence may be even stronger at the individual student level. First to second year persistence data from Humboldt State (Hughes and Pace 2003) also showed positive relationships between engagement and persistence.

2. Though smaller schools generally engage students more effectively, colleges and universities of similar sizes can vary widely. For example, figure 6—the EKG of student engagement—shows the senior academic challenge benchmark scores for the 600+ 4-year schools that participated in NSSE at least once between 2000 and 2003 (Kuh 2003). Smaller schools are generally more academically challenging, in part because they that have a lower student-faculty ratio, more full-time faculty, and more classes with fewer than 20 students (NSSE 2005). At the same time, some large universities are more engaging than many smaller colleges. This pattern holds for the other clusters of effective educational practice. Similar patterns exist at 2-year colleges, with some larger institutions being more engaging on average than small ones (K. McClenney, personal communication, March 9, 2006). So, estimating institutional performance in terms of student engagement requires probing more deeply into the nature of the student experience at a particular institution because not all colleges of certain types and sizes are comparable on these types of indicators.

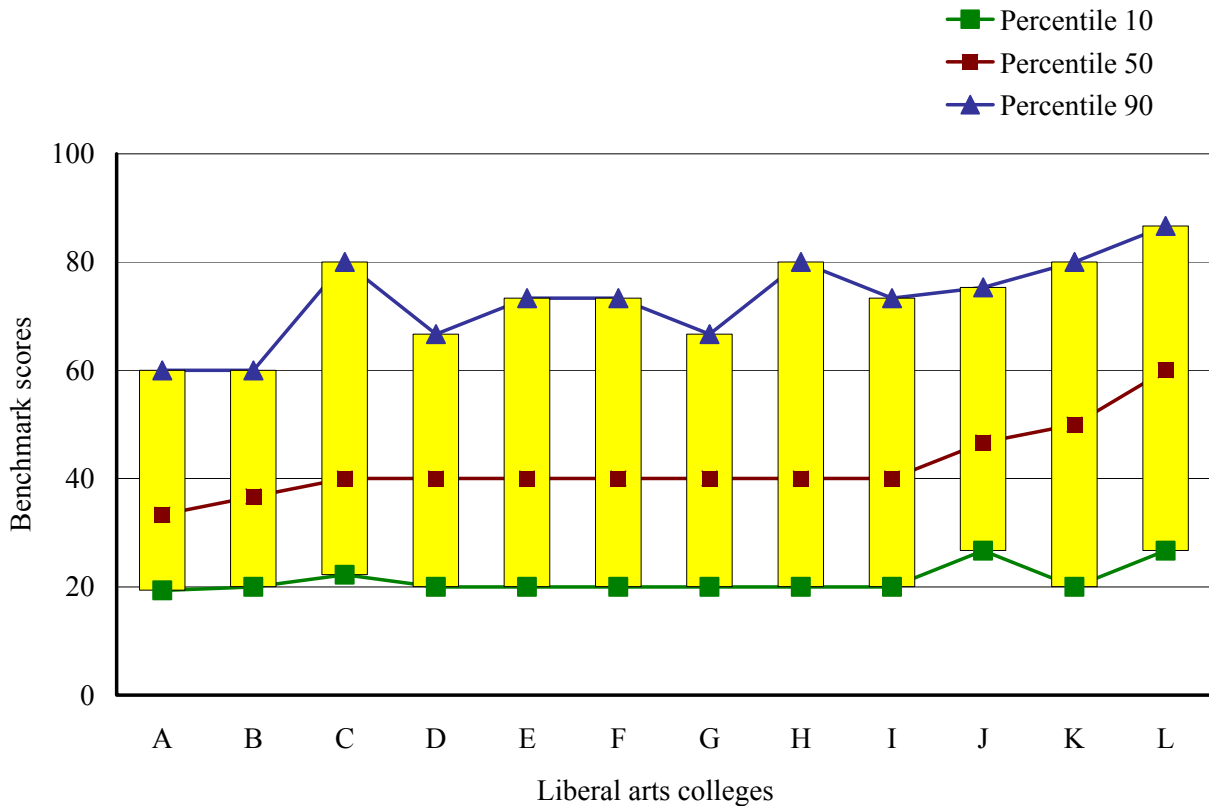
Figure 6. Level of academic challenge for seniors, by enrollment



SOURCE: National Survey of Student Engagement 2005.

3. *Student engagement varies more **within** any given school or institutional type than **between** schools or institutional types).* This may sound counter-intuitive, but it is consistent with other research (Pascarella and Terenzini 2005). To illustrate, figure 7 shows the range of student-faculty interaction benchmark scores of first-year students at 12 different baccalaureate liberal-arts colleges, ranging from the lowest-scoring school on this benchmark to the highest scoring (Kuh 2003). At this type of institution, we might expect student contact with faculty to be relatively high across the board. The figure shows only the middle 80 percent of students at each institution so that outliers do not skew the display. Note that the distance between the mean scores of the lowest (31) and highest scoring schools (59) is quite substantial, about 28 points, or more than one quarter of the 100 point scale. This suggests that instead of a fairly uniform pattern of high student-faculty interaction at small liberal arts colleges, there are instead very large differences within this sector. Equally important, the pattern represented in figure 7 is similar for the other NSSE benchmarks of effective educational practice for all other types of 4-year colleges and universities, indicating that student engagement varies more within institutions and categories of institutions than it does between schools or types of schools.

Figure 7. Student-faculty interaction: First-year students at 12 liberal arts colleges



SOURCE: National Survey of Student Engagement 2005.

4. *Student engagement in effective educational practice is unrelated to selectivity* (Kuh and Pascarella 2004; NSSE 2003). The combined SAT or ACT scores of entering students are independent of student participation in educationally purposeful activities. That is, while highly selective institutions can claim that their students are likely to benefit from being around highly able peers, there is not evidence, for example, that they interact more with faculty members, have more experiences with diversity, or participate more frequently in active and collaborative learning activities (Kuh and Pascarella; Pascarella et al. 2005).

5. *Some groups of students are typically somewhat more engaged than others.* Figure 8 lists the groups of students that are, *on average*, more engaged than others. Full-time students and students who live on campus (the vast majority of whom are enrolled full time) are more engaged. This is to be expected, as they take more classes, read and write more, and spend more time preparing for class than their part-time counterparts. Because they live on campus, they have easier access than their commuting peers to faculty members, other students, and other institutional resources. In addition, full-time students tend to have fewer obligations, such as family responsibilities and off-campus work that might preclude them from taking part in certain educational activities, such as study abroad or extracurricular events (Kuh 2003). As we illustrate later, full-time students also have more experiences with diversity, such as having serious conversations with peers from different racial or ethnic background or who hold different political or social views.

Figure 8. Who's more engaged?

- Women
- Full-time students
- Students living on campus
- Native students (those who start at and graduate from the same school)
- Learning community students
- International students
- Students with diversity experiences

6. *Some single-mission institutions often confer engagement advantages to their students.* For example, in general, women at single-sex colleges are more engaged than women at private coeducational institutions (Kinzie et al. 2004). That is, both first-year and senior women attending women's colleges report:

- Higher levels of academic challenge,
- More active and collaborative learning,
- More interaction with faculty members, and
- More diversity-related experiences.

Women's college graduates have higher educational and career aspirations than their counterparts at coed institutions (Pascarella and Terenzini 2005). However, the perceptions of the campus environment on women's college campuses are somewhat mixed, in that seniors at women's colleges perceived a lower level of interpersonal support while first-year students at women's colleges perceived greater support for success.

Finally, NSSE data indicate that compared with women at coeducational institutions, women at single-sex colleges report:

- Greater gains in understanding themselves and others,
- Greater gains in general education, and
- Greater gains in their ability to analyze quantitative problems.

Minority-Serving Institutions. Bridges et al. (2005) used the NSSE database to examine the nature of student engagement at minority-serving institutions (MSIs) and PWIs, analyzing records from about 16,000 Hispanic/Latino students from 36 Hispanic-Serving Institutions (HSIs) (26 public, 10 private) and 639 primarily White institutions (PWIs) (274 public, 365 private) as well as 23,000 African American students from 37 Historically Black Colleges and Universities (HBCUs) (23 public, 14 private) and 650 PWIs (276 public, 374 private). On balance, it appears that cultural capital plays a role in the

type of institution a student chooses to attend, but the dynamic differs for African Americans and Hispanics, depending on the type of institution they attend.

While differences in student engagement for Hispanic students at HSIs and PWIs are generally quite small (effect sizes between -0.20 and 0.20), there appears to be a compensatory effect of attending an HSI. That is, without statistical controls for student background characteristics, the effects of Hispanic students attending HSIs tend to be unfavorable. However, when controls for gender, mother's education, enrollment status, and transfer status are entered, the HSI results improve slightly. In fact, controlling for student characteristics when they enter college, HSIs show a few, albeit very small, positive effects. Seniors benefit the most from active and collaborative learning and show greater gains in understanding people of other races/ethnicities (Bridges et al. 2005).

However, at HSIs where Hispanics made up 10 percent or more of the faculty, students interacted more often with faculty and participated more frequently in active and collaborative learning activities and enriching educational experiences such as community service (Bridges et al. 2005). This finding is consistent with other research showing that minority faculty members across all institutional types are more likely to use effective educational practices compared with White faculty members (Kuh, Nelson Laird, and Umbach 2004).

7. The single best predictor of student satisfaction with college is the degree to which they perceive the college environment to be supportive of their academic and social needs. Perceptions of the college environment seem to matter to various forms of student engagement and other dimensions of student success, at least indirectly (Astin 1993b; Pascarella and Terenzini 2005). How students feel about their school does not necessarily directly affect how much they learn. But perceptions do directly affect student satisfaction and how much effort students will expend on educationally purposeful activities, which consequently have direct effects on their learning and personal development (Hu and Kuh 2002, 2003b; Kuh and Hu 2001a, 2001b; Kuh, Hu, and Vesper 2000). Unfortunately, African Americans and Asian Americans are the least satisfied with their college experiences (NSSE 2005).

A Closer Look at Engagement in Effective Educational Practices

Faculty-Student Contact

As mentioned earlier, numerous studies and reports point to the salutary effects associated with student contact with faculty members (Astin 1977, 1985, 1993b; Bean 1985; Bean and Kuh 1984; ECS 1995; Ewell 1989; Feldman and Newcomb 1969; Kuh et al. 1991; Lamport 1993; Pascarella 1985; Pascarella and Terenzini 1976, 1979b, 1991, 2005; Terenzini, Pascarella, and Blimling 1996; Terenzini et al. 1995; Tinto 1993; Wilson et al. 1975). Informal student-faculty interaction activities—being a guest in a professor's home, working on a research project with a faculty member, talking with instructors outside of class, and serving on committees with faculty—are positively correlated with student learning and development (Astin 1993b; Kuh 2003; Kuh and Hu 2001a).

Intentional programs to facilitate student-faculty interaction have different effects on students. For example, relationships with faculty predicted development of academic competence among new students in the first year of college (Reason, Terenzini, and Domingo 2005), and sophomore success (in terms of GPA and satisfaction) was related to high quality student-faculty interaction (Graunke and Woosley 2005; Juillerat 2000).

On balance, student persistence and success are related to the extent to which students interact with supportive adults on campus, both inside and outside the classroom (Kuh 2003; Pascarella and Terenzini 1977, 1991, 2005). First-generation students who reported positive interactions with faculty and other college personnel were more likely to experience academic success (satisfactory GPA and persistence) and were more satisfied with their academic experience (Amelink 2005). Whether these are causal relationships, however, is not known. That is, perhaps more satisfied students are more confident in seeking out faculty members, rather than becoming more satisfied because of such contacts. In fact, Kuh and Hu (2001a) found that the effects of student-faculty interaction are conditional. For example, those students who were better prepared academically and who devoted more effort to their studies interacted more frequently with faculty members. It is not clear whether this is because such students were more assertive in seeking out faculty members or whether faculty members offered cues inviting students who performed well academically to make contact, such as writing laudatory comments in the margins of a student's paper suggesting they talk further about the topic. Most likely, both forms of student and faculty behavior are operating (Bean and Kuh 1984).

Mentoring activities, including faculty interaction outside of class and contact with advisors, are positively related to African American student persistence at PWIs and HBCUs (Himelhoch et al. 1997). Also, Fries-Britt and Turner (2002) found that students at HBCUs attributed their success to the encouragement and support they received from faculty and staff. Similarly, strong relationships with faculty and staff appear to contribute to Latino students' sense of belonging and their feeling that they are valued and "matter" in the community (Dayton et al. 2004). Likewise, among the distinctive strengths attributed to Tribal Colleges are high-quality student-faculty interactions that provide students personal attention and opportunities to integrate traditional values into the learning environment (AIHEC, IHEP, and Sallie Mae Education Institute 2000).

In general, for most students most of the time, the more interaction with faculty the better. Both substantive and social out-of-class contacts with faculty members appear to positively influence (though indirectly) what students get from their college experience, their views of the college environment (especially the quality of personal relations), and their satisfaction. The possible exceptions are meeting with faculty members about improving their written work and interacting with faculty informally outside the classroom (Kuh and Hu 2001a). The former appears to be important to the development of academic skills and many desirable gains, but it also has a mild dampening effect on student satisfaction. It is possible that many students—especially in the first year—interpret faculty feedback on their writing to be overwhelmingly critical, while faculty members may intend to use criticism to challenge students to higher levels of performance. Good intentions notwithstanding, such feedback may come as a shock to many new students who earned relatively high grades in high school. At the same time, contact with faculty focused on writing improvement was positively related to the amount of time devoted to educationally purposeful college activities and gains.

Out-of-class contacts appear to positively shape students' perceptions of the campus environment and seem to positively influence educational aspirations (Gurin and Epps 1975; Hearn 1987; Pascarella 1985) and degree completion (Pascarella, Smart, and Ethington 1986; Stoecker, Pascarella, and Wolfe 1988). Although the reason for this relationship is not clear, it seems likely that when faculty engage students outside the classroom, and these interactions are positive, students may feel affirmed and develop a stronger bond with the institution (Kuh et al. 1994). These interactions may reinforce a student's initial goals and deepen the commitment to graduate (Pascarella and Terenzini 1991, 2005). However, primarily informal, social-oriented contacts do not directly contribute to desired outcomes (Bean 1980, 1985; Voorhees 1987). In fact, there is some evidence that students who have the most out-of-class contact with faculty report making less progress toward desired outcomes (Kuh and Hu 2001a).

For some purposes, occasional contact with faculty members may be enough. To illustrate, three of the six behaviors on the NSSE student-faculty cluster are of this kind: discussing career plans, working with a faculty member outside of class on a committee or project, and doing research with a faculty member. For most students, doing the first two of these once or maybe twice a semester is probably good enough. Working on a research project with a faculty member just once during college could be a life-altering experience. For other activities, such as getting prompt feedback, discussing grades and assignments, and discussing ideas outside of class, the more frequent the contact the better (Kuh 2004).

It is prudent to assume that technology will alter our understanding of the faculty role in the learning process. For example, after reviewing evidence from institutions participating in the Pew-funded Course Redesign Program conducted by the Center for Academic Transformation, Carol Twigg (2005) concluded that by using technology effectively, “student success can be achieved in class without increased student-faculty contact.” This requires being more intentional about the nature of the contact, such as being available on an as-needed, “when students get stuck” basis, which is built into the redesigns of mathematics courses at Virginia Tech, the University of Alabama, and the University of Idaho.

In the final analysis, student-faculty interaction is important because it encourages students to devote greater effort to other educationally purposeful activities. Both the *nature* and *frequency* of the contacts matter (Kuh and Hu 2001a; Pascarella and Terenzini 2005). However, the dynamics of how student contact with faculty contributes to this heightened and balanced engagement are not clear. Perhaps meeting and talking with faculty members empowers students to do more than they think they can and helps validate them as full members of the campus community, which in turn legitimates their presence and makes them more comfortable to reach out and become engaged in a variety of activities.

Peer Interactions

Who students choose for friends and spend time with is important to what they do in college and how they feel about their experiences (Kuh 1993). "A large part of the impact of college is determined by the extent and content of one's interactions with major agents of socialization on campus, namely, faculty members and student peers" (Pascarella and Terenzini 1991, p. 620). In fact, according to Astin (1993b, p. 398), peers are "the single most potent source of influence," affecting virtually every aspect of development—cognitive, affective, psychological, and behavioral. Indeed, the differences in the experiences of students who commute to college and live in campus residences are likely to be indirect (as contrasted with direct) influences through the interactions that students have with faculty, staff, and peers.

Student interaction with peers can positively influence overall academic development, knowledge acquisition, analytical and problem-solving skills, and self-esteem (Kuh 1993, 1995). Aleman (1994, p. 38) found that “for female friends in college, conversations with each other serve as vehicles to transgress the limits of dualistic thinking,” or ways to go beyond the tendency of traditional age students to think in “either/or” or “black and white” terms when dealing with complex issues. Female friendships may be models for peer-assisted learning, an “often neglected potent resource inherent in a student population” (Alexander, Gur, and Patterson 1974, p. 175).

Among the peer interactions that foster learning (Astin 1993b, p. 385) are:

- discussing course content with other students,
- working on group projects for classes,

- tutoring other students,
- participating in intramural sports,
- being a member of a social fraternity or sorority,
- discussing racial or ethnic issues,
- socializing with someone from a different racial or ethnic group,
- being elected to a student office, and
- spending time each week socializing or in student clubs or organizations.

Peer teaching and participation in peer tutorial programs also have a positive impact on learning and personal development for those who do the teaching (Goldschmid and Goldschmid 1976) because students who teach other students must know the material more thoroughly than if they were only studying it for themselves (Annis 1983; Bargh and Schul 1980; Pace 1990). Moreover, such students become more actively engaged with the material to be taught, which is thought to produce greater conceptual learning (Benware and Deci 1984; Pascarella and Terenzini 1991).

Peer interactions are particularly important with regard to social integration because students are more likely to stay in school when they feel comfortable and connected to other students with similar interests and aspirations (social integration) (Bean 1980; Spady 1970; Tinto 1975, 1987). For this reason, perhaps, fraternity and sorority membership are positively related to persistence (Astin 1975). In addition, institutions with higher levels of student social interaction also have higher levels of student educational aspirations (Pascarella 1985). According to Pascarella and Terenzini (1991, p. 384):

Obtaining the bachelor's degree was positively influenced by attending a college with a high level of cohesion in the peer environment (the number of peers whom the student regarded as close friends) or where students frequently participated in college-sponsored activities and there was a high level of personal involvement with and concern for the individual student.

Experiences with Diversity

Peer interactions are a major contributor to experiences with diversity, which can have substantial and positive effects for virtually all students and across a wide range of desirable college outcomes (Chang 1999, 2000; Gurin 1999; Hurtado et al. 1999; Orfield 2001; Umbach and Kuh 2006). Such experiences include:

- Attending an institution that encourages contact among students of different backgrounds,
- Talking with others of different races/ethnicities,
- Talking with others who are very different in terms of their religious beliefs or personal values, and
- Incorporating diverse perspectives into class discussions or written work.

First-year students were more likely than sophomores, juniors, and seniors to interact with students from different racial and ethnic backgrounds (Hu and Kuh 2003a; NSSE 2005). These differences are likely a function of the fact that more first-year students live on campus in close proximity to people who are different. We return to this important topic in the next two sections.

Cocurricular Activities

Participation in cocurricular activities is positively related to persistence (Carroll 1988; Christie and Dinham 1991; Mallinckrodt 1988; Mallinckrodt and Sedlacek 1987; Nelson, Scott, and Bryan 1984; Simpson, Baker, and Mellinger 1980). Hanks and Eckland (1976) speculated that involvement in cocurricular activities may influence persistence in two ways: (a) students are connected psychologically and socially to an affinity group that is achievement-oriented and reinforces the desire to graduate, and (b) students engage in activities that help them develop skills and competencies that enable them to succeed in college (e.g., interpersonal skills, self-confidence) (Pascarella and Terenzini 2005).

The extent to which participation in cocurricular activities affects persistence seems to be conditional in that such participation influences students differently. Pascarella and Chapman (1983) and Pascarella and Terenzini (1979a) found that involvement had the greatest positive impact on persistence for students with lower levels of commitment to the institution and their educational goals; that is, the greater the commitment to attaining educational goals, the less important engagement in campus life is to persistence. Pascarella and Terenzini (1983) and Ethington and Smart (1986) found that involvement had a greater positive effect on first-year persistence for women than for men. Because a variety of out-of-class experiences seem to be related to student commitment to the institutions (e.g., involvement in athletics, fraternity or sorority membership), there seems to be a link between participation in certain out-of-class activities and persistence via increased student commitment to the institution and to earning a degree.

Although involvement in cocurricular activities is positively associated with persistence and other desirable outcomes (Astin 1977, 1993b; Kuh 1993; Pascarella and Terenzini 2005), more than two-fifths of students (43 percent first-year students, 48 percent seniors) at 4-year colleges and 84 percent of students at 2-year colleges spend *no time* on these activities (CCSSE 2004; NSSE 2005).

Student Satisfaction

Student satisfaction with the institution is an important but sometimes overlooked variable in determining the quality of the undergraduate experience. Satisfaction represents a sense that the student feels he or she belongs at, and is loyal to, the institution (Lenning, Beal, and Sauer 1980; Tinto 1987) and is highly correlated with engagement (Abrahamowicz 1988; Astin 1993b; Holland and Huba 1991; NSSE 2005; Russel and Skinkle 1990; Whitt 1994), persistence (Pascarella and Terenzini 1991; Tinto 1987), and academic performance (Bean 1980; Bean and Bradley 1986; Bean and Vesper 1994; Pike 1991, 1993). Student satisfaction seems to have a stronger effect on grades than vice versa (Bean and Bradley). Moreover, "the student's degree of satisfaction with the college experience proves to be much less dependent on entering characteristics... and more susceptible to influence from the college environment" (Astin, p. 277).

Most students (86-87 percent) at 2-year and 4-year colleges judge the overall quality of their experience to be at least "good"; only 2 percent say it was "poor" (CCSSE 2005; NSSE 2005). Generally, the more interaction students have with their peers and with faculty, the more satisfied they are overall with the college experience (Astin 1993b; Kuh 2003; NSSE 2005).

Student Characteristics

Because the effects of college experiences on desired outcomes are conditional (Pascarella and Terenzini 2005), it is instructive to briefly review the engagement patterns of different groups of students.

First-Generation Students

First-generation students tend to be less engaged than other students, perhaps in part because they know less about the importance of engagement or how to get involved in productive activities (Pike and Kuh 2005). That is, they have less tacit knowledge of and fewer experiences with college campuses and related activities, behaviors, and role models compared with second-generation college students. In addition, parents are unable to help much, even if they are so inclined as they, too, lack knowledge of, or in some instances may find off-putting, certain activities that could lead to greater levels of engagement (Kenny and Stryker 1996; London 1992). This is especially problematic for students attending institutions where the predominant racial, ethnic, or religious culture differs from their own and where they may encounter a unique set of adjustment challenges (Allen 1992).

Most studies of first-generation students tend to attribute their lower levels of academic and social engagement and learning and intellectual development to the immutable characteristic of being born to parents who did not go to college. Such findings may have been largely due to the analytical approaches employed. Pike and Kuh (2005) suggest that low levels of engagement are an *indirect* result of being the first in one's family to go to college, and are more a function of lower educational aspirations and living off campus. Thus, those committed to improving success rates of first-generation students should address these proximate causes.

Race and Ethnicity

Some studies show that minority students must contend with circumstances that may prevent them from taking full advantage of learning opportunities, especially at PWIs (Crosson 1988; Feagin, Vera, and Imani 1996; Pierce 1989; Turner 1994). To some degree, this may be due to cumulative disadvantages associated with substandard precollege educational preparation (Garcia 2001; O'Brien and Zudak 1998). A less-than-congenial postsecondary learning environment may also be a contributing factor (Allen 1985).

NSSE and CCSSE studies show that in general, students from different racial and ethnic backgrounds appear to engage in effective educational practices at comparable levels. Among the exceptions are the following:

- Asian Pacific Americans and African Americans are somewhat more likely to take part in enriching educational experiences than their peers.
- African Americans report more active and collaborative learning activities; Asian Pacific Americans are the least engaged in this area.
- Latinos/as and Whites are the two groups most satisfied with their college experience; African American students are generally least satisfied (NSSE 2005).

- Black women attending community colleges tend to be more engaged than their male counterparts (CCSSE 2005).

Relational mechanisms for coping with the stresses of college life may also vary between student groups (Hurtado 1994; Hurtado, Carter, and Spuler 1996). A study of Latino students (Hurtado and Carter 1997) indicated the importance of belonging to campus religious and social-community organizations and discussing course topics with student peers outside of class. Other research (Hernandez 2000; Kenny and Perez 1996) indicates the role that continuing relationships with off-campus family members play in the psychological well-being of racially and ethnically diverse first-year students.

International Students

Generally speaking, international students engage more often in effective educational practices than their American counterparts, especially in the first year. International students:

- Report greater academic challenge,
- Interact more with faculty members,
- Engage more in diversity-related activities,
- Perceive the campus environment to be more supportive, and
- Report greater gains in personal and social development, practical competence, and general education.

First-year international students report higher levels of active and collaborative learning than their American peers, but spend significantly less time relaxing and socializing. By the senior year, international students are more like American students in terms of socializing (Zhao, Kuh, and Carini 2005).

Transfer Students

NSSE (2005) data show that senior transfer students share many characteristics with both older students and commuters, but differ in marked ways from their counterparts who persist at the same college where they started. These patterns hold even after controlling for institutional characteristics (sector, size, Carnegie type) and student characteristics (sex, enrollment status, age, race). For example, transfer students from 2-year institutions:

- Interacted less with faculty, and
- Participated in fewer educationally enriching activities.

Transfer students from 4-year institutions:

- Did more active and collaborative learning,

- Participated in fewer educationally enriching activities,
- Viewed the campus as less supportive,
- Gained less during college, and
- Were less satisfied overall with college.

Compared with seniors who began and persisted at their current institution, students who transferred later in their course of studies reported that at the time of their initial enrollment at their current institution they:

- Interacted less with faculty,
- Participated in fewer educationally enriching activities, and
- Gained less from college than their peers.

Fraternity and Sorority Members

Students who belong to Greek-letter organizations are generally as or more engaged than other students in educationally effective practices (Hayek et al. 2002). This includes the amount of effort they put forth inside and outside the classroom (including experiences and exposure to diversity), self-reported gains in various educational and personal growth areas, and perceptions of the campus environment (see also Pike 2003). These findings run counter in some ways to the research showing mixed or negative relationships between membership in Greek-letter organizations and desired student learning and personal development outcomes (Astin 1993b; Blimling 1989, 1993; Pascarella et al. 1996; Pascarella et al. 2001; Pike and Askew 1990).

The overall favorable Greek effect on engagement extends to all segments of Greek membership—men and women, first-year and senior students, and to a lesser extent those who lived in the fraternity or sorority house or elsewhere, either on or off campus. Though living in Greek housing did not generate large negative effects on student engagement, the results do not necessarily refute the assertion that Greek housing might be linked to lower educational outcomes for some students (Blimling 1989, 1993). Much of the commentary about the potential ill effects of living in Greek housing focus on the well-being and educational experience of first-year students and newly initiated sophomores, not seniors. First-year students living in Greek housing spent more time in extracurricular activities with no appreciable diminution of time in other activities. Although participating in these activities may aid social integration and positively influence persistence, it also suggests that the time commitments of first-year Greek members may well be stretched beyond those of their nonmember counterparts, making it difficult to balance their studies with responsibilities to their new organization including new member activities (Hayek et al. 2002).

Student Athletes

On balance, it appears that student athletes, including those participating in high-profile sports (men football and basketball players, women basketball players), participate as often or more often as

their nonathlete peers in effective educational practices (NSSE 2005; Umbach and Kuh 2004; Umbach et al. 2004). These findings differ from those of recent highly publicized reports featuring athletes at highly selective 4-year colleges (Bowen and Levin 2003; Shulman and Bowen 2001). For example, first-year high-profile student athletes show some signs of being less academically challenged than their lower profile athletic peers. For example, both male Division II and female Division I high-profile athletes are less likely to spend 16 or more hours a week preparing for class than their lower profile peers. In addition:

- High-profile Division I senior female athletes see their campus environment as more supportive than other women athletes.
- First-year women in Division III high-profile sports are slightly less engaged across the five NSSE measures of effective educational practices compared with Division III women in lower profile sports.

Compared with their nonathlete peers, high-profile student athletes are as engaged and often more engaged in effective educational practices:

- Student athletes (both high-profile and other sports) at Division I institutions are more satisfied with the quality of their academic advising than are their nonathlete peers.
- Compared with other seniors, student athletes are more likely to participate in community service projects, culminating senior experiences, and foreign language courses, regardless of gender or division of play.
- Senior women at Division I institutions report participating in more enriching educational activities, see the campus as more supportive of their educational and social needs, and report gaining more in terms of speaking clearly and persuasively and understanding people from backgrounds different from their own (NSSE 2005).

Summary

The evidence from scores of studies over several decades strongly indicates that student engagement in effective educational practices seems to benefit all types of students to varying degrees.

- Student engagement is related to a host of positive outcomes including persistence, grades, and satisfaction.
- Student-faculty interaction matters most to learning when it encourages students to devote greater effort to other educationally purposeful activities during college.
- Student engagement varies more within institutions than between institutions.
- Some students are generally less engaged than others, such as first-generation students, males, transfer students, and those who live off campus.

Some emerging research suggests the engagement may have compensatory effects for at-risk students, including low income, first generation, and students of color attending PWIs. These findings suggest that seeking ways to channel student energy toward educationally effective activities would be

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wise, especially for those who start college with two or more “risk” factors. How institutions can do this is the subject of the next section.

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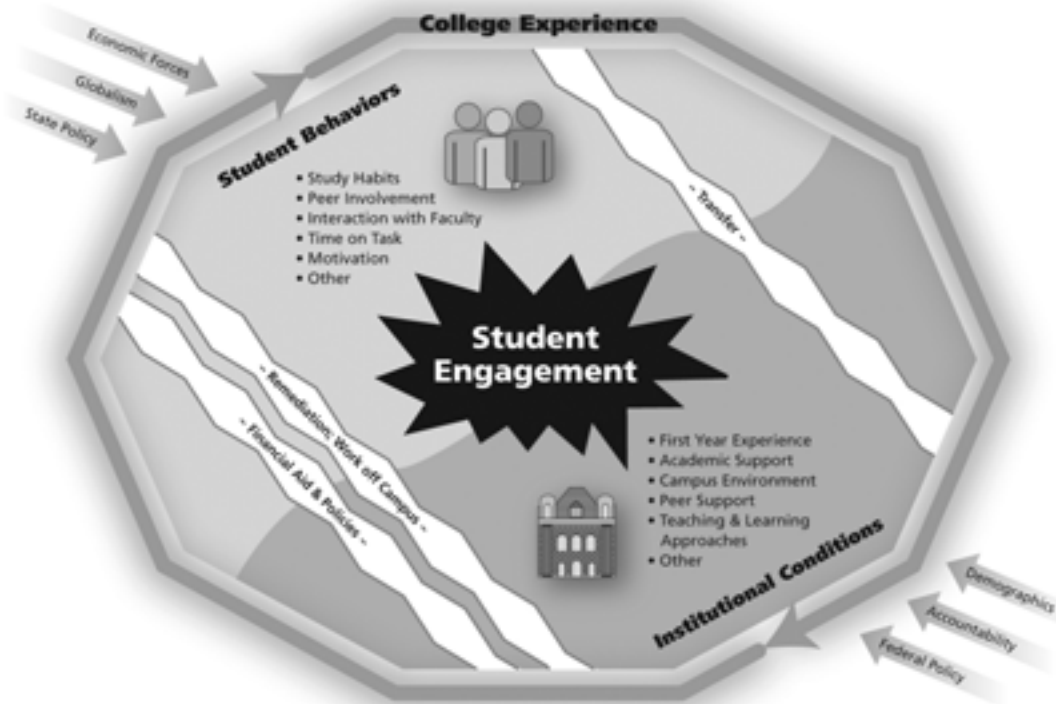
6. WHAT INSTITUTIONAL CONDITIONS (POLICIES, PROGRAMS, PRACTICES, CULTURAL PROPERTIES) ARE ASSOCIATED WITH STUDENT SUCCESS?

In this section, we distill the institutional conditions and promising policies and practices that foster student success. What institutions can do in this regard is of particular interest since these are factors over which they have some direct if only modest influence. Thus, knowing the policies and practices and other institutional conditions that are related to student success and how to create them are vital to efforts to develop student-friendly campus cultures. Indeed, “if, as it appears, individual effort or engagement is one of the critical determinants of the impact of college, then it is important to focus on the ways in which an institution can shape its academic, interpersonal, and extracurricular offerings to encourage *student engagement*” (emphasis added) (Pascarella and Terenzini 2005, p. 602).

Much of the pertinent literature is contained in national reports and studies, such as *The Seven Principles for Good Practices in Undergraduate Education* (Chickering and Gamson 1987) and Ewell’s synthesis, *Making Quality Count*, produced for the Education Commission of the States (1995), which summarizes the key concepts associated with student success and strong institutional performance. Carey (2004), Kuh et al. (2005b), and Tagg (2003) describe programs and practices at educationally effective institutions. Other recent reports, , such as *The Road Less Traveled? Students who Enroll in Multiple Institutions* (Peter and Cataldi 2005) and *Community College Students: Goals, Academic Preparation, and Outcomes* (Hoachlander, Sikora, and Horn, 2003), are instructive for looking at programs and practices that work with different groups of students. Bailey and Alfonso (2005) and Bauman et al. (2005) offer further evidence of how institutions can organize their resources and create success-oriented cultures. Also relevant is emerging research associated with the ongoing Building Engagement and Attainment of Minority Students (BEAMS) project, Association of American Colleges and Universities’ (AAC&U) Making Excellence Inclusive initiative, *Creating Role Models for Change: A Survey of Tribal College Graduates* (2000), the Diversity Scorecard (Bensimon 2004), and the work of Hurtado et al. (2003), on the value of diversity and inclusion of underrepresented populations in higher education.

The institutional conditions shown in the lower right corner of figure 9 include a sample of the programs and activities many colleges and universities offer. To examine the relationships between student success and institutional conditions, we summarize the literature across four broad, overlapping categories: structural and organizational characteristics, programs and practices, teaching and learning approaches, and student-centered campus cultures. However, the effects on student performance are greater than the sum of these conditions in that they work together in an inclusive, mutually shaping, holistic way to enhance student and institutional performance. Equally important, to the extent institutions intentionally organize their resources to induce higher levels of student engagement, they may be adding value to the student experience.

Figure 9. The relationship between student success and institutional conditions



Structural and Organizational Characteristics

Structural characteristics of institutions include such features as size, sector, control, mission, residential character, student-faculty ratio, endowment, and structural diversity (percentage of students from different racial and ethnic backgrounds). In general, the effects of these sorts of institutional characteristics on most measures of student success when controlling for student characteristics are trivial or inconclusive (Pascarella and Terenzini 2005). That is, for 4-year institutions, the effects of different institutional characteristics on student change are both small and inconsistent. This is due to a variety of factors (methodological problems, lack of accurate measures, student-institution level of analysis complications) that make it difficult to estimate the impact of structural conditions on student success. Nevertheless, some structural characteristics appear to be consistently related to traditional measures of student success.

Institutional Attributes: Residence, Size, Type, Sector, Resources and Reputation

Institutional characteristics have few if any direct effects on measures of student success. For example, Astin (1993b) and Pascarella and Terenzini (2005) agree that institutional control is not a factor

in whether students earn a bachelor's degree. However, selectivity and persistence are highly correlated; that institutions that enroll academically well-prepared students graduate them at higher rates is to be expected, of course (Saupe, Smith, and Xin, 1999).

Institutional size is inversely related to student persistence and degree completion, although as with other areas, Pascarella and Terenzini concluded its impact is small and indirect. Institutional attributes such as size have an indirect, or mediating effect, because the effect is transmitted through other intervening variables. For example, size appears to shape students' enrollment decisions through its effects on students' perceptions of the institutional environment, faculty and peer interactions, and students' academic and social involvement. As noted previously in Part 5, smaller 4-year institutions are generally more engaging than larger institutions (NSSE 2002, 2003). In part this is because they have more favorable faculty-student ratios and more small classes, which makes it easier for faculty to know students by name, for students to know their peers, and for students to participate actively in classes. Also, smaller institutions are more likely to be geographically isolated, which increases the chances that students will live near one another and close to the campus and contributes to social and academic integration.

Testing Bean's student attrition model with institution-level constructs from the Berger and Milem (2000) college impact model, Titus (2004) found that the only institution-level variables that influenced student persistence were size and selectivity. Titus concluded that differences between institutions may not be as important as differences between students in terms of their educational goals, college experiences, and institutional commitment. In other words, college student persistence is influenced by complex factors, most of which are student-level factors such as gender, socioeconomic status, enrollment patterns, and engagement levels.

Campus Residences. Living on campus has long been associated with persistence and student success (Astin 1993b; Chickering and Reisser 1993). Students who live on campus generally interact more with faculty and peers and are more satisfied with their undergraduate experience (Pascarella and Terenzini 1991; 2005). Consistent with the findings of Chickering and others (see Blimling 1993), living on campus had a direct, positive effect on learning outcomes, and educational aspirations had the greatest indirect effects on learning and intellectual development. In fact, living on campus had the greatest total effect (i.e., the combination of direct and indirect effects) on learning outcomes of any institutional characteristic. Living learning centers and residentially based freshman interest groups have even stronger effects on average than living on campus. That campus residence is relatively powerful is understandable, because of the propinquity principle (Newcomb 1966): living on campus puts students in close physical proximity so they cannot avoid being confronted on an almost daily basis by others who have views and backgrounds that differ from their own.

