educational policy institute

retaining minority students in higher education

a framework for success

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with
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PART I: POSTSECONDARY OPPORTUNITY

Purpose and Overview

In 1975, a research article by Vincent Tinto, entitled "Dropout from higher education: A theoretical synthesis of recent research," was published in the Review of Higher Education. Tinto's work spurred more than 25 years of dialogue on student retention and persistence in higher education. Though it has been attacked by some and revised by Tinto himself, his work has remained the dominant sociological theory of how students navigate through our postsecondary system.

Over a quarter of a century later, the issues regarding student retention and persistence are as pertinent as they were when Tinto first published his Student Integration Model. In the 1970s and 80s, the focus was primarily on access policy, with federal and state legislation aimed at reducing barriers to higher education. By the mid 1990s, the discussion moved from access to issues of choice, affordability, and persistence to degree. While gaining entry to college is still a dramatic accomplishment for some, persisting to degree is what really matters in the post-college world. Unfulfilled academic goals often result in unfulfilled career realities: lower pay, less security, fewer opportunities, and dreams deferred—if not abandoned.

The retention issue is a persistent problem in higher education. For the past 100 years, the institutional graduation rate has stubbornly held at the 50 percent mark: half of all students entering higher education fail to realize their dreams and aspirations based on earning a certificate or degree. As Tinto remarks, "The consequences of this massive and continuing exodus from higher education are not trivial, either for the individuals who leave or for their institutions" (Tinto, 1993, p. 1).

For students of color in particular, the stakes have never been trivial. Access and completion rates for African-American, Hispanic, and Native American students have always lagged behind White and Asian students. The same is true for low-income students and students with disabilities (Gladieux and Swail, 1998). But there have been great strides made since the 1960s War on Poverty. Postsecondary enrollment rates for students of color are at levels similar to White and Asian students, although equal access to four-year colleges remains an area of concern, especially at our nation's most selective institutions. But even if access rates of minority students were on level with majority White students, students of color have not been able to realize the degree production rates of other students. In fact, they earn degrees at a ratio between 1:2 and 1:3 compared with White and Asian students.

Given that the U.S. will become significantly "less White" over the course of the next 50 years, issues of color cannot be ignored. California is already a "majority-minority" state, but its flagship public institutions of higher education have embarrassing low participation rates among African-American and Hispanic students. Texas, Florida, and several other states host similar problems. If such issues are not urgently addressed, today's retention and diversity problems will seem like child's play in a few, short decades.

In 2004, the Congress is expected to reauthorize the Higher Education Act for the seventh time since 1965. Congress will likely tinker with Pell Grant authorizations, loan limits and rules, and other important issues, such as teacher training and distance education. Another reauthorization goal may be to pressure institutions to improve student retention and completion, in view of Congress' limited ability to force colleges to curb spiraling tuitions.

Beyond such measures, concerted action will be required to spur U.S. colleges, on a large scale, to get more serious about retention and persistence and move faster to become more "diversity-friendly."

This publication is intended as a reference for key stakeholders regarding the realities of, and strategies for student retention. It is our hope that it will serve as a "compass" for those charged with the complex task of improving retention at their campus.

More specifically, this reader details the findings of three levels of research. The first was an exhaustive review of the literature on the issues that affect retention of minority and underrepresented students in postsecondary education. Updating a previous study of minority-student retention in the mid-1990s by Swail (1995), this review looked at more recent issues facing underrepresented students in the college pipeline.

Second, our team analyzed a number of databases[1] to look for enrollment, persistence, and completion trends of students of color at U.S. colleges and universities. We also examined pre- and post-college issues, such as preparation and employment.

Finally, investigators conducted a series of focus groups and interviews with campus leaders and practitioners about current practice and their perspectives on how our nation's campuses are dealing with the student retention problem.

To aid the reader, this publication is divided into four sections:

Part I introduces the key policy issues and presents data on minority student retention in the United States. We begin with a discussion of the growing importance of a college degree in America, followed by an analysis of the cost of student attrition to students, colleges, and society. Part I also presents data on the educational pipeline for minority students, and concludes with a synopsis of recent affirmative action legislation.