The effects of living on campus are probably more indirect than direct in terms of persistence and degree completion (Pascarella and Terenzini 2005). That is, students who live on campus are more engaged generally because they have more opportunities to interact with peers and faculty members. They are also more positive about the campus social and intellectual climates, and report greater personal growth and development. We will return to other effects of living on campus later.

Sector. Although 2- and 4-year colleges differ in respect to such features as selectivity and residential living options, Pascarella et al. (1995) found few significant differences between 2- and 4-year college samples in their examination of first-year gains made on four cognitive measures—reading comprehension, mathematics, critical thinking, or composite measure of all three tests. The 2-year sector had slightly higher end-of-first-year scores in mathematics, while students at the 4-year institutions had slight advantages in reading comprehension and critical thinking. Women derived slightly greater cognitive benefits from 4-year institutions than men, while men gained more than women at 2-year

institutions. Non-White students gained more at 2-year institutions, while White students gained more at 4-year institutions. This suggests that differences in institutional resources, library size, faculty-student ratio, and campus physical and recreation facilities probably have trivial influences on cognitive and intellectual gains.

Institutional resources and reputation featured in college rankings are largely irrelevant to high quality educational experiences as measured by student engagement in educationally purposeful activities (Kuh and Pascarella 2004; Pike 2004). Recall, too, that institutional selectivity has little impact on measures of student learning, particularly critical thinking (Pascarella 2001; Pascarella et al. 2005). This research suggests that enrollment management activities, guidebooks, and efforts to help students make choices on these characteristics overemphasize the importance of these institutional characteristics to student learning. Instead, what matters to developmentally powerful undergraduate learning experiences are the vitality of classroom experiences combined with students' own effort and study habits (Astin 1993b; Kuh 2003; Kuh et al. 2005b; Kuh and Pascarella 2004; Volkwein et al. 2000).

Structural Diversity. Structural diversity of a campus positively affects student outcomes (American Council on Education (ACE) and American Association of University Professors (AAUP) 2000; Hurtado et al. 1998). A more diverse student body is associated with greater interaction among the groups, and more positive relations among students (Hurtado et al. 2003; Pascarella 2001), in part because it *increases the probability* that students will interact with peers from different backgrounds (Gurin 1999). Such interactions positively affect critical thinking (Pascarella et al. 2001) and also make students more susceptible to subsequent diversity experiences (Pascarella et al. 1996; Whitt et al. 2001). Students who have more frequent experiences with diversity also report:

- More progress in personal and educational growth,
- More involvement in active and collaborative learning, and
- Higher levels of satisfaction with their college experience.

Diversity experiences also vary by institutional type. Hu and Kuh (2003a) found that students at Doctoral/Research-Extensive universities are slightly more likely than their counterparts attending other types of 4-year institutions to interact with students from different backgrounds, perhaps because there are proportionately more students from diverse backgrounds attending such institutions. It might also be a result of concerted efforts to provide diversity-related programming (Kuh and Umbach 2005; Pike and Kuh 2006). Umbach and Kuh (2006) reported that students at Liberal Arts Colleges are the most likely to engage in diversity-related activities, while students at Master's institutions are the least likely. Pike et al. (in press) found that being a Doctoral/Research university or a master's university, as opposed to a baccalaureate general college, was not significantly related to informal interactional diversity. Likewise, neither urbanicity nor size (i.e., full-time-equivalent enrollment) was related to informal interactional diversity. Density of racial and ethnic groups is important as students are somewhat more likely to engage in diversity-related activities on campuses where there are larger proportions of students of color, regardless of institution type.

Persistence among racial/ethnic minority and White students also is positively related to a diverse campus (Hurtado et al. 1998). However, Nettles (1991) found that African American students attending institutions where they were in the minority progressed toward degree completion at a slower pace than African American students attending institutions where they were the majority.

Consistent with Kuh and Umbach (2005), HBCU students report fewer experiences with diversity compared with students elsewhere. This is to be expected, given that HBCU enrollments are slightly over 80 percent African American on average (Provasnik and Shafer 2004). Contrary to some other research, Bridges et al. (2005) found that African American students at PWIs were more satisfied with their overall experience than African American HBCU students. In addition, first-year students at HBCUs did not perceive their campus environment as supportive as their counterparts at PWIs, especially in terms of providing academic support. Informal interactional diversity was negatively related to being a public institution, but positively related to being a liberal arts college. There was a substantial positive relationship between structural diversity and informal interactional diversity (Bridges et al.).

In addition, diversity experiences also vary substantially by major field. Seniors majoring in math, science, and engineering disciplines have the fewest experiences with diversity; students in the social sciences and humanities report the most. More than half of social sciences and humanities majors said they frequently had serious conversations with students of a different race or ethnicity than their own compared with only about a quarter (26 percent) of engineering majors and a third (36 percent) of physical science majors (NSSE 2004).

Organizational Structure. Using Birnbaum's (1988) conceptual framework, Berger (2002) found that the organizational structure of an institution, defined as the patterns and processes of behaviors exhibited by administrators on campus, has some influence on student learning. Colleges that were more externally oriented and less focused on internal aspects of the campus had a negative relationship to student learning (represented by student self-ratings of academic ability, educational gains, and GPA); campuses with a collegial ethos also had some negative effects, suggesting that strong relationships among faculty and administrators may not necessarily be relevant to student learning. Bureaucratic dimensions had no significant effect, while institutions with symbolic (meaning through stories and myths) dimensions had mixed effects on student learning outcomes. Godwin and Markham's (1996) case study of the effects of bureaucratic organizational structure on new student college adjustment and socialization at a large state university revealed that new students were frustrated by waiting in lines, "getting the runaround," and excessive paperwork. As a result, new students developed coping mechanisms ranging from accepting such bureaucratic dysfunctions as the natural order and conforming to confronting inefficiencies. Although bureaucratic structures was found to have limited impact on student learning, it seems to affect the manner in which newcomers are socialized to the campus. Given Braxton and McClendon's (2001–02) finding that effective communication of rules and regulations positively impacts student integration and persistence, how new students perceive and interact with the bureaucratic elements of the institution may well affect student success.

Blose (1999) found that the biggest differences between institutions in terms of persistence and graduation rates is the amount of time it takes to earn a degree, suggesting that low graduation rates might be the result of aspects of the institution that impede academic progress, including course availability and scheduling and problems in the advising process.

Institutional Mission. Organizational theory suggests that institutional mission, which is generally denoted by sector difference or institutional type, is related to student success because colleges and universities that align their mission with their educational policies and programs generally are more effective and efficient (Birnbaum 1991; Bolman and Deal 1991; Ewell 1989). As Chickering and Reisser (1993, p. 287) put it:

Clear and consistent objectives, stated in terms of desired outcomes for learning and personal development, are critically important in creating an educationally powerful institution. These should not have to be deduced from course descriptions. They should be

explicit and compelling. They should be defined by the members of the college community, taken to heart by campus leaders, and invoked as guides to decision-making.

For example, the extent to which a campus has an enacted mission that makes an explicit commitment to the success of all students appears to be related to graduation rates, persistence, and student engagement (Kezar and Kinzie 2006; Kuh et al. 2005b). Ewell (1989) found that the match between actual program delivery and intended purpose and the degree to which people on campus agree on the mission are important to students' academic development. These studies suggest that the espoused, written institutional mission appears to be less important contrasted with the enacted mission of a campus.

Small liberal arts colleges are generally associated with greater gains in terms of student engagement and general education outcomes (Hu and Kuh 2002; Kuh and Siegel 2000; Pascarella et al. 2004). Although Carnegie type was related to certain areas of student engagement, it is probable that other institutional characteristics have a greater influence on student engagement (Pike and Kuh 2005a). In fact, after taking into account the background characteristics of students, differences by institutional type tend to diminish (Pike, Kuh, and Gonyea 2003). In addition, Kuh et al. (2005b) found that institutions with higher-than-predicted graduation rates and levels of student engagement differed considerably in terms of Carnegie classification type, control, and selectivity, yet they had policies and practices in place that appeared to engage students at high levels. Elements of the institutional culture and the complementary practices employed appeared to explain more of what mattered to student success than the types of institutional or student characteristics typically examined in research.

Transfer rates are a legitimate indicator of student success, particularly in the 2-year sector (Dougherty 1994; London and Shaw 1996; Nora 1999; Rendon and Garza 1996; Rifkin 1998; Rosenbaum 1998). The transfer mission is particularly important to the educational attainment and success of students from underserved populations since 2-year colleges serve as the gateway to the bachelor's degree for the majority of these students (National Articulation and Transfer Network 2002; Rendon and Garza; Suarez 2003). Strong transfer rates appear to be associated with clear articulation agreements between community colleges and 4-year institutions (Nora; Rendon and Garza) and a deep institutional commitment to the transfer mission, where transfer to a 4-year institution is a high priority and a shared responsibility of administrators, faculty, and counselors (Shaw and London 2001; Suarez; Townsend 1995). Access to accurate transfer procedures and financial aid information along with other support (e.g., counseling services, workshops on the transfer process, orientation programs) seem to help with transfer student persistence and satisfaction (Alpern 2000), perhaps because they help to demystify the process (Berger and Malaney 2003; Cohen and Brawer 1987; Cuseo 1998; Rifkin; Suarez; Turner 1988).

The assigned role of community colleges in a state system seems to affect associate's degree completion rates and transfer rates. For example, if the community college is viewed as a transfer college for its state's university system, then transfer rates tend to be higher. If viewed as both a site for transfer and preparation for immediate employment, then transfer rates are usually lower. Also, variations in transfer rates can be predicted by whether a state's community colleges emphasize technical or comprehensive programs and which of these functions institutional policies support (Cohen 1996).

Minority-Serving Institutions. Certain special mission institutions—HBCUs, HSIs, and Tribal colleges—appear to benefit their students educationally and socially (Allen 1992; Dayton et al. 2004; Outcalt and Skewes-Cox 2002). Strong support systems, which help create a success-oriented environment, explain in part HBCU students' better academic performance, higher graduation rates, and higher occupational aspirations compared with those of their African American counterparts at PWIs (Allen; Astin, Tsui, and Avalos 1996). For example, Terenzini et al. (1997) found that first-year HBCU students received greater peer encouragement to remain enrolled than their counterparts attending PWIs,

indicating the power of the peer group at HBCUs. Women's colleges also enjoy small to modest advantages in terms of persistence rates. Moreover, despite most being underresourced, HBCUs have developed programmatic interventions that seem to effectively promote high expectations for intellectual development and academic support associated with cognitive gains for African American students similar to those found at PWIs (Kim 2002; Pascarella 2001).

At 4-year institutions, African Americans attending HBCUs are more likely to complete their degree than their counterparts at PWIs. The size of these positive effects vary, depending on the study. Astin, Tsui, and Avalos (1996) found the advantage to be about 6 percentage points; Ehrenberg and Rothstein (1994) estimated the advantage to be between 9 and 29 percentage points, depending on the model used" (Pascarella and Terenzini 2005, p. 394). Kim (2002) asserted that certain outcomes such as academic performance for African American students at HBCUs and PWIs are more a function of precollege differences in students' educational preparation than of institutional environments. However, the weight of the evidence suggests that attending a HBCU has significant positive effects, especially for persistence and graduation rates.

Another distinction of HBCUs is that they serve as a gateway to advanced degrees for African American students, similar to what liberal arts colleges do for White students (Gumport 2001). Some evidence also suggests that for African Americans, attendance at an HBCU has a net positive effect on degree aspirations and the likelihood of enrolling in graduate school (Carter 1999; Heath 1992; Weiler 1993) or entering a program in the sciences, engineering, or business relative to their counterparts who attended PWIs (Redd 2001; Wenglinski 1997). HBCUs remain the primary producers of African American undergraduates who go on to science and engineering doctorates (Solorzano 1995).

The small number of studies of Hispanic students at HSIs yields mixed results (Abraham et al. 2002; Benitez 1998; Dayton et al. 2004; Laden 1999, 2001, 2004). According to Laden (2004, p. 193), "many HSIs offer a variety of academic and student support programs and holistic approaches that are specifically designed to raise Latino student aspirations and enhance their retention and completion rates." Dayton et al. and Laden (2001, 2004) propose that faculty and administrators, particularly those who are Hispanic, can play a key role in facilitating academic and social integration as well as academic success.

Tribal colleges, the vast majority of which are 2-year institutions, have educational programs that encourage many graduates to pursue additional degrees, especially bachelor's degrees (AIHEC 2000). Most Tribal colleges have good articulation agreements with 4-year institutions in their state, and they emphasize student transfer to these campuses. Approximately 75 percent of the students surveyed in the previously cited study believed that their Tribal college attendance provided them with "excellent" or "good preparation" for baccalaureate degree pursuit. The same study found that 88 percent of the students surveyed were "satisfied" or "very satisfied" with their experience at the Tribal college, which was consistent with a similar study conducted previously (i.e., Boyer 1995).

Programs and Practices

As noted earlier, academic and social support programs that complement the institution's mission and student characteristics can help students adjust to college by providing clear pathways to succeeding in college (Kramer and Associates 2003; Kuh et al. 2005b). These include orientation, transition courses and first-year seminars, learning communities, intrusive advising, tutoring, supplemental instruction, peer tutoring, study groups and summer bridge programs, study skills workshops, mentoring and student support groups, student-faculty research, and senior capstone projects. However, simply offering such programs and practices does not guarantee that they will have the intended effects on student success. Instead, institutional programs and practices must be of high quality, carefully designed to meet the needs

of students they are intended to reach, and firmly rooted in a student success-oriented campus culture (Kuh et al.).

New Student Adjustment

Coherent first-year experience programs, which include precollege and ongoing orientation programs, first-year seminars, and other new student advising and study group experiences, appear to be linked to a variety of positive outcomes for first-year students (Muraskin and Wilner 2004; Reason, Terenzini, and Domingo 2005; Upcraft, Gardner, and Barefoot 2005; Upcraft et al. 1993). For example, The Pell Institute (2004) found that institutions with high graduation rates had more programs that eased new students' entry and adjustment to college, including bridge programs, learning communities, study groups, block registering of students, tutoring, and other programs to help students adjust to college. In addition, creating clear pathways to show students what to expect and what success looks and feels like helps students bring meaning to their educational experiences and helps acculturate them to the institution (Kuh et al. 2005b).

Orientation. Forest (1985) controlled for entering student academic ability and found that institutions that provided the most extensive orientation and advising programs had higher graduation rates. Other studies show similar results (Dunphy et al. 1987; Fidler and Hunter 1989). Orientation also may have a positive effect on persistence through its influence on social integration and subsequent commitment to the institution.

NSSE (2005) reported that most (87 percent) first-year students attended an institution-sponsored orientation program. Those that did:

- Participated in more educationally enriching activities,
- Perceived the campus environment to be more supportive,
- Reported greater developmental gains during their first year of college, and
- Were more satisfied with their overall college experience.

Orientation programs generally facilitate students' adjustment to college and increase commitment to the institution. However, after taking into account students' educational aspirations, commitment to graduation, academic aptitude, and socioeconomic status, student participation in orientation may only have a trivial, statistically nonsignificant direct effect on persistence (Pascarella and Terenzini 1991, 2005). Despite this qualification, direct effects on persistence were found to be associated with longer duration, comprehensive orientation programs, while even short summer orientation programs exert an indirect influence on student persistence.

First-Year Seminars. First-year seminars take a variety of different forms. Some are of the "orientation to college" genre; others are discipline based and taught by faculty members; yet others are team taught and combine advising and orientation activities and substantive, discipline-based or interdisciplinary content (Upcraft, Gardner, and Barefoot 2005). Such courses are relatively common. For example, NSSE (2005) reported that more than half (54 percent) of all first-year students participated in a course specifically designed to enhance their academic skills or social development.

Pascarella and Terenzini (2005) reported on only one study using an experimental design (Strumpf and Hunt 1993) that estimated the impact of a freshman year seminar (FYS). New students at the University of Maryland at College Park interested in taking the seminar were randomly assigned to two groups, one that took the FYS and the other that did not. Two years later, those that completed FYS were more likely to have stayed in school.

NSSE 2005 findings show additional benefits for students who participated in a first-year seminar. Controlling for a variety of student and institutional characteristics, those in an FYS:

- Were more challenged academically,
- Reported more active and collaborative learning activities,
- Interacted more frequently with faculty,
- Perceived the campus environment as being more supportive,
- Gained more from their first year of college, and
- Made greater use of campus services.

Carstens (2000) found that students who completed a first-semester orientation course earned more credit hours per semester and expended greater effort toward academic tasks 3 years after enrollment than their peers in a matched sample who had not taken the course. Furthermore, after controlling for student characteristics, the least academically prepared students earned more credit hours per term, had higher grades, and reenrolled at significantly higher rates than did their peers who did not take the orientation course; even students with higher entering ability had more positive academic outcomes than their no-course counterparts (Carstens).

Advising

Structured academic advising is important for helping students find their way through college at both 2- and 4-year institutions (Cohen and Brawer 1996; Kramer and Associates 2003). Although advising takes many forms in postsecondary education and it is difficult to tease out the effects of, for example, advising delivered by professional advisors or faculty members, high quality advising seems to be positively related to student success. That is, while studies that did not control for the perceived quality of advising found mixed results (Aitken 1982; Brigman, Kuh, and Stager 1982; Kowalski 1977), Tinto (2004) found that advising positively affects retention and graduation when advisors address the needs of undecided students, those who decide to change their major, and first-generation students, who may not have the same knowledge of how to successfully navigate higher education. As with orientation, the quality of academic advising may also have an indirect effect when factors such as high school grades, gender, and age are taken into account (Metzner 1989).

In addition, advising is thought to be most effective in terms of promoting student success when integrated into academic support services and when sensitive to developmental needs of diverse students (Kramer and Associates 2003). Advising processes are increasingly important to assist students who attend multiple institutions or are co-enrolled during their undergraduate experience (McCormick 2003). Advisors are particularly important to helping students plan their educational program appropriately and to addressing questions of coherence and sequencing of the educational program. However, advisors

must also encourage students to become involved with peers in campus events and organizations and invest effort in educational activities known to promote student learning and development (Braxton and McClendon 2001–02; Kuh et al. 2005b).

The quality of academic advising also is the single most powerful predictor of satisfaction with the campus environment for students at 4-year schools (NSSE 2005). Fortunately, most students are reasonably satisfied with the quality of their academic advising. Only 7 percent of first-year students describe it as “poor.” At liberal arts colleges and general colleges, advising is “very good” for first-year students and even better for seniors. NSSE data (2005) show that students who rate their advising as good or excellent:

- Are more likely to interact with faculty in various ways,
- Perceive the institution’s environment to be more supportive overall,
- Are more satisfied with their overall college experience, and
- Gain more from college in most areas.

However, a smaller percentage (65 percent) of part-time first-year students say advising is good or excellent; more say advising is poor (11 percent). Perhaps this is because part-time students spend less time on campus and have less time to meet with an advisor, which may translate into less favorable ratings because student needs aren’t being met. They are also twice as likely to be undecided in terms of major, which may require different types of advising skills (less information dispensing and more career exploration).

Early Warning Systems

Early warning systems are especially important for students who start college with two or more risk factors (see figure 3), or who appear to be struggling academically. Midterm progress reports, course-embedded assessments, and early alert systems that incorporate a network of individuals, including faculty, mentors, academic support units, and peer support groups, are most effective at helping students address these early adjustment difficulties (Kuh et al. 2005b; Tagg 2003). Student retention, progression to degree, and graduation at HBCUs is fostered when at-risk students are identified early and intervention strategies are employed (Nettles et al. 1999). Specially designed academic support programs that provide early intervention to prepare and assist students from historically underrepresented groups, including federally funded TRIO programs, and other institutionally designed initiatives typically include early warning systems to identify and support students at academic risk.

Learning Communities

Learning communities, programs that enroll groups of students in a common set of courses usually organized around a theme and frequently linked with residence life experiences, continue to be adopted at all types of colleges and universities as promising approaches to enrich student learning and student success (Knight 2003; Shapiro and Levine 1999; Tinto 1997a, 1997b). The National Learning Communities Project monograph, *Learning Community Research and Assessment: What We Know Now* (Taylor 2003), provides a comprehensive account of empirical evidence on learning communities and concludes that participation in a learning community was associated with student retention, student

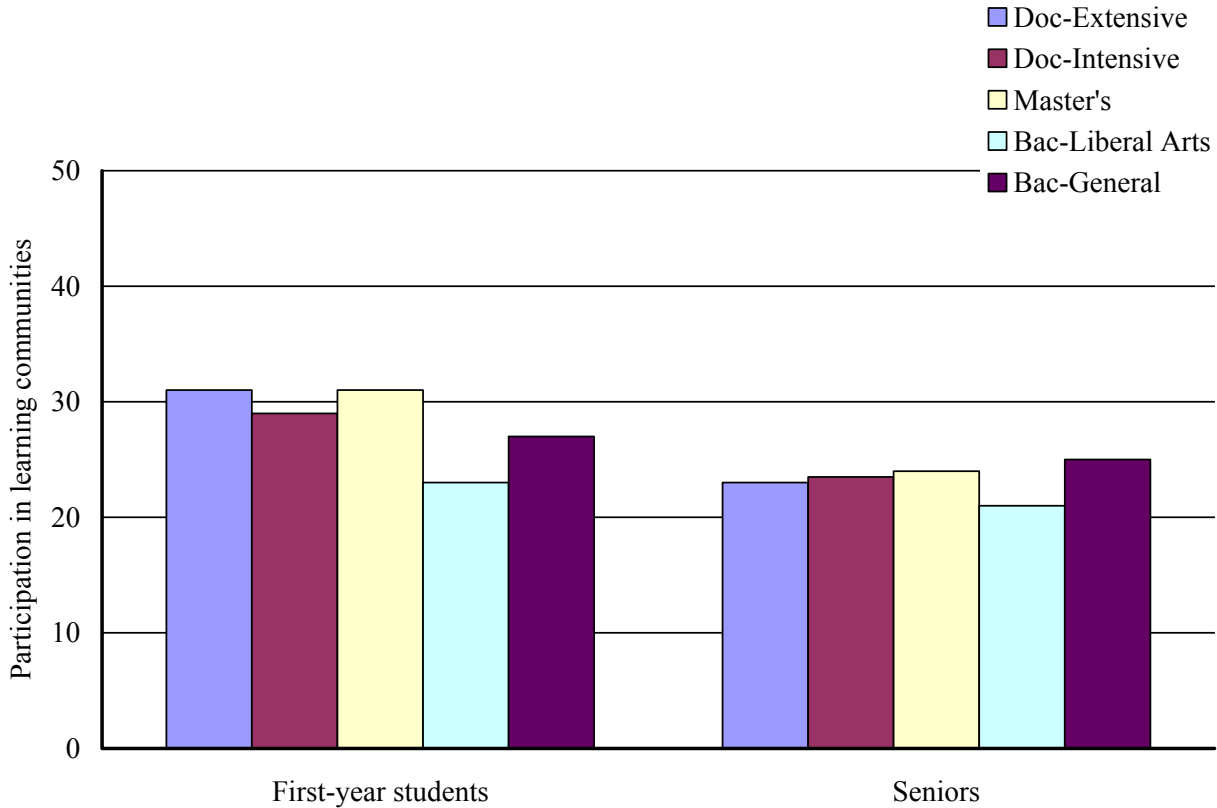
academic performance (GPA), credit hours earned, and student satisfaction. These findings hold for a variety of learning community settings and structures and types of students. Further evidence of the theoretical connections between learning communities and student engagement, self-reported gains in learning, and persistence have been fairly well documented (Knight 2003; Pike 1999; Pike, Schroeder, and Berry, 1997; Price 2005; Zhao and Kuh 2004).

Nationally, 29 percent of first-year students and 22 percent of seniors report participating (or planning to participate) in some type of learning community, defined as an experience where students take two or more of the same courses together (Zhao and Kuh 2004). Learning communities are strongly related to all of the five NSSE clusters or benchmarks of effective educational practice including diversity experiences, student self-reported gains in personal and social development, practical competence, and general education, and overall satisfaction with the undergraduate college experience. This is true for both first-year and senior students, though the effects are greater for first-year students (as would be expected as they are more likely to have had the experience recently).

Figure 10 shows that first-year students at Doctoral Extensive and Master's institutions have the highest learning community participation rates (about 30 percent). Among the students most likely to gravitate to learning communities are:

- Women,
- Full-time students,
- Students living in Greek housing,
- Nontransfer students,
- International students, and
- Students majoring in health-related fields; education; ethnic, cultural, and area studies; park, recreation and sports management; agriculture; and liberal/general studies.

Figure 10. Learning community participation rates, by Carnegie classification



SOURCE: National Survey of Student Engagement 2003.

Participation in learning communities at the University of Texas at El Paso (UTEP) (2003) was related to increased first to second year persistence for students in science, technology, engineering and mathematics. The UTEP learning community featured an orientation program, clustered discipline-based courses, and academic advising. Students in a similar program for women in science and engineering that added a residential component were more likely than their counterparts to persist; they also had higher grades and were more satisfied (Allen, Brower, and Golde 1999). At Western Washington University (1996), participation in a 2-year, cohort learning community designed for underrepresented minority students in law had a positive impact in terms of helping them make progress toward degree, enriching their learning, and facilitating their acceptance to law school.

Learning communities appear to be effective for enhancing student success at community colleges (Tinto 1997a; Tinto and Love 1995). The Opening Doors Demonstration project (Bloom and Sommo 2005) used a random assignment research design to study the effects of learning communities (block scheduled, three linked courses, with faculty integrating activities across courses) on student persistence and achievement. Students in the learning communities out performed (higher pass rate in English) students not in a learning community. The effects of the program were even stronger in cases in which faculty coordinated writing assignments, and when students were aware that their instructors were working together. These studies are particularly noteworthy because they demonstrate the impact of learning communities on success of women, students of color, and other students in fields in which they have been historically underrepresented.

Campus Residences

As indicated in the previous section on structural characteristics, residence halls can be a powerful vehicle for incorporating students into college. Residence halls help students develop social connections with peers who are dealing with similar challenges and difficulties. The formation of peer communities supports Astin's (1993b) finding that the single most powerful influence on college students' cognitive and social development is their peers. Social network theory (see Part 3) may in part explain why students who do not have an affinity group have more trouble persisting in college when they encounter difficulty. Moreover, Pascarella and Terenzini (2005) reported that students in halls with strong academic orientation generally have greater academic achievement than do other students. Residence halls with an academic orientation—typically identified as living learning communities—house students together and provide some common academic experiences (usually courses, academic support services, or lecture series) to enrich the academic connections among students.

The benefits of residential living-learning communities are documented in several studies in the National Learning Communities Project monograph (Taylor 2003). In their study of students in freshman interest groups (FIGs), Pike, Schroeder, and Berry (1997) found that although residential learning communities did not improve students' academic achievement and persistence directly, they did indirectly improve students' success by enhancing their incorporation into college. Participation in a FIG was also associated with higher levels of involvement in campus activities, greater interaction with faculty outside the class and with peers, and higher levels of integration of course information (Schroeder, Minor, and Tarkow 1999). This research corroborates that educational interventions in residence halls can have a positive effect on the quality of students' interaction with peers and faculty, which in turn enhances achievement and persistence.

Student Success Initiatives

Student success courses typically address issues such as optimal use of campus support resources and time management, advising and career development, and skill development including goal setting, and test and note taking (Gardner and Jewler 1995). These courses have been credited with helping students learn effective study skills and improve retention of course material (Coleman and Freeman 1996; Helmcamp and Petrie 1998). The adaptive skills fostered in such courses are prerequisite behaviors that have direct and indirect influences on persistence and graduation. Furthermore, when academic support services are designed to meet student learning needs for particular courses, departments or majors, such as supplemental instruction or study groups linked to gateway courses, student persistence is enhanced (Tinto 2004). Student success courses also support underrepresented students adjustment to college. For example, participating in academic support courses and programs was found to contribute to a stronger sense of belonging among Latinos in college (Hurtado and Ponjuan 2005). Linking academic support to the classroom is especially valuable to commuting students, who may have limited time on campus, and to ensure that all students have access to academic support services.

When starting college, the vast majority of students (87 percent) say they'll at least "occasionally" use campus academic support services such as writing skills centers. Yet, by the end of the first year almost half (46 percent) have *not* done so. In contrast, only 15 percent *never* used campus recreational facilities. Between 40 percent and 50 percent of first-year students *never* used career planning, financial advising, or academic tutoring services. An Indiana University Bloomington study (Hossler, Kuh, and Olsen 2001) showed that students in high-risk courses were almost twice as likely to seek tutoring when it was available in their own residence hall than when the same service was provided in other campus locations. Student use of academic skills centers jumped when the centers were moved closer to where

students lived, thereby increasing access. Three such centers now operate in residence halls in different parts of the campus. Students who use these skill centers for mathematics and writing improvement are much more likely to persist to the second year and get higher grades than peers who do not, even though they are similar in most background characteristics including academic ability (Hossler, Kuh, and Olsen). This is an excellent example of why simply providing services will not have the desired effect; students must be induced to use them.

Remediation. About one-third of entering college students take developmental courses to bring their academic skills up to a level that will allow them to perform adequately in college (Bettinger and Long 2005). Even so, debate continues about whether to limit the number of development courses a student can take, how much they cost (and thus divert funds from the core academic program), and whether participants should receive academic credit and count toward graduation requirements. The research about the effects of such courses in community colleges—which deliver a disproportionate share of developmental courses nationally—is somewhat mixed. One study showed that taking remedial courses is associated with student retention (Hoyt 1999). Another (Bettinger and Long) indicated that students who take remediation courses were more likely to persist in college in comparison to students with similar test scores and backgrounds who were not required to take the courses, and the participants were more likely to transfer to a higher level college and to complete a bachelor’s degree. In addition, developmental education courses were also found to play an important role in student success at institutions with high graduation rates (The Pell Institute 2004). At least one study produced contradictory findings (Burley, Cejda, and Butner 2001). However, remediation in English was found to have a positive effect on Latino students, which may help them overcome challenges associated with English being their second language (Swail et al. 2005). Perhaps remediation helps students bring their performance up to levels that allows them to stay in school academically, even though their grades may not be comparable to those who do not require remediation.

By tailoring remediation programs to the specific characteristics of students in need of such assistance, institutions are better able to serve and move students from developmental courses to college-level courses. The use of different methodologies, and teaching strategies, such as using intensive review formats or “refresher workshops” in math or grammar fundamentals to prepare returning adult students to take assessment and placement tests, have been found to be a more efficient approach to moving returning adults into college-level courses (Ignash 1997). In contrast, to address the needs of younger students, it is especially helpful when community colleges cooperate with high schools to clarify what college readiness means in terms of academic expectations and requirements, and collaborate with schools to develop programs to meet high school students’ developmental needs (Ignash; Rosenbaum 1998). Despite some promising findings, there is still more to learn about the most effective approaches to working with students with weak academic skills at community colleges (Bailey and Alphonso 2005; Boyland 2002; Grubb 2001). Figure 11 lists desirable characteristics of effective developmental education programs.

Figure 11. Recommended components of developmental education initiatives

- Required entry-level testing
- Mandatory placement in basic skills courses
- Required orientation programs
- No late registration options
- Dual enrollment in basic and college-level courses
- Reduced academic load for working students
- Comprehensive financial aid
- Incorporation of problem-solving skills in all developmental courses
- Limited number of courses allowed for remediation
- Continuous program evaluation
- Articulation between basic skills and college-level courses
- Institutionalization of precollege activities
- Developmental sequence of courses
- Early completion of sequence
- Course load restrictions even after completing sequence
- Early warning and academic progress information systems
- Continuous midterm program report
- Degree audit system for advising, and frequent discussions about major/program intent
- Full-time director to organize and coordinate developmental education initiative

SOURCES: Ignash 1997; Lucy-Allen, Merisotis, and Redmond 2002.

Student Support Services

Some evidence suggests that the ratio of student development professionals to students influences persistence. Hedlund and Jones (1970) found that all the 2-year colleges in their sample with no greater than a 1:150 student development professional to student ratio graduated 50 percent or more of their students in 2 years in contrast to the 20 percent graduation rate of the colleges with a ratio of more than 1:150. Astin (1993b) reported a similar relationship between persistence and resources allocated to student services and personnel. Pascarella and Terenzini (1991) cautioned, however, that such findings are confounded by many factors, including systematic differences in the ability of students attending certain institutions and the institution's enacted mission and ethos (Kuh 1995). For example, perhaps institutions that invest in more student development professionals also have other attributes that promote student success that previous studies have not measured (Kuh et al. 2005b).

Lewis and Middleton (2003) emphasized the importance of a child care facility on campus to African American persistence, transfer from 2- to 4-year institutions, and degree completion. Child care is also a major challenge facing low-income adults pursuing postsecondary education. At the State University of New York, Kappner (2002) found that when child care is provided on campus, student parents are more likely remain in school, graduate in fewer years, and earn higher grades. Other important services for adult learners are quiet work and study areas, academic support services available for extended hours, and family-oriented activities (Cook and King 2005). Notably, the private, for-profit sector of postsecondary education seems to be more responsive in providing such services for adults compared with other sectors of higher education. Bailey, Badway, and Gumport (2001) found that student services such as admissions, counseling, and career placement were more integrated and better developed at the for-profit than at the comparison community colleges in their study.

Teaching and Learning Approaches

Widespread use of effective pedagogical practices must be at the core of any agenda to promote student success. This area of research received more attention than any other over the past dozen years (Pascarella and Terenzini 2005), fueled by the expanding research and theory on human learning (National Research Council 2000). Widely disseminated papers (Barr and Tagg 1995; Chickering and Gamson 1987, 1991; Cross 1998, 1999; Guskin 1994, 1997; Hutchings 1996) described the value of restructuring the teaching and learning environment to maximize student learning. This restructuring movement is characterized by a shift in emphasis from faculty teaching to student learning (Barr and Tagg). This shift promises to have profound implications for setting higher expectations for students, for raising academic standards, for asking students to take more responsibility for their learning, for demonstrating competency through assessment, and for emphasizing and validating alternative ways of knowing, interdisciplinary methods, and problem-focused learning.

Educational Philosophy

“Faculty who show regard for their students’ unique interests and talents are likely to facilitate student growth and development in every sphere--academic, social, personal, and vocational” (Sorcinelli 1991, p. 21). Maintaining an unshakable focus on student success is manifested by holding high expectations for all students and is a central feature of institutions with a student success-oriented educational philosophy. A key element of this approach is adopting a talent development philosophy throughout the institution. In addition to recognizing that every student can learn under the right conditions, the talent development view requires that the institution organize its resources and create conditions for teaching and learning based on educationally effective practices.

The talent development view also recognizes the need to embrace and address students’ diverse talents and needs (Chickering in press; Chickering and Gamson 1987). Although a talent development philosophy is appropriate for all students, it is particularly effective for working with students historically underserved in higher education, especially when pedagogical practices acknowledge and honor the experiences of adult learners and view the talents and skills students bring to the classroom as “assets” versus deficiencies. Such a view holds that because each student has a unique perspective on the world and the topic under study, all students enrich the learning of others as well as their own through sharing their knowledge and experience (Alexander and Murphy 1994). Because faculty members often misunderstand, ignore, or devalue the talents of students from diverse backgrounds, these learning style differences can be viewed as academic deficiencies in need of remediation (Pounds 1987). Uri Treisman (1992) noted that many students from historically underserved groups at the University of California, Berkeley were failing calculus even though they had the academic prerequisites and demonstrated ability to perform successfully. He discovered that environmental disorientation was the problem, not lack of motivation as was assumed initially by their instructors. Treisman developed strategies so that these Black and Hispanic students could use and further hone their mathematical and problem-solving talents. “We did not question that minority students could excel. We just wanted to know what kind of setting we would need to provide so that they could” (Treisman, p. 368). By adopting a talent development perspective and taking into account the backgrounds and characteristics of the students, Treisman and his colleagues were able to develop a model program that is responsive to the needs of a variety of students (Kuh et al. 1994).

Pedagogical Approaches

Institutions that adopt educational philosophies that value undergraduate student learning also tend to encourage the use of such engaging pedagogies as active and collaborative learning, classroom-based problem solving, peer teaching, service-learning, and various forms of electronic technologies. Other promising instructional practices are supplemental instruction, peer tutoring, reciprocal teaching, attributional retraining, concept-knowledge maps, and 1-minute papers. According to Bourner (1997), the greater the repertoire of teaching methods, the more effective the learning experience, especially when teaching approaches are aligned with student abilities and preferred learning styles and learning aims. For example, if the goal is to disseminate up-to-date knowledge, lectures, guest lecturers, and use of the Internet may be effective methods. If the aim is the develop students' ability to test ideas and evidence, seminars, feedback on written work, and peer and self-assessment are good methods. In general, it is important for faculty to have high aspirations for learning outcomes, clear expectations for student performance, and standards for holding students accountable (Hassel and Lourey 2005; Tagg 2003).

Setting high expectations and then supporting and holding students accountable for reaching them is an effective strategy for encouraging student success. High expectations for student performance characterized institutions with higher than predicted student engagement and graduation rates (Kuh et al. 2005b). According to Blose (1999), students tend to adjust their behavior and comply, regardless of their prior academic history, to the academic expectations of the environment. The author found that students at selective institutions promoting high academic expectations exceeded predicted performance expectations, suggesting that a self-fulfilling prophecy was at work. Although high expectations for student success should be encouraged at all institutions, Rosenbaum (1998) cautioned that it must be accompanied by realistic advice to students about degree completion and what is necessary to succeed.

Rendon (1995, 1999) found that “validation”—an enabling, confirming, and supportive process initiated by faculty and other agents of socialization in and out of the classroom—fosters student success, particularly for historically underserved students. Validation activities in the teaching and learning context include calling students by name, working one on one with students, praising students, providing encouragement and support, encouraging students to see themselves as capable of learning, and providing vehicles for students to support and praise each other. These validation actions can induce “transformational changes” in students, accompanied by an increased interest and confidence in their capacity to learn.

According to Volkwein and Cabrera (1998), such classroom experiences as whether students are intellectually challenged, are learning new things, and are given stimulating assignments are the most important influences on student growth and satisfaction. Other beneficial classroom experiences include supportive contact between students and faculty and the degree to which students are engaged and exert effort. Such favorable classroom experiences stimulate learning and contribute to greater intellectual growth (Strauss and Volkwein 2002; Volkwein and Cabrera). Furthermore, these classroom experiences were found to be independent of incoming student characteristics (race/ethnicity, sex, financial need, family background), but not of the effort students expend (Volkwein and Cabrera). However, perceptions of discrimination and prejudice in the classroom have significant negative effect on student persistence, particularly for minority students (Nora and Cabrera 1996).

Volkwein et al. (2000) reported that the most consistently influential variable on students' academic achievement and cognitive growth were items about faculty behaviors representing being well-prepared for class and designing assignments students considered meaningful. These faculty behaviors also appear to be associated with gains in students' cognitive development (Pascarella 2001).

Instructor qualities that matter include preparation and organization, clarity, availability and helpfulness, and concern for and rapport with students. As summarized by Angelo and Cross (1993) and Pascarella and Terenzini (2005):

- Good teachers are knowledgeable about their subject matter, are enthusiastic, encourage students to express their views through discussion, and interact with their students, both in and outside of class, (Feldman 1976; Marsh 1984; McKeachie et al. 1986; Murray 1985; Pascarella 1980).
- Students learn more from courses when they are given timely feedback that is both supportive and corrective (Cross 1987; Kulik, Kulik, and Cohen 1980; McKeachie et al. 1986; Menges and Mathis 1988).
- When students are expected to work hard, academic achievement, class attendance, and their sense of responsibility all increase (Berliner 1984; Cashin 1988; Marsh 1984).
- Because every student learns differently, individualized instruction is more effective under most circumstances (McKeachie et al. 1986).

It seems reasonable to assume that if these effective approaches were adapted by faculty, administrators, student affairs staff, and others who routinely interact with students outside the classroom (e.g., faculty advisors to organizations, internship supervisors, employers, peer mentors), out-of-class experiences would make a greater contribution to students' learning and personal development and increase institutional productivity (Kuh et al. 2005b; Kuh et al. 1991). Helping faculty members acquire these skills should be a priority for faculty development programs.

Active and Collaborative Learning. Most of the scholarship on teaching and learning indicates that the passive lecture format where faculty do most of the talking and students listen is contrary to almost every principle of an optimal learning environment (Barr and Tagg 1995; Guskin 1997; Tagg 2003). Rather, active and collaborative learning approaches feature three elements that matter to student learning: involving students, increasing their time on task, and taking advantage of peer influence. Active and collaborative learning is an effective educational practice because students learn more when they are intensely involved in their education and are asked to think about and apply what they are learning in different settings. Collaborating with others on academic work and problem solving prepares students to deal with the messy, unscripted situations they will encounter daily during and after college (NSSE 2000) and substantially increases the amount of time and effort students spend learning (Guskin 1997). Active learning has been found to have differential impact on various student populations and in different disciplines. For example, first-generation students who report more participation in group discussion, presentations, performances, research projects, and group projects, and who more frequently discuss courses with other students, had higher probability of success (Amelink 2005).

Problem-based, or inquiry-based, learning has gained a strong foothold in health science education. For example, faculty in science, engineering, technology, and mathematics courses were encouraged to infuse active learning into the classroom (Allen and Duch 1998; Duch, Gron, and Allen 2001; Rutherford and Ahlgren 1991). Ebert-May and Brewer (1997) documented the efficacy of reform efforts, including more active learning in place of the traditional lecture format; the infusion of cooperative learning into lectures; and the addition of in-class science activities, debates, simulations, and discussions, in introductory biology courses. They reported that students learned more effectively by participating in a cooperative group; enjoyed their social interactions; characterized the classroom environment as friendly, nonthreatening, fun, and dynamic; and reported a sense of belonging and camaraderie because they

regularly interacted with peers and learned from each other. Students also reported that the course had a positive impact on how hard they worked and their level of attention in class because they more frequently reported to the class about their progress on assignments. Ebert-May and Brewer concluded that to improve biological literacy, educators must emphasize the process of knowing and depth of content rather than trying to cover as much information as possible.

Active and collaborative learning seems to introduce other opportunities for engaging in other effective educational practices and contribute to social integration, institutional commitment, and intent to return (Braxton, Milem, and Sullivan 2000). That is, active learning experiences are positively associated with increased frequency of student contacts with faculty members (probably because the nature of class activities and out-of-class assignments requires it) and more positive views of the campus environment (probably mediated by getting to know classmates better through the collaborative exercises). It is perhaps through these experiences that active learning exerts a positive influence on student integration and persistence.

In addition, though far from conclusive, there is some evidence that active and collaborative learning can have compensatory effects for lower ability students. NSSE was coadministered with several experimental learning measures, and the results indicated that students who scored greater than 1300 on the SAT appeared to gain less from active and collaborative learning activities than their counterparts who scored below 990 (Carini, Kuh, and Klein in press). In fact, the lower scoring group appeared to benefit more in student engagement and learning outcomes from high quality personal relationships, a supportive campus environment, and experiences with diversity. Preferred learning styles may also be a factor. That is, “higher ability” students may be more proficient in abstract reasoning compared with “lower ability” students who perform better when course material is presented in concrete terms and they have opportunities to apply concepts to their daily lives. These findings are mildly provocative, suggesting that interventions to boost student engagement may have the greatest payoff for those students who are most at risk for leaving college prematurely.

Feedback. As mentioned previously, timely and apt feedback are positively associated with student learning and success (Chickering and Gamson 1991; Kuh 2003). Feedback that furthers learning provides students with ongoing guidance and information about whether they are on track in a way that enables adjustment (Tagg 2003). Faculty members provide appropriate challenge and support to students when they communicate high standards to students and provide timely and apt feedback and support to meet their students’ needs (Kuh et al. 2005b). The best feedback is interactive, involving teachers, staff, and students in a conversation about how the student is performing. Correspondingly, the use of classroom assessment techniques (Angelo and Cross 1993) provides faculty members with data on teaching effectiveness and student comprehension and also involves students in active mental processing of information and makes them more aware of themselves as learners (Cambridge 1996; Steadman 1998).

Instructional Technology. Instructional technology has matured at the same time as pedagogical approaches have expanded to serve more diverse learners (Twigg 2002). Kuh and Hu (2001b) found that older first-year students were much less likely to use electronic technology to complete assignments or discuss course topics with peers and instructors. Those students who frequently (“often” or “very often”) used information technology for classroom-related activities or assignments were more likely than their counterparts to report that their courses frequently (“quite a bit” or “very much”) emphasize higher order thinking skills, a component of academic challenge (Nelson Laird and Kuh 2005). For example, of those students who frequently communicated with classmates online to complete academic work, 84 percent said their courses regularly emphasized applying theories or concepts to practical problems or in new situations compared to 70 percent for those who did not frequently communicate with classmates online. Those same students also were more likely to report more frequent interactions with faculty; that is, 64

percent said they “frequently” discussed grades or assignments with an instructor compared with only 44 percent of those who infrequently communicated with classmates online.

In addition, students who reported that their instructors either frequently require the use of information technology or frequently use it in class were more likely to report frequently working in groups outside of class. For example, of those students who reported that their faculty frequently used information technology in class, 59 percent indicated that they frequently work in groups outside of class using the technology compared to 41 percent of those students who said that their faculty infrequently used information technology in class.

Some evidence suggests that courses redesigned to infuse instructional technology have made the teaching and learning enterprise more active and learner centered (Twigg 2005). Educationally effective course redesigns included instructional software and web-based learning to engage students with course content, learning paced around mastery and modular formats, expanded support systems online and in labs, small group activities, and alternate staffing for instructional personnel including undergraduate peer mentors and course assistants. Course redesign projects showed improvement in course completion rates, lowered drop-failure-withdrawal rates, and higher achievement rates (Twigg 2003).

Courses using technology, particularly those that require participation in specific experiences and on-demand support services, have been found to be positive for underserved students, especially those who are low income, first generation, and working adults (Twigg 2005). Quality improvement techniques included online tutorials; continuous assessment and feedback, particularly in large courses moved to automated assessment; more feedback, quizzes, online quizzing; increased interaction among students, supported via the Internet; individualized on-demand support; submission of midstage drafts of papers to tutors at any time; use of computer or group learning supplemental instruction and learning centers; use of undergrad learning assistants instead of graduate students (because undergraduate students relate better to other undergraduates); early interventions; setting baseline performance standards; and contacting those falling behind (Twigg).

For adult working students, the most predominant benefits were the convenience and flexibility of technology-enhanced approaches. For example, in response to an online survey at the University of Southern Mississippi, where a large percentage of the students are both low income and adult, 97 percent of the students indicated that the online materials allowed them to work on the course whenever they wanted; 91 percent said they found these materials helpful; and 85 percent disagreed or strongly disagreed with the statement, “I missed the chance to attend lecture on a regular basis.” Almost all (94 percent) indicated they would like to see the online features incorporated into other courses (Twigg 2005).

Faculty report that the use of technology in redesigned courses helped to create a more open, inclusive learning environment. Previously, students of color would not speak out in class, but in the redesigned course they more frequently contributed while online. Both adults and students of color used the online resources for self-remediation—probably, the faculty surmise, because no one knew they were doing so. Rather than feeling stigmatized when seeking help, students could find what they needed on their own time and without anyone’s knowing. The learning environment at the University of Alabama, where students received individualized assistance in labs, was much friendlier to students seeking help than the traditional classroom was, and it led to higher performance among African American freshmen (Twigg 2005).

Student-Centered Campus Cultures

Student learning is encouraged and supported through the cultivation of human scale settings and an ethos of learning that pervades all aspects of the institution (Kuh et al. 1994). Learning environments with these characteristics do not happen by accident. They are intentionally designed (Kuh et al. 2005b; Schroeder and Hurst 1996). According to Strange and Banning (2001), “campus environments set conditions that affect student learning and, in turn, students influence the shape of campus environments” (p. 200). In the broadest sense, the campus environment includes the physical component, a social component, an institutional component and an “ecological-climate dimension” derived from the interaction of the other three (Conyne and Clack 1981).

The natural and built physical environments of the campus shape behavior by permitting certain kinds of activities while limiting or making impossible other kinds. Moreover, students’ commitment in terms of persistence and loyalty to the institution can be strengthened by intentionally creating a strong “sense of place” through connecting campus architecture and design to meaningful experiences and memories of activities (Kuh et al. 2005b). The proximity of academic buildings to student residences can promote or inhibit interactions between students from different majors (Kuh 2000). Thus, “the actual features of the physical environment can encourage or discourage the processes of learning and development” (Strange and Banning 2001, p. 12). Institutions vary considerably as to the degree to which their physical and social environments foster or are congenial to student success (Berger and Milem 2000; Pascarella and Terenzini 2005). For example, institutions can encourage student-faculty interaction and peer interaction before and after class by placing benches and comfortable seating areas near classrooms, while others support student-faculty interaction by creating well-equipped group study space proximal to faculty offices, thereby increasing the likelihood of spontaneous interactions between students and faculty (Kuh et al. 2005b; Kuh et al. 1991).

The built environment directly affects what people with physical or visual limitations can do. Carvings, statues, paintings and other aspects of the adapted environment value or privilege some groups over others; in some instances, members of certain groups may find some of these properties, such as featuring portraits solely of white male campus leaders in a popular meeting room in the student center, alienating (Banning and Bartels 1997). Understanding how various groups of students perceive and react to the physical environment should be an essential step in any effort to enhance student satisfaction and success (Banning and Cunard 1996).

The social component represents students’ demographic characteristics as well as dominant personality orientations that can be represented by the proportions of student pursuing various majors. That is, institutions with large numbers of engineering and science majors differ in their environmental press from schools that have large numbers of business and performing arts students, as the personalities of the former tend to be realistic and conventional while the latter are enterprising and artistic (Holland 1973). Smart, Feldman, and Ethington (2000) emphasize the importance of academic environment as the primary mechanism by which students further their distinctive patterns of abilities and interests. The most favorable classroom experiences, faculty interaction, and intellectual and disciplinary growth was reported by seniors majoring in departments rated high on both measures of teaching and research, and students in departments that lacked a strong research climate or strong teaching climate reported less favorable experiences with faculty in and out of class (Volkwein and Carbone 1994). Thus, a robust departmental research orientation is neither beneficial nor detrimental to academic experiences of students, but when strong research combines with attention to teaching, it can have beneficial influence on the academic integration and intellectual growth of undergraduate majors.

Partnerships to Support Learning

Effective partnerships among those who have the most contact with students—faculty and student affairs professionals—are important to creating a campus culture that supports student success (Kuh et al. 2005b). Institutions that have established a sense of shared responsibility for student success are characterized by a high degree of respect and collaboration among community members and have made student success important to everyone.

Powerful Partnerships: A Shared Responsibility for Learning (National Association of Student Personnel Administrators (NASPA), American Association for Higher Education (AAHE), and American College Personnel Association (ACPA) 1998) outlines principles for sharing responsibility for student learning. *Learning Reconsidered* (NASPA and ACPA 2004) promotes the integration of an institution's educational resources to develop "the whole student." Schroeder, Minor, and Tarkow (1999) demonstrated how to develop an effective partnership between student affairs and academic affairs by developing residential learning communities called freshman interest groups. As noted earlier, FIGs are designed to help students connect and make meaning of their in-class and out-of-class experiences. Students who belonged to a FIG interact more with peer and faculty members outside of class, are more involved in campus activities, and integrate course information better than their non-FIG counterparts. Moreover, initiatives such as FIGs bring academic and student affairs units together to create a more coherent educational experience for students and make important contributions to a student success-oriented campus culture.

Designing for Diversity

Findings from research studies on diversity in college classrooms reported in *Does Diversity Make a Difference?* (ACE and AAUP 2000), demonstrate that campus diversity benefits all students. As Bauman et al. (2005) emphasize, diversity should not be perceived as simply a numerical goal of a percentage of students of color, but a process toward better learning and equity in educational outcomes for all students. For example, Kuh and Umbach (2004) found that one reason students at liberal arts colleges report having more experiences with diversity is because of frequent exposure to diverse perspectives in their classes. Among the more effective teaching and learning approaches related to productively introducing diverse perspectives are using interactive teaching techniques, such as small group discussions, role playing, and debates; a supportive, inclusive classroom climate; and faculty members who see themselves as learners and reflect on how to use the diversity present among members of the class to enhance learning (ACE and AAUP).

Swail (2003) noted that the effectiveness of a campus-wide retention program depends on supportive leadership, willingness to evoke change on campus, and careful planning. It is also important that institutional efforts to integrate students of color into predominantly White academic communities be sensitive to their needs and concerns (Eimers and Pike 1997; Terenzini et al. 1994). Feeling a sense of fit and belonging at the institution is important because being validated by faculty, staff, and peers helps students believe they can succeed (Hernandez 2000; Rendon 1994, 1999; Suarez 2003). One of the cultural factors that may inhibit the success of African American students at PWIs is that Black students spend more energy dealing with feelings of alienation and frustration, as well as a lack of campus support, than students at HBCUs (Watson and Kuh 1996). Dawson-Threat (1997) found that African American men benefit from more occasions to make connections between the reality of their lives and learning experiences in the classroom. Students need safe spaces to express their personal views, struggle with understanding human differences, and explore their identities.

A variety of institutional conditions support student success at HBCUs. The Third Black Colleges Program examined efforts designed to foster student retention, progression, and graduation, and found that student retention interventions are most effective when they are integral to the college community and are a shared responsibility of many different groups in the institution (Nettles et al. 1999). Because these findings have implications in and outside the classroom, they reveal important opportunities for collaboration between student and academic affairs.

Institutional Ethic of Improvement

Institutions focused on improving student success use information to assess their performance, pinpoint where improvement is necessary, inform change strategies, and monitor their effectiveness. Kuh et al. (2005b) called this continuous assessment and improvement ethic “positive restlessness.” Nettles et al. (1999) underscored the importance of developing a database for effective monitoring and evaluation to address retention, degree progression, and graduation objectives at HBCUs. For example, Bensimon’s (2004) “Diversity Scorecard,” a process designed to help campuses discover and enhance their capacity to achieve comparable results for African American and Latino/a students, puts data to use by establishing indicators to assess efforts to address inequities in educational outcomes. Evidence is assembled using institutional data to examine equity from four perspectives: access, retention, excellence (measurements of achievement for underrepresented students), and institutional receptivity (measures of institutional support for an affirming campus).

Summary

Institutions that foster student success provide stimulating classroom experiences that encourage them to devote more time and effort to their learning and help them develop good study habits (Kuh et al. 2005b; Volkwein et al. 2000). It is particularly important for institutions to invest in academic support services designed for the needs of diverse students (Bailey and Alfonso 2005), and for student and academic affairs to work together to improve the learning climate in and outside the classroom to have the greatest impact on student success. The institutional conditions associated with student success include:

- A clear, focused institutional mission,
- High standards and expectations for student performance,
- Assessment and timely feedback,
- Student learning centered culture,
- Peer support,
- Encouragement and support for students to explore human differences,
- Emphasis on the first college year,
- Respect for diverse ways of knowing,
- Integration of prior learning and experience,
- Academic support programs tailored to meet student needs,

- Ongoing application of learned skills,
- Active learning,
- Collaboration among student and academic affairs, and among students,
- Environment that emphasizes support for academic work, and
- Out-of-class contact with faculty.

The relevance of most of these conditions to student success has been demonstrated by their effective use at different types of colleges and universities across the country. For example, most institutions “front load” or concentrate resources on first-year students. Other institutions have developed learning communities, which are particularly important creating a social network for students at urban and commuter campuses. Service learning and related forms of community involvement also are widely considered educationally purposeful activities. These programs and practices are activities that institutions can put in place at relatively little additional cost and measure their impact over time on student success.

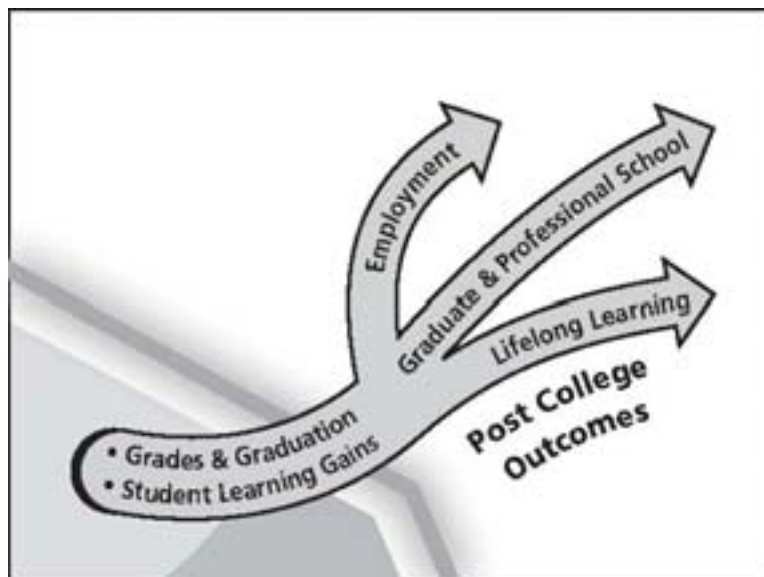
7. WHAT ARE THE OUTCOMES AND INDICATORS OF STUDENT SUCCESS DURING AND AFTER COLLEGE?

This section summarizes some of the more important investigations into the impact of college on desired outcomes and indicators of success during and following college. The former represent a range of learning and personal development domains. The latter include indicators such as grades, employment, postcollege income, civic engagement, and job and life satisfaction. When appropriate, we draw on key findings from Kuh et al. (1994) and Pascarella and Terenzini's recent volume (2005), which is the definitive source on the impact of college on student outcomes. We also feature findings—when available—that distinguish among institutional types and students from different backgrounds (race, gender, socioeconomic status). This is important because many of the effects of college are conditional and indirect, meaning that some students are affected more than others and their participation in certain activities mediates (or makes possible), but does not contribute directly to, certain outcomes (Pascarella and Terenzini). For example, living on campus does not by itself contribute to desirable outcomes, but it is important because it creates opportunities for other experiences that do contribute directly to these outcomes, such as interacting more frequently with faculty members and peers (Pike and Kuh 2005b).

College and Postcollege Indicators

Previous sections have focused on persistence and graduation. In figure 12, we briefly summarize research findings about two types of outcomes: (a) academic achievement represented by grades and (b) economic benefits and postcollege quality of life.

Figure 12. Student success outcomes



Grades

Despite the limitations and problems in using them, Pascarella and Terenzini (2005) concluded that college grades are probably the best predictor of student persistence, degree completion, and graduate

school enrollment. Good grades in the first year are especially important to subsequent academic success and degree completion, as strong academic achievement seems to reduce the chances of a student's stopping out and increases the probability of timely degree completion. For example, Adelman (1999) found that both first-year grades and trends in subsequent grades predicted bachelor's degree completion beyond the effects of other variables, including students' precollege characteristics, institutional selectivity, financial aid, hours worked, and selected college experience variables. Performing in the top two quintiles of the grade distribution improved the odds twofold that a student would complete a degree compared with their counterparts in the bottom three quintiles. Other studies found similar results even when controlling for students' background characteristics and college experiences (Astin 1993b; Heller 2001; Horn 1998; House 1996).

Pascarella and Terenzini (2005) estimated that undergraduate grades have "a modest positive impact" on being employed full time early in one's career in a position appropriate to one's bachelor's degree. But there is little evidence that grades are causally related to job satisfaction or job mobility. Grades do have a "positive net impact on both occupational status and earnings" (Pascarella and Terenzini 2005, p. 619). The most noteworthy finding regarding grades between Pascarella and Terenzini's 1991 and 2005 syntheses is that good grades in the first year appear to be particularly important to ensuing academic success and degree acquisition, indicating that the performance significance of grades varies over time.

Student engagement is linked to a wide array of desired college outcomes, so it is no surprise that as illustrated in Part 5, engagement and grades go hand in hand. In fact, GPA is positively related to all the effective educational practices measured by NSSE and nearly all those represented on the Community College Survey Student Engagement (CCSSE 2005; NSSE 2005). Specifically for students at 4-year colleges, GPA is associated with time spent preparing for class, coming to class prepared, asking questions in class, tutoring other students, receiving prompt feedback from faculty, maintaining high quality relationships with faculty, and having a favorable evaluation of overall educational experiences in college. These patterns generally hold for both first-year and senior students, though they do not explain the direction of the relationship between grades and engagement. That is, does engagement result in higher grades, or do higher grades promote more engagement? Findings from the National Survey of Student Engagement over the years indicate:

- Women report higher grades than men.
- At both 2-year and 4-year colleges, White students generally reported higher grades than students of color.² Why students of color report lower grades for comparable academic effort is not clear.
- Few students at 4-year colleges report C or lower average grades, i.e., only 5 percent of first-year students and 1 percent of seniors.

²At 2-year colleges, 58 percent of African American, Hispanic, and Native American students compared with 72 percent of White students report overall grade averages of A or B (CCSSE 2005). At 4-year schools, White students reported the highest grades, Asian and multiracial students somewhat lower grades, Latina/o and Native American students lower grades still, and African American students the lowest grades. For example, 52 percent of Latinos reported GPAs of 2.49 and below, as compared to 68 percent of Whites who earned GPAs of 2.50 and above (Swail 2003). At 2-year colleges, 58 percent of African American, Hispanic, and Native American students compared with 72 percent of White students report overall grade averages of A or B (CCSSE 2005). At 4-year schools, White students reported the highest grades, Asian and multiracial students somewhat lower grades, Latina/o and Native American students lower grades still, and African American students the lowest grades. For example, 52 percent of Latinos reported GPAs of 2.49 and below, as compared to 68 percent of Whites who earned GPAs of 2.50 and above (Swail 2003).

- Grade patterns vary by major fields. Seniors majoring in education, foreign languages, humanities, math, and the visual and performing arts report the highest GPAs, while those majoring in agriculture, engineering, and public administration report the lowest.
- Grades do not vary appreciably by institutional type or selectivity strata, though the *distribution* of grades is considerably compressed at more selective institutions (Hu 2005; Kuh and Hu 1999).

Economic Benefits and Quality of Life

Studies of postcollege outcomes focus primarily on the economic benefits associated with degree attainment. Analyzing four categories of college-related outcomes and benefits (public economic benefits, private economic benefits, public social benefits, private social benefits), the Institute for Higher Education Policy (IHEP) concluded that individuals and society at large benefit with each person who attends college (1998a; see also Williams and Swail 2005).

The factor that contributes most to postgraduate earnings is attaining a bachelor's degree (Barrow and Rouse 2005; Dey et al. 1995; Pascarella and Terenzini 2005), with the effects on earnings appearing to be comparable for women and men, all racial groups, and across all SES levels (Perna 2003). Those who benefit most economically in postgraduate earnings are first-generation and low-income students (Sanchez, Laanan, and Wiseley 1999; Tinto 2004). That is, first-generation students who overcome the odds and earn degrees and certificates appear able to secure employment and compensation comparable to those whose parents attended college (Nuñez 1998; Nuñez and Cuccaro-Alamin 1998). Indeed, the short-term labor market outcomes appear to be comparable for first-generation and other students in terms of what type of work they do and how much they earn (Choy 2001; Tym et al. 2004). Pascarella and Terenzini (1991, 2005) postulate that the types of benefits linked with a college education conferred on subsequent generations may be indirect through intervening factors such as family income, student aspirations, and institution type.

Choice of major field appears to affect long-term earnings (Dey et al. 1995; Fitzgerald 2000). Despite the fact that engineering and math are two fields that have a positive significant impact on career earnings (Fitzgerald; Dey et al.), the number of graduates in those disciplines declined between 1991 and 2002 (U.S. Department of Education 2004). Pascarella and Terenzini corroborated the impact of grades on the subsequent earnings of students majoring in business, education, science and math in comparison to other majors, additionally noting that men tend to be overrepresented in majors closely linked to the highest paying fields and the opposite holds true for women. Other student background characteristics, such as career aspirations and academic ability, affected long-term occupational attainments, but the effects of gender and aspirations appear to decline over time (Dey et al.).

College quality or selectivity is considered by the public at large as having an impact on earnings. The research on this topic is mixed but leans toward selectivity having only a slight effect, if any at all, on earnings (Dey et al. 1995; Fitzgerald 2000; Pascarella and Terenzini 2005). Pascarella and Terenzini conclude that economic benefits linked to institutional quality or selectivity does not accrue consistently to students from all backgrounds, with the greatest impact on earnings for low-income students and those with relatively low academic ability. However, it appears that graduating from one of the most highly selective institutions (top 1 or 2 percent) improves occupational attainment in specific high-status professions such as medicine or law (Pascarella and Terenzini).

According to Hoachlander, Sikora, and Horn (2003), students who leave community college without completing a credential nonetheless report that their postsecondary education favorably affected

their employment, even though they did not accomplish their educational goals. However, students who had earned a credential were more likely to report positive impacts than students who had not earned one (Hoachlander, Sikora, and Horn). Individuals can potentially boost their earnings by acquiring modest amounts of postsecondary education without earning a credential, but the average return seems to be smaller. Also, the economic returns of completing a year of community college appear to be comparable to completing an equal number of credits at a 4-year college (Pascarella and Terenzini 2005).

Williams and Swail (2005) determined that college graduates of every race and ethnicity, men and women, and members of each SES group reported better living conditions than their peers who do not earn a degree. HBCU graduates reported lower salaries but were just as likely as their peers to be satisfied with their pay, job challenges, and promotional opportunities (Redd 2000). HBCU alumni also enrolled in graduate and professional programs and received advanced degrees at higher rates than their counterparts who graduated from PWIs (Redd; Wenglinsky 1997). Tribal college graduates report that the education they receive, primarily associate degrees and certificates, had a positive effect on their lives (AIHEC 2000).

Pascarella and Terenzini (2005) concluded that attending college clearly influences occupations and earnings and various indices of quality of life, in part because college graduates tend to choose environments with similarly educated people, including spouses, close friends, and colleagues who share their social and political points of view. These quality of life benefits are transmitted to their children, favorably shaping their academic preparation, college choices, and college performance.

Learning and Personal Development Outcomes

To organize the review of learning and personal development outcomes associated with college attendance, we use the five outcome domains in figure 13 distilled by Kuh (1993), which are generally consistent with other research on student outcomes (Astin 1977, 1993b; Bowen 1977; Ewell 1984; Harris 1998; Lenning 1976; Pascarella and Terenzini 1991, 2005).

Figure 13. Outcome domains associated with college attendance

- *Cognitive complexity*: cognitive skills including reflective thought, critical thinking (e.g., ability to summarize information accurately and perceiving logical coherences and discernable themes and patterns across different sources of information), quantitative reasoning, and intellectual flexibility (i.e., openness to new ideas and different points of view).
- *Knowledge acquisition and application*: understanding knowledge from a range of disciplines and physical, geographic, economic, political, religious, and cultural realities, and the ability to relate knowledge to daily life including using information presented in one class in other classes or other areas of life.
- *Humanitarianism*: an understanding and appreciation of human differences including an increased sensitivity to the needs of others.
- *Interpersonal and intrapersonal competence*: a coherent, integrated constellation of personal attributes (e.g., identity, self-esteem, confidence, integrity, appreciation for the aesthetic and spiritual qualities of life and the natural world, sense of civic responsibility) and skills (e.g., how to work with people different from oneself).
- *Practical competence*: skills reflecting an enhanced capacity to manage one's personal affairs (e.g., time management, decisionmaking), to be economically self-sufficient, and to be vocationally competent.

SOURCE: Kuh (1993).

Cognitive Complexity

The development of cognitive skills is arguably one of the most important and desirable outcomes of college attendance. Developing intellectual and practical skills, particularly critical and creative thinking, has never been more important (AACU 2005). The cognitive complexity domain consists of two outcome categories—reflective judgment and application of knowledge (Kuh 1993), abilities needed to think critically and to logically evaluate or assess the quality of one's own thinking and experience by exercising independent judgment.

Pascarella and Terenzini (2005) found that students become more critical, reflective, and sophisticated thinkers during their college years and that college significantly enhances their general intellectual and analytical skills, critical thinking, and intellectual flexibility. However, attending an academically selective institution has a negligible impact on general cognitive development. They found that college environments that emphasize close relationships and high levels of student-faculty contact promote critical thinking, analytic competencies, and general intellectual development.

Astin (1993b) determined that the number of hours spent studying was positively related to all self-reported increases in cognitive abilities. Graham and Gisi (2000) found that adult learners did as well or slightly better than traditional-age students across measures of intellectual growth, scientific reasoning, problem-solving, and career development. They also found that the more time adults devoted to course and other related learning activities, the greater their reported learning outcomes, a pattern similar to that of traditional-age students (Kuh 1999; Kuh, Pace, and Vesper 1997; Pace 1990).

A number of studies have found positive correlations between cognitive complexity outcomes and the quality of relationships between students and faculty (Endo and Harpel 1981; Pascarella et al. 1983; Terenzini and Pascarella 1980; Volkwein, King, and Terenzini 1986). Wilson et al. (1975) reported that seniors who spent the most time with faculty outside of class also exhibited the greatest gains in cognitive outcomes (e.g., comprehension, interpretation, evaluation, or extrapolation abilities) (Pascarella and Terenzini 1991). Kuh (1995) reported that only about a quarter of the gains in cognitive complexity were associated with academics and faculty contact. Also, a higher proportion of men linked their contacts with faculty with gains in this area, while women more frequently attributed gains to contacts with peers. In general, students reporting greater gains in cognitive development are those who (a) perceive faculty as being concerned with teaching and student development, (b) have developed a close, influential relationship with at least one faculty member, and (c) report that their peers have had an important influence on their development.

Gains in cognitive development linked to out-of-class experiences tend to be related to the amount of effort students expend in educationally purposeful activities, such as service-learning (Astin, Sax, and Avalos 1999), studying or talking with peers and faculty about advising matters (Frost 1991), or other issues related to their studies (e.g., paper topics, graduate school) (Astin 1993b; Pace 1990). For example, studies of seniors (Gaff 1973; Wilson et al. 1975; Wilson, Wood, and Gaff 1974) show that those more involved in certain activities (intellectual, vocational, athletic, political, social) made greater progress on dimensions of cognitive growth (learning abstractions, applying principles, evaluating materials and methods) than those who were less involved. The majority of the out-of-class antecedents of gains in cognitive complexity were distributed across five areas: (a) peer interaction, (b) academic activities (e.g., studying), (c) other miscellaneous antecedents (e.g., influence of family, illness), (d) campus ethos, (e) and leadership responsibilities (Kuh 1995).

Living and Work Environments. Pascarella and Terenzini (1980) found that first-year students in living-learning residences rated the institutional environment significantly stronger in intellectual press and sense of community and also reported significantly greater gains in cognitive development compared

with their counterparts in other campus residences. Students who lived on campus exhibited greater gains in critical thinking than those who commuted (Chickering 1974; Pascarella et al. 1993). Pace (1990) found that students who lived on campus benefited more in terms of intellectual development, even though their participation in relevant activities is not much higher than those who live off campus. This suggests that it may not be the activities themselves that promote or foster development, but the contact with peers and others associated with such activities. Pascarella et al. concluded:

Residential living may be most influential in fostering cognitive growth in areas that are not closely linked to specific course or curricular experiences... . General cognitive growth during college is fostered not just by course work and academic involvement, but also by social and intellectual interaction with peers and faculty (p. 219).

With regard to work, no significant differences were found in critical thinking gains for students who worked on campus, worked off campus, or did not work during the first year of college (Pascarella et al. 1994).

Several studies illustrate the cognitive impact of HBCU attendance for African American students, especially when compared to those who attend PWIs. Bohr et al. (1995) examined the comparative first-year cognitive impacts on African American students enrolled at HBCUs and PWIs and found essentially no differences on standardized measures of reading comprehension, mathematics, critical thinking, and composite success measures. HBCU students differed from their counterparts in a variety of areas on entering characteristics and college experiences, but the experiences were not associated with differences in first-year cognitive gains. In other studies, African American HBCU students reported greater intellectual gains than their counterparts at PWIs (DeSousa and Kuh 1996; Fleming 1984) and more frequent interactions with faculty (Allen 1992; Flowers 2003; Pascarella and Terenzini 2005). These findings corroborate the widespread perception that HBCUs provide more supportive learning environments for their students.

Institutional mission and culture shape campus environments and influence student outcomes to varying degrees. For example, students attending small, private liberal arts colleges more frequently reported gains in cognitive complexity, ostensibly fueled by their engagement in educationally purposeful academic activities and with peers, and by the institutional ethos (Kuh 1993, 1995). In contrast, Bauer (2000) reported that participating in student union activities, clubs, and other out-of-class activities had a negative effect on cognitive outcomes and GPA. The conflicting findings may be due to differences in institutional contexts. That is, such findings may suggest that student cognitive growth may be influenced by a variety of experiences and conditions on a campus, particularly when out-of-class climates and experiences complement and encourage students to integrate what they learn in class with their lives outside the classroom (Kuh 1995). These activities may be especially important for African American students (MacKay and Kuh 1994) and older, part-time students who seem to benefit more in terms of cognitive development from the amount of time they invest in studying and related activities (Arnold et al. 1993; Kuh, Vesper, and Krehbiel 1994).

According to Terenzini, Pascarella and Blimling (1996), students' class-related and out-of-class experiences make statistically significant (albeit modest) and unique contributions to explaining variations in students' intellectual orientations after controlling for student characteristics. Volkwein, King, and Terenzini (1986) reported results consistent with the above for transfer students to a large state university during their first year at the new institution on a dependent measure of intellectual skill development; however, the net effect of out-of-class experiences was much smaller (though still statistically significant) than the amount of their involvement in the classroom.

Knowledge Acquisition and Academic Skills

The outcomes in this domain are primarily a function of course-related learning and the amount of effort students devote to their studies and independent research. At the same time, there is some evidence that engaging in cocurricular activities contributes to knowledge acquisition (Kuh 1993, 1995) with men and women benefiting to a comparable degree (Kuh 1995). This corroborates Pace's (1990) observation that sex and ethnicity do not explain fully differences in undergraduate activities and outcomes. Essentially, what matters most is what one does with his/her time, sex and ethnicity notwithstanding.

Pascarella and Terenzini (2005) concluded that students make significant gains in subject matter knowledge, verbal and quantitative skills, and oral and written communication during the undergraduate years. Students also tend to demonstrate their greatest learning gains in those subjects consistent with their major (Pascarella and Terenzini). For example, natural science and engineering majors report greater gains in scientific and quantitative reasoning than humanities and social science majors (Cheng 2000; Hu and Kuh 2002; Pace 1990). Full-time students report making greater gains in mathematics, science, and technology than part-time students; African American students perceived greater gains in these subjects than Asian students (Horn and Ethington 2002). Students from all minority groups are taking a more rigorous curriculum than in the past, although African American, Latino, and American Indian students continue to trail their Asian and White counterparts in advanced math and science course taking (U.S. Department of Education 1997).

The number of hours students spend studying and their level of effort and engagement in empirically verified effective educational practices have a strong, significant effect on their overall academic development (Astin 1993b; Pascarella and Terenzini 2005). Teacher behavior is an important influence on students' acquisition of course subject matter, especially when instructional approaches incorporate good practices in undergraduate education (Chickering and Gamson 1987) and complement students' preferred learning styles. Terenzini et al. (1996) found that perceptions of faculty concern for students and encouragement from peers were positively related to second-generation students' reading scores, but negatively related to the reading scores of first-generation students.

As with cognitive complexity, institutional type appears to have somewhat of an impact on the knowledge and academic skills students acquire while in college. Students attending small, private liberal arts colleges more frequently reported gains in knowledge and academic skills, which they attributed more often to classroom, lab, and studio activities than to out-of-class experiences (Kuh 1993). Attending an academically selective institution seems to have only a trivial effect on knowledge acquisition (Pascarella and Terenzini 2005).