Part II focuses on why students leave college, and presents theoretical models that describe the student persistence process.

Part III introduces a comprehensive framework and a geometric model that provides a new perspective on student persistence and achievement.

And finally, **Part IV** reviews key factors in implementing programs for retention improvement on college campuses, including the major role of leadership.

[1] IPEDS; NELS:88/94; HS&B:82/92; NLS:72; BPS:89/94; B&B:92/94.

The **appendices** contain two useful collections of information. **Appendix A** provides information on 25 programs and strategies of interest to administrators and practitioners. **Appendix B** provides an annotated bibliography of studies that we deem important resources.

Once again, the major purpose of the report is to engage higher education personnel in the complex area of student retention through a discussion of important concepts, issues, and practices. And hopefully, better understanding will lead to increases in diversity and opportunity for all attending postsecondary campuses.

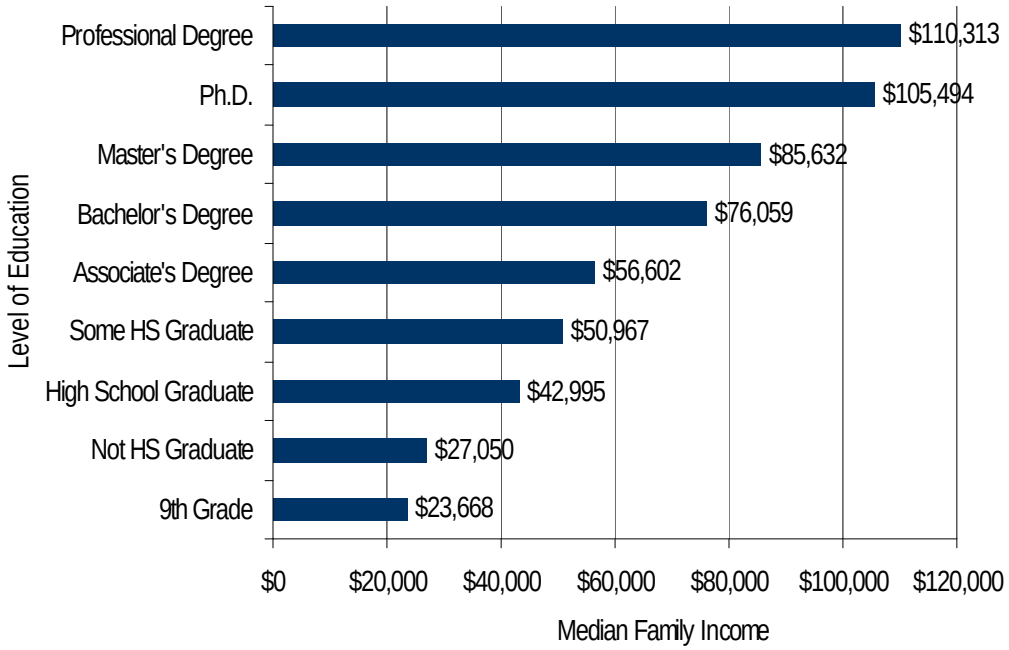
The Growing Importance of a College Degree

> Higher education has an enormous responsibility for our society's well-being … Education determines not only earning capacity but also the very quality of human life. Even longevity is correlated with educational achievement. In the broad sense of how well we live our lives—both individually and collectively—higher education is a public-health issue. (Davies, 2001)

Education has a profound impact on both the individual and society-at-large. Education is one of the surest ways to increase one's social and economic levels and overcome the barriers of poverty and deprived social conditions (Swail, 2000). According to the U.S. Census Bureau, individuals with a bachelor's degree earn about double that of high school graduates, and those with a professional degree earn double what the BA-earner makes annually (Figure 1). On an annual basis, these variances are considerable. Over a lifetime, they are tremendous. The earning differential between each level is approximately $1 million, and this does not count the investment opportunities and capital gains of those with high levels of disposable income—in most cases those with advanced and professional degrees.