First- and second-generation students do not seem to differ in the gains they make during college after controlling for differences in background characteristics and levels of engagement during college (Terenzini et al. 1996). However, there may be an interaction between first-generation status and college experiences in that the effects of engagement on learning differ for first- and second-generation students. For example, Chen (2005) reported that first-generation status had a negative impact on students' academic skill development in several areas, including math, science, and foreign language. Pike and Kuh (2005b) found that first-generation students reported making less progress in their learning and intellectual development, though this was due more to their aspirations and living off campus than to background characteristics. This finding is generally consistent with the Pascarella et al. (1993) finding that students who lived on campus exhibited greater (but not statistically significant) gains in reading and mathematics during the first year of college compared with those who commuted.

Participation in intercollegiate athletics, especially men's football and basketball, appears to be linked to smaller gains in reading comprehension and mathematical problem solving compared with other

students (Pascarella et al. 1995). Working (on campus, off campus, or not at all) was not related to gains in reading comprehension or mathematics during the first year of college (Pascarella et al. 1994).

The relationship between certain engagement practices and learning outcomes appears to be stronger for 2-year college students than students attending 4-year colleges. For example, Baer, Cook, and Baldi (2006) reported that the relationships between literacy (especially prose and document literacy) and preponderance of analytical coursework for students at 2-year colleges was associated with dramatic differences as engagement increases. This pattern is the same, although not nearly as pronounced, for students at 4-year schools. Other activities that show a consistent pattern between engagement and literacy are:

- Asking questions in class,
- Receiving prompt feedback,
- Emphasis on studying and academic work, and
- Providing support to succeed academically (Baer, Cook, and Baldi, 2006).

Taken together, these findings suggest that students at 2-year schools marked by challenging classroom activities and a success-oriented campus climate have higher literacy scores.

Humanitarianism

The AAC&U (2005) recently underscored the importance of college students acquiring the habits of the mind and heart that will prepare them to engage in civic affairs and work effectively with people from diverse backgrounds. The two outcome categories within this domain, altruism and estheticism, represent interest in the welfare of others and in people from different backgrounds, and appreciation for the arts (Kuh 1993). The latter should be of particular interest, given Gumpert's (2001) conclusion that American colleges and universities are not doing a good job of encouraging student interest in the arts and cultural activities.

By the time they graduate, students are more likely to support gender equality and are more likely to be tolerant of the political, social, and religious views of others (Pascarella and Terenzini 2005). Among the factors associated with these changes are living on campus, participating in cultural awareness workshops, undertaking social leadership activities, and perceiving that their institution places an emphasis on diversity and multiculturalism. In addition, faculty views, the peer environment, and other factors consistently and positively influence changes in a range of sociopolitical and civic attitudes and behaviors (Astin and Kent 1983; Kuh 1995; Kuh and Lund 1994; Pascarella, Ethington, and Smart 1988; Vogelgesang 2001). For example, Astin, Sax, and Avalos (1999) found that the frequency with which a student volunteers during college predicts similar behavior after college. Peer interactions in particular tend to have significant net effects on changes on these dimensions (Astin 1993b). Student interactions with other students who are different ethnically or culturally have a strong, positive effect on cultural awareness (Astin). Students' interactions with faculty also are positively correlated with promoting racial understanding (Astin), as are voluntarism and socializing with persons from different racial/ethnic groups (Astin, Sax, and Avalos 1999).

Apparently, the relatively homogenous environment of HBCUs does not necessarily inhibit the development of humanitarianism tendencies of their African American students. For example, Flowers

and Pascarella (1999) found that African American students' openness to racial and cultural diversity is not hindered by attending an HBCU, even though they tend not to report as many experiences with diversity (Kuh and Umbach 2005).

Race and gender seem to be significant and consistent predictors of students' likelihood to become involved in humanitarian efforts, particularly when it comes to promoting racial understanding and an appreciation for diversity. Gumport (2001) concluded that women were substantially more engaged in civic pursuits compared with men, who were more likely to stay abreast of current events. Vogelgesang (2001) found that a diverse student body was a significant predictor only for White students in developing a commitment to promoting racial understanding, and the effect is negative. Certain activities have positive impact across races, including enrolling in ethnic studies courses, attending racial awareness workshops, engaging in cross-racial interactions, and participating in community service. Hurtado and Ponjuan (2005) found that actual experiences in the college environment are more important than student background in predicting perceptions of a hostile climate for diversity.

Not surprisingly, full-time community college students reported greater gains in knowledge of the world than did part-time students (Horn and Ethington 2002). Pascarella and Terenzini report that community college students show greater gains than similar students at 4-year institutions in their openness to both intellectual and racial/ethnic diversity. Students attending small, private liberal arts colleges more frequently reported changes in altruism and estheticism (Kuh 1993). Attending an HBCU also appears to have an impact on civic orientation as their graduates are substantially more likely to participate in community service activities (Redd 2000). NSSE (2004) reported that compared with their counterparts at PWIs, HBCU African American students report having more contact with faculty, a greater belief that their institutions contribute to their spiritual growth, and a greater sense that their campus experience has contributed to their community involvement and civic engagement. Students at HBCUs also report greater increases in self-understanding and the likelihood they will vote.

As Gumport (2001) and Kuh (1993) observed, some institutions appear to leave a distinctive imprint, as their graduates exhibit substantially stronger dispositions toward certain values. Given that this domain is more of a value-oriented outcome it makes sense that institutional types, missions, environments and cultures would have a significant impact on what students learn from college regarding these outcomes (Kuh).

Interpersonal and Intrapersonal Competence

This domain consists of five attributes considered indispensable to living a meaningful, self-regulating, fulfilling life. They are self-awareness, autonomy, confidence, social competence, and sense of purpose. These outcomes contribute to one's sense of self-worth and well-being, and affect the quality of interactions with others.

Educationally purposeful out-of-class experiences such as peer interactions, work experiences, and meaningful leadership activities are linked with positive social self-esteem, self confidence, and other aspects of personal development (Kuh 1993, 1995; Pascarella and Terenzini 2005), with women gaining more in self-esteem than men. Similarly, experience in a paraprofessional role is related to gains in self-confidence, self-awareness, skills in interpersonal communication, and group dynamics. Pascarella and Terenzini concluded that attending a structurally diverse institution tended to enhance social self-concept. Service-learning courses help students clarify and define their identities and strengthen their self-esteem, internal locus of control, and interpersonal skills. Taking diversity courses, tutoring, helping to teach a course, working with a faculty member on a research project, and being involved in course group

projects, as well as the quality of instruction, all are positively linked to varying degrees with academic self-concept, self-esteem, and self-directed behavior.

Student-Faculty Contact. Student-faculty interaction beyond the classroom is positively correlated with personal growth in the areas of leadership, social activism, and intellectual self-esteem (Astin 1993b), and academic as well as social self-concept (Astin and Kent 1983; Pascarella et al. 1987; Smart and Pascarella 1986). Such interactions include the hours per week spent talking with faculty outside of class, assisting faculty in teaching a class, working on a professor's research project, and being a guest in a professor's home.

Living Environments. Pace (1984) found that the largest differences in self-reported gains in personal and social development were between on-campus and off-campus students (Chickering 1974). Living-learning centers in particular appeared to have a positive influence on aesthetic appreciation (Blimling 1993); coeducational living environments are associated with declines in self-consciousness and anxiety in social settings (Reid 1974). Most of these gains are attributed to interactions with faculty and peers (Pascarella and Terenzini 1991). For example, students who live or spend time with someone from a different racial and ethnic background gain in appreciation for the aesthetic qualities of life (Astin 1993b). In addition, exposure to people with diverse perspectives and interaction with people who have more advanced stages of moral reasoning (e.g., discussions between first-year students and upper-class students or faculty members or staff, work-related experiences) have been shown to enhance moral reasoning abilities (Kuh et al. 1994).

Students of color tend to report making greater gains in personal and social development from attending college than White students (Horn and Ethington 2002; Kuh 1995; Placier, Moss, and Blockus 1992). Generally, African American students at HBCUs tend to be more satisfied, more confident, and gain more in academic and personal development than their counterparts who attend PWIs (Allen 1986, 1992; Allen, Epps, and Haniff 1991; DeSousa and Kuh 1996; Fleming 1984, 2001; Flowers and Pascarella 1999; Watson and Kuh 1996). In part, this may be because African American students attending PWIs have to devote more effort to maintaining supportive social relationships due to their minority status; as a result of this effort, they gain more in areas such as interpersonal skills (DeSousa and Kuh). However, African Americans at historically Black institutions appear to benefit more in terms of desired outcomes of college from academic engagement. Horn and Ethington found that Hispanic community college students reported gaining more in communication skills and personal and social development compared to their Asian counterparts, and greater gains in personal and social development compared to Caucasian students. Placier, Moss, and Blockus concluded that proportionally more African American than White alumni perceived that college had made a significant impact on their personal growth, suggesting that college attendance has different meanings for African American and White students.

Practical Competence

Practical competence represents students' capacity to perform effectively after college in a variety of areas. Employers and policymakers are increasingly interested in this arena, saying that while students are well-prepared in their major field, many lack the skills and abilities needed to be successful in the workplace (Cappelli 1992; Ewell 1994; Hayek and Kuh 1999; Immerwahr 1999), what Bruffee (1993, p. 1) called "the craft of interdependence." Although practical competencies can be obtained in classrooms, laboratories, and studios, the nature of many out-of-class activities often *requires* that students become competent in these areas (Kuh 1995), demanding that students examine and test their skills and values in a variety of situations not unlike those they will encounter after college (Kuh et al. 1994). Thus, the practical competence domain includes the acquisition of time management skills and other attitudes and

competencies, such as interpersonal communication, group process, team work, decisionmaking, and understanding and demonstrating sensitivity to workplace culture, needed to manage one's own affairs and perform well in postcollege employment settings.

Educationally purposeful out-of-class experiences such as voluntarism, community service, and holding office in student government or other organizations positively contribute to leadership development, decisionmaking skills, and feelings of personal competence (Ethington, Smart, and Pascarella 1988; Evanoski 1988; Kuh 1995; Kuh and Lund 1994). For example, leadership experiences (e.g., student government or fraternity officer, peer advisor) accounted for almost one-quarter of all gains reported by seniors in this area (Kuh 1995). Other researchers have confirmed the impact of leadership experiences on the development of career-relevant skills, or practical competence (Antonio 1998; Astin 1993b; Kezar and Moriaty 2000). These same researchers also found that engagement in diversity experiences while enrolled in college contributes to practical competence. Voluntarism and community service in particular are linked with student-reported gains in competence or the belief that their college experience provided good preparation for work (Astin, Sax, and Avalos 1999).

Inquiries into the relationships between involvement in cocurricular activities and occupational choice produced mixed findings. Weidman (1979) found that holding a leadership position in student government or other organizations did not have a direct effect on career choice. However, other studies (Braxton et al. 1990; Ethington, Smart, and Pascarella 1988) suggest that extracurricular activities may positively affect career mobility.

In a dated study, Howard (1986) determined that cocurricular involvement did not predict occupational success for AT&T male managers. It was, however, related to assessments of managerial potential, especially participation in student government, involvement on a debating team, and serving on the school paper. In other dated studies, participation in cocurricular activities had a small, positive effect on postcollege earnings (Calhoun and Reddy 1968; Jepsen 1951; Walters and Bray 1963). However, Hunt (1963) found that the net effect of involvement in cocurricular activities had a positive effect on earnings in one study, but a statistically nonsignificant effect for another group. More recent inquiries into this topic are limited and inconsistent in their results. Participating in student government had a positive impact on earnings 12 to 17 years after college, but the sample was small and consisted of alumni who had earned master's degrees (Fischer 1994). However, Stoecker and Pascarella (1991) found that engagement in extracurricular activities had a nonsignificant impact on women's later earnings. Participation in intercollegiate athletics was not related to postcollege earnings (DuBois 1978; Pascarella and Smart 1991).

Although studies on the influence of cocurricular student involvement on career development are mixed, college graduates *think* such activities are important to their success after college; that is, college graduates typically refer to such involvement (e.g., leadership roles) as important to later achievements (Bisconti and Kessler 1980; Pascarella and Terenzini 1991; Schuh and Laverty 1983). However, it is likely that other variables (personality, motivation) may be more important in explaining such postcollege outcomes as income (Pascarella and Terenzini). A study of African American students at HBCUs and PWIs suggests that their involvement in extracurricular activities may enhance their career aspirations (Allen 1992).

Involvement in intercollegiate athletics also shows mixed effects in relation to occupational status. Pascarella and Smart (1991) found that athletic participation was related to occupational status attainment for African American men and had a positive indirect effect on occupational status for Caucasian men, after controlling for race, socioeconomic background, occupational aspirations, college grades, and educational attainment. However, DuBois (1978) and Howard (1986), found trivial and statistically nonsignificant effects when comparing athletes and nonathletes.

Working during college, particularly in a job related to one's major or vocational goal, is related to subsequent career attainment (Pascarella and Terenzini 1991). Indeed, Kuh (1995) found that about one-third of the benefits seniors associated with their employment, either on or off campus, were in the practical competence domain (e.g., decisionmaking, time management); work was especially important to students of color. Students' perceptions of practical competence development is enhanced when their collegiate work experience is related to their career interests (Kane, Healy, and Henson 1992). The influence of work on postcollegiate earnings is not conclusive, although the evidence tends to lean toward it having a positive influence (Fuller and Schoenberger 1991; Gleason 1993). It appears that if there is an impact of working during college on earnings, it is more pronounced earlier in the career than later (Pascarella and Terenzini 2005).

Student-Faculty Contact. Student-faculty informal contacts outside the classroom have a statistically significant influence on career choice, career interest, and eventual career selection (Astin 1977, 1993b; Karman 1973; Komarovsky 1985; Wood and Wilson 1972). Kim and Alvarez (1995) found that women's relationships with faculty had meaningful and positive effects on self-reported growth in career-related skills. Polizzi and Ethington (1996) investigated student-faculty interactions at community colleges and found that the extent of these interactions had a positive impact on perceived career preparation growth, particularly for students in trade and industry fields. Student-faculty interactions also appear to have a positive impact on the likelihood of students choosing careers in academic and scientific research (Astin 1993b; Pascarella and Terenzini 2005; Sax 1996). If faculty have an influence on students' career choice, it stands to reason that there is a concomitant effect of student-faculty interactions on earnings, but additional research is necessary to confirm this idea. However, other aspects of practical competence (e.g., decisionmaking, time management) do not seem to be influenced by contact with faculty (Kuh 1995).

Single-Sex Institutions. Finally, the influence of an institution's gender composition on career outcomes is unclear. Tidball (1980, 1986) and Tidball and Kistiakowsky (1976) discovered that graduates of women's colleges were more likely to enter male-dominated fields and had higher levels of occupational achievement than women from coeducational institutions. However, after controlling for students' background characteristics (something not done by Tidball), Stoecker and Pascarella (1991) determined that attendance at a women's college did not predict postcollege occupational attainment, concluding that "the career attainments previously linked to attendance at women's colleges may be attributable more to differential student recruitment than to socialization occurring in a distinctive institutional environment" (p. 403).

Summary

The consensual view is that multiple and interrelated sources influence all forms of benefits associated with postsecondary education for both residential and commuter students at 2- and 4-year colleges (Abrahamowicz 1988; Astin 1993b; Kuh 1993, 1995; Pace 1980, 1984, 1990; Pascarella and Terenzini 2005; Terenzini et al. 1994; Volkwein, King, and Terenzini, 1986). The effects of college are cumulative and mutually shaping (Pascarella and Terenzini). For example, student cognitive growth seems to be influenced by a variety of experiences and conditions on a campus, particularly when out-of-class climates and experiences complement and encourage students to integrate what they learn in class with their lives outside the classroom (Kuh 1995). In addition, out-of-class activities that impact the development of cognitive skills also may impact the development of ethical and moral reasoning abilities. More specifically:

- Earning a degree has the greatest impact on postgraduate outcomes.

- Precollege characteristics such as academic preparation, SES, and first-generation status affect one's potential for desirable outcome attainment.
- Institutional type influences postcollege outcomes in personal values.
- Undergraduate major has a significant impact on postgraduate earnings.
- The peer group is the single most powerful influence on students' academic and personal development.
- Interacting with faculty is positively associated with persistence, practical competence, and other measures of success and desired outcomes.
- Community college students have different goals and outcomes than their counterparts at 4-year institutions.
- Student effort and engagement in educationally purposeful activities has a cumulative positive effect on earnings, values development, cognitive development, and lifelong learning outcomes.

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8. PROPOSITIONS AND RECOMMENDATIONS ABOUT STUDENT SUCCESS IN POSTSECONDARY EDUCATION

An array of educational policies, student characteristics, institutional conditions, and other factors are associated with student success in college. In this section, we offer seven propositions about what matters to student success. Taken together, the propositions represent the building blocks of a theory of student success and point to a series of complementary policies, programs, and practices that promise to enhance the performance and educational attainment of all students.

The recommendations that flow from the propositions must be adapted to fit an institution's educational mission, its students' characteristics, and its campus culture. They must also be aligned with key elements in the external environment, such as local community, state, and regional economic conditions, needs, and priorities. Equally important, the selected interventions should be demonstrably effective for the setting and student populations to be served and implemented at a reasonably high level of quality. Even then, it is important to recognize that postsecondary institutions are limited in what they can do to help underprepared students overcome deficiencies in their educational preparation and other risk factors. With this in mind, we close by suggesting topics for research with the potential to improve students' chances for postsecondary success and to increase the educational effectiveness of postsecondary institutions.

Propositions and Recommendations

1. The trajectory for academic success in college is established long before students matriculate.

- *Ensure that all students have rigorous, intensive precollege academic preparation.*

What students do before and during high school affects their postsecondary academic performance. As Rendon (1998, p. 61) put it, "students begin to drop out of college in grade school." If students do not attain grade level proficiencies—particularly in math and reading—by the eighth grade, they are much less likely to acquire the needed skills in high school, which makes early intervention even more important (Gladieux and Swail 1998). And if students do not perform well in the right kinds of courses in high school, including 4 years of English and advanced mathematics classes (such as algebra II, precalculus, trigonometry, and calculus), interventions later can have only modest effects on their chances to succeed and complete a baccalaureate degree.

- *Develop a comprehensive national college readiness strategy that addresses the educational needs of all students.*

There is no substitute for rigorous academic preparation in elementary and secondary school. To markedly improve postsecondary participation and success rates in an increasingly mobile society, an unprecedented national coordinated effort is required involving communities, K–12 schools, postsecondary institutions, and local and state business leaders and government officials, and policymakers (Finn 2006; Kirst and Venezia 2006). Essential to this task are K–12 and postsecondary education partnerships that will strengthen the connections between various transition points—from elementary to middle school, from middle school to high school, from high school to college, and from college to work (Carnevale and Desrochers 2003; Committee for Economic Development 2005; Frost

2003; McDonough 2004; Pathways to College Network 2004; Pennington 2004; Venezia, Kirst, and Antonio 2003). While it is not realistic to presume all educational disadvantages for every student can be ameliorated, far more can be done than is so at present. At the same time, institutional policies and structures are needed to respond to and accommodate high ability, highly motivated learners who can move through the system more expeditiously than currently is possible.

Toward these ends, national organizations and foundations are promoting various initiatives aimed at improving precollege experiences and shifting the societal mentality from “*access to college*” to “*success in college*” (Pathways to College Network 2004; Venezia, Kirst, and Antonio 2003). The six principles in figure 14 offer a glimpse of what is needed to strengthen precollege preparation (Pathways to College Network). Marketing efforts and incentives will be needed to promote and sustain the necessary collaborative efforts, such as state-funded joint budget initiatives and assessment and monitoring systems that track the impact of interventions and guide continuous program improvement (Immerwahr 2003; Pathways to College Network).

Figure 14. Principles for strengthening precollege preparation

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- Principle One: Expect that all underserved students are capable of being prepared to enroll and succeed in college.
 - Set high expectations for all students.
 - Principle Two: Provide a range of high-quality college preparatory tools for underserved students and their families.
 - Require a complete college-preparatory core curriculum.
 - Make honors and college-credit courses available to all students.
 - Provide early college awareness programs and broad support services to accelerate student learning.
 - Make language-accessible college planning and financial aid information available.
 - Principle Three: Embrace social, cultural, and learning style differences in developing learning environments and activities for underserved students.
 - Involve families in supporting learning.
 - Affirm students’ social and cultural backgrounds.
 - Create environments that support diversity and foster positive intergroup relations.
 - Principle Four: Involve leaders at all levels in establishing policies, programs, and practices that facilitate student transitions toward postsecondary attainment, from:
 - elementary to middle school;
 - middle to high school;
 - high school to college; and
 - college to work and further education.
 - Principle Five: Provide sufficient financial and human resources to enable underserved students to prepare for, enroll, and succeed in college.
 - Staff schools and programs with well-qualified teachers, counselors, and leaders.
 - Ensure equitable funding that addresses past deficiencies and meets student needs.
 - Adequately fund need-based financial aid.
-

Figure 14. Principles for strengthening precollege preparation—continued

- Principle Six: Assess policy, program, practice, and institutional effectiveness regularly.
 - Use assessment models that demonstrate whether practices are working for underserved students.
 - Collect and use data that provide feedback for continuous improvement.
 - Employ a variety of analytical tools.
-

SOURCE: Pathways to College Network (2004).

- *Align high school curricula with college performance standards.*

Students frequently overestimate their readiness for college when state standardized tests are not articulated with college admission requirements and postsecondary academic performance expectations. Fortunately, standards reform efforts are gaining momentum. Standards for Success, a project sponsored by the AAC&U with funding from The Pew Charitable Trusts, has developed tools to help guide these alignment efforts (Conley 2003) and is a good source for learning what is required from schools, communities, and postsecondary faculty and staff members.

- *Provide incentives in state budgets to increase the number of students who become college ready in high school and enroll in college.*

State budgets do not provide incentives for efforts to promote college readiness in high school (Kirst and Venezia 2006). One option is for states to offer incentives to local school districts to provide dual enrollment opportunities to high school students and to schools where students who go on to college do not require postsecondary remediation. Such a program would require alignment between high school and college academic standards and an integrated K–16 finance model (Kirst and Venezia).

- *Instill in K–12 educators an assets-based talent development philosophy about teaching and learning.*

Sadly, high school teachers have lower educational aspirations for their students than students themselves or their parents (U.S. Department of Education 2003a). These deleterious beliefs and assumptions about students and their learning must be changed—those that teachers hold and those that students have about themselves. Then, students must be held to high standards to insure they acquire the skills and competencies demanded in college. Teachers must adapt their instructional approaches to accommodate the different learning styles of their students in order to build on students’ assets and strengths as contrasted with initially dwelling on shortcomings (Dweck 2000). Teacher education and educational leadership programs are key to preparing professional educators who subscribe to an assets view of their students. Shifting the cultures of K–12 schools to encourage such personnel to approach students and families in this way will be challenging and will likely require foundation support and local and state incentives over many years to fully realize.

2. Family and community support are indispensable to raising a student’s educational aspirations, becoming college prepared, and persisting.

- *Increase the quality of information to students and families who lack adequate information about college going, including real costs and aid availability.*

Every high school student and family must be made aware of the “one million dollar” decision—the financial cost over a lifetime of not completing a postsecondary degree (Pennington 2004). Students most at risk tend to have less accurate information about college and get less encouragement and support from their family and friends for preparing for and attending college. As with many of the other large-scale initiatives we recommend, partnerships between school personnel and neighborhood or community and educational agencies are essential to make certain parents and other family members obtain the information and understand how to adequately prepare for college and the importance of family support. McDonough (2004) reported that students who participated in well-designed early intervention programs had had most of the information needed to prepare for college. National initiatives such as the nonprofit National College Access Network (NCAN), which supports a network of state and local college access programs that provide counseling, advice, and financial assistance to students and families, can help open the doors of postsecondary education through counseling and support. STAND UP is a community-based national campaign to promote better high schools. Its coalition includes public school districts; nonprofit organizations; alternative high schools, and early college high schools as well as organizations such as the New York City Department of Education; Chicago Public Schools; the National Council of La Raza; the Colorado Children’s Campaign; Knowledge is Power Program (KIPP); the Texas High School Project; and St. HOPE Public Schools in Sacramento, California. The STAND UP website, www.standup.org, provides information for parents, guardians and concerned citizens as well as data about the state of the nation’s high schools. In addition, state and other local initiatives such as College Mentors for Kids! Inc., which cultivates ongoing one-on-one relationships between college and elementary-aged students through shared experiences on the campus and in the community, and Learn More Resource Center (formerly the Indiana College Placement and Assessment Center), under the direction of the Indiana Commission for Higher Education, are models for state-level dissemination of information about college. In addition, state and other local initiatives such as College Mentors for Kids! Inc., which cultivates ongoing one-on-one relationships between college and elementary-aged students through shared experiences on the campus and in the community, and Learn More Resource Center (formerly the Indiana College Placement and Assessment Center), under the direction of the Indiana Commission for Higher Education, are models for state-level dissemination of information about college.

- *Expand the scale and scope of demonstrably effective college encouragement and transition programs.*

The playing field must be leveled for students who face significant challenges in terms of succeeding in college. Effective school-community partnerships, such as Indiana’s 21st Century Scholars Program and GEAR UP programs, are essential to this task. Those who participate in well-designed college encouragement and readiness programs, such as the TRIO programs of Upward Bound or the Puente Project, appear to be better prepared to succeed academically, in part because members of their families are better informed and more likely to offer moral support for preparing for college, applying for college admission and financial aid, matriculating, and persisting.

For example, the substantial body of college choice research shows that the timing, quality, and quantity of information provided to students about postsecondary educational opportunities can help raise and clarify their educational aspirations (Hossler, Schmit, and Vesper, 1999). Students begin to become interested in different postsecondary options in the 10th grade, and this interest builds during the 11th and 12th grades. This means *sophomores* in high school should start receiving information about various types of postsecondary schools and admissions requirements. However, many sophomores do not actively seek out information and are not aware of the types of assistance available to help them think about whether they should pursue a postsecondary education (Schmit 1991). Taking the PSAT and the SAT and completing the FAFSA cause students and their families to think more carefully about postsecondary education. Sometime in the spring or summer of the junior year, students thinking about

attending a 4-year institution become more interested in receiving information about postsecondary options (Kinzie et al. 2004). At this stage, they start to read the information that colleges send them and even begin to seek out additional information.

3. The right amount and kind of money matters to student success; too little can make it impossible for students to pay college bills, while too much loan debt can discourage students from persisting.

- *Use financial aid to encourage high school students to complete a rigorous program of study.*

A recently enacted federal program will increase the size of Pell grants to students who complete a “rigorous secondary school program” (Finn 2006, p. B40). Though “rigorous” has yet to be defined, efforts to create incentives that induce students to become college ready warrant consideration and experimentation (Finn).

- *Align financial aid and tuition policy so that financial assistance packages meet students’ need.*

Affordability depends on many factors, including the state of the economy and the amount of aid available to students from state systems and individual institutions (Finney and Kelly 2004). It is a critical determining factor as to whether students and their families believe college is within reach; it is a major obstacle for many historically underserved students. About 9 of 10 college-qualified low-income students had an annual unmet financial need averaging less than \$5,000. If this figure is accurate, it seems to be a manageable amount of debt to incur when compared with the long-term benefits. Even so, convincing loan-averse families to take on additional debt to pay for college is not a trivial matter. These very real concerns notwithstanding, financial support to attend college must be made available in amounts and forms that enable low-income students to attend full time rather than part time and—when necessary—work fewer hours, preferably on campus rather than off campus. One plan that promises to redress inequities in how aid is distributed to different groups of students is the Changing Directions project, funded by Lumina Foundation for Education and coordinated by the Western Interstate Commission for Higher Education (WICHE) with collaboration from the State Higher Education Executive Officers (SHEEO) and the American Council on Education (ACE) (Heller 2002; WICHE 2003). At first blush, equalizing need-based financial aid awards seems like an easy thing to accomplish, but very few states have achieved such an alignment, with Minnesota’s Design for Shared Responsibility, being one of the few working models. The Design for Shared Responsibility initiative sets no arbitrary family income limits and students can use state aid to attend full or part time at public or private institutions. Another proposal, the Student’s Total Education Package (STEP) put forth by the National Commission on Responsibilities for Financing Post-Secondary Education (IHEP 1995) would make all full-time undergraduate college students eligible for the same maximum amount of federal aid, with the type of aid depending on financial need and institutional cost. The poorest students would receive primarily grants, work-study, and subsidized loans. Students from middle-income families could receive a mix of subsidized and unsubsidized loans, work-study, and grants. Students from affluent families would not be eligible for subsidized aid but could receive an unsubsidized loan. Such policies would make plain the exact amount and packaging of aid students could receive from the federal government, thereby reducing some confusion and uncertainty.

- *Create small pockets of emergency funds to address real student needs in “real” time.*

Providing even small amounts of money at key times can mean the difference between some students staying in school or leaving. For example, some students drop out because they do not have enough money at the beginning of the academic term to buy books. Most institutions can find additional resources to expand their short-term emergency loans to address this issue. But first, the institution must recognize the problem. This will require cooperation from academic and student affairs leaders and logistical support from financial aids and academic advising personnel.

4. Most students—especially those who start college with two or more characteristics associated with premature departure—benefit from early interventions and sustained attention at key transition points.

- *Clarify institutional values and expectations early and often to prospective and matriculating students.*

Colleges and universities have two nonnegotiable obligations to their students. The first is to establish high performance expectations, inside and outside the classroom, appropriate to students' abilities and aspirations. To do this, a school must first understand who its students are, what they are prepared to do academically, and what they expect of the institution and themselves.

- What are the expectations first-year students from different backgrounds have for college?
- What factors account for differing levels of expectations among first-year students?
- What role do students' expectations play in shaping their actual experiences and perceptions of the campus environment?

The second obligation institutions have to their students is to give them prompt, frequent feedback as to how well they are meeting these expectations. A substantial number of new students may not fully understand and appreciate their role as learners. Far fewer students use campus learning and support services than say they will when starting college (NSSE 2005). To address these concerns, faculty members, advisors, and student affairs professionals must clearly and consistently communicate to students what is expected and provide periodic feedback as to the quality of students' performance.

- *Provide multiple, interconnected learning support networks, early warning systems, and safety nets.*

Students attending institutions that employ a comprehensive system of complementary initiatives based on effective educational practices are more likely to perform better academically, to be more satisfied, and to persist and graduate. Among these initiatives are those described in section VI, such as well-designed and implemented orientation, placement testing, first-year seminars, learning communities, intrusive advising, early warning systems, redundant safety nets, supplemental instruction, peer tutoring and mentoring, theme-based campus housing, adequate financial aid including on-campus work, internships, service learning, and demonstrably effective teaching practices (Forest 1985, Wang and Grimes 2001; Kuh et al. 2005b). Waiting until midterm examinations is often too late to give students an idea of how well they are performing. Advisors and academic support program personnel do some of their most important work by paying attention to student class attendance patterns, drop and add information, early semester and midterm grades, and preregistration information. Some institutions, such

as Truman State, have used the College Student Expectations Questionnaire (CSXQ) or the Beginning College Student Survey of Student Engagement (BCSSE) to help students see how their in-class and out-of-class activities compare with those of their peers in terms of study time, talking with faculty members about various matters, and participation in cocurricular activities, to name a few. Faculty members teaching in Fayetteville State University's Early Alert program contact first-year student mentors and University College to alert them about students experiencing difficulty during the first 2 weeks of the semester. Mentors contact students to advise and refer as appropriate. At Wheaton College in Massachusetts, a first-year student's "advising team" is made up of a faculty member, a student preceptor, a librarian, and a staff member. These and other approaches adapted to local conditions and student characteristics are needed at every institution.

- *Concentrate early intervention resources on those who have two or more risk factors.*

Underprepared, first-generation students and ethnic minorities are especially at risk, particularly those from lower income levels, and those who have one or more of the other risk factors listed in figure 3. At some institutions, additional risk factors may come into play depending on the nature of students' ability to pay for college, the curriculum, and campus climate. Thus, interventions are needed both before and during college for these students.

- *Clarify the role of community colleges in a state system.*

There is some evidence that when state systems emphasize the transfer role of its community colleges, transfer rates tend to be higher. Because community colleges enroll a disproportionate share of at-risk students including students from historically underserved populations, it is imperative that the transfer role of community colleges be clarified and emphasized if increasing the number of people with a baccalaureate degree is a state priority.

5. Students who find something or someone worthwhile to connect to in the postsecondary environment are more likely to engage in educationally purposeful activities, persist, and achieve their educational objectives.

- *Make the classroom the locus of community.*

Many commuter students spend only a limited amount of time each week on campus. The classroom is the only regular point of contact they have with other students (including those who are not in their primary reference groups) and with faculty and staff members. Thus, using the classroom to create communities of learning must be a high priority in terms of creating a success-oriented campus culture. Faculty members in partnership with student affairs professionals and other staff familiar with culture-building strategies can work together to fashion a rich, engaging classroom experience that complements the institution's academic values and students' preferred learning styles. This means that faculty members must also be more intentional about teaching institutional values and traditions and informing students about campus events, procedures, and deadlines such as registration. In addition, faculty members could design cooperative learning activities that bring students together to work together after class on meaningful tasks.

- *Structure ways for more commuter students to spend time with classmates.*

Because peers are very influential to student learning and values development, institutions must harness and shape this influence to the extent possible so it is educationally purposeful and helps to reinforce academic expectations. A well-designed first-year seminar, freshman interest group, or learning community (where students take two or more courses together) can serve this purpose (Kuh et al. 2005b; Matthews 1994; Muraskin 2003; Price 2005; Tinto 1996, 2004; Tinto, Love, and Russo 1995). One version of the first-year seminar used at different types of colleges and universities is University 101, developed at the University of South Carolina, that is primarily focused on an orientation to college and teaching students survival and academic success skills. Another variation is to organize academic offerings in the first year so that all first-year students have at least one discipline-based course with 25 or fewer students taught by a faculty member. An especially attractive approach is for the seminar instructor to serve as the academic advisor for the students in the seminar for the first college year. Such seminars will be more fulfilling for students as well as instructors (faculty members, undergraduate mentors) if the latter are provided a structured opportunity to prepare and reflect periodically on their experiences in the company of colleagues.

- *Involve every student in a meaningful way in some activity or with a positive role model in the college environment.*

Working on campus, writing for the student newspaper, or conducting research with a faculty member can be a life-changing experience. When students are required to take responsibility for activities that require daily decisions and tasks, they become invested in the activity and more committed to the college and their studies. Advisors, counselors, and others who have routine contact with students must persuade or otherwise induce them to get involved with one or more of these kinds of activities or people (i.e., faculty or staff members). For example, upper division students at the University of Michigan who were involved in the undergraduate research program in their first year of college described continued and meaningful contact with their faculty mentors (Kuh et al. 2005b).

- *Encourage students to live on campus—at least for the first year—at institutions that have housing available.*

Students living on campus represent only about 15 percent of all undergraduates, so this recommendation applies to a relatively small number of students at institutions with campus housing available. Yet, the fact remains that students who live on campus are more engaged and gain more from their college experience. They have easier access to faculty and staff members and peers, and they are more likely to take advantage of the institution's cultural and artistic venues. They also have more experiences with diversity. If an institution wants to improve first-generation student success rates, it should create ways to make it possible for those students to live on campus, at least for the first year. For low-income, first-generation students, such a policy will require additional financial assistance. Work-study or co-op living units could be created to offset cost differences between living on and off campus or at home. Of course, for older students with families and full-time jobs, this is not an option. In those instances, innovative approaches are needed that attract nontraditional students and their families to spend time on the campus.

6. Institutions that focus on student success, subscribe to a talent development philosophy, and create a student-centered culture are better positioned to help their students attain their educational objectives.

- *Instill in postsecondary educators an assets-based talent development philosophy about teaching and learning.*

As with K–12 teachers and staff, the debilitating beliefs and assumptions about student learning held by postsecondary instructors must be also changed (Dweck 2000). There are numerous examples of colleges and universities that have woven this philosophy into their cultures (Chickering, in press; Kuh et al. 2005b). For example, many Minority-Serving Institutions operate from an assets-based philosophy for student learning. Some MSIs (e.g., California State University Monterey Bay, Fayetteville State University, Spelman College, University of Texas at El Paso, Winston-Salem State University, Xavier University) provide well-integrated and redundant opportunities for students to engage with their peers in important educational practices including active and collaborative learning and service-learning. In addition, certain HBCUs appear to connect students and faculty in ways that increase students' level of engagement and commitment to success. This combination of clarity of mission, talent development philosophy, and supportive campus climate helps these institutions to overcome substantial financial and physical plant inequalities to foster student success (Kuh et al.). Creating these affirming conditions for learning has implications for K–12 teacher preparation programs, graduate education (where the next generation of college instructors are being prepared), and faculty development efforts in postsecondary settings.

- *Use effective educational practices throughout the institution.*

Postsecondary institutions can address shortcomings in students' academic preparation and increase the chances that students will succeed by adapting demonstrably effective policies and practices. How and why many of these practices work in different institutional settings with different types of students were discussed in Part VI (see also Chickering and Gamson 1987; Chickering and Reisser 1993; ECS 1995; Kuh et al. 1994; Kuh et al. 2005b; Kuh et al. 1991; Pascarella and Terenzini 2005). Other promising practices specific to particular groups or activities also are available, such as working with adult learners (Cook and King 2005), undergraduate teaching and learning (Sorcinelli 1991), developmental education for underprepared students (Boyland 2002; Grubb 2001), assessment (AAHE 1992), and student affairs work (Blimling and Whitt 1999). Consistent with this view, Swail (2003, pp. 116-118) suggests the following principles for designing student success interventions:

- Rely on proven research,
- Suit needs of campus,
- Institutionalize the activity or service or program,
- Involve a variety of groups on campus,
- Be sensitive to change issue and retrain staff,
- Focus on students,
- Plan for sustainability regarding funding,

- Conduct assessment and institutional research,
 - Be patient, and
 - Target the most needy student populations.
-
- *Encourage faculty members to focus on deep learning activities.*

Faculty members can promote higher levels of student engagement by asking students to write papers that require synthesizing information from different fields, using e-mail to discuss course topics, and discussing feedback on assignments. Faculty members can also influence the degree to which students contribute to class discussions or apply class material to other areas of their lives. The latter can be encouraged by designing assignments that feature and assign weight to the activity, such as placing materials on reserve in the library so students become familiar with the venue. Other powerful institution-driven learning experiences are consistent with the approach outlined here, such as service-learning courses and faculty-student research projects. Of course, all this depends on whether faculty members can be encouraged to see these as valuable pedagogical techniques.

- *Use technology in educationally effective ways.*

The evaluative data from Twigg's (2005) PCR schools discussed in Part 5 suggest that when used appropriately, information technology can be a solution rather than an obstacle to increasing success for underserved students. A key step is insuring learner readiness to benefit from technology-based courses. Learner readiness involves more than access to computers. It also involves having access to technical support as well as other forms of student support —such as help in using navigation tools and course management systems — and the processes that enable students to gain literacy skills if they do not already possess them.

- *Incentivize institutions to identify and ameliorate debilitating cultural properties.*

Policy and programmatic interventions are necessary but insufficient to shift a campus to a student success paradigm. Kuh et al. (2005b) describe different types of educationally policies and practices and provide recommendations for how to cultivate and sustain student-friendly campus cultures (see also Kuh et al. 1994; Kuh et al. 1991). These efforts are especially important for promoting the success of historically underserved students because their premature departure is due in part to their inability to successfully navigate the distance and differences between their cultures of origin and the institution's dominant culture (Kuh and Love 2000). Students either reject the institution's attempt to socialize them, or they have not found a cultural enclave from which they can draw support and guidance as they try to negotiate what seems to be an alien culture (Attinasi 1989; Tierney 1992). One approach is to physically and symbolically link families to the campus (Ortiz 2004; Torres 2003). Possible strategies include involving students in community-based experiential learning activities and providing students and their family opportunities to visit campus before and after matriculation in order to develop a sense of the support systems available to students on campus. Rather than trying to force continued cultural distinctions between life and home and at college, the goal is to create a "mestiza consciousness" (Anzaldua 1987) that melds these seemingly opposed worlds in a mutually satisfying way. Whatever is tried, efforts to create hospitable campus climates for diverse student populations must be culturally sensitive in order to understand and ameliorate the ways that dominant values, norms, and practices may

contribute to perceptions of a hostile environment by students whose backgrounds differ from the majority (Berger 2000; Kuh et al. 1991).

7. Because we value what we measure, focus assessment and accountability efforts on what matters to student success.

- *Conduct periodic examinations of the student experience, inside and outside the classroom.*

Many campuses know a good deal about their first-year students and graduating seniors. More must also be learned about those students who leave college without completing their degree, especially those who are only a semester or two away from fulfilling graduation requirements. The students at greatest risk of leaving college sometime after the second year are almost identical in terms of demographic characteristics to those who leave prior to that point. Because socialization to academic norms is not complete at the end of the first year of college, especially for first-generation college students and others who lack tacit knowledge about what is required to succeed at the university or whose goals and aspirations are not yet clear, additional interventions may be needed for certain groups so that these students continue to engage in the kinds of activities associated with success in college. At high-performing colleges with better than predicted graduation rates, people constantly remind themselves of their pursuit of excellence by periodically reviewing campus priorities, policies, and practices to ensure that what is enacted is of acceptable quality and consistent with the institution's espoused priorities and values (Kuh et al. 2005b). Such examinations are sometimes formal, such as program reviews or accreditation self-studies. For example, the University of Michigan conducted six major studies of the quality of the undergraduate experience between the mid-1980s and 2000. Informal reviews stimulated by faculty curiosity or unease are also levers for positive change. At Indiana University Bloomington several years ago, more than a third of the students in a particular math course in a given term typically received a D or F grade or withdrew from the class. The math faculty redesigned this one-semester course and, among other things, created a reduced pace two-semester offering that covers the same material and uses the same exams. The percentage of students who now complete the course with a C or better grade has jumped by about 20 percent.

- *Incentivize postsecondary institutions to responsibly report and use information about the student experience to improve teaching, learning, and personal development.*

A variety of excellent assessment tools are available to provide useful information that institutions can use to improve. Certainly more need to be developed. The results of these assessments must be analyzed, interpreted, and reported in responsible ways that take into account the diversity of student backgrounds and abilities as well as institutional missions and resources. For example, an institution's *unadjusted* student engagement scores, test results, or graduation rates may not necessarily be the most appropriate indicators of how well an institution is doing by its students. Residual statistical models can be more revealing because they control for student background characteristics and entering ability as well as institutional characteristics such as size, control, and resources to produce estimates of whether institutions are performing better or worse than they are predicted to, given the nature of their students and their resources. Whatever measures are used, they should be calculated separately for groups of students with different background characteristics, such as race/ethnicity, gender, SES, first-generation status, and transfer status. Such analyses may raise nettlesome questions that have to be answered sooner or later related to articulation agreements and for performance indicator systems. For example, when evaluating the quality of the educational experience, how much responsibility for transfer student performance belongs to the institution, to the individual student, and to the other institutions transfer students have attended? This assignment of responsibility is especially important, given that three-fifths

of baccalaureate degree recipients attend two or more colleges and as many as one-quarter take classes at two or more different schools in the same academic term.

- *Incentivize postsecondary institutions to adopt a common reporting template for indicators of student success to make their performance transparent.*

One way to bring about more transparency of student and institutional performance is to develop a common template that schools can use to display their performance results. A one-size-fits-all set of indicators will not likely be sufficient, given the increasing diversity of college students and the multiple, winding pathways they follow to a baccalaureate degree. Multiple sets of indicators will be needed to yield an accurate, albeit more complicated picture of the student experience and to document various measures of success for different types of institutions and students. Along with student engagement data, other commonly used indicators of success include student retention and graduation. Other outcomes of interest include student goal attainment, course retention, transfer rates and transfer success, success in subsequent course work, fall-to-fall persistence, degree/certificate completion, student satisfaction, student personal and professional development, citizenship and student involvement, student learning outcomes, and postcollege outcomes including graduate school participation, employment, and orientation to lifelong learning. The Carnegie Foundation for the Advancement of Teaching recently introduced additional criteria for grouping institutions with similar students and educational purposes and offerings. A “student success” organizing framework that takes into account student and institutional characteristics in addition to mission and academic programs would be a welcome addition and allow policymakers, state governments, parents, and other groups to compare the performance of similar types of schools for various purposes.

- *Further develop state and institutional capacity for collecting, analyzing, and using data for accountability and improvement purposes.*

One of the most powerful levers for institutional improvement is the use of credible data that tell a more comprehensive story of students’ educational experiences in our colleges and universities. To do this requires an expanded technological and human capacity for data collection and analysis, and there is presently an extraordinarily wide range in these capacities across both states and institutions, from paper-and-pencil operations conducted by part-time faculty members to highly sophisticated research operations. Until colleges, universities, and state systems have the capacity to routinely conduct longitudinal tracking of student cohorts, regularly elicit responses from students on surveys and other assessments, and *use* that data to engage faculty and student service professionals in discussion about strengths and needs for improvement, our ability to prompt significant institutional change will be severely limited. Therefore, it is important to build adequate data systems.

Needed Research

The foregoing propositions represent what the literature points to as conditions that matter to student success. As with most complicated matters in a dynamic, even volatile environment (AACU 2005), additional research is needed to better understand various aspects of student performance prior to and during college in order to develop a comprehensive theory of student success (Kuh et al. 2005b; Pascarella and Terenzini 2005; Social Science Research Council Project 2005; Swail 2003; Tinto 2004).

In this section, we propose some research and development activities that can address some of the gaps in our understanding of the factors that contribute to student success.

- *Determine the more effective approaches for encouraging different types of students (e.g., first generation, low income, students of color, men) to participate in and benefit from postsecondary encouragement programs.*

In the absence of incontrovertible evidence of what works, it is difficult to persuade policymakers and institutional leaders to allocate scarce resources to postsecondary encouragement and access initiatives. Among the programs we need to learn more about are dual-enrollment programs, “middle college-early college” schools in which students attain sufficient college credit while in high school to graduate with a high school diploma and an associate’s degree or 2 years of transferable college credit (Middle College National Consortium 2006), vocational/technical policies and innovations (including Tech Prep), bridge programs, and P–16 initiatives. We also need to know which of these programs and their variants work with students who are less likely to become college ready and enroll, such as low-income students, men, and students of color. To be eligible for many of these programs, students must take certain steps, which they and their families may be unaware of, such as meeting certain academic standards (Bishop 2002, 2004) or pledging to stay drug free (a TFCS requirement). We need to know who takes advantage of these programs (or not) and program effects on student persistence and educational outcomes. In Kentucky, for example, 40 percent of the students who used state educational excellence grants to pay for college expenses in 2004–05 were no longer eligible for them the following year for various reasons (Kentucky Higher Education Assistance Authority 2006), which likely affects their ability to stay in school. Almost half (45 percent) of Kentucky high school seniors in 2005 eligible for these awards did not use them the following year to attend college. The absence of longitudinal K–16 data, the inability of states to track students through the pipeline, institutional review board and FERPA issues, and other security problems all hamper our ability to effectively analyze and interpret precollege research and interventions (Venezia, Kirst, and Antonio 2003).

- *Develop additional ways to assess the ability to do college-level work.*

Sternberg (2005) contends that students from lower SES backgrounds often have substantial hidden talents that are not reflected in traditional college admissions screening tools, such as the ACT or SAT or high school grades. He argues other measures can be used to augment traditional measures to better assess analytical, creative and practical skills. Another approach is to evaluate the efficacy of the SAT merit index to predict success in college. The merit index subtracts the average SAT test score for an individual’s high school from the student’s individual test score, providing an estimate of the extent to which a student’s ability exceeded what could be reasonably expected given the student’s academic environment (St. John et al., 1999). These and other measures may offer more useful assessments of an individual’s talent, ability, and motivation to do college-level work.

- *Develop an efficient way for colleges and universities to report back to high schools their graduates’ college performance and **use** the information to improve.*

For high schools to better prepare their students for the academic challenges presented in postsecondary education, teachers and administrators must know how their graduates perform in postsecondary settings. Such feedback loops are essential for strengthening the high school curriculum (American Diploma Project 2004; Conley 2003). While some systems are in place (e.g., California State University’s Collaborative Academic Preparation Initiative) (Roach 2000), too often high schools and

community agencies do not have the means to effectively gather and use this information to improve student preparation.

- *Evaluate the performance of the educational system on a state by state basis.*

The National Center on Public Policy and Higher Education's biennial state-by-state report card present revealing data. However, they are at best gross indicators of the current state of affairs in key performance categories. Little information points to what states, K–12 schools, or postsecondary institutions can and should do to *improve* their performance. More fine-grained analyses are needed that can help answer questions such as:

- What types of students leave the educational system at which junctures?
- Are current interventions addressing the proximal causes of student departure at these points?
- Are early warning systems and assessment tools adequate for the task of identifying these students early enough to make interventions?
- Are aid programs working as intended?
- How do changes in tuition and financial aid policy affect enrollment and persistence?
- Do students carefully consider their postsecondary options at the appropriate time?
- Which transition points need more attention?
- *Determine the most efficient way of using financial aid to encourage student preparation for college and to make college affordable for students who need financial support to attend college.*

Loans seem to be helpful in encouraging White students to persist but do not positively affect completion rates for African American and Latino students. Price sensitivity and family views of different kinds of financial aid are also key factors. In addition to having enough money available to make college both appear to be affordable, and actually be affordable, we need to know more about what types of aid packages under what circumstances encourage students to become ready, apply, enroll, and complete college.

- *Develop additional indicators of success for different types of institutions and students.*

Determining reasonable institutional indicators of student success must involve a variety of groups—policymakers, administrators, faculty, staff, and students. Commonly used indicators of success include student retention and graduation. However, more expansive indicators of student goal attainment, course retention, transfer rates and transfer success, success in subsequent course work, fall-to-fall persistence, degree/certificate completion, student satisfaction, student personal and professional development, citizenship and student involvement, student learning outcomes, and post-college outcomes including graduate school participation, employment, and orientation to lifelong learning are important measures of success for different types of institutions and students (Appendix B). For example, measures of success in subsequent coursework are important measures for students who have been historically

underrepresented in specific majors, and at institutions that provide remedial education. Although indicators that are sensitive to different students and institutions need to be developed, agreeing on what are legitimate indicators will not be easy, because so many groups from state and federal policymakers to business leaders to institutional officials have an interest in the issue. For example, are satisfaction and program or certificate completion adequate indicators in the rapidly growing proprietary sector of postsecondary education? Also, because it is clear that a one-size-fits-all set of indicators will not likely be sufficient, given the increasing diversity of college students and multiple, winding pathways to a baccalaureate, multiple sets of indicators will be needed to yield an accurate, albeit more complicated picture.

- *Determine appropriate, responsible ways to measure, report, and use student success indicators for purposes of accountability and improvement.*

Persistence rates appear to have risen between the early and mid-1990s, though there was no perceptible change in graduation rates (Horn and Berger 2004). This suggests this cohort of students may be persisting longer and attending multiple institutions on the road to the baccalaureate. Thus, it is possible that current estimates of educational attainment rates are lower than reported. Accurate, real-time, state-level tracking systems and data sharing across states are needed to paint a more comprehensive, true picture of persistence and graduation rates. States such as Florida, Ohio, and Texas have made good progress in this regard (P. Ewell, personal communication, January 11, 2006).

Using instruments such as CCSSE and NSSE is one relatively inexpensive approach that can serve multiple purposes (assessment, accountability, improvement). Another approach is systematically auditing the extent to which conditions for student success exist, such as described in the Inventory for Student Engagement and Success (Kuh et al. 2005a). For example, does the way the curriculum is organized and delivered facilitate or present obstacles to student success? A problem common to many universities is the gateway mathematics course that is required by some majors where the traditional approach to delivering course content *assumes* that not all students can master challenging mathematical concepts. As a result, a substantial fraction of students do not master the material which impedes their progress to degree.

- *Determine the institutional policies and practices that work best with different groups of students (low income, first generation, ethnic minorities, immigrants, men and so forth) at different types of institutions (2-year and 4-year colleges, public and private schools, and private for-profit entities).*

Single institution and consortia studies are needed to learn more about interventions that are effective with different groups of students at different points in time. For example, are pedagogical approaches that feature active and collaborative learning activities appropriate for all students? That is, do all students who report more experience with such activities learn more and graduate at higher rates than their counterparts? Engaging pedagogies, such as active and collaborative learning and electronic technology that permit instructors to offer just-in-time assistance to students who are having difficulty mastering concepts, offer great promise for increasing student learning and keeping students motivated to complete learning tasks and to persist. While engaging teaching approaches appear to be more or less effective with all students (NSSE 2005), we need to discover whether some approaches work better with students with certain characteristics than others.

- *Determine the elements of institutional culture at different types of postsecondary settings that are associated with student success.*

Virtually every study of high performing organizations concludes that culture is a major factor in their success (Collins 2001; Kuh et al. 2005b; Kuh and Whitt 1988; Tierney 1999). Particularly instructive would be studies of the institutional conditions associated with student success at community colleges, special mission and minority-serving institutions that control for student precollege characteristics, such as first-generation status, SES, aspirations, academic preparation and so forth (Becker and Andrews 2004; Fitzgerald 2004; Heller 2004; Swail et al. 2005). Another understudied area is how organizational structures at colleges affect student performance and satisfaction. Learning more about how students make sense of and navigate the college environment has greater potential to reveal aspects of the organizational structure that support and hinder student success.

The research on student development indicates that students learn more and more deeply when their experiences inside and outside the classroom are complementary and mutually reinforcing. Many institutions are doing exemplary work in this area; some of which have been described (Kuh et al. 2005b; Kuh et al. 1991). More studies of such efforts would be welcome, particularly those that discover and describe programs and practices at institutions that enroll large numbers of part-time and commuting students, as this segment of students will continue to increase. Such efforts would also help us better understand the “invisible tapestry” (Kuh and Whitt 1988) of language, norms, and other cultural properties that contribute to student success.

- *Examine the educational effectiveness of private, for-profit postsecondary institutions.*

Very little is known about the student experiences at these types of institutions, which have rapidly increasing enrollments. As a result it is not possible to determine what role they play in the educational system in terms of enhancing student learning and contributing to the education capital of the state and nation.

- *Determine whether highly selective colleges and universities are deemphasizing the recruitment of minority students and the implications of this practice.*

As mentioned earlier, there is some recent evidence that many institutions, including flagship state university campuses, are devoting less time and effort in recruiting students from historically underserved backgrounds. If this unfortunate turn of affairs is substantiated, institutional governing boards, states, and policymakers must work together to reverse this trend and hold postsecondary institutions accountable for serving the public interest.

- *Examine the motivations and quality of educational experiences of students attending multiple institutions.*

The “swirl” phenomenon—attending two or more postsecondary schools in a meandering pattern as well as concurrent enrollment at two or more schools in the same academic term—is a fact of contemporary college going. Very little is known about the experiences of these students, even though they now compose the majority of all undergraduates who earn a bachelor’s degree. We need more and better information about institutional attendance patterns (including transfer students) and their effects on student learning and other indicators of student success.

- *Determine more precisely what postsecondary education contributes to practical competence and postcollege performance and what can be done to enhance the impact of college in this area.*

Although many institutions still do not adequately document the outcomes of their educational programs, the voluminous college student development literature verifies that the effects of college are substantial in most desired outcomes domains (Pascarella and Terenzini 2005). The two areas where more research is needed is the development of practical competencies during college and the performance of college graduates after college in the workplace and civic engagement. Although there are understandable reasons for the limited amount of research in these areas (e.g., longitudinal studies with precollege controls are expensive and time consuming), the fact remains that in an era when the public wants assurances that its investments in postsecondary education are bearing fruit, such data are important.

- *Determine what postsecondary institutions can realistically do and at what cost to help academically underprepared students overcome the deficiencies they bring with them to college.*

The weight of the evidence shows that precollege experiences—and especially taking the right kinds of courses in high school—are key to persistence and graduation. With this hard truth, how much can postsecondary institutions realistically be expected to do? Who is most likely to benefit from remediation and what are the costs and benefits of various remediation approaches? Although much of the solution to student success in college is related to the quality of precollege academic preparation, postsecondary institutions must do everything feasible to help their students who matriculate without the requisite skills and competencies to perform at a satisfactory level. Systematic efforts are needed to determine the design and delivery of advising and counseling services and developmental coursework that are effective with different types of learners (adult students, first generation, low income) in different types of settings. The results of such inquiries can help to establish realistic benchmarks that policy makers, funding agencies, and institutional leaders can use for purposes of accountability and institutional improvement.

A Final Word

Earning a bachelor's degree is linked to long-term cognitive, social, and economic benefits to individuals, benefits that are passed on to future generations, enhancing the quality of life of the families of college-educated persons, the communities in which they live, and the larger society. Whereas college was once considered an option for a relatively small percentage of the adult population, this is no longer the case. Indeed, the majority of an age cohort—perhaps more than 80 percent—needs some form of postsecondary education to live and work productively in a rapidly changing, information-based economy. For this reason, various groups have put forward scores of policy recommendations for how policymakers, states, K–12 schools, postsecondary institutions, students, families, and community agencies can work together to enhance student success and educational attainment.

As this review demonstrates, we know many of the factors that facilitate and inhibit earning a bachelor's degree. To a lesser degree, we also know some of the more promising interventions that—if implemented effectively to reach large numbers of students—promise to increase this number. There is certainly much more to learn about these and related matters as demonstrated by the list of unanswered questions just presented.

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Colleges and universities are limited in terms of what they can do to encourage student success. An institution of higher education cannot change the lineage of its students. Campus cultures do not change easily or willingly. Too many long-held beliefs and standard operating practices are tightly woven into an institution's ethos and embedded in the psyche of faculty leaders and senior administrators, some of which may be counterproductive. That said, most institutions can do far more than they are doing at present to implement interventions that will change the way students approach college and what they do after they arrive.

The real question is whether we have the *will* to more consistently use what we know to be promising policies and effective educational practices in order to increase the odds that more students get ready, get in, and get through.

REFERENCES

- Abraham, J. P., Lujan, S. S., Lopez, E. E., and Walker, M. T. (2002). Graduating Students' Perceptions of Outcomes of College Experiences at a Predominantly Hispanic University. *Journal of Hispanic Higher Education, 1*(3): 267-276.
- Abrahamowicz, D. (1988). College Involvement, Perceptions, and Satisfaction: A Study of Membership in Student Organizations. *Journal of College Student Development, 29*(3): 233-238.
- Achieve, Inc. (2006, February). *Closing the Expectations Gap 2006: An Annual 50-State Progress Report on the Alignment of High School Policies with the Demands of College and Work*. Washington, DC: Author.
- Adelman, C. (1999). *Answers in the Toolbox: Academic Intensity, Attendance Patterns, and Bachelor's Degree Attainment*. U.S. Department of Education. Washington, DC: Office of Educational Research and Improvement.
- Adelman, C. (2004) *Principal Indicators of Student Academic Histories in Postsecondary Education, 1972-2000.*: U.S. Department of Education. Washington, DC: Institute of Education Sciences.
- Adelman, C. (2005). Educational "Anticipations" of Traditional Age Community College Students: A Prolegomena to Any Future Accountability Indicators. *Journal of Applied Research in the Community College, 12*(1): 93-107.
- Adelman, C. (2006, February). *The Toolbox Revisited: Paths to Degree Completion From High School Through College*. U.S. Department of Education. Washington, DC: Office of Vocational and Adult Education.
- Adelman, C. (2006, April). *The Propaganda of Numbers in Higher Education*. Paper presented at the annual meeting of the American Educational Research Association, San Francisco, CA.
- Aitken, N. D. (1982). College Student Performance, Satisfaction, and Retention: Specification and Estimation of Structural Equation Model. *Journal of Higher Education, 53*: 32-50.
- Aleman, A. (1994, April). *The Cognitive Value of College Women's Friendships*. Paper presented at the annual meeting of the American Educational Research Association, New Orleans, LA.
- Alexander, P. A., and Murphy, P. K. (1994, April). *The Research Base for APA's Learner-Centered Psychological Principles*. Paper presented at the annual meeting of the American Educational Research Association, New Orleans, LA.
- Alexander, L. T., Gur, R., and Patterson, L. (1974). Peer-Assisted Learning. *Improving Human Performance, 3*(4): 175-186.
- Allen, C., Brower, A., and Golde, C. (1999). Wiser Women: Fostering Undergraduate Success in Science and Engineering With a Residential Academic Program. *Journal of Women and Minorities in Science and Engineering, 5*: 265-277.
- Allen, D., and Duch, B. (1998). *Thinking Toward Solutions: Problem-Based Learning Activities For General Biology* (1st Ed.). Fort Worth, TX: Harcourt College Publishing.
- Allen, W. R. (1985). Black Student, White Campus: Structural, Interpersonal, and Psychological Correlates of Success. *The Journal of Negro Education, 54*(2): 134-147.

- Allen, W. R. (1986). *Gender and Campus Race Differences in Black Student Academic Performance, Racial Attitudes, and College Satisfaction*. Atlanta, GA: Southern Education Foundation.
- Allen, W. R. (1992). The Color of Success: African-American College Student Outcomes at Predominately White and Historically Black Public Colleges and Universities. *Harvard Educational Review*, 62(1): 26-44.
- Allen, W. R., Epps, E., and Haniff, N. (Eds.). (1991). *College in Black and White: African American Students in Predominately White and in Historically Black Public Universities*. Albany, NY: State University of New York Press.
- Alpern, B. E. (2000). *Factors That Influence Community College Transfer Students' Satisfaction With Their Baccalaureate Institutions*. Troy, MI: Walsh College.
- Amelink, C. T. (2005). *Predicting Academic Success Among First-Year, First Generation Students*. Unpublished Ph.D. diss. Virginia Polytechnic Institute and State University.
- American Association of Community Colleges. (1994). *Community Colleges: Core Indicators of Effectiveness*. AAC Special Reports No. 4. Washington, DC: Author.
- American Association for Higher Education. (1992). *Assessment Principles of Good Practices*. Washington, DC: Author.
- American College Testing Program (ACT). (2005). *Crisis at the Core: Preparing all Students for College and Work*. Iowa City, IA: Author.
- American College Testing Program (ACT). (2006). *Reading Between the Lines: What the ACT Reading Test Reveals About College Readiness*. Iowa City, IA: Author.
- American Council on Education (ACE) and American Association of University Professors (AAUP). (2000). *Does Diversity Make a Difference? Three Research Studies on Diversity in College Classrooms. Executive Summary*. Washington, DC: Author.
- American Diploma Project. (2004). *Ready or Not: Creating a High School Diploma That Counts. Executive Summary*. Washington, DC: Achieve, Inc.
- American Indian Higher Education Consortium (AIHEC), The Institute for Higher Education Policy (IHEP), and Sallie Mae Education Institute. (2000, May). *Creating Role Models for Change: A Survey of Tribal College Graduates*. Alexandria, VA: Author.
- Anaya, G. (1996). College Experiences and Student Learning: The Influence of Active Learning, College Environments, and Co-Curricular Activities. *Journal of College Student Development*, 37(6): 611-622.
- Angelo, T. A., and Cross, P. K. (1993). *Classroom Assessment Techniques: A Handbook for College Teachers* (2nd Ed.). San Francisco: Jossey-Bass.
- Annis, L. F. (1983). The Processes and Effects of Peer Tutoring. *Human Learning*, 2: 39-47.
- Antonio, A. L. (1998, April). *Student Interaction Across Race and Outcomes in College*. Paper presented at the annual meeting of the Association for the Study of Higher Education, San Antonio, TX.
- Antonio, A. L. (2001). Diversity and the Influence of Friendship Groups in College. *The Review of Higher Education*, 25(1): 63-89.

- Antonio, A. L., Chang, M. J., Hakuta, K., Kenny, D. A., Levin, S., and Milem, J. F. (2003). *Effects of Racial Diversity on Complex Thinking in College Students*. Stanford, CA: Stanford University.
- Anzaldua, G. (1987). *Borderlands = La Frontera: The New Mestiza*. San Francisco: Spinster/Aunt Lute.
- Arnold, J. C., Kuh, G. D., Vesper, N., and Schuh, J. H. (1993). Student Age and Enrollment Status as Determinants of Learning and Personal Development at Metropolitan Institutions. *Journal of College Student Development*, 34(1): 11-16.
- Association of American Colleges and Universities (AACU). (2002). *Greater Expectations: A New Vision for Learning as a Nation Goes to College*. Washington, DC: Author.
- Association of American Colleges and Universities (AACU). (2005). *Liberal Education Outcomes: A Preliminary Report on Student Achievement in College*. Washington, DC: Author.
- Astin, A. W. (1975). *The Power of Protest: A National Study of Student and Faculty Disruptions With Implications for the Future* (1st ed.). San Francisco: Jossey-Bass.
- Astin, A. W. (1977). *Four Critical Years: Effects of College on Beliefs, Attitudes, and Knowledge*. San Francisco: Jossey-Bass.
- Astin, A. W. (1984). Student Involvement: A Developmental Theory for Higher Education. *Journal of College Student Development*, 25(4): 297-308.
- Astin, A. W. (1985). Involvement: The Cornerstone of Excellence. *Change*, 17(4): 35-39.
- Astin, A. W. (1991). The Changing American College Student: Implications for Educational Policy and Practice. *Higher Education*, 22(2): 129-143.
- Astin, A. W. (1993a). What Matters in College. *Liberal Education*, 79(4): 4-15.
- Astin, A. W. (1993b). *What Matters in College? Four Critical Years Revisited* (1st Ed.). San Francisco: Jossey-Bass.
- Astin, A. W. (1997). How "Good" is Your Institution's Retention Rate? *Research in Higher Education*, 38(6): 647-658.
- Astin, A. W., Sax, L. J., and Avalos, J. (1999). Long-Term Effects of Volunteerism During the Undergraduate Years. *The Review of Higher Education*, 22(2): 187-202.
- Astin, A. W., Tsui, L., and Avalos, J. (1996). *Degree Attainment Rates at American Colleges and Universities: Effects of Race, Gender, and Institutional Type* (No. HE 029 589). Los Angeles, CA: University of California, Higher Education Research Institute.
- Astin, H., and Kent, L. (1983). Gender Roles in Transition: Research and Policy Implications for Higher Education. *Journal of Higher Education*, 54(3): 309-324.
- Attinasi, L. C., Jr. (1989). Getting in: Mexican Americans' Perceptions of University Attendance and the Implications for Freshman Year Persistence. *Journal of Higher Education*, 60(3):247-277.
- Attinasi, L. C., Jr. (1992). Rethinking the Study of the Outcomes of College Attendance. *Journal of College Student Development*, 33(1): 61-70.
- Baer, J. D., Cook, A. L., and Baldi, S. (2006). *The Literacy of American's College Students*. Washington, DC: American Institutes for Research.

- Bailey, T. R., and Alfonso, M. (2005). *Paths to Persistence: An Analysis of Research on Program Effectiveness at Community Colleges*. New Agenda Series, 6(1). Indianapolis, IN: Lumina Foundation for Education.
- Bailey, T., Badway, N., and Gumport, P. (2001). *For-Profit Higher Education and Community Colleges*. Paper prepared for National Center for Postsecondary Improvement (Deliverable #0400). Stanford, CA: Stanford University
- Bailey, T., Calcagno, J. C., Jenkins, D., Leinbach, T., and Kienzl, G. (2005). *Beyond Student Right-to-Know Data: Factors That Can Explain Community College Graduation Rates* (CCRC Brief Number 29). New York: Columbia University, Community College Research Center.
- Bailey, T., Jenkins, D., and Leinbach, T. (2005). *Graduation Rates, Student Goals, and Measuring Community College Effectiveness* (CCRC Brief Number 28). New York: Columbia University, Community College Research Center.
- Baker, R. W., McNeil, O. V., and Siryk, B. (1985). Expectation and Reality in Freshman Adjustment to College. *Journal of Counseling Psychology*, 32(1): 94-103.
- Bandura, A. (1982). Self-Efficacy Mechanism in Human Agency. *American Psychologist*, 37: 122-147.
- Bandura, A., Millard, M., Peluso, E. A., and Ortman, N. (2000). Effects of Peer Education Training on Peer Educators: Leadership, Self-Esteem, Health Knowledge, and Health Behaviors. *Journal of College Student Development*, 41(5): 471-478.
- Bank, B., Slavings, R., and Biddle, R. (1990). Effects of Peer, Faculty, and Parental Influences on Students' Persistence. *Sociology of Education*, 63(3): 209-225.
- Banning, J. H., and Bartels, S. (1997). A Taxonomy: Campus Physical Artifacts as Communicators of Campus Multiculturalism. *NASPA Journal*, 35(1): 29-37.
- Banning, J. H., and Cunard, M. (1996). *Assessment and Redesign of the Physical Environment in Support of Student Development* (ACU-I Classics: Student Development). Bloomington, IN: ACU-I
- Bargh, J., and Schul, Y. (1980). On the Cognitive Benefits of Teaching. *Journal of Educational Psychology*, 72(5): 593-604.
- Barovick, H., and Baron, M. (2001). Indiana University: A Web of Friendly Interest Groups Makes This Big Research Institution Feel Less Intimidating. *Time*, September 10. <http://www.time.com/time/archive/preview/0,10987,1000722,00.html> (accessed January 2, 2006).
- Barr, R. B., and Tagg, J. (1995). From Teaching to Learning: A New Paradigm for Undergraduate Education. *Change*, 27(6): 12-25.
- Barrow, L. R., and Rouse, C. E. (2005). Does College Still Pay? *The Economists' Voice*, 2(4). <http://www.bepress.com/ev/vol2/iss4/art3> (accessed December 10, 2005).
- Bauer, K. W. (2000, November). *The Influence of Personality Traits, Pre-College Characteristics, and Co-Curricular Experiences on College Outcomes*. Paper presented at the annual meeting of the North East Association of Institutional Research, Pittsburg, PA.
- Baum, S., and Payea, K. (2004). *Education Pays 2004: The Benefits of Higher Education for Individual and Society*. New York: The College Board.

- Bauman, G. L., Bustillos, L. T., Bensimon, E. M., Brown, M. C., and Bartee, R. D. (2005). *Achieving Equitable Educational Outcomes With All Students: The Institution's Roles and Responsibilities*. Washington, DC: Association of American Colleges and Universities.
- Baxter Magolda, M. B. (2001). *Making Their Own Way: Narratives for Transforming Higher Education to Promote Self-Development*. Sterling, VA: Stylus.
- Baxter Magolda, M. B. (2004). Self-Authorship as the Common Goal of 21st-Century Education. In *Learning Partnerships: Theory and Models of Practice to Educate for Self-Authorship*, edited by M.B. Baxter Magolda and P.M. King, 1-36. Sterling, VA: Stylus.
- Bean, J. P. (1980). Dropouts and Turnover: The Synthesis and Test of a Causal Model of Student Attrition. *Research in Higher Education*, 12(2): 155-187.
- Bean, J. P. (1983). The Application of a Model of Turnover in Work Organizations to the Student Attrition Process. *The Review of Higher Education*, 6(2): 129-148.
- Bean, J. P. (1985). Interaction Effects Based on Class Level in an Exploratory Model of College Student Dropout Syndrome. *American Educational Research Journal*, 22:35-64.
- Bean, J. P., and Bradley, R. (1986). Untangling the Satisfaction-Performance Relationship for College Students. *Journal of Higher Education*, 57(4): 393-412.
- Bean, J. P., and Eaton, S. (2000). A Psychological Model of College Student Retention. In *Reworking the Departure Puzzle: New Theory and Research on College Student Retention*, edited by J. M. Braxton, 73-89. Nashville, TN: University of Vanderbilt Press.
- Bean, J. P., and Kuh, G. D. (1984). The Reciprocity Between Student-Faculty Informal Contact and the Academic Performance of University Students. *Research in Higher Education*, 21(4): 461-477.
- Bean, J. P., and Vesper, N. (1994, November). *Gender Differences in College Student Satisfaction*. Paper presented at the annual meeting of the Association for the Study of Higher Education, Tucson, AZ.
- Becker, G. S. (1964). *Human Capital: A Theoretical and Empirical Analysis*. New York: Columbia University Press.
- Becker, W. E., and Andrews, M. L. (Eds.). (2004). *The Scholarship of Teaching and Learning in Higher Education: Contributions of Research Universities*. Bloomington, IN: Indiana University Press.
- Benitez, M. (1998). Hispanic-Serving Institutions: Challenges and Opportunities. *New Directions for Higher Education*, 26(2): 57-68.
- Bensimon, E. M. (2004). The Diversity Scorecard: A Learning Approach to Institutional Change. *Change*, 36(1): 44-53.
- Benware, C., and Deci, E. (1984). Quality of Learning With an Active Versus Passive Motivational Set. *American Educational Research Journal*, 21(4): 755-765.
- Berdie, R. F. (1966). College Expectations, Experiences, and Perceptions. *Journal of College Student Personnel*, 7: 336-344.
- Berdie, R. F. (1968). Changes in University Perceptions During the First Two Years. *Journal of College Student Personnel*, 9: 85-89.

- Berger, J. B. (2000). Optimizing Capital, Social Reproduction, and Undergraduate Persistence. In *Reworking the Student Departure Puzzle*, edited by J. Braxton, 95-124. Nashville, TN: Vanderbilt University Press.
- Berger, J. B. (2001-02). Understanding the Organizational Nature of Student Persistence: Empirically-Based Recommendations for Practice. *Journal of College Student Retention: Research, Theory, & Practice*, 3(1): 3-21.
- Berger, J. B. (2002). The Influence of the Organizational Structures of Colleges and Universities on College Student Learning. *Peabody Journal of Education*, 77(3): 40-59.
- Berger, J. B., and Braxton, J. M. (1998). Revising Tinto's Interactionist Theory of Student Departure Through Theory Elaboration: Examining the Role of Organizational Attributes in the Persistence Process. *Research in Higher Education*, 39(2): 103-119.
- Berger, J. B., and Malaney, G. D. (2003). Assessing the Transition of Transfer Students from Community Colleges to a University. *NASPA Journal*, 40(4).
http://vnweb.hwwilsonweb.com/hww/shared/shared_main.jhtml;jsessionid=GAGWNWEN3WC13QA3DINCFGGADUNGIIV0?_requestid=66495 (accessed December 1, 2005).
- Berger, J. B., and Milem, J. F. (1999). The Role of Student Involvement and Perceptions of Integration in a Causal Model of Student Persistence. *Research in Higher Education*, 40(6): 641-664.
- Berger, J. B., and Milem, J. F. (2000). Organizational Behavior in Higher Education and Student Outcomes. In *Higher Education: Handbook of Theory and Research*, Vol. 15, edited by J. C. Smart, 268-338. New York: Agathon.
- Berkner, L., and Chavez, L. (1997). *Access to Postsecondary Education for the 1992 High School Graduates* (NCES 98-105). U.S. Department of Education. Washington, DC: National Center for Education Statistics.
- Berkner, L., Cuccaro-Alamin, S., and McCormick, A. (1996). *Descriptive Summary of 1989-90 Beginning Postsecondary Students: Five Years Later* (NCES 96-155). U.S. Department of Education. Washington, DC: National Center for Education Statistics.
- Berkner, L., He, S., and Cataldi, E. F. (2002). *Descriptive Summary of 1995-96 Beginning Postsecondary Students. Six Years Later*. (NCES 2003-151). U.S. Department of Education. Washington, DC: National Center for Education Statistics.
- Berliner, D. C. (1984). The Half-Full Glass: A Review of Research on Teaching. In *Using What We Know About Teaching*, edited by P.L. Hosford, 51-84. Alexandria, VA: Association for Supervision and Curriculum Development.
- Bettinger, E. P., and Long, B. T. (2005, May). *Addressing the Needs of Under-Prepared Students in Higher Education: Does College Remediation Work?* (NBER Working Paper 11325). Cambridge, MA: National Bureau of Economic Research.
- Billson, J. M., and Terry, B. T. (1982). In Search of the Silken Purse: Factors in Attrition Among First-Generation Students. *College and University*, 58(1): 57-75.
- Birnbaum, R. (1988). *How Colleges Work: The Cybernetics of Academic Organization and Leadership*, 1st ed. San Francisco: Jossey-Bass.
- Birnbaum, R. (1991). *Faculty in Governance: The Role of Senates and Joint Committees in Academic Decision Making*. San Francisco: Jossey-Bass.