Socio-economic status is closely related to race and ethnicity. African Americans and Latinos earn considerably less, on average, than White families. In fact, both groups earn less than two-thirds what White households earn (U.S. Census Bureau, 2001). This directly impacts the ability to make purchases, but the greater impact is on an individual's or families' ability to plan, save, and invest for future security, as well as invest in his or her own personal development. In other words, earning power affects the ability to become more capable and competitive and increase one's human and social capital.

Figure 1. Median Annual Household Income, by Educational Attainment of Householder, 25 years Old and Over, 1999



SOURCE: Mortenson, Thomas (2002). Higher Education as Private and Social Investment. A presentation to the Key Bank Financing Conference 2002, February 15, 2002, Orlando, Florida.

Although there will always be gaps in who goes to college and who ultimately succeeds, it still holds true that education has the greatest potential to benefit all.

> There are no guarantees in life with or without a college diploma, but the odds are increasingly stacked against those with the least education and training. The more education one has, the more—on average—one earns. And this relationship has become conventional wisdom. People understand: who goes to college—and often which college—determines more than ever who has entrée to the best jobs and the best life chances. (Gladieux and Swail, 1998)

A recent report by RAND suggests that the social/societal benefits of education may exceed the private—or individual—benefits (Vernez, Krop, and Rydell, 1999). This in-depth analysis of national datasets found that increases in education level resulted in improvements in social cohesion, technological innovations, and tangible intergenerational benefits that affect the entire society. In addition, reductions in crime and recidivism, Medicaid and Medicare costs, and other social costs are tied to education levels. The study provides this example of education's benefits:

> For every native-born Mexican woman who graduates from high school instead of dropping out, the nation would save $2,438 in social programs and would add $1,843 in public revenues in her 30th year. Similar savings and increases in public revenues would accrue annually over her lifetime. In

> addition, this woman would enjoy $2,588 more in disposable income during her 30th year. If this woman were to attend some college instead of stopping at high school, the result would be $956 more in program savings, $1,398 more in public revenues, and $2,401 more in disposable income at age 30. And graduating from college would add another $411 in program savings, $2,551 in public revenues, and $3,722 in disposable income. (Vernez et al., 1999, p. 30).

Impact on Educational Institutions

The fact that people in all walks of American life understand the importance of education affects educational institutions in two distinct ways. First, the demand for postsecondary studies has increased greatly over the past several decades. Enrollments are up over ten-fold since the mid 1900s to approximately 14 million, with four-year enrollments attracting almost 4 million full-time equivalent students each year (see discussion later in this section and data in Table 2). The U.S. has the largest and broadest postsecondary system in the world, and certainly the most open system (Gladieux, 2001), allowing a full spectrum of individuals from all levels of society to participate. From a purely market standpoint, higher education institutions have done well. Although colleges and universities continue to raise tuition and fee charges at rates twice that of inflation to meet their budgets (College Board, 2001), higher education has done well to meet the market demand.

It is important to note that this increase in demand for education has an economic relationship to academic persistence and completion rates in the United States. Bean (1986) offers the following example:

> There is a linear relationship between enrollment and income. If an institution has a break-even point of one thousand students, maintaining an enrollment of eleven hundred students represents an enormous cushion, since most classes can be 10 percent larger without additional cost to the institution. If the enrollment drops to nine hundred, however, the instructional costs remain the same, but faculty and other institutional employees may be faced with the loss of 10 percent of their income or 10 percent of their colleagues. Given a typical tuition of $5,000 at an institution enrolling eight hundred full-time freshmen where the freshman to sophomore year attrition rate is 25 percent, the loss of two hundred students would cost the school $1 million. Across the country, the tuition loss due to full-time freshman attrition alone would be $3 billion. (Bean, 1986, p. 47)

Bean's example resonates as well today as it did in 1986. Retention rates relate directly to institutional budget. The argument has been made that low retention rates (or high attrition rates) drive up the cost of education via inflated tuition and fee charges and increased consumption of public subsidies (at least for public institutions). However, tuition, fees, and subsidies are *already* inflated because the cost of attrition has been packaged into those charges that are passed off to the student and family, and indirectly to public budgets.