- Bisconti, A., and Kessler, J. (1980). *College and Other Stepping Stones: A Study of Learning Experiences That Contribute to Effective Performance in Early and Long-Run Jobs*. Bethlehem, PA: CPC Foundation.
- Bishop, J. H. (2002, April). *What Should be the Federal Role in Supporting and Shaping Development of State Accountability Systems for Secondary School Achievement?* Paper presented at the Preparing America's Future: The High School Symposium, Washington, DC.
- Bishop, J. H. (2004). Money and Motivation. *Education Next*, 4(1): 62-67.
- Blimling, G. S. (1989). A Meta-Analysis of the Influence of College Residence Halls on Academic Performance. *Journal of College Student Development*, 30(4): 298-308.
- Blimling, G. S. (1993). The Influence of College Residence Halls on Students. In *Higher Education: Handbook of Theory and Research*, Vol. 9, edited by J. C. Smart, 248-307. New York: Agathon.
- Blimling, G. S., and Whitt, E. J. (1999). Identifying the Principles That Guide Student Affairs Practice. In *Good Practice in Student Affairs: Principles To Foster Student Learning*, edited by G. S. Blimling and E. J. Whitt, 1-20. San Francisco: Jossey-Bass.
- Bloom, D., and Sommo, C. (2005). *Building Learning Communities Early Results from the Opening Doors Demonstration at Kingsborough Community College*. New York: Manpower Demonstration Research Corporation.
- Blose, G. (1999). Modeled Retention and Graduation Rates: Calculating Expected Retention and Graduation Rates for Multicampus University Systems. *New Directions for Higher Education*, 27(4): 69-86.
- Bohr, L., Pascarella, E. T., Nora, A., and Terenzini, P. T. (1995). Do Black Students Learn More at Historically Black or Predominately White Colleges? *Journal of College Student Development*, 36(1): 75-85.
- Bolman, L. G., and Deal, T. E. (1991). *Reframing Organizations: Artistry, Choice, and Leadership*, 1st ed. San Francisco: Jossey-Bass
- Borden, V. M. H. (2004). Accommodating Student Swirl: When Traditional Students Are No Longer the Tradition. *Change*, 36(2), 10-17.
- Bourdieu, P., and Passeron, J. C. (1977). *Reproduction in Education, Society, and Culture*. London: Sage.
- Bourner, T. (1997). Teaching Methods for Learning Outcomes. *Education + Training*, 39(9): 344-348.
- Bowen, H. (1977). *Investment in Learning: The Individual and Social Value of American Higher Education*. San Francisco: Jossey-Bass Publishers.
- Bowen, H. (1978). Some Reflection on the Current Position and Future Outlook of American Higher Education. *Academe: Bulletin of the AAUP*, 66(1), 8-15.
- Bowen, W. G., and Bok, D. C. (1998). *The Shape of the River: Long-Term Consequences of Considering Race in College and University Admissions*. Princeton, NJ: Princeton University Press.
- Bowen, W. G., and Levin, S. A. (2003). *Reclaiming the Game: College Sports and Educational Values*. Princeton, NJ: Princeton University Press.
- Boyer, E. L., and Hechinger, F. M. (1981). *Higher Learning in the Nation's Service: A Carnegie Foundation Essay*. Princeton, NJ: Carnegie Foundation for the Advancement of Teaching.

- Boyer, P. (1995). Sharing Power. *Tribal College Journal*, 6(4): 6-7, 46.
- Boyland, H. R. (2002) *What Works: A Guide to Research-Based Best Practices in Developmental Education*. Boone, NC: Appalachian State University, Continuous Quality Improvement Network with the National Center for Developmental Education.
- Bradburn, E. M., and Hurst, D. G. (2001). Community College Transfer Rates to 4-Year Institutions: Using Alternative Definitions of Transfer. *Education Statistics Quarterly*, 3(3): 119-125.
- Braswell, J. S., Lutkus, A. D., Grigg, W. S., Santapau, S. L., Tay-Lim, B. S. H, and Johnson, M. S. (2001). *The Nation's Report Card: Mathematics 2000*. U.S. Department of Education. Washington, DC: National Center for Education Statistics.
- Braxton, J. M. (2003). Student Success. In *Student Services: A Handbook for the Profession*, 4th ed., edited by S. R. Komives and D. B. Woodard, Jr., 317-338. San Francisco: Jossey-Bass.
- Braxton, J. M., Brier, E. M, Herzog, L., and Pascarella, E.T. (1990). Becoming a Lawyer: The Effects of College and College Experiences. *The Review of Higher Education*, 13(3): 285-301.
- Braxton, J. M., Hirschy, A. S., and McClendon, S. A. (2004). *Understanding and Reducing College Student Departure*. ASHE-ERIC Higher Education Report, 30, No. 3. Washington, DC: The George Washington University, School of Education and Human Development.
- Braxton, J. M., and Lien, L. (2000). The Viability of Academic Integration as a Central Construct in Tinto's Interactionist Theory of College Student Departure. In *Reworking the Student Departure Puzzle*, edited by J. Braxton, 11-28. Nashville, TN: Vanderbilt University Press.
- Braxton, J. M., and McClendon, S. A. (2001-02). The Fostering of Social Integration and Retention Through Institutional Practice. *Journal of College Student Retention: Research, Theory & Practice*, 3(1): 57-71.
- Braxton, J. M., Milem, J. F., and Sullivan, A. S. (2000). The Influence of Active Learning on the College Student Departure Process: Toward a Revision of Tinto's Theory. *Journal of Higher Education*, 71(5): 569-590.
- Braxton, J. M., Sullivan, A., S., and Johnson, R. T. (1997). Appraising Tinto's Theory of College Student Departure. In *Higher Education: Handbook of Theory and Research*, Vol. 12, edited by J. C. Smart, 107-158). New York: Agathon.
- Braxton, J. M., Vesper, N., and Hossler, D. (1995). Expectations for College and Student Persistence. *Research in Higher Education*, 36(5): 595-612.
- Breland, H., Maxey, J., Gernand, R., Cumming, T., and Trapani, C. (2002, March). *Trends in College Admission 2000: A Report of a National Survey of Undergraduate Admission Policies, Practices, and Procedures*. Alexandria, VA: National Association for College Admission Counseling.
- Bridglall, B. L., and Gordon, E. W. (2002). The Idea of Supplementary Education. *Pedagogical Inquiry and Praxis* (No. 3). New York: Teachers College, Columbia University, Institute for Urban and Minority Education.
- Bridges, B., Cambridge, B., Kuh, G. D., and Leegwater, L. H. (2005). Student Engagement at Minority-Serving Institutions: Emerging Lessons From the BEAMS Project. In *Minority Retention: What Works? New Directions for Institutional Research*, 125, edited by G. H. Gaither, 25-43.

- Brigman, S., Kuh, G. D., and Stager, S. (1982). Those Who Choose to Leave: Why Students Voluntarily Withdraw From College. *Journal of the National Association of Women Deans, Administrators, and Counselors*, 45(3): 3-8.
- Bruffee, K. A. (1993). *Collaborative Learning: Higher Education, Interdependence, and the Authority of Knowledge*. Baltimore: Johns Hopkins University Press.
- Burley, A., Cejda, B., and Butner, B. (2001). Dropout and Stopout Patterns Among Developmental Education Students in Texas Community Colleges. *Community College Journal of Research and Practice*, 25(10): 767-782.
- Cabrera, A. F., Casteneda, M. B., Nora, A., and Hengstler, D. (1992). The Convergence Between Two Theories of College Persistence. *Journal of Higher Education*, 63(2): 143-164.
- Calhoun, R., and Reddy, A. (1968). The Frantic Search for Predictors of Success: 50 Years of Confusion and Contradiction. *Journal of College Placement*, 28: 54-66.
- Cambridge, B. L. (1996). The Paradigm Shifts: Examining Quality of Teaching Through Assessment of Student Learning. *Innovative Higher Education*, 20(4): 287-297.
- Camera, W. J. (2003, March). *College Persistence, Graduation, and Remediation*. College Board Research Notes, No. 19. http://search.collegeboard.com/research/pdf/rn19_22643.pdf (accessed April 1, 2006).
- Cantor, N., and Mischel, W. (1977). Traits and Prototypes: Effects of Recognition Memory. *Journal of Personality and Social Psychology*, 35(1): 38-49.
- Cappelli, P. (1992) College, Students, and The Workplace: Assessing Performance to Improve the Fit. *Change*, 24(6): 54-61.
- Carey, K. (2004, May). *A Matter of Degrees: Improving Graduation Rates in Four-Year Colleges and Universities*. Washington, DC: Education Trust.
- Carini, R. M., Kuh, G. D., and Klein, S. P. (2004, April). *Student Engagement and Student Learning: Insights From a Construct Validation Study*. Paper presented at the annual meeting of the American Educational Research Association, San Diego, CA.
- Carini, R. M., Kuh, G. D., and Klein, S. P. (in press). Student Engagement and Student Learning: Testing the Linkages. *Research in Higher Education*.
- Carnevale, A. P., and Desrochers, D. M. (2002, April). *The Missing Middle: Aligning Education and the Knowledge Economy*. Paper presented at the Preparing America's Future: The High School Symposium, Washington, DC.
- Carnevale, A. P., and Desrochers, D. M. (2003). Preparing Students for the Knowledge Economy: What School Counselors Need to Know. *Professional School Counseling*, 6(4): 228-236.
- Carroll, D. (1989). *College Persistence and Degree Attainment for the 1980 High School Graduates: Hazards for Transfers, Stopouts, and Part-Timers* (NCES 89-302). U.S. Department of Education. Washington, DC: National Center for Education Statistics.
- Carroll, J. (1988). Freshman Retention and Attrition Factors at a Predominately Black Urban Community College. *Journal of College Student Development*, 29(1): 52-59.

- Carstens, J. B. (2000). Effects of a Freshman Orientation Course on Academic Outcomes, Quality of Effort and Estimated Intellectual Gain. PhD diss., University of Iowa, 2000. Abstract in *Dissertation Abstracts International*, 61, 2206.
- Carter, D. F. (1999). The Impact of Institutional Choice and Environments on African-American and White Students' Degree Expectations. *Research in Higher Education*, 40(1): 17-41.
- Carter, D. J., and Wilson, R. (1997). *Minorities in Higher Education: 1996-1997 Fifteenth Annual Status Report*. Washington, DC: American Council on Education, Office of Minority Concerns.
- Cashin, W. E. (1988). *Student Ratings of Teaching: A Summary of the Research* (IDEA Paper No. 20). Manhattan, KS: Kansas State University, Center for Faculty Evaluation and Development, Division of Continuing Education.
- Cejda, B. D., and Kaylor, A. J. (2001). Early Transfer: A Case Study of Traditional-Aged Community College Students. *Community College Journal of Research and Practice*, 25:621-638.
- Chamberlain, T.A. (2005). *Branching Out or Breaking Off: An Exploration of First-Year Students' Social Network*. Unpublished manuscript, Indiana University, Bloomington, IN.
- Chang, M. J. (1999). Does Racial Diversity Matter? The Educational Impact of a Racially Diverse Undergraduate Population. *Journal of College Student Development*, 40: 377-395.
- Chang, M. J. (2000, November). *Is it More Than About Getting Along? The Broader Educational Implications of Reducing Students' Racial Biases*. Paper presented at the annual meeting of the Association for the Study of Higher Education, San Antonio, TX.
- Chen, X. (2005). *First Generation Students in Postsecondary Education: A Look at Their College Transcripts* (NCES 2005-171). U.S. Department of Education. Washington, DC: U.S. Government Printing Office.
- Cheng, D. X. (2000, November). *Student Self-Perceived Gain Scales as the Outcome Measure of Collegiate Experience*. Paper presented at the annual meeting of the North East Association of Institutional Research, Pittsburg, PA.
- Chickering, A.W. (1974). *Communing Versus Resident Students: Overcoming the Educational Inequities of Living Off Campus*. San Francisco: Jossey-Bass Publishers.
- Chickering, A. W. (in press). Creating Conditions so Every Student Can Learn. *About Campus*.
- Chickering, A. W., and Gamson, Z. F. (Eds.). (1987). Seven Principles for Good Practice in Undergraduate Education. *AAHE Bulletin: March*: 3-7.
- Chickering, A. W., and Gamson, Z. F. (1991). *Applying the Seven Principles for Good Practice in Undergraduate Education*. San Francisco: Jossey-Bass.
- Chickering, A. W., and Reisser, L. (1993). *Education and Identity*, 2nd ed. San Francisco: Jossey-Bass.
- Choy, S. P. (1999). College Access and Affordability. *Education Statistics Quarterly*, 1(2):74-90.
- Choy, S. P. (2001). *Students Whose Parents did not go to College: Postsecondary Access, Persistence, and Attainment*. (NCES 2001-126). U.S. Department of Education. Washington, DC: National Center for Education Statistics.

- Chrispeels, J. H., and Rivero, E. (2001). Engaging Latino Families for Student Success: How Parent Education can Reshape Parents' Sense of Place in the Education of Their Children. *Peabody Journal of Education*, 76(2): 119-169.
- Christie, N., and Dinham, S. (1991). Institutional and External Influences on Social Integration in the Freshman Year. *Journal of Higher Education*, 62(4): 412-436.
- Cohen, A. M. (1996). Orderly Thinking About a Chaotic System. *New Directions for Community Colleges*, 24(4): 25-34.
- Cohen, A. M., and Brawer, F. (1987). *The Collegiate Function of Community Colleges*. San Francisco: Jossey-Bass.
- Cohen, A. M., and Brawer, F. B. (1996). *Policies and Programs That Affect Transfer*. Washington, DC: American Council on Education.
- Coleman, J. S. (1988). Social Capital in the Creation of Human Capital. *American Journal of Sociology*, 94: 95-120.
- Coleman, H. L., and Freeman, A. M. (1996). Effects of a Structured Group Intervention on the Achievement of Academically At-Risk Undergraduates. *Journal of College Student Development*, 37(6): 631-636.
- Collins, J. C. (2001). *Good to Great: Why Some Companies Make the Leap—and Others Don't*. New York: Harper Business.
- Committee for Economic Development. (2005, May). *Cracks in the Education Pipeline: A Business Leader's Guide to Higher Education Reform*. Washington, DC: Author.
- Community College Survey of Student Engagement (CCSSE). (2004). *Engagement by Design: 2004 Findings*. Austin, TX: Author.
- Community College Survey of Student Engagement (CCSSE). (2005). *Engaging Students, Challenging the Odds: 2005 Findings*. Austin, TX: Author.
- Conley, D. T. (2003). Connecting the Dots: Linking High Schools and Postsecondary Education to Increase Student Success. *Peer Review*, 5(2): 9-12.
- Conyne, R. K., and Clack, R. J. (1981). *Environmental Assessment and Design: A New Tool for the Applied Behavioral Scientist*. New York: Praeger.
- Cook, B., and King, J. E. (2005). *Improving Lives Through Higher Education: Campus Programs and Policies for Low-Income Adults*. Washington, DC: Lumina Foundation for Education and American Council on Education Center for Policy Analysis.
- Cross, K. P. (1987, February). *Teaching "for" Learning*. Paper presented at the North Carolina State University Centennial Year Provost's Forum, Raleigh, NC.
- Cross, K. P. (1998). Classroom Research: Implementing the Scholarship of Teaching. *New Directions for Teaching and Learning*, (75): 5-12.
- Cross, K. P. (1999). What Do We Know About Students' Learning, and How Do We Know It? *Innovative Higher Education*, 23(4): 255-270.
- Crosson, P. H. (1988). Four-Year College and University Environments for Minority Degree Achievement. *The Review of Higher Education*, 11(4): 365-382.

- Cuseo, J. B. (1998). *The Transfer Transition: A Summary of Key Issues, Target Areas, and Tactics for Reform*. ERIC Document Reproduction Service No. ED425771.
- Cuyjet, M. J. (1997). African-American Men on College Campuses: Their Needs and Their Perceptions. *New Directions for Student Services*, (80): 5-19.
- Dawson-Threat, J. (1997). Enhancing In-Class Academic Experiences for African American Men. *New Directions for Student Services*, (80:) 31-41.
- Dayton, B., Gonzalez-Vasquez, N., Martinez, C. R., and Plum, C. (2004). Hispanic-Serving Institutions Through the Eyes of Students and Administrators. In *Addressing the Unique Needs of Latino American Students*, *New Directions for Student Services*, (105), edited by A. M. Ortiz, 29-39.
- de los Santos, A., Jr., and Wright, I. (1990). Maricopa's Swirling Students: Earning One-Third of Arizona's State's Bachelor's Degrees. *Community, Technical, and Junior College Journal*, 60(6): 32-34.
- DeSousa, J. D., and Kuh, G. D. (1996) Does Institutional Racial Composition Make a Difference in What Black Students Gain From College? *Journal of College Student Development*, 37(3): 257-267.
- Dey, E. L., Wimsatt, L. A., Rhee, B., and Meader, E. W. (1995). *Long-Term Effect of College Quality on the Occupational Status of Students*. Stanford, CA: Stanford University School of Education, National Center for Postsecondary Improvement.
- Dougherty, K. J. (1994). *The Contradictory College: The Conflicting Origins, Impacts, and Futures of the Community College*. Albany, NY: State University of New York Press.
- DuBois, P. (1978). Participation in Sports and Occupational Attainment: A Comparative Study. *Research Quarterly*, 49: 28-37.
- Duch, B. J., Gron, S. E., and Allen, D. E. (Eds.) (2001). *The Power of Problem-Based Learning: A Practical "How To" for Teaching Undergraduate Courses in any Discipline*. Sterling, VA: Stylus Publishing.
- Dunphy, L., Miller, T., Woodruff, T., and Nelson, J. (1987). Exemplary Retention Strategies for the Freshman Year. *New Directions in Higher Education*, 15(4): 39-60.
- Dweck, C. S. (2000). *Self-Theories: Their Role in Motivation, Personality, and Development*. Philadelphia, PA: Psychology Press.
- Dweck, C. S., and Leggett, E. L. (1988). A Social-Cognitive Approach to Motivation and Personality. *Psychological Review*, 95(2): 256-273.
- Ebert-May, D., Brewer, C., and Allred, S. (1997). Innovation in Large Lectures-Teaching for Active Learning. *Bioscience*, 47(9): 601-607.
- Education Commission of the States (ECS). (1995). *Making Quality Count in Undergraduate Education*. Denver, CO: ECS Distribution Center.
- Ehrenberg, R. G., and Rothstein, D. S. (1994). Do Historically Black Institutions of Higher Education Confer Unique Advantages on Black Students? An Initial Analysis. In *Choices and Consequences: Contemporary Policy Issues in Education*, edited by R. G. Ehrenberg, 89-137. Ithaca, NY: ILR Press.

- Eimers, M. T., and Pike, G. R. (1997). Minority and Non-Minority Adjustment to College: Differences or Similarities? *Research in Higher Education*, 38(1): 77-97.
- Elkins, S. A., Braxton, J. M., and Glenn, J. W. (2000). Tinto's Separation Stage and its Influence on First-Semester College Student Persistence. *Research in Higher Education*, 41(2): 251-268.
- Endo, J. J., and Harpel, R. L. (1981, May). *The Effect of Student-Faculty Interaction on Student's Educational Outcomes*. Paper presented at the annual meeting of the Association for Institutional Research, Minneapolis, MN.
- Ethington, C. A., and Smart, J. C. (1986). Persistence to Graduate Education. *Research in Higher Education*, 24(3): 287-303.
- Ethington, C. A., Smart, J. C., and Pascarella, E. T. (1988). Influences on Women's Entry into Male-Dominated Occupations. *Higher Education*, 17(5): 545-562.
- Evanoski, P. O. (1988). The Role of Mentoring in Higher Education. *Community Review*, 8(2):22-27.
- Ewell, P. T. (1984). *The Self-Regarding Institution: Information for Excellence*. Boulder, CO: National Center for Higher Education Management Systems.
- Ewell, P. T. (1989). Institutional Characteristics and Faculty/Administrator Perceptions of Outcomes: An Exploratory Analysis. *Research in Higher Education*, 30(2): 113-136.
- Ewell, P. T. (1994). A Matter of Integrity: Accountability and the Future of Self-Regulation. *Change*, 26(6): 24-29.
- Fallows, J., Bakke, D., Ganeshanathan, V. V., and Johnson, C. (2003, November). The New College Chaos. *Atlantic Monthly*, 292(4): 106-114.
- Feagin, J. R., Vera, H., and Imani, N. (1996). *The Agony of Education: Black Students at White Colleges and Universities*. New York: Routledge.
- Feldman, D. C. (1981). The Multiple Socialization of Organizational Members. *Academy of Management Review*, 6: 308-318.
- Feldman, K. A. (1976). The Superior College Teacher From the Students' View. *Research in Higher Education*, 5(3): 243-288.
- Feldman, K. A., and Newcomb, T. M. (1969). *The Impact of College on Students* (1st ed.). San Francisco: Jossey-Bass.
- Fidler, P., and Hunter, M. (1989) How Seminars Enhance Student Success. In *The Freshman Year Experience: Helping Student Survive and Succeed in College*, edited by M. Upcraft, J. Gardner, and Associates, 216-237. San Francisco: Jossey-Bass Publishers.
- Finn, C. E., Jr. (2006). Obstacles on the Route From High School to College. *Chronicle of Higher Education*, March 10, B40.
- Finney, J. E., and Kelly, P. J. (2004). Affordability: Obtaining and Making Sense of Information about How Students, Families, and States Pay for Higher Education. *Change*, 36(4): 54-60.
- Fischer, N. M. (1994). *The Long-Term Effect of Undergraduate Involvement Experiences on Cognitive and Affective Outcomes for Selected College Graduates at a Southern California University*. Unpublished PhD diss., University of California, Los Angeles.

- Fischer, N. M. (1995, May). *The Long Term Effects of Undergraduate Student Involvement Experiences on Selected Outcome Measures*. Paper presented at the annual meeting of the Association for Institutional Research, Boston, MA.
- Fitzgerald, B. K. (2004). Missed Opportunities: Has College Opportunity Fallen Victim to Policy Drift? *Change*, 36(4): 10-20.
- Fitzgerald, R. A. (2000). *College Quality and the Earnings of Recent College Graduates* (NCES 2000-043). U.S. Department of Education. Washington, DC: National Center for Education Statistics.
- Fitzgerald, R. A., and Burns, S. (2000). *College Quality and the Earnings of Recent College Graduates*. (NCES 2000-043). U.S. Department of Education. Washington, DC: National Center for Education Statistics.
- Fleming, J. (1982). Sex Differences in the Impact of College Environments on Black Students. In *The Undergraduate Woman: Issues in Educational Equity*, edited by P. J. Perun, 229-250. Lexington, MA: Lexington Books.
- Fleming, J. (1984). *Blacks in College: A Comparative Study of Students' Success in Black and White Institutions* (1st ed.). San Francisco: Jossey-Bass Publishers.
- Fleming, J. (2001). The Impact of a Historically Black College on African American Students: The Case of LeMoyné-Owen College. *Urban Education*, 36(5): 597-611.
- Florida Department of Education. (2005, March). *Postsecondary Success Begins With High School Preparation*. Data Trend #33. Tallahassee, FL: Florida Department of Education.
- Flowers, L. A. (2003). Effects of College Racial Composition on African American Students' Interactions with Faculty. *College Student Affairs Journal*, 23(1): 54-63.
- Flowers, L. A., and Pascarella, E. T. (1999). Does College Racial Composition Influence the Openness to Diversity of African-American Students? *Journal of College Student Development*, 40(4): 405-417.
- Forest, A. (1985). Creating Conditions for Student and Institutional Success. In *Increasing Student Retention: Effective Programs and Practices for Reducing Dropout Rate*, edited by L. Noel, R. S. Levitz, D. Saluri, and Associates. San Francisco: Jossey-Bass.
- Fries-Britt, S., and Turner, B. (2002). Uneven Stories: Successful Black Collegians at a Black and a White Campus. *The Review of Higher Education*, 25(3): 315-330.
- Frost, S. H. (1991). Fostering the Critical Thinking of College Women Through Academic Advising and Faculty Contact. *Journal of College Student Development*, 32(4): 359-366.
- Frost, S. (2003). The Shortchanged High School. *American School Board Journal*, 190(1): 29-31.
- Fuller, R., and Schoenberger, R. (1991). The Gender Salary Gap: Do Academic Achievement, Internship Experience, and College Major Make a Difference? *Social Science Quarterly*, 72(4): 715-726.
- Gaff, J. (1973). Making a Difference: The Impacts of Faculty. *Journal of Higher Education*, 44(8):605-622.
- Ganderton, P., and Santos, R. (1995). Hispanic College Attendance and Completion: Evidence from the High School and Beyond Surveys. *Economics of Education Review*, 14(1): 35-46.

- Garcia, P. (2001). *Understanding Obstacles and Barriers to Hispanic Baccalaureates*. Funded by the Hispanic Scholarship Fund, San Francisco. ERIC Document Reproduction Service No. ED477 485. Arlington, VA: RAND Corporation.
- Gardner, J. N., and Jewler, A. J. (1995). *Your College Experience: Strategies for Success* (2nd ed.). Boston: Wadsworth-Thomson Publishing Company.
- General Accounting Office. (1995). *Higher Education: Restructuring Student Aid Could Reduce Low-Income Student Dropout Rate* (GAO/HEHS-95-48). Washington, DC: U.S. Government Printing Office.
- Gerken, J. T., and Volkwein, J. F. (2000, May). *Pre-College Characteristics and Freshman Year Experiences as Predictors of 8-Year College Outcomes*. Paper presented at the annual meeting of the Association for Institutional Research, Cincinnati, OH.
- Gladieux, L. E., and Swail, W. S. (1998). Financial Aid is Not Enough: Improving the Odds of College Success. *College Board Review*, (185): 16-21, 30-32.
- Gleason, P. (1993). College Student Employment, Academic Progress, and Post-College Labor Market Success. *Journal of Student Financial Aid*, 23(2): 5-14.
- Godwin, G. J., and Markham, W. T. (1996). First Encounters of the Bureaucratic Kind: Early Freshman Experiences with a Campus Bureaucracy. *Journal of Higher Education*, 67(6):660-691.
- Goldin, C., Katz, L. F., and Kuziemko, I. (2006, March). *The Homecoming of American College Women: The Reversal of the College Gender Gap* (NBER Working Paper 12139). Cambridge, MA: National Bureau of Economic Research.
- Goldschmid, B., and Goldschmid, M. (1976). Peer Teaching in Higher Education: A Review. *Higher Education*, 4(1): 9-33.
- Gonzales, J. L., Jr. (1996, March). *Discrimination and Conflict: Minority Status and the Latino Community in the United States*. (ERIC Document Reproduction Service No. ED413158). Davis, CA: University of California, Davis.
- Gonzalez, J. M., and Szecsy, E. M. (2002). *The Condition of Hispanic Education in Arizona, 2002*. Tempe, AZ: Arizona State University.
- Gonzalez, K. P. (2000-01). Toward a Theory of Minority Student Participation in Predominantly White Colleges and Universities. *Journal of College Student Retention*, 2(1): 69-91.
- Gonzalez, N. A., Cauce, A. M., Friedman, R. J., and Mason, C. A. (1996). Family, Peer, and Neighborhood Influences on Academic Achievement Among African-American Adolescents: One-Year Prospective Effects. *American Journal of Community Psychology*, 24(3): 365-387.
- Gonyea, R. M. (2005). *The Relationship Between Student Engagement and Selected Desirable Undergraduate Outcomes in the First Year of College*. Unpublished PhD diss., Indiana University, Bloomington.
- Goodsell, A. S., Maher, M., and Tinto, V. (1992). *Collaborative Learning: A Sourcebook for Higher Education*. Vol. 1. University Park, PA: National Center on Postsecondary Teaching, Learning, and Assessment.
- Gordon, E. W. (1999). *Education and Justice: A View From the Back of the Bus*. New York: Teachers College Press.

- Graham, S. W., and Gisi, S. L. (2000). Adult Undergraduate Students: What Role Does College Involvement Play? *NASPA Journal*, 38(1): 99-121.
- Graunke, S. S., and Woosley, S. A. (2005). An Exploration of the Factors That Affect the Academic Success of College Sophomores. *College Student Journal*, 39(2): 367-377.
- Grubb, W. N. (2001, February). *From Black Box to Pandora's Box: Evaluating Remedial/Developmental Education*. New York: Columbia University, Teachers College, Community College Research Center.
- Gumport, P. J. (2001). A Report to Stakeholders on the Condition and Effectiveness of Postsecondary Education. *Change*, 33(3): 27-42.
- Gumport, P. J. (2001). Built to Serve: The Enduring Legacy of Public Higher Education. In *In Defense of American Higher Education*, edited by P. G. Altbach, P. J. Gumport, and D. B. Johnstone, 85-109. Baltimore: John Hopkins University Press.
- Guerin, K. (1997, May). *Tracking Student Stop-Out, Transfer and Graduation: An Event History Analysis of Competing Risks*. Paper presented at the annual meeting of the Association for Institutional Research, Orlando, FL.
- Gurin, P. (1999). *The Compelling Need for Diversity in Higher Education*, Gratz et al. v. Bollinger et al. No. 97-75237 and Grutter et al. v. Bollinger et al. No. 97-75928. (Expert Report of Patricia Gurin). Ann Arbor, MI: The University of Michigan.
- Gurin P., and Epps, E. (1975). *Black Consciousness, Identity, and Achievement: A Study of Students in Historically Black Colleges*. New York: John Wiley & Sons.
- Guskin, A. E. (1994). Reducing Student Costs and Enhancing Student Learning: The University Challenge of The 1990s Part II: Restructuring the Role of Faculty. *Change*, 26(5): 16-25.
- Guskin, A. E. (1997). Learning More, Spending Less. *About Campus*, 2(3): 4-9.
- Gutierrez, R. (2000). Advancing African-American, Urban Youth in Mathematics: Unpacking the Success of One Math Department. *American Journal of Education*, 109(1): 63-111.
- Hamrick, F. A., and Stage, F. K. (2004). College Predisposition at High-Minority Enrollment, Low-Income Schools. *The Review of Higher Education*, 27(2), 151-168.
- Hanks, M. P., and Eckland, B. K. (1976). Athletics and Social Participation in the Education Attainment Process. *Sociology of Education*, 49(4): 271-294.
- Hanniford, B., and Sagoria, M. (1994, April). *The Impact of Work and Family Roles on Associate and Baccalaureate Degree Completion Among Students in Early Adulthood*. Paper presented at the annual meeting of the American Educational Research Association, New Orleans, LA.
- Harker, R. K. (1984). On Reproduction, Habitus, and Education. *British Journal of Sociology*, 5(2): 117-127.
- Harris, B. W. (1998). Looking Inward: Building a Culture for Student Success. *Community College of Research and Practice*, 22(4): 401-418.
- Harvey, W. B. (2001). *Minorities in Higher Education 2000-2001: Eighteenth Annual Status Report*. Washington, DC: American Council on Education.
- Hassel, H., and Laurey, J. (2005). The Dea(r)th of Student Responsibility. *College Teaching*, 53(1): 2-13.

- Hayek, J. C., Carini, R. M., O'Day, P. T., and Kuh, G. D. (2002). Triumph or Tragedy: Comparing Student Engagement Levels of Members of Greek-Letter Organizations and Other Students. *Journal of College Student Development*, 43(5): 643-663.
- Hayek, J. C., and Kuh, G. D. (1999, November). *College Activities and Environmental Factors Associated With the Development of Lifelong Learning Competencies for College Seniors*. Paper presented at the annual meeting of the Association for the Study of Higher Education, San Antonio, TX.
- Hearn, J. C. (1987). Impacts of Undergraduate Experiences on Aspirations and Plans for Graduate and Professional Education. *Research in Higher Education*, 27(2): 119-141.
- Heath, T. (1992, October). *Predicting the Educational Aspiration and Graduate Plans of Black and White College and University Students: When Do Dreams Become Realities?* Paper presented at the annual meeting of the Association for the Study of Higher Education, Minneapolis, MN.
- Hedlund, D., and Jones, J. (1970). Effects of Student Personnel Services on Completion Rates in Two-Year Colleges. *Journal of College Student Personnel*, 11(3): 196-199.
- Helmcamp, A., and Petrie, T. A. (1998). Evaluation of an Academic Skills Course. *Journal of College Student Development*, 39(1): 112-116.
- Heller, D. E. (2001). *Debts and Decisions: Student Loans and Their Relationship to Graduate School and Career Choice*. New Agenda Series. Indianapolis, IN: Lumina Foundation.
- Heller, D. E. (Ed.). (2002). *Conditions of Access: Higher Education for Lower-Income Students*. Westport, CT: American Council on Education/Praeger Series on Higher Education
- Heller, D. E. (2004). The Changing Nature of Financial Aid. *Academe*, 90(4): 36-38.
- Hernandez, J. C. (2000). Understanding the Retention of Latino College Students. *Journal of College Student Development*, 41(6): 575-588.
- High School Survey of Student Engagement (HSSE). (2005). *Getting Students Ready for College: What Student Engagement Data Can Tell Us*. Bloomington, IN: Indiana University.
- Himelhoch, C. R., Nichols, A., Ball, S. R., and Black, L. C. (1997, November). *A Comparative Study of the Factors Which Predict Persistence for African American Students at Historically Black Institutions and Predominantly White Institutions*. Paper presented at the annual meeting of the Association for the Study of Higher Education, Albuquerque, NM.
- Hoachlander, G., Sikora, A. C., and Horn, L. (2003). *Community College Students: Goals, Academic Preparation, and Outcomes*. (NCES 2003-164). U.S. Department of Education. Washington, DC: National Center for Education Statistics.
- Hoffman, K., Llagas, C., and Snyder, T. D. (2003). *Status and Trends in the Education of Blacks* (NCES 2003-034). U.S. Department of Education, Institute for Education Sciences. Washington, DC: National Center for Education Statistics.
- Hoffman, N. (2005, April). *Add and Subtract: Dual Enrollment as a State Strategy to Increase Postsecondary Success for Underrepresented Students*. Boston: Jobs for the Future.
- Holland, J. L. (1973). *Making Vocational Choices: A Theory of Careers*. Englewood Cliffs, NJ: Prentice-Hall.

- Holland, A., and Huba, M. E. (1991). Satisfaction With College Among Participants in a Campus Service Program. *NASPA Journal*, 28(4): 342-347.
- Horn, L. J. (1998). *Stopouts or Stayouts? Undergraduates who Leave College in Their First Year* (NCES 1999-087). U.S. Department of Education. Washington, DC: National Center for Education Statistics.
- Horn, L. J., and Berger, R. (2004). *College Persistence on the Rise? Changes in 5-Year Degree Completion and Postsecondary Persistence Rates Between 1994 and 2000*. (NCES 2005-156). U.S. Department of Education, National Center for Education Statistics. Washington, DC: U.S. Government Printing Office.
- Horn, L. J., and Kojaku, L. K. (2001). High School Academic Curriculum and the Persistence Path Through College: Persistence and Transfer Behavior of Undergraduates 3 Years After Entering 4-Year Institutions. *Education Statistics Quarterly*, 3(3): 65-72.
- Horn, L. J., and Premo, M. (1995). *Profile of Undergraduates in U.S. Postsecondary Institutions: 1992-93* (NCES 96-237). U.S. Department of Education. Washington, DC: National Center for Education Statistics.
- Horn, R. A., and Ethington, C. A. (2002). Self-Reported Beliefs of Community College Students Regarding Their Growth and Development: Ethnic and Enrollment Status Differences. *Community College Journal of Research and Practice*, 26(5): 401-413.
- Horvat, E. M. (2003). The Interactive Effects of Race and Class in Educational Research: Theoretical Insights From the Work of Pierre Bourdieu. *Penn GSE Perspectives in Urban Education*, 2(1): 1-25.
- Hossler, D., Kuh, G. D., and Olsen, D. (2001). Finding Fruit on the Vines: Using Higher Educational Research and Institutional Research to Guide Institutional Policies and Strategies. Part II. *Research in Higher Education*, 42(2): 223-235.
- Hossler, D., and Schmit, J. (1995). The Indiana Postsecondary-Encouragement Experiment. *New Directions for Higher Education*, 89: 27-39.
- Hossler, D., Schmit, J., and Vesper, N. (1999). *Going to College: How Social, Economic, and Educational Factors Influence the Decisions Students Make*. Baltimore: Johns Hopkins University Press.
- House, J. (1996, May). *College Persistence and Grade Outcomes: Noncognitive Variables as Predictors for African American, Asian-American, Hispanic, Native American, and White Students*. Paper presented at the annual meeting of the Association for Institutional Research, Albuquerque, NM.
- Howard, A. (1986). College Experiences and Managerial Performance. *Journal of Applied Psychology Monographs*, 71(3): 530-552.
- Howard, J. A. (2005). Why Should We Care About Student Expectations? In *Promoting Reasonable Expectations: Aligning Student and Institutional Views of the College Experience*, edited by T. E. Miller, B. E. Bender, J. S. Schuh, and Associates, 10-33. San Francisco: Jossey-Bass.
- Hoyt, J. E. (1999). Remedial Education and Student Attrition. *Community College Review*, 27(2): 51-72.
- Hu, S. (Ed.). (2005). *Beyond Grade Inflation: Grading Problems in Higher Education*. ASHE Higher Education Report 30, No. 6. Washington, DC: The George Washington University, School of Education and Human Development.

- Hu, S., and Kuh, G. D. (2002). Being (Dis)Engaged in Educationally Purposeful Activities: The Influences of Student and Institutional Characteristics. *Research in Higher Education*, 43(5): 555-575.
- Hu, S., and Kuh, G. D. (2003a). Diversity Experiences and College Student Learning and Personal Development. *Journal of College Student Development*, 44(3): 320-334.
- Hu, S., and Kuh, G. D. (2003b). Maximizing What Students Get Out of College: Testing a Learning Productivity Model. *Journal of College Student Development*, 44(2): 185-203.
- Hughes, K. L., Karp, M. M., Fermin, B. J., and Bailey, T. R. (2005). *Pathways to College Access and Success*. Office of Vocational and Adult Education. Washington, DC: U.S. Department of Education.
- Hughes, R., and Pace, C. R. (2003). Using NSSE to Study Student Retention and Withdrawal. *Assessment Update*, 15(4): 1-2.
- Hunt, S. (1963). Income Determinants for College Graduates and the Return to Educational Investment. *Yale Economic Essays*, 3(1): 305-357.
- Hurtado, S. (1994). The Institutional Climate for Talented Latino Students. *Research in Higher Education*, 35(1): 21-41.
- Hurtado, S., and Carter, D. F. (1997). Effects of College Transition and Perceptions of the Campus Racial Climate on Latino Students' Sense of Belonging. *Sociology of Education*, 70(4): 324-345.
- Hurtado, S., Carter, D. F., and Spuler, A. (1996). Latino Student Transition to College: Assessing Difficulties and Factors in Successful College Adjustment. *Research in Higher Education*, 37(2): 135-157.
- Hurtado, S., Dey, E. L., Gurin, P. Y., and Gurin, G. (2003). College Environments, Diversity, and Student Learning. In *Higher Education: Handbook of Theory and Research*, Vol. 13, edited by J. C. Smart, 145-189. Boston: Kluwer Academic Publishers.
- Hurtado, S., Milem, J. F., Clayton-Pedersen, A. R., and Allen, W. R. (1998). Enhancing Campus Climates for Racial/Ethnic Diversity: Educational Policy and Practice. *The Review of Higher Education*, 21(3): 279-302.
- Hurtado, S., Milem, J. F., Clayton-Pedersen, A. R., and Allen, W. R. (1999). *Enacting Diverse Learning Environments: Improving the Climate for Racial/Ethnic Diversity in Higher Education*. ASHE-ERIC Higher Education Report 26, No. 8. Washington, DC: The George Washington University, School of Education and Human Development.
- Hurtado, S., and Ponjuan, L. (2005). Latino Educational Outcomes and the Campus Climate. *Journal of Hispanic Higher Education*, 4(3): 235-251.
- Hutchings, P. (1996). The Peer Review of Teaching: Progress, Issues and Prospects. *Innovative Higher Education*, 20(4): 221-234.
- Ignash, J. M. (1997). Who Should Provide Postsecondary Remedial/Developmental Education? *New Directions for Community Colleges*, (100): 5-9.
- Illinois State Board of Higher Education. (2003). *Assessing Progress Toward Meeting the Goals of "The Illinois Commitment": Performance Indicators*. 2003 Annual Report. Springfield, IL: Author.

- Immerwahr, J. (1999, January). *Taking Responsibility: Leaders' Expectations of Higher Education*. San Jose, CA: National Center for Public Policy and Higher Education and Public Agenda Foundation.
- Immerwahr, J. (2000, May). *Great Expectations: How the Public and Parents—White, African American, and Hispanic—View Higher Education*. New York: Public Agenda Foundation.
- Immerwahr, J. (2003, June). *With Diploma in Hand: Hispanic High School Seniors Talk About Their Futures*. New York: Public Agenda and National Center for Public Policy and Higher Education.
- Institute for Higher Education Policy (IHEP). (1995, June). *The Next Step: Student Aid for Student Success*. Washington, DC: Author.
- Institute for Higher Education Policy (IHEP). (1998a, March). *Reaping the Benefits: Defining the Public and Private Value of Going to College*. Washington, DC: Author.
- Institute for Higher Education Policy (IHEP). (1998b, December). *College Remediation: What it is, What it Costs, What's at Stake*. Washington, DC: Author.
- Institute for Higher Education Policy (IHEP). (2001, February). *Getting Through College: Voices of Low-Income and Minority Students in New England*. Washington, DC: Author.
- Institute for Higher Education Policy (IHEP). (2002, August). *The Policy of Choice: Expanding Student Options in Higher Education*. Washington, DC: Author.
- Institute for Higher Education Policy (IHEP), and New England Resource Center for Higher Education. (2002, September). *Developmental Education and College Opportunity in New England: Lessons for a National Study of State and System Policy Impacts*. Washington, DC: Author.
- Jacobson, J. (2006). A Nevada County Shows That Schools and Colleges Can Work Together. *Chronicle of Higher Education*, March 10, B24.
- Jalomo, R. (1995). *Latino Students in Transition: An Analysis of the First-Year Experience in Community College*. Unpublished PhD diss., Arizona State University.
- Jepsen, V. (1951). Scholastic Proficiency and Vocational Success. *Educational and Psychological Measurement*, 11: 616-628.
- Johnson, D. W., Johnson, R. T., and Smith, K. A. (1991). *Cooperative Learning: Increasing College Faculty Instruction Productivity*. ASHE-ERIC Higher Education Report No. 4. Washington, DC: The George Washington University, School of Education and Human Development.
- Johnstone, D. B. (2005). Fear and Loathing of Tuition Fees: An American Perspective on Higher Education Finance in the UK. *Perspectives: Policy and Practice in Higher Education*, 9(1): 12-16.
- Jones, C. E., and Watt, J. D. (1999). Psychosocial Development and Moral Orientation Among Traditional-Aged College Students. *Journal of College Student Development*, 40(2): 125-132.
- Juillerat, S. (2000). Assessing the Expectations and Satisfactions of Sophomores. In *Visible Solutions for Invisible Students: Helping Sophomores Succeed* (Monograph 31), edited by L. A. Schreiner and J. Pattengale, 19-29. Columbia, SC: University of South Carolina, National Resource Center for the First-Year Experience and Students in Transition.
- Kane, S., T., Healy, C., and Henson, J. (1992). College Students and Their Part-Time Jobs: Job Congruency, Satisfaction, and Quality. *Journal of Employment Counseling*, 29(3): 138-144.

- Kappner, A.S. (2002). *Across the Education Continuum: Child Care on the College Campus*. Cedar Fall, IA: National Coalition for Campus Children's Centers.
- Karman, F. J. (1973, April). *Women: Personal and Environmental Factors in Career Choice*. Paper presented at the meeting of the American Educational Research Association, New Orleans, LA.
- Kenny, M. E., and Perez, V. (1996). Attachment and Psychological Well-Being Among Racially and Ethnically Diverse First-Year College Students. *Journal of College Student Development*, 37(5): 527-535.
- Kenny, M. E., and Stryker, S. (1996). Social Network Characteristics and College Adjustment Among Racially and Ethnically Diverse First-Year Students. *Journal of College Student Development*, 37(6): 649-658.
- Kentucky Higher Education Assistance Authority. (2006, February). *2005 Kentucky Educational Excellence Scholarship Data Report*. <http://www.kheaa.com/pdf/kheaareports/kheaareport20060221.pdf> (accessed May 26, 2006).
- Kezar, A., and Kinzie, J. (2006). Examining the Ways Institutions Create Student Engagement: The Role of Mission. *Journal of College Student Development*, 47(2): 149-172.
- Kezar, A., and Moriarity, D. (2000). Expanding Our Understanding of Student Leadership Development: A Study Explaining Gender and Ethnic Identity. *Journal of College Student Development*, 41(1): 55-69.
- Kim, M. M. (2002). Historically Black vs. White Institutions: Academic Development Among Black Students. *The Review of Higher Education*, 25(4): 385-407.
- Kim, M. M., and Alvarez, R. (1995). Women-Only Colleges: Some Anticipated Consequences. *Journal of Higher Education*, 66(6): 641-668.
- King, J. E. (2000). *Gender Equity in Higher Education: Are Male Students at a Disadvantage?* Washington, DC: American Council of Education, Center for Policy Analysis.
- Kinzie, J., Palmer, M., Hayek, J. C., Hossler, D., Jacob, S. A., and Cummings, H. (2004). *Fifty Years of College Choice: Social, Political and Institutional Influences on the Decision-Making Process*. Indianapolis, IN: Lumina Foundation for Education.
- Kirst, M. W., and Venezia, A. (2006). What States Must Do. *Chronicle of Higher Education*, B36, March 10.
- Kleiner, B., and Lewis, L. (2005). *Dual Enrollment of High School Students at Postsecondary Institutions: 2002-03*. (NCES 2005-008). U.S. Department of Education. Washington, DC: National Center for Education Statistics.
- Knapp, L. G., Kelly-Reid, J. E., and Whitmore, R. W. (2006). *Enrollment in Postsecondary Institutions, Fall 2004; Graduation Rates, 1998 & 2001 Cohorts; and Financial Statistics, Fiscal Year 2004* (NCES 2006-155). U.S. Department of Education. Washington, DC: National Center for Education Statistics. <http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2006155> (accessed March 14, 2006).
- Knight, W. E. (2003). Learning Communities and First-Year Programs: Lessons for Planners. *Planning for Higher Education*, 31(4): 5-12.

- Knight, W. E. (2004). Time to Bachelor's Degree Attainment: An Application of Descriptive, Bivariate, and Multiple Regression Techniques. *IR Applications: Using Advanced Tools, Techniques, and Methodologies*, 2: 1-15.
- Komarovsky, M. (1985). *Women in College: Shaping New Feminine Identities*. New York: Basic Books.
- Kowalski, C. (1977). *The Impact of College on Persisting and Nonpersisting Students*. New York: Philosophical Library.
- Kramer G. L., and Associates (2003). *Student Academic Services: An Integrated Approach*. San Francisco: Jossey-Bass.
- Kuh, G. D. (1993). In Their Own Words: What Students Learn Outside the Classroom. *American Educational Research Journal*, 30(2): 277-304.
- Kuh, G. D. (1995). The Other Curriculum: Out-Of-Class Experiences Associated With Student Learning and Personal Development. *Journal of Higher Education*, 66(2): 123-155.
- Kuh, G. D. (1996). Guiding Principles for Creating Seamless Learning Environments for Undergraduates. *Journal of College Student Development*, 37(2): 135-148.
- Kuh, G. D. (1999). A Framework for Understanding Student Affairs Work. *Journal of College Student Development*, 40(5): 530-537.
- Kuh, G. D. (2000). Do Environments Matter? A Comparative Analysis of the Impress of Different Types of Colleges and Universities on Character. *Journal of College and Character*.
<http://collegevalues.org/articles.cfm?a=1&id=239> (accessed January 3, 2006).
- Kuh, G. D. (2001). Assessing What Really Matters to Student Learning: Inside the National Survey of Student Engagement. *Change*, 33(3): 10-17, 66.
- Kuh, G. D. (2003). What We're Learning About Student Engagement From NSSE: Benchmarks for Effective Educational Practices. *Change*, 35(2): 24-32.
- Kuh, G. D. (2004). The Contributions of the Research University to Assessment and Innovation in Undergraduate Education. In *The Scholarship of Teaching and Learning in Higher Education: The Contributions of Research Universities*, edited by W. E. Becker and M. L. Andrews, 81-98. Bloomington, IN: Indiana University Press.
- Kuh, G. D. (2005). Student Engagement in the First Year of College. In *Challenging and Supporting the First-Year Student: A Handbook for Improving the First Year of College*, edited by M. L. Upcraft, J. N. Gardner, and B. O. Barefoot, 86-107. San Francisco: Jossey-Bass.
- Kuh, G. D. (2006). Built to Engage: Liberal Arts Colleges and Effective Educational Practice. In *Liberal Arts Colleges in American Higher Education* (ACLS Occasional Paper), edited by F. Oakely, 122-150. New York: American Council of Learned Societies.
- Kuh, G. D., Douglas, K. B., Lund, J. P., and Ramin-Gyurnek, J. (1994). *Student Learning Outside the Classroom: Transcending Artificial Boundaries*. ASHE-ERIC Higher Education Report No. 8. Washington, DC: The George Washington University, Graduate School of Education and Human Development.
- Kuh, G. D., Gonyea, R. M., and Williams, J. M. (2005). What Students Expect From College and What They Get. In *Promoting Reasonable Expectations: Aligning Student and Institutional Thinking*

- About the College Experience*, edited by T. Miller, B. Bender, J. Schuh and Associates, 34-64. San Francisco: Jossey-Bass/National Association of Student Personnel Administrators.
- Kuh, G. D., Hayek, J. C., Carini, R. M., Ouimet, J. A., Gonyea, R. M., and Kennedy, J. (2001). *NSSE Technical and Norms Report*. Bloomington, IN: Indiana University Center for Postsecondary Research and Planning.
- Kuh, G. D., and Hu, S. (1999, April). *Learning Productivity at Research Universities*. Paper presented at the annual meeting of the American Educational Research Association, Montreal, Canada.
- Kuh, G. D., and Hu, S. (2001a). The Effects of Student-Faculty Interaction in the 1990s. *Review of Higher Education*, 24(3): 309-332.
- Kuh, G. D., and Hu, S. (2001b). The Relationships Between Computer and Information Technology Use, Selected Learning and Personal Development Outcomes, and Other College Experiences. *Journal of College Student Development*, 42(3): 217-232.
- Kuh, G. D., Hu, S., and Vesper, N. (2000). "They Shall Be Known by What They Do:" An Activities-Based Typology of College Students. *Journal of College Student Development*, 41(2): 228-244.
- Kuh, G. D., Kinzie, J., Schuh, J. H., and Whitt, E. J. (2005a). *Assessing Conditions to Enhance Educational Effectiveness: The Inventory for Student Engagement and Success*. San Francisco: Jossey-Bass.
- Kuh, G. D., Kinzie, J., Schuh, J. H., and Whitt, E. J. (2005b). *Student Success in College: Creating Conditions That Matter*. San Francisco: Jossey-Bass.
- Kuh, G. D., and Love, P.G. (2000). A Cultural Perspective on Student Departure. In *Reworking the Student Departure Puzzle*, edited by J.M. Braxton, 196-212. Nashville, TN: Vanderbilt University Press.
- Kuh, G. D., and Lund, J. P. (1994). What Students Gain From Participating in Student Government. *New Directions for Student Services*, (66): 5-17.
- Kuh, G. D., Nelson Laird, T. F., and Umbach, P. D. (2004). Aligning Faculty Activities and Student Behavior: Realizing the Promise of Greater Expectations. *Liberal Education*, 90(4): 24-31
- Kuh, G. D., and Natalicio, D. S. (2004). Forging a New Direction: How UTEP Created its Own Brand of Excellence. *About Campus*, 9(5): 9-15.
- Kuh, G. D., Pace, C. R., and Vesper, N. (1997). The Development of Process Indicators to Estimate Student Gains Associated With Good Practices in Undergraduate Education. *Research in Higher Education*, 38(4): 435-454.
- Kuh, G. D., and Pascarella, E. T. (2004). What Does Institutional Selectivity Tell Us About Educational Quality? *Change*, 36(5): 52-58.
- Kuh, G. D., Schuh, J. H., Whitt, E. J., Andreas, R., Lyons, J., Strange, C. C., Krehbiel, L. E., and MacKay, K. A. (1991). *Involving Colleges: Successful Approaches to Fostering Student Learning and Development Outside the Classroom*. San Francisco: Jossey-Bass Publishers.
- Kuh, G. D., and Siegel, M. J. (2000). *College Student Experiences Questionnaire: Tentative Norms for the Fourth Edition*. Bloomington, IN: Center for Postsecondary Research and Planning, Indiana University.

- Kuh, G. D., Vesper, N., and Krehbiel, L. (1994). Student Learning at Metropolitan Universities. In *Higher Education: Handbook of Theory and Research*, Vol. 10, edited by J. C. Smart, 1-44. New York: Agathon.
- Kuh, G. D., and Whitt, E. J. (1988). *The Invisible Tapestry: Culture in American Colleges and Universities*. ASHE-ERIC Higher Education Report No. 1. Washington, DC: The George Washington University, School of Education and Human Development.
- Kuh, G. D., and Umbach, P. D. (2004). College and Character: Insights From the National Survey of Student Engagement. In *Assessing Character Outcomes in College*, New Directions in Institutional Research, (122), edited by J. Dalton and T. Russell, 37-54. San Francisco: Jossey-Bass.
- Kuh, G. D., and Umbach, P. D. (2005). Experiencing Diversity: What Can We Learn From Liberal Arts Colleges? *Liberal Education*, 91(1): 14-21.
- Kulik, J., Kulik, C., and Cohen, P. (1980). Effectiveness of Computer-Based College Teaching: A Meta-Analysis of Findings. *Review of Educational Research*, 50(4): 525-544.
- Laden, B. V. (1999). Two-year Hispanic-serving colleges. In *Two-Year Colleges for Women and Minorities: Enabling Access to the Baccalaureate*, edited by B. Townsend, 151-194. New York: Falmer Press.
- Laden, B. V. (2001). Hispanic-Serving Institutions: Myths and Realities. *Peabody Journal of Education*, 76(1): 73-92.
- Laden, B. V. (2004). Hispanic-Serving Institutions: What Are They? Where Are They? *Community College Journal of Research and Practice*, 28(3): 181-198.
- Lamont, M., and Lareau, J. (1988). Cultural Capital: Allusions, Gaps, and Glissandos in Recent Theoretical Developments. *Sociological Theory*, 6(2): 153-168.
- Lamport, M. A. (1993). Student-Faculty Interaction and the Effect on College Student Outcomes: A Review of the Literature. *Adolescence*, 28(112): 971-990.
- Lareau, A., and Horvat, E. M. (1998). Moments of Social Inclusion and Exclusion: Race, Class, and Cultural Capital in Family School Relationships. *Sociology of Education*, 72(1): 37-53.
- Lenning, O. T. (1976). A Review and Preview. *New Directions for Higher Education*, (16): 93-100.
- Lenning, O. T., Beal, P., and Sauer, K. (1980). *Retention and Attrition: Evidence for Action and Research*. Boulder, CO: National Center for Higher Education Management Systems.
- Levine, A., and Cureton, J.S. (1998). Collegiate Life: An Obituary. *Change*, 30(3): 12-17, 51.
- Levine, A., and Nidiffer, J. (1996). *Beating the Odds: How the Poor Get to College*. San Francisco: Jossey-Bass Publishers.
- Lewis, C. W., and Middleton, V. (2003). African Americans in Community Colleges: A Review of Research Reported in the Community College Journal of Research and Practice: 1990-2000. *Community College Journal of Research and Practice*, 27 (9-10): 787-798.
- Liddell, D. L., and Davis, T. L. (1996). The Measure of Moral Orientation: Reliability and Validity Evidence. *Journal of College Student Development*, 37(5): 485-493.
- London, H. B. (1989). Breaking Away: A Study of First-Generation College Students and Their Families. *American Journal of Education*, 97(1): 144-170.

- London, H. B. (1992). Transformations: Cultural Challenges Faced by First-Generation College Students. *New Directions for Community Colleges*, 20(4): 5-11.
- London, H. B., and Shaw, K. M. (1996). Enlarging the Transfer Paradigm: Practice and Culture in the American Community College. *Metropolitan Universities: An International Forum*, 7(2): 7-14.
- Lucy-Allen, D., Merisotis, J., and Redmond, C. (2002). *Developmental Education and College Opportunity in New England: Lessons for a National Study of State and System Policy Impacts (Pilot Study)*. Washington, DC: Institute for Higher Education Policy.
- MacKay, K. A., and Kuh, G. D. (1994). A Comparison of Student Effort and Educational Gains of Caucasian and African-American Students at Predominantly White Colleges and Universities. *Journal of College Student Development*, 35(3): 217-223.
- Mallinckrodt, B. (1988). Student Retention, Social Support, and Dropout Intention: Comparison of Black and White Students. *Journal of College Student Development*, 29(1): 60-64.
- Mallinckrodt, B., and Sedlacek, W. E. (1987). Student Retention and the Use of Campus Facilities by Race. *NASPA Journal*, 24(3): 28-32.
- Marsh, H. (1984). Students' Evaluations of University Teaching: Dimensionality, Reliability, Validity, Potential Biases, and Utility. *Journal of Educational Psychology*, 76(5): 707-754.
- Marchese, T. J. (1997, June). *The New Conversations About Learning*. Paper presented at the annual meeting of the American Association for Higher Education on Assessment and Quality, Miami Beach, FL.
- Marchese, T. J. (1998). Not-So-Distant Competitors: How New Providers Are Remaking the Postsecondary Marketplace. *AAHE Bulletin*, 50(9): 3-7
- Marsden, P. V. (2004). Social Networks. In *Encyclopedia of Sociology, Vol. 3* (2nd ed.), edited by E. F. Borgatta and R. J. V. Montgomery, 2727-2735. New York: Macmillan Reference.
- Martinez, M., and Klopott, S. (2003). *Improving College Access for Minority, Low-Income, and First-Generation Students*. Boston: Pathways to College Network.
- Matthews, R. S. (1994). Enriching Teaching and Learning Through Learning Communities. In *Teaching and Learning in the Community College*, edited by T. O'Banion, 179-200. Washington, DC: Community College Press.
- McCabe, R. H. (2000). *No One to Waste: A Report to Public Decision-Makers and Community College Leaders*. Washington, DC: American Association of Community Colleges.
- McCarthy, M. M., and Kuh, G. D. (2006). Are Students Ready for College? What Student Engagement Data Say. *Phi Delta Kappan*, 87(9), 664-669.
- McCormick, A. C. (1990, November). *Mobility of Educational Expectations: The Effect of Community Colleges*. Paper presented at the annual meeting of the Association for the Study of Higher Education, Portland, OR.
- McCormick, A. C. (1997a, November). *Changes in Educational Aspirations After High School: The Role of Postsecondary Attendance and Context*. Paper presented at the annual meeting of the Association for the Student of Higher Education, Albuquerque, NM.

- McCormick, A. C. (1997b). *Transfer Behavior Among Beginning Postsecondary Students: 1989-1994* (NCES 97-266). U.S. Department of Education. Washington, DC: National Center for Education Statistics.
- McCormick, A. C. (2003). Swirling and Double-Dipping: New Patterns of Student Attendance and Their Implications for Higher Education. *New Directions for Higher Education* (121): 13-24.
- McCormick, A. C., and Horn, L. J. (1996). *A Descriptive Summary of 1992-93 Bachelor's Degree Recipients: 1 Year Later* (NCES 96-158). U.S. Department of Education. Washington, DC: National Center for Education Statistics.
- McDonough, P. M. (2004, December). *The School-To-College Transition: Colleges and Prospects*. Washington, DC: American Council on Education, Center for Policy Analysis.
- McKeachie, W. J., Pintrich, P. R., Lin, Y. G., and Smith, D. A. F. (1986). *Teaching and Learning in the College Classroom: A Review of the Research Literature*. Ann Arbor, MI: University of Michigan.
- Menges, R. J., and Mathis, B. C. (1988). *Key Resources on Teaching, Learning, Curriculum, and Faculty Development: A Guide to the Higher Education Literature*. San Francisco: Jossey-Bass Publishers.
- Merton, R. K. (1948). The Self-Fulfilling Prophecy. *Antioch Review, Summer*: 193-210.
- Metzner, B. (1989). Perceived Quality of Academic Advising: The Effect on Freshman Attrition. *American Educational Research Journal*, 26(3): 422-442.
- Meyers, D., Olsen, R., Seftor, N., Young, J., and Tuttle, C. (2004). *The Impacts of Regular Upward Bound: Results From the Third Follow-Up Data Collection* (NCES 2004-13). U.S. Department of Education. Washington, DC: National Center for Education Statistics.
- Middle College National Consortium (MCNC). (2006, May). *MCNC History*. <http://www.lagcc.cuny.edu/mcnc/history.htm> (accessed May 15, 2006).
- Milem, J. F. (2000). Why Race Matters. *Academe*, 86(5): 26-29.
- Miller, T., Kuh, G. D., Paine, D., and Associates. (2005). *Taking Student Expectations Seriously: A Guide for Campus Applications*. San Francisco: Jossey-Bass Publishers.
- Mortenson, T. G. (2003, August 9). *Fact Sheet: What's Wrong With the Guys?* <http://www.postsecondary.org/archives/previous/GuysFacts.pdf> (accessed April 7, 2006).
- Mortenson, T. G. (2005, October). *Segregation of Higher Education Enrollment by Family Income and Race/Ethnicity 1980 to 2004*. Oskaloosa, IA: Postsecondary Education Opportunity.
- Muraskin, L. (1997). *"Best Practices" in Student Support Services: A Study of Five Exemplary Sites*. Washington, DC: U.S. Department of Education, Planning and Evaluation Service.
- Muraskin, L. (2003). *National Evaluation of GEAR UP: A Summary of the First Two Years*. Washington, DC: Department of Education.
- Muraskin, L., Lee, J., (with Wilner, A., and Swail, W. S.). (2004, December). *Raising the Graduation Rates of Low-Income College Students*. Washington, DC: The Pell Institute for the Study of Opportunity in Higher Education.
- Muraskin, L., and Wilner, A. (2004). *What We Know About Institutional Influences on Retention*. Washington, DC: JBL Associates.

- Murdock, T. A. (1990). Financial Aid and Persistence: An Integrative Review of the Literature. *NASPA Journal*: 27(3): 213-221.
- Murray, D. M. (1985). *A Writer Teaches Writing* (2nd Ed.). Boston: Houghton Mifflin Company. *National Articulation and Transfer Network: Building an Alternative Pathway for Underserved Student Populations to Access Historically Black Colleges and Universities, Hispanic Serving Institutions, and Tribal Colleges and Universities*. (2002). San Francisco: City College of San Francisco.
- National Association of Student Personnel Administrators (NASPA), American Association for Higher Education (AAHE), and American College Personnel Association (ACPA). (1998). *Powerful Partnerships: A Shared Responsibility for Learning*. Washington, DC: Author.
- National Association of Student Personnel Administrators (NASPA), and American College Personnel Association (ACPA). (2004, January). *Learning Reconsidered: A Campus-Wide Focus on the Student Experience*. Washington, DC: Author.
- National Center for Public Policy and Higher Education. (2002, May). *Losing Ground: A National Status Report on the Affordability of American Higher Education*. San Jose, CA: Author.
- National Center for Public Policy and Higher Education. (2004, April). *Policy Alert. The Educational Pipeline: Big Investments, Big Returns*. San Jose, CA: Author.
- National Center for Public Policy and Higher Education. (2004, September). *Measuring Up 2004: The National Report Card on Higher Education*. San Jose, CA: Author.
- National Center for Public Policy and Higher Education. (2005, November). *Policy Alert: Income of U.S. Workforce Projected to Decline if Education Doesn't Improve*. San Jose, CA: Author.
- National Research Council. (1999). *Equity & Adequacy in Education Finance: Issues and Perspectives*. Washington, DC: National Research Council Committee on Education Finance.
- National Research Council. (2000). *How People Learn: Brain, Mind, Experience, and School*. Washington, DC: National Academy Press.
- National Research Council. (2004). *Engaging Schools: Fostering High School Students' Motivation to Learn*. Washington, DC: The National Academies Press.
- National Survey of Student Engagement (NSSE). (2000). *The NSSE 2000 Report: National Benchmarks of Effective Educational Practice*. Bloomington, IN: Indiana University Center for Postsecondary Research.
- National Survey of Student Engagement (NSSE). (2001). *Improving the College Experience: National Benchmarks For Effective Educational Practice*. Bloomington, IN: Indiana University Center for Postsecondary Research
- National Survey of Student Engagement (NSSE)). (2002). *From Promise to Progress: How Colleges and Universities Are Using Student Engagement Results to Improve Collegiate Quality*. Bloomington, IN: Indiana University Center for Postsecondary Research.
- National Survey of Student Engagement (NSSE). (2003). *Converting Data Into Action: Expanding the Boundaries of Institutional Improvement*. Bloomington, IN: Indiana University Center for Postsecondary Research.
- National Survey of Student Engagement (NSSE). (2004). *Student Engagement: Pathways to Collegiate Success*. Bloomington, IN: Indiana University Center for Postsecondary Research.

- National Survey of Student Engagement (NSSE). (2005). *Student Engagement: Exploring Different Dimensions of Student Engagement*. Bloomington, IN: Indiana University Center for Postsecondary Research.
- Naumann, W. C., Bandalos, D., and Gutkin, T. B. (2003). Identifying Variables That Predict College Success for First-Generation College Students. *Journal of College Admission*, 181: 4-9.
- Nelson, R. B., Scott, T., and Bryan, W. (1984). Pre-College Characteristics and Early College Experiences as Predictors of Freshman Year Persistence. *Journal of College Student Personnel*, 25: 50-54.
- Nelson Laird, T. F., and Kuh, G. D. (2005). Student Experiences With Information Technology and Their Relationship to Other Aspects of Student Engagement. *Research in Higher Education*, 46(2): 211-233.
- Newcomb, T. M. (1966). *The General Nature of Peer Group Influence*. In *College Peer Groups: Problems and Prospects for Research*, edited by T. M. Newcomb and E. Wilson, 2-16. Chicago: Aldine Publishing Company.
- Nettles, M. T. (1991, November). *Assessing the Business Roundtable's 1990s Education Initiatives*. Paper presented at the annual meeting of the University/Urban Schools National Task Force, Atlanta, GA.
- Nettles, M. T., Wagener, U., Millett, C. M., and Killenbeck, A. M. (1999). Student Retention and Progression: A Special Challenge for Private Historically Black Colleges and Universities. *New Directions for Higher Education*, 27(4): 51-67.
- Nora, A. (1999). *Community Colleges in the 21st Century: Revisiting and Reexamining their Mission*. A project of the W.K. Kellogg Foundation, AACC, and ACCCT.
http://199.75.76.16/initiatives/newexpeditions/white_papers/ (accessed December 1, 2005).
- Nora, A. (2001-02). The Depiction of Significant Others in Tinto's "Rites Of Passage": A Re-Conceptualization of the Influence of Family and Community in the Persistence Process. *Journal of College Student Retention: Research, Theory & Practice*, 3(1): 41-56.
- Nora, A., and Cabrera, A. F. (1996). The Role of Perceptions in Prejudice and Discrimination and the Adjustment of Minority Students to College. *Journal of Higher Education*, 67(2): 119-148.
- Nuñez, A. M. (1998, November). *First-Generation Students: A Longitudinal Analysis of Educational and Early Labor Market Outcomes*. Paper presented at the annual meeting of the Association for the Study of Higher Education, Miami, FL.
- Nuñez, A. M., and Cuccaro-Alamin, S. (1998). *First-Generation Students: Undergraduates Whose Parents Never Enrolled in Postsecondary Education* (NCES 98-082). U.S. Department of Education. Washington, DC: National Center for Education Statistics.
- O'Brien, E. M., and Zudak, C. (1998). Minority-Serving Institutions: An Overview. *New Directions For Higher Education*, 26(2): 5-15.
- Olsen, D., Kuh, G. D., Schilling, K. M., Schilling, K., Connolly, M., Simmons, A., and Vesper, N. (1998, November). *Great Expectations: What First-Year Students Say They Will Do and What They Actually Do*. Paper presented at the annual meeting of the Association for the Study of Higher Education, Miami, FL.

- Orfield, G. (2001). Introduction. In *Diversity Challenged: Evidence on the Impact of Affirmative Action*, edited by G. Orfield, 1-30. Cambridge, MA: Harvard Education Publishing Group.
- Ortiz, A. M. (2004). Promoting the Success of Latino Students: A Call to Action. In *Addressing the Unique Needs of Latino American Students, New Directions for Student Services*, (105), edited by A. M. Ortiz, 89-97.
- Outcalt, C. L., and Skewes-Cox, T. E. (2002). Involvement, Interaction, and Satisfaction: The Human Environment at HBCUS. *The Review of Higher Education*, 25(3): 331-347.
- Pace, C. R. (1980). Measuring the Quality of Student Effort. *Improving Teaching and Institutional Quality, Current Issues in Higher Education* (No. 1). Washington, DC: American Association for Higher Education.
- Pace, C. R. (1984). *Measuring the Quality of College Student Experiences*. Los Angeles: University of California, Graduate School of Education, Higher Education Research Institute, Project on the Study of Quality in Undergraduate Education.
- Pace, C. R. (1990). *The Undergraduates: A Report of Their Activities and College Experiences in the 1980s*. Los Angeles: Center for the Study of Evaluation, UCLA Graduate School of Education.
- Parrish, T. B., Matsumoto, C. S., and Fowler, W. J., Jr. (1995). *Disparities in Public School District Spending 1989-90: A Multi-Variate, Student-Weighted Analysis, Adjusted for Differences in Geographic Cost of Living and Student Need*. U.S. Department of Education. Washington, DC: National Center for Education Statistics.
- Pascarella, E. T. (1980). Student-Faculty Informal Contact and College Outcomes. *Review of Educational Research*, 50(4): 545-595.
- Pascarella, E. T. (1985). College Environmental Influences on Learning and Cognitive Development: A Critical Review and Synthesis. In *Higher Education: Handbook of Theory and Research*, Vol. 1, edited by J. C. Smart, 1-62. New York: Agathon.
- Pascarella, E. T. (2001). Cognitive Growth in College: Surprising and Reassuring Findings. *Change*, 33(6): 20-27.
- Pascarella, E. T., Bohr, L., Nora, A., Desler, M., and Zusman, B. (1994). Impacts of On-Campus and Off-Campus Work on First-Year Cognitive Outcomes. *Journal of College Student Development*, 35(5): 364-370.
- Pascarella, E. T., Bohr, L., Nora, A., and Terenzini, P. T. (1995). Cognitive Effects of 2-Year and 4-Year Colleges: New Evidence. *Educational Evaluation and Policy Analysis*, 17(1): 83-96.
- Pascarella, E. T., Bohr, L., Nora, A., Zusman, B., Inman, P., and Desler, M. (1993). Cognitive Impacts of Living on Campus Versus Commuting to College. *Journal of College Student Development*, 34(3): 216-220.
- Pascarella, E. T., and Chapman, D. (1983). A Multi-Institutional, Path Analytic Validation of Tinto's Model of College Withdrawal. *American Educational Research Journal*, 20(1): 87-102.
- Pascarella, E. T., Cruce, T., Wolniak, G. C., Kuh, G. D., Umbach, P. D., Hayek, J. C., Carini, R. M., Gonyea, R. M., and Zhao, C-M., (2005). Institutional Selectivity and Good Practices In Undergraduate Education. *Journal of Higher Education*, 77(2): 251-285.

- Pascarella, E. T., Duby, P., Terenzini, P. T., and Iverson, B. (1983). Student-Faculty Relationships and Freshman Year Intellectual and Personal Growth in a Nonresidential Setting. *Journal of College Student Personnel*, 24(5): 395-402.
- Pascarella, E. T., Edison, M. I., Nora, A., Hagedorn, L. S., and Terenzini, P. T. (1996). Influences on Students' Openness to Diversity and Challenge in the First Year of College. *Journal of Higher Education*, 67(2): 174-195.
- Pascarella, E. T., Edison, M. I., Nora, A., Hagedorn, L. S., and Terenzini, P. T. (1998). Does Work Inhibit Cognitive Development During College? *Educational Evaluation and Policy Analysis*, 20(2): 75-93.
- Pascarella, E. T., Edison, M. I., Nora, A., Terenzini, P. T., and Hagedorn, L. S. (1998). Does Community College Versus Four-Year College Attendance Influence Students' Educational Plans? *Journal of College Student Development*, 39(2): 179-193.
- Pascarella, E. T., Ethington, C. A., and Smart, J. C. (1988). The Influence of College on Humanitarian/Civic Involvement Values. *Journal of Higher Education*, 59(4): 412-437.
- Pascarella, E. T., Palmer, B., Moye, M., and Pierson, C. (2001). Do Diversity Experiences Influence the Development of Critical Thinking? *Journal of College Student Development*, 42(3): 257-271.
- Pascarella, E. T., Pierson, C. T., Wolniak, G. C., and Terenzini, P. T. (2004). First Generation College Students: Additional Evidence on College Experiences and Outcomes. *The Journal of Higher Education*, 75(3): 249-284.
- Pascarella, E. T., and Smart, J. C. (1991). Impact of Intercollegiate Athletic Participation for African-American and Caucasian Men: Some Further Evidence. *Journal of College Student Development*, 32(2): 123-130.
- Pascarella, E. T., Smart, J. C., and Ethington, C. A. (1986). Long-Term Persistence of Two-Year College Students. *Research in Higher Education*, 24(1): 47-71.
- Pascarella, E. T., Smart, J. C., Ethington, C. A., and Nettles, M. T. (1987). The Influence of College on Self-Concept: A Consideration of Race and Gender Differences. *American Educational Research Journal*, 24(1): 49-77.
- Pascarella, E. T., and Terenzini, P. T. (1976). Informal Interaction with Faculty and Freshman Ratings of Academic and Non-Academic Experience of College. *Journal of Educational Research*, 70(1): 35-41.
- Pascarella, E. T., and Terenzini, P. T. (1977). Patterns of Student-Faculty Informal Interaction Beyond the Classroom and Voluntary Freshman Attrition. *Journal of Higher Education*, 48(5): 540-552.
- Pascarella, E. T., and Terenzini, P. T. (1979a). Interaction Effects in Spady's and Tinto's Conceptual Models of College Dropout. *Sociology of Education*, 52(4): 197-210.
- Pascarella, E. T., and Terenzini, P. T. (1979b). Student-Faculty Informal Contact and College Persistence: A Further Investigation. *Journal of Educational Research*, 72(4): 214-218.
- Pascarella, E. T., and Terenzini, P. T. (1980). Student-Faculty and Student-Peer Relationships as Mediators of the Structural Effects of Undergraduate Residence Arrangements. *Journal of Educational Research*, 73(6): 344-353.