Thus, our inability to reduce attrition during the past 50 years of postsecondary expansion has had—and continues to have—serious implications on the inflationary pressures on tuition and fees at public and private universities across the country. Each fall, when the College Board releases its *Trends in College Pricing* report at the National Press Club, the media asks why tuition and fees continue to escalate. Typical answers include the costs of technology infrastructure, new housing units, enhancing the quality of education, and so on. But a main driver of these price increases is the enormous cost of losing students.

This reality is not lost on managers of educational institutions. During the mid-1990s, one of this report's authors had a discussion with a vice president of student services at one of the more exclusive private universities in the Washington, D.C. area. The vice president calculated that each enrolled student cost the institution about $750 to attract and enroll. This included cost of recruitment, outreach, and admissions, among other costs. He was concerned about the sizeable investment the institution would lose if they let that student fall out of their system—an investment that would not nor could not be recouped.

Beyond the sheer financial impact, the implications of retention and attrition are felt in the culture of the institution. Bean (1986) references a connection between high attrition and low faculty morale, as well as a sense of failure among students, administrators, and staff. Just as institutions are valued on the basis of their selectivity, students, parents, and policymakers also rank institutions in the light of their graduation rates. A main indicator in the infamous U.S. News and World Report survey is the institutional graduation rate. People want to know: "does this institution get students through?" Regardless of institution mission and selectivity, schools with low retention and graduation rates carry a burden that has a direct impact on the college's ability to recruit and retain future students. It is a difficult and vicious cycle to break.

Institutions also have ethical obligations to retain students. By admitting a student, an institution not only makes a contractual commitment to that student, but also incurs a moral obligation to provide him or her with an appropriate level of education and support. Through admissions, the institution essentially states: "You belong here, and we're here to help you." Institutions that admit students without providing adequate resources or support aren't doing themselves or their students any favors. In fact, in many cases, they could be causing more harm than good. Students that leave before graduation—especially low-income and disadvantaged students—often do so with a sizable loan burden and poor prospects for employment without the degree they originally sought. As a further complication, these students have a high propensity to default on their student loans, affecting their credit rating and digging a deeper financial hole for themselves.

Moving from Access to Success

Since World War II, the primary focus of federal support for higher education has been on postsecondary access. The GI Bill (the 'Serviceman's Readjustment Act of 1944') was introduced as a measure designed to help military servicemen reintegrate into the econ-

omy and society after the WWII (as well as to stem off a recession by the influx of hundreds of thousands of workers into the U.S. economy). An astonishing 40 percent of military veterans took advantage of the GI Bill, ushering higher education into a new era (Levine and Nidiffer, 1996).

The 1960s brought the War on Poverty and two major legislative packages: The Civil Rights Act of 1964 and the Higher Education Act of 1965. These bills established the tenet for future federal involvement in education, which historically had been a state responsibility. The federal government had already laid the groundwork for access to postsecondary education through the GI Bill and through increased focus on math and science education after Sputnik in 1957. But the legislation of the mid-1960s expanded the federal role through new student financial aid programs and academic support programs, such as the TRIO programs (Upward Bound, Student Support Services, and Talent Search). As President Johnson said upon signing the Higher Education Act of 1965, "[W]e need to do more…to extend the opportunity for higher education more broadly among lower and middle income families" (Johnson, 1965, 1102). And they did.

The 1970s continued the federal government's expansion into support for educational opportunity, resulting in the Pell Grant (originally known as the Basic Educational Opportunity Grant, or BEOG, before it was renamed after Senator Claiborne Pell in 1980). In the words of President Nixon, this measure was intended to ensure that "no qualified student who wants to go to college should be barred by lack of money" (Gladieux and Wolanin, 1976, p. 70). Later reauthorizations of the Higher Education Act established more programs, with the greatest expansion of aid coming in 1992 through the introduction of the unsubsidized