- Pascarella, E. T., and Terenzini, P. T. (1983). Predicting Voluntary Freshman Year Persistence/Withdrawal Behavior in a Residential University: A Path Analytic Validation of Tinto's Model. *Journal of Educational Psychology*, 75(2): 215-226.
- Pascarella, E. T., and Terenzini, P. T. (1991). *How College Affects Students: Findings and Insights From Twenty-Years of Research* (1st ed.). San Francisco: Jossey-Bass Publishers.
- Pascarella, E. T., and Terenzini, P. T. (1995). The Impact of College on Students: Myths, Rational Myths, and Some Other Things That May Not Be True. *NACADA Journal*, 15(2): 26-33.
- Pascarella, E. T., and Terenzini, P. T. (2005). *How College Affects Students: A Third Decade of Research*. San Francisco: Jossey-Bass.
- Pascarella, E. T., Wolniak, G. C., Cruce, T. M., and Blaich, C. F. (2004). Do Liberal Arts Colleges Really Foster Good Practice in Undergraduate Education? *Journal of College Student Development*, 45(1): 57-74.
- Pathways to College Network. (2004). *A Shared Agenda: A Leadership Challenge to Improve College Access and Success*. Boston: The Education Resources Institute.
- Pennington, H. (2004, December). *Fast Track to College: Increasing Postsecondary Success for All Students*. Boston: Jobs for the Future.
- Perna, L. W. (2003). The Private Benefits of Higher Education: An Examination of the Earnings Premium. *Research in Higher Education*, 44(4): 451-472.
- Perna, L. W., and Titus, M. A. (2005). The Relationship Between Parental Involvement as Social Capital and College Enrollment: An Examination of Racial/Ethnic Group Differences. *Journal of Higher Education*, 76(5): 485-518.
- Pescosolido, B. A. (1994). Bringing Durkheim Into the Twenty-First Century: A Network Approach to Unresolved Issues in the Sociology of Suicide. In *Emile Durkheim Le Suicide: One Hundred Years Later*, edited by D. Lester, 264-295. Philadelphia, PA: The Charles Press.
- Peter, K., and Cataldi, E. F. (2005). *The Road Less Traveled? Students who Enroll in Multiple Institutions*. (NCES 2005-157). U.S. Department of Education. Washington, DC: U.S. Government Printing Office.
- Pierce, C. M. (1989). Unity in Diversity: Thirty-Three Years of Stress. In *Black Students: Psychological Issues and Academic Achievement*, edited by G. L. Berry and J. K. Asamen, 296-312. Newbury Park, CA: Sage Publications.
- Pike, G. R. (1991, November). *Dimensions of Academic Growth and Development During College: Using Alumni Reports to Evaluate Education Programs*. Paper presented at the annual meeting of the Association for the Student of Higher Education, Boston, MA.
- Pike, G. R. (1993). The Relationship Between Perceived Learning and Satisfaction With College: An Alternative View. *Research in Higher Education*, 34(1): 23-40.
- Pike, G. R. (1999). The Effects of Residential Learning Communities and Traditional Residential Living Arrangements on Educational Gains During the First Year of College. *Journal of College Student Development*, 40(3): 269-284.

- Pike, G. R. (2003). Membership in a Fraternity or Sorority, Student Engagement, and Educational Outcomes at AAU Public Research Universities. *Journal of College Student Development*, 44(3): 369-382.
- Pike, G. R. (2004). Measuring Quality: A Comparison of U.S. News Rankings and NSSE Benchmarks. *Research in Higher Education*, 45(2): 193-208.
- Pike, G. R., and Askew, J. W. (1990). The Impact of Fraternity or Sorority Membership on Academic Involvement and Learning Outcomes. *NASPA Journal*, 28(1): 13-19.
- Pike, G. R., and Kuh, G. D. (2005a). A Typology of Student Engagement for American Colleges and Universities. *Research in Higher Education*, 46(2): 185-209.
- Pike, G. R., and Kuh, G. D. (2005b). First- and Second-Generation College Students: A Comparison of Their Engagement and Intellectual Development. *Journal of Higher Education*, 76(3), 276-300.
- Pike, G. R., and Kuh, G.D. (2006). Another Look at the Relationships Among Structural Diversity, Informal Peer Interactions and Perceptions of the Campus Environment. *The Review of Higher Education*, 29(4): 425-450.
- Pike, G. R., Kuh, G. D., and Gonyea, R. M. (2003). The Relationship Between Institutional Mission and Students' Involvement and Educational Outcomes. *Research in Higher Education*, 44(2): 243-263.
- Pike, G. R., and Saupe, J. L. (2002). Does High School Matter? An Analysis of Three Methods of Predicting First-Year Grades. *Research in Higher Education*, 43(2): 187-207.
- Pike, G. R., Schroeder, C. C., and Berry, T. R. (1997). Enhancing the Educational Impact of Residence Halls: The Relationship Between Residential Learning Communities and First-Year College Experiences and Persistence. *Journal of College Student Development*, 38(6): 609-621.
- Pike, G. R., Smart, J. C., Kuh, G. D., and Hayek, J. C. (in press). Educational Expenditures and Student Engagement: When Does Money Matter? *Research in Higher Education*.
- Placier, P., Moss, G., and Blockus, L. (1992). College Student Personal Growth in Retrospect: A Comparison of African American and White Alumni. *Journal of College Student Development*, 33(5): 462-471.
- Polizzi, T. B., and Ethington, C. A. (1996, October). *Factors Affecting Gains in Career Preparation: A Comparison of Vocational Groups*. Paper presented at the annual meeting of the Association for the Study of Higher Education, Memphis, TN.
- Porter, O. F. (1990, April). *Undergraduate Completion and Persistence at Four-Year Colleges and Universities: Completers, Persisters, Stopouts, and Dropouts*. Paper presented at the annual meeting of the American Educational Research Association, Boston, MA.
- Porter, O. F. (1991). Where Do We Go From Here: Looking Beyond Student Aid and Access to Persistence. *New Directions for Higher Education*, 29(2): 75-90.
- Pounds, A. (1987). Black Students' Needs on Predominantly White Campuses. *New Directions for Student Services*, 38: 23-38.
- Presley, J. B., and Clery, S. B. (2001). Middle Income Undergraduates: Where They Enroll and How They Pay for Their Education. *Education Statistics Quarterly*, 3(3): 78-81.

- Price, D.V. (2005, December). *Learning Communities and Student Success in Postsecondary Education: A Background Paper*. New York: MDRC.
- Provasnik, S., and Shafer, L. L. (2004). *Historically Black Colleges and Universities, 1976 to 2001* (NCES 2004-062). U.S. Department of Education. Washington, DC: U.S. Government Printing Office.
- Reason, R. D., Terenzini, P. T., and Domingo, R. J. (2005, May). *First Things First: Developing Academic Competence in the First Year of College*. Paper presented at the annual meeting for the Association for Institutional Research, San Diego, CA.
- Redd, K. E. (2000). *HBCU Graduates, Employment Earnings and Success after College*. Indianapolis, IN: USA Groups, Inc.
- Redd, K. E. (2001). *Discounting Toward Disaster: Tuition Discounting, College Finances, and Enrollments of Low-Income Undergraduates* (New Agenda Series, Vol. 3, No. 2). Indianapolis, IN: USA Group Foundation.
- Reid, E. A. (1974). Effects of Co-Residential Living on the Attitudes, Self-Image, and Role Expectations of College Women. *American Journal of Psychiatry*, 131(5): 551-554.
- Rendon, L. I. (1994, February). *A Systemic View of Minority Students in Educational Institutions*. Paper presented at the Southern Education Foundation Panel on Educational Opportunity and Postsecondary Desegregation, Austin, TX.
- Rendon, L. I. (1994, August). *Beyond Involvement: Creating Validating Academic and Social Communities in the Community College*. Paper presented at the American River Community College, Sacramento, CA.
- Rendon, L. I. (1995, March). *Facilitating Retention and Transfer for First Generation Students in Community Colleges*. Paper presented at the New Mexico Institute, Rural Community College Initiative, Espanola, NM.
- Rendon, L. I. (1998, September). *Access in a Democracy: Narrowing the Opportunity Gap*. Paper presented at the Policy Panel on Access, National Postsecondary Education Cooperative, Washington, DC.
- Rendon, L. I. (1999). Toward a New Vision of the Multicultural Community College for the Next Century. In *Community Colleges as Cultural Texts: Qualitative Explorations of Organizational and Student Culture*, edited by K. M. Shaw, J. R. Valadez, and R. A. Rhoads, 195-204. Albany, NY: State University of New York Press.
- Rendon, L. I., and Garza, H. (1996). Closing the Gap Between Two- and Four-Year Institutions. In *Educating a New Majority*, edited by L. I. Rendon and R. Hope, 289-308. San Francisco: Jossey-Bass Publishers.
- Rendon, L. I., Jalomo, R. E., and Nora, A. (2000). Theoretical Consideration in the Study of Minority Student Retention in Higher Education. In *Rethinking the Departure Puzzle: New Theory and Research on College Student Retention*, edited by J. Braxton, 127-156. Nashville, TN: Vanderbilt University Press.
- Reynolds, A. J., and Walberg, H. J. (1992). A Process Model of Mathematics Achievement and Attitude. *Journal for Research in Mathematics Education*, 23(4): 306-328.

- Richardson, R. C., and Skinner, E. F. (1992). Helping First-Generation Minority Students Achieve Degrees. *New Directions for Community Colleges*, 20(4): 29-43.
- Rifkin, T. (1998). *Issues Surrounding the Community College Collegiate Function: A Synthesis of the Literature*. Los Angeles: ERIC Clearinghouse for Community Colleges.
- Roach, R. (2000). Ambitious Outreach. *Black Issues in Higher Education*, 17(12): 19, 21.
- Rosenbaum, J. (1998, October). *Unrealistic Plans and Misdirected Efforts: Are Community Colleges Getting the Right Message to High School Students?* (Community College Research Center Occasional Paper). New York: Columbia University, Teachers College, Community College Research Center.
- Rousseau, D. M. (1995). *Psychological Contract in Organizations: Understanding Written and Unwritten Agreements*. Newbury Park, CA: Sage.
- Russel, J. H., and Skinkle, R. R. (1990). Evaluation of Peer-Adviser Effectiveness. *Journal of College Student Development*, 31(5): 388-394.
- Rutherford, F. J., and Ahlgren, A. (1990). *Science for All Americans*. New York: Oxford University Press.
- Sanchez, J. R., Laanan, F. S., and Wiseley, W. C. (1999). Postcollege Earnings of Former Students of California Community Colleges: Methods, Analysis, and Implications. *Research in Higher Education*, 40(1): 87-113.
- Saupe, J. L., Smith, T. Y., and Xin, W. (1999, May). *Institutional and Student Characteristics in Student Success: First-Term GPA, One-Year Retention and Six-Year Graduation*. Paper presented at the annual meeting for the Association for Institutional Research, Seattle, WA.
- Sax, L. J. (1996, November). *The Impact of College on Post-College Commitment to Science Careers: Gender Differences in a Nine-Year Follow-Up of College Freshmen*. Paper presented at the annual meeting of the Association for the Study of Higher Education, Memphis, TN.
- Sax, L. J., Astin, A. W., Lindholm, J. A., Korn, W. S., Saenz, V. B., and Mahoney, K. M. (2003). *The American Freshman: National Norms for Fall 2003*. Los Angeles: University of California, Los Angeles, Higher Education Research Institute.
- Schilling, K. M., and Schilling, K. L. (1999). Increasing Expectations for Student Effort. *About Campus*, 4(2): 4-10.
- Schmit, J. (1991, November). *An Empirical Look at the Search Stage of the Student College Choice Process*. Paper presented at the annual meeting of the Association for the Study of Higher Education, Boston, MA.
- Schroeder, C. C., and Hurst, J. C. (1996). Designing Learning Environments that Integrate Curricular and Co-Curricular Experiences. *Journal of College Student Development*, 37(2): 174-181.
- Schroeder, C. C., Minor, F. D., and Tarkow, T. A. (1999). Freshman Interest Groups: Partnerships For Promoting Student Success. *New Directions for Student Services*, (87): 37-49.
- Schuh, J. H., and Laverty, M. (1983). The Perceived Long-Term Influence of Holding a Significant Student Leadership Position. *Journal of College Student Personnel*, 24(1): 28-32.

- Shapiro, N. S., and Levine, J. H. (1999). *Creating Learning Communities: A Practical Guide to Winning Support, Organizing for Change, and Implementing Programs*. San Francisco: Jossey-Bass.
- Shaw, K. M., and London, H. B. (2001). Culture and Ideology in Keeping Transfer Commitment: Three Community Colleges. *The Review of Higher Education*, 25(1): 91-114.
- Shulman, J., and Bowen, W. (2001). *The Game of Life: College Sports and Educational Values*. Princeton, NJ: Princeton University Press.
- Simpson, C., Baker, K., and Mellinger, G. (1980). Convention Failures and Unconventional Dropouts: Comparing Different Types of University Withdrawals. *Sociology of Education*, 53(4): 203-214.
- Skahill, M. P. (2002-03). The Role of Social Support Network in College Persistence Among Freshman Students. *Journal of College Student Retention*, 4(1): 39-52.
- Smart, J. C., Feldman, K. A., and Ethington, C. A. (2000). *Academic Disciplines: Holland's Theory and the Study of College Students and Faculty*. Nashville, TN: Vanderbilt University Press.
- Smart, J. C., and Pascarella, E. T. (1986). Self-Concept Development and Educational Degree Attainment. *Higher Education*, 15(1-2): 3-15.
- Snyder, M., and Swann, W. B. (1978). Behavioral Confirmation in Social Interaction: From Social Perception to Social Reality. *Journal of Experimental Social Psychology*, 14(2): 148-162.
- Snyder, T. D., and Hoffman, C. M. (2003). *Digest Of Education Statistics, 2002* (NCES 2003-060). U.S. Department of Education. Washington, DC: National Center for Education Statistics.
- Social Science Research Council Project. (2005). *Questions That Matter: Setting the Research Agenda on Access and Success in Postsecondary Education*. New York: Social Science Research Council Project Transitions to College: From Theory to Practice.
- Solorzano, D. G. (1995). The Doctorate Production and Baccalaureate Origins of African Americans in the Sciences and Engineering. *Journal of Negro Education*, 64(1): 15-32.
- Sorcinelli, M. D. (1991). Research Findings on the Seven Principles. *New Directions for Teaching and Learning*, (47): 13-25.
- Spady, W. G. (1970). Dropouts From Higher Education: An Interdisciplinary Review and Synthesis. *Interchange*, 1(1): 64-85.
- St. John, E. P. (2002). *The Access Challenge: Rethinking the Causes of the New Inequality* (Policy Issues Report). Bloomington, IN: Indiana University, Education Policy Center.
- St. John, E. P. (2003). *Refinancing the College Dream: Access, Equal Opportunity, and Justice for Taxpayers*. Baltimore: Johns Hopkins University Press.
- St. John, E. P., Hu, S., Simmons, A., and Musoba, G. D. (1999). *Aptitude Versus Merit: What Matters in Persistence?* (Policy Research Report). Bloomington, IN: Indiana University, Education Policy Center.
- St. John, E. P., Paulsen, M. B., and Carter, D. F. (2005). Diversity, College Costs, and Postsecondary Opportunity: An Examination of the Financial Nexus Between College Choice and Persistence for African Americans and Whites. *Journal of Higher Education*, 76(5): 545-569
- Stage, F. K. (1989). An Alternative to Path Analysis: A Demonstration of LISREL Using Students' Commitment to an Institution. *Journal of College Student Development*, 30(2): 129-135.

- Stage, F. K., and Hossler, D. (2000). Where is the Student?: Linking Student Behaviors, College Choice, and College Persistence. In *Reworking the Student Departure Puzzle*, edited by J.M. Braxton, 170-195. Nashville, TN: Vanderbilt University Press.
- State Higher Education Executive Officers. (2005). Accountability for Better Results—A National Imperative for Higher Education. *Network News*, 24: 1-4.
- Steadman, M. H. (1998). CATs: Using Classroom Assessment to Change Both Teaching and Learning. *New Directions for Teaching and Learning*, (75): 23-35.
- Stern, G. (1970). *People in Context: Measuring Person-Environment Congruence in Education and Industry*. New York: John Wiley & Sons.
- Sternberg, R. J. (2005). Accomplishing the Goals of Affirmative Action—With or Without Affirmative Action. *Change*, 37(1): 6-14.
- Stevens, J. H. (2003) Why Texas Business Backs Rigorous Course-Taking. *Thinking K-16: A Publication of The Education Trust*, 7(1): 20-25
- Stoecker, J. L., and Pascarella, E. T. (1991). Women's Colleges and Women's Career Attainments Revisited. *Journal of Higher Education*, 62(4): 394-406.
- Stoecker, J. L., Pascarella, E. T., and Wolfe, L. (1988). Persistence in Higher Education: A 9-Year Test of a Theoretical Model. *Journal of College Student Development*, 29(3): 196-209.
- Strange, C., and Banning, J. (2001). *Educating by Design: Creating Campus Learning Environments That Work*. San Francisco: Jossey-Bass.
- Strauss, L. C., and Volkwein, J. F. (2002). Comparing Student Performance and Growth in 2- and 4-Year Institutions. *Research in Higher Education*, 43(2): 133-161.
- Strumpf, G., and Hunt, P. (1993). The Effects of an Orientation Course on the Retention and Academic Standing of Entering Freshmen, Controlling for the Volunteer Effect. *Journal of the Freshman Year Experience*, 5(1): 7-14.
- Suarez, A. L. (2003). Forward Transfer: Strengthening the Educational Pipeline for Latino Community College Students. *Community College Journal of Research and Practice*, 27(2): 95-118.
- Swail, W. S. (with Redd, K. E., and Perna, L. W.). (2003). *Retaining Minority Students in Higher Education: A Framework for Success*. ASHE-ERIC Higher Education Report No. 2. Washington, DC: The George Washington University, School of Education and Human Development.
- Swail, W. S., Cabrera, A. F., Lee, C., and Williams, A. (2005). *Latino Students and the Educational Pipelines: A Three-Part Series. Part III: Pathways to the Bachelor's Degree for Latino Students*. Stafford, VA: Education Policy Institute.
- Swanson, C. (2002). *Cooling-Out and Warming-Up: The Role of the Postsecondary Institutional Environment in Managing Ambitions*. Unpublished manuscript, University of Chicago, National Opinion Research Center.
- Tagg, J. (2003). *The Learning Paradigm College*. Bolton, MA: Anker Publishing Company.
- Taylor, K. (with Moore, W. S., MacGregor, J., and Lindblad, J.). (2003). *Learning Community Research and Assessment: What We Know Now*. National Learning Communities Project Monograph Series.

- Olympia, WA: The Evergreen State College, Washington Center for Improving the Quality of Undergraduate Education.
- Terenzini, P. T., and Pascarella, E. T. (1980). Student/Faculty Relationships and Freshman Year Educational Outcomes: A Further Investigation. *Journal of College Student Personnel*, 21(6): 521-528.
- Terenzini, P. T., Pascarella, E. T., and Blimling, G. S. (1996). Students' Out-Of-Class Experiences and Their Influence on Learning and Cognitive Development: A Literature Review. *Journal of College Student Development*, 37(2): 149-162.
- Terenzini, P. T., Rendon, L. I., Upcraft, M. L., Millar, S. B., Allison, K. A., Gregg, P. L., and Jalomo, R. (1994). The Transition to College: Diverse Students, Diverse Stories. *Research in Higher Education*, 35(1): 57-73.
- Terenzini, P. T., Springer, L., Pascarella, E. T., and Nora, A. (1995). Academic and Out-Of-Class Influences on Students' Intellectual Development. *The Review of Higher Education*, 19(1): 23-44.
- Terenzini, P. T., Springer, L., Yaeger, P., Pascarella, E. T., and Nora, A. (1996). First-Generation College Students: Characteristics, Experiences, and Cognitive Development. *Research in Higher Education*, 37(1): 1-22.
- Terenzini, P. T., Yaeger, P. M., Bohr, L., Pascarella, E. T., and Nora, A. (1997). *African American College Students' Experiences in HBCUs and PWIs and Learning Outcomes*. University Park, PA: National Center on Postsecondary Teaching, Learning, and Assessment.
- The Education Resources Institute, and Institute for Higher Education Policy (IHEP). (1996, October). *Life After Forty: A New Portrait of Today's—and Tomorrow's—Postsecondary Students*. Boston: Author.
- The Pell Institute. (2004, Fall). *Indicators of Opportunity in Higher Education: Fall 2004 Status Report*. Washington, DC: Author.
- Thompson, M. D. (2001). Informal Student-Faculty Interaction: Its Relationship to Educational Gains in Science and Mathematics Among Community College Students. *Community College Review*, 29(1): 35-57.
- Tidball, M. E. (1980). Women's Colleges and Women Achievers Revisited. *Signs: Journal of Women in Culture and Society*, 5(3): 504-517.
- Tidball, M. E. (1986). Baccalaureate Origins of Recent Natural Science Doctorates. *Journal of Higher Education*, 57(6): 606-620.
- Tidball, M. E., and Kistiakowsky, V. (1976). Baccalaureate Origins of American Scientists and Scholars. *Science*, 193: 646-653.
- Tierney, W. G. (1992). *Official Encouragement, Institutional Discouragement: Minorities in Academe—The Native American Experience*. Norwood, NJ: Ablex Publishing Corporation.
- Tierney, W. G. (1993). *Building Communities of Difference: Higher Education in the Twenty-First Century*. Westport, CT: Bergin & Garvey.
- Tierney, W. G. (1999). *Building the Responsive Campus: Creating High Performance Colleges and Universities*. Thousand Oaks, CA: Sage Publications.

- Tierney, W. G., Corwin, Z. B., and Colyar, J. E. (Eds.) (2004). *Preparing for College: Nine Elements for Effective Outreach*. Albany, NY: State University of New York Press.
- Tierney, W. G., and Hagedorn, L. S. (2002). *Increasing Access to College: Extending Possibilities for All Students*. Albany, NY: State University of New York Press.
- Tinto, V. (1975). Dropout From Higher Education: A Theoretical Synthesis of Recent Research. *Review of Educational Research*, 45: 89-125.
- Tinto, V. (1986). Theories of Student Departure Revisited. In *Higher Education: Handbook of Theory and Research*, Vol. 2, edited by J.C. Smart, 359-384. New York: Agathon Press.
- Tinto, V. (1987). *Leaving College: Rethinking the Causes and Cures of Student Attrition*. Chicago: University of Chicago Press.
- Tinto, V. (1993). *Leaving College: Rethinking the Causes and Cures of Student Attrition*. (2nd ed.). Chicago: University of Chicago Press.
- Tinto, V. (1996). Reconstructing the First Year of College. *Planning for Higher Education*, 25(1): 1-6.
- Tinto, V. (1997a). Classroom as Communities: Exploring the Education Character of Student Persistence. *Journal of Higher Education*, 68(6): 599-623.
- Tinto, V. (1997b). Enhancing Learning Via Community. *Thought & Action*, 13(1): 53-58.
- Tinto, V. (2004). *Student Retention and Graduation: Facing the Truth, Living With the Consequences*. (Occasional Paper 1). Washington, DC: The Pell Institution for the Study of Opportunity in Higher Education.
- Tinto, V., and Love, A. G. (1995). *A Longitudinal Study of Learning Communities at LaGuardia Community College*. University Park, PA: National Center on Postsecondary Teaching, Learning, and Assessment.
- Tinto, V., Love, A. G, and Russo, P. (1995). *Building Learning Communities for New Students: A Summary of Research Findings of the Collaborative Learning Project*. University Park, PA: National Center on Postsecondary Teaching, Learning, and Assessment.
- Titus, M. A. (2004). An Examination of the Influence of Institutional Context on Student Persistence at 4-Year Colleges and Universities: A Multi-Level Approach. *Research in Higher Education*, 45(7): 673-699.
- Torres, V. (2003). Influences on Ethnic Identity Development of Latino College Students in the First Two Years of College. *Journal of College Student Development*, 44(4): 532-547.
- Townsend, B. K. (1995). Community College Transfer Students: A Case Study of Survival. *The Review of Higher Education*, 18(2): 175-193.
- Treisman, U. (1992). Studying Students Studying Calculus: A Look at the Lives of Minority Mathematics Students in College. *College Mathematics Journal*, 23(5): 362-372.
- Trow, M. (2001). From Mass Higher Education to Universal Access: The American Advantage. In *In Defense of American Higher Education*, edited by P. G. Altbach, P. J. Gumport, and D. B. Johnstone, 110-143. Baltimore: Johns Hopkins University Press.
- Turner, C. S. V. (1988). *A California Case Study: Organizational Determinants of the Transfer of Hispanic Students From Two- to Four-Year Colleges*. Unpublished PhD diss., Stanford University.

- Turner, C. S. V. (1994). Guests in Someone Else's House: Students of Color. *The Review of Higher Education*, 17(4): 355-370.
- Turner, R. C. (1998). *Teaching English to Another Generation of Students*. Unpublished manuscript, Indiana University, Indianapolis.
- Twigg, C. A. (2002, October). *Redefining Community: Small Colleges in the Information Age*. Paper presented at the Pew Symposium in Learning and Technology, Charleston, SC.
- Twigg, C. A. (2003). Improving Quality and Reducing Cost: Designs for Effective Learning. *Change*, 35(4): 22-29.
- Twigg, C. A. (2005, July). *Improving Learning and Reducing Costs: New Models for Online Learning*. Keynote address at the annual meeting for the Association for Learning Technology, Manchester, England.
- Tym, C., McMillion, R., Barone, S., and Webster, J. (2004, November). *First-Generation College Students: A Literature Review* (Research and Analytic Services). Texas Round Rock, TX: Texas Guaranteed Student Loan Corporation.
- Umbach, P. D., and Kuh, G. D. (2004). Disengaged Jocks: Myth or Reality? *LiberalArtsOnline*, 4(4) http://staged.wabash.edu/cila/displayStory_print.cfm?news_ID=1593 (accessed January 3, 2006).
- Umbach, P. D., and Kuh, G. D. (2006). Student Experiences With Diversity at Liberal Arts Colleges: Another Claim for Distinctiveness. *Journal of Higher Education*, 77(1): 169-192.
- Umbach, P. D., Palmer, M. M., Kuh, G. D., and Hannah, S. J. (2004, June). *Intercollegiate Athletes and Effective Educational Practices: Winning Combination or Losing Effort?* Paper presented at the annual meeting of the Association for Institutional Research, Boston, MA.
- University of Texas at El Paso. (2003). *A Longitudinal Study of Student Persistence in Science, Technology, Engineering, and Mathematics (STEM) at a Regional Urban University*. El Paso, TX: Author.
- Upcraft, M. L., Gardner, J. N., and Barefoot, B. O. (2005). *Challenging and Supporting the First-Year Student: A Handbook for Improving the First Year of College*. San Francisco: Jossey-Bass.
- Upcraft, M. L., Mullendore, R. H., Barefoot, B. O., and Fidler, D. S. (1993). *Designing Successful Transitions: A Guide for Orienting Students to College* (Monograph No. 13). Columbia, SC: University of South Carolina, National Resource Center for the Freshman Year Experience, National Orientation Directors Association.
- U.S. Department of Education. (1997). *Findings From the Condition of Education 1996: Minorities in Higher Education* (NCES 97-372). Washington, DC: National Center for Education Statistics.
- U.S. Department of Education. (2003a). *High Schools With High Expectations for All* (Issue Paper: The High School Leadership Summit). Washington, DC: Author.
- U.S. Department of Education (2003b). *Digest of Education Statistics, 2002* (NCES 2003-060). Washington, DC: National Center for Education Statistics.
- U.S. Department of Education (2004). *The Condition of Education 2004* (NCES 2004-077). Washington, DC: U.S. Government Printing Office.

- U.S. Department of Education. (2005). *Postsecondary Participation Rates by Sex and Race/Ethnicity: 1974-2003* (NCES 2005-028). Washington, DC: National Center for Education Statistics.
- Van Gennep, A. (1960). *The Rites of Passage*. Chicago: University of Chicago Press.
- Venezia, A., Callan, P. M., Finney, J. E., Kirst, M. W., and Usdan, M. D. (2005, September). *The Governance Divide: A Report on a Four-State Study on Improving College Readiness and Success*. San Jose, CA: The Institute for Educational Leadership, the National Center for Public Policy and Higher Education, and the Stanford Institute for Higher Education Research.
- Venezia, A., Kirst, M. W., and Antonio, A. L. (2003, March). *Betraying the College Dream: How Disconnected K-12 and Postsecondary Education Systems Undermine Student Aspirations*. Stanford, CA: National Center for Postsecondary Improvement.
- Vogelgesang, L. J. (2001, April). *The Impact of College on the Development of Civic Values: How Do Race and Gender Matter?* Paper presented at the annual meeting of the American Educational Research Association, Seattle, WA.
- Volkwein, J. F., and Cabrera, A. F. (1998, May). *Student Measures Associated With Favorable Classroom Experiences*. Paper presented at the annual meeting of the Association for Institutional Research, Minneapolis, MN.
- Volkwein, J. F., and Carbone, D. A. (1994). The Impact of Departmental Research and Teaching Climates on Undergraduate Growth and Satisfaction. *Journal of Higher Education*, 65(2): 147-167.
- Volkwein, J. F., King, M., and Terenzini, P.T. (1986). Student-Faculty Relationships and Intellectual Growth Among Transfer Students. *Journal of Higher Education*, 57(4): 413-430.
- Volkwein, J. F., Valle, S., Parmley, K., Blose, G., and Zhou, Y. (2000, May). *A Multi-Campus Study of Academic Performance and Cognitive Growth Among Native Freshman, Two-Year Transfers, and Four-Year Transfers*. Paper presented at the annual meeting of the Association for Institutional Research, Cincinnati, OH.
- Voorhees, R. (1987). Toward Building Models of Community College Persistence: A Logit Analysis. *Research in Higher Education*, 26(2): 115-129.
- Walters, R., and Bray, D. (1963). Today's Search for Tomorrow's Leaders. *Journal of College Placement*, 24: 22-23.
- Wang, H., and Grimes, J. W. (2001). A Systematic Approach to Assessing Retention Programs: Identifying Critical Points for Meaningful Interventions and Validating Outcomes Assessment. *Journal of College Student Retention*, 2(1): 59-68.
- Warburton, E. C., Bugarin, R., and Nuñez, A. M. (2001). Bridging the Gap: Academic Preparation and Postsecondary Success of First-Generation Students. *Education Statistics Quarterly*, 3(3): 73-77.
- Watkins, T. J. (1997). Teacher Communications, Child Achievement, and Parent Traits in Parent Involvement Models. *Journal of Educational Research*, 91(1): 3-14.
- Watson, L. W., and Kuh, G. D. (1996). The Influence of Dominant Race Environments on Student Involvement, Perceptions, and Educational Gains: A Look at Historically Black and Predominantly White Liberal Arts Institutions. *Journal of College Student Development*, 37(4): 415-424.

- Weidman, J. C. (1979). Impacts of Campus Experience and Parental Socialization on Undergraduates' Career Choices. Washington, DC: Bureau of Social Science Research, Inc.
- Weiler, W. (1993). Postbaccalaureate Educational Choices of Minority Students. *The Review of Higher Education*, 16(4): 439-460.
- Wenglinsky, H. (1997). *Students at Historically Black Colleges and Universities: Their Aspirations & Accomplishments* (Policy Information Report). Princeton, NJ: Educational Testing Service, Policy Information Center.
- Wenglinsky, H. (1998). Finance Equalization and Within-School Equity: The Relationship Between Education Spending and the Social Distribution of Achievement. *Educational Evaluation and Policy Analysis*, 20(4): 269-283.
- Western Interstate Commission for Higher Education (WICHE). (2003, May). *What is Changing Direction? A Project Overview*. Boulder, CO: Author.
- Western Washington University. (1996). *Law and Diversity Program. Report to the Fund for the Improvement of Postsecondary Education (FIPSE)*. <http://www.ac.wvu.edu/~ldp/> (accessed May 26, 2006).
- Whiteley, J. (1982). *Character Development in College Students*, Vol. 1. Schenectady, NY: Character Research Press.
- Whitt, E. J. (1994). "I Can Be Anything!": Student Leadership in Three Women's Colleges. *Journal of College Student Development*, 35: 198-207.
- Whitt, E. J., Edison, M., Pascarella, E. T., Terenzini, P. T., and Nora, A. (2001). Influences on Students' Openness to Diversity and Challenge in the Second and Third Years of College. *Journal of Higher Education*, 72(2): 172-204.
- Wilkinson, R. (2005). What Colleges Must Do to Help Needy Students. *Chronicle of Higher Education*, October 7, B7.
- Williams, A., and Swail, W. S. (2005). *Is More Better? The Impact of Postsecondary Education on the Economic and Social Well-Being of American Society*. Washington, DC: Education Policy Institute, Inc.
- Wilson, R. C., Gaff, J. C., Dienst, R. E., Wood, L., and Bavry, J. L. (1975). *College Professors and Their Impact on Students*. New York: Wiley-Interscience.
- Wilson, R., Wood, L., and Gaff, J. (1974). Social-Psychological Accessibility and Faculty-Student Interaction Beyond the Classroom. *Sociology of Education*, 47(1): 74-92.
- Wood, L., and Wilson, R. (1972). Teachers With Impact. *Research Reporter*, 7(2), 1-4.
- York-Anderson, D., and Bowman, S. (1991). Assessing the College Knowledge of First-Generation and Second-Generation Students. *Journal of College Student Development*, 32: 116-122.
- Zhao, C. M., and Kuh, G. D., (2004). Adding Value: Learning Communities and Student Engagement. *Research in Higher Education*, 45(2): 115-138.
- Zhao, C-M., Kuh, G. D., and Carini, R. M. (2005). A Comparison of International Student and American Student Engagement in Effective Educational Practices. *Journal of Higher Education*, 76(2): 209-232.

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APPENDIX A. NOTE ON RESEARCH METHODS

We conducted this extensive review of the literature related to student success, broadly defined, to develop an informed perspective on policies, programs, and practices that contribute to desired outcomes of postsecondary education. The research team developed a search strategy for identifying relevant literature and created a list of key search terms, authors, and related topics to focus the literature search. More than 70 search words, 40 authors, and 30 organizations were identified as salient. In addition to searching for these terms via online library databases, we also devised a plan to explore reports found on pertinent foundations and organization websites. Colleagues across the country were consulted to uncover additional research on student success that was less accessible through conventional means.

We then searched electronic library databases that house the vast majority of references on undergraduate student experiences, precollege characteristics, and institutional conditions that foster student success. These included ERIC-EBSCO, a multidisciplinary, full-text database that contains references from over 3,100 scholarly publications; PsycINFO, which contains the international literature of psychology and related fields from more than 1,300 journals; and Sociological Abstracts, which contains the international literature in sociology and related disciplines in the social and behavioral sciences. In addition, we examined relevant materials in the Indiana University Center for Postsecondary Research library and archives and findings from our ongoing survey work with several hundred colleges and universities nationwide.

These efforts yielded more than 700 relevant documents for our collection. We were more inclusive with recent research articles and more selective with monographs, books, and articles that were 15 years or older. We sorted these documents into four broad categories: precollege characteristics, postsecondary educational experiences, institutional conditions, and postcollegiate outcomes. The approximate number of relevant documents reviewed for particular categories are as follows: precollege characteristics, 200; postsecondary educational experiences, 300; institutional conditions, 290; and postcollegiate outcomes, 130. The total number of relevant books and articles in these four categories exceeded 700 as many articles pertained to more than one category. Among the research team, we divided up responsibility for reviewing the documents. We also created a database with full citations of articles.

The research team met face to face periodically to develop and fine-tune the search strategy, discuss our approach to reviewing the literature, share emerging findings and trends, identify deficiencies in documents collected, and discuss our framework for the report. Team members communicated frequently via e-mail about our respective activities. We developed a template to systematize our review of the literature in order to assess of the value of the respective piece for answering the guiding research questions and to summarize key findings. After reviewing the majority of the literature, team members then wrote up abstracts of key findings and insights from assigned categories of readings. These summaries were used to write up the major sections of the report. Drafts of sections were shared with the entire team. Finally, as the major sections of the report were completed, team members reviewed all segments and developed the recommendations and propositions.

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**APPENDIX B:
INDICATORS OF STUDENT SUCCESS IN POSTSECONDARY EDUCATION***

- Student Goal Attainment: To what extent are students attaining their final educational goal as indicated on their application and advising records?
- Course Retention and Success: At what rate do students complete the individual courses in which they enroll? At what rates are D, F, and W grades awarded in particular courses?
- Success in Subsequent Coursework: How successful are students in courses that are linearly sequential especially in math, science, and English?
- Fall-to-Fall Persistence: At what rate do students continue their education one complete academic year to the next, in accordance with their educational goal?
- Time to Degree: How many semesters elapsed prior to degree attainment? What percentage of full-time students attempt and complete the average credit hour load per term?
- Degree/Certificate Completion: What number and percentage of students complete their chosen degree or certificate program?
- Graduate School Enrollment and Employment: At what level are students enrolling in graduate and professional school and attaining employment and advancement relevant to their degree or certificate program?
- Transfer Rate and Success: At 2-year institutions, what percentage of students complete their educational goal of transferring to a 4-year institution? How does the success of transfer students compare to students that started at the institution?
- Employer Assessment of Students: How satisfied are employers with students' knowledge, qualities, and skills?
- Academic Value Added: What knowledge and skills have students acquired during their undergraduate experience?
- Student Satisfaction: How satisfied are students with access, instructional and student services, facilities, and campus life?
- Student Professional Growth and Development: What is the self-perceived personal growth, community involvement, and moral development of students completing their education at the institution?
- Student Involvement: To what extent are students participating in educationally purposeful activities?
- Citizenship and Engagement: To what extent are students acquiring habits of the mind and heart in college that will benefit them and society in the future?

*Adapted from *Community Colleges: Core Indicators of Effectiveness* (American Association of Community Colleges, 1994, and Harris 1998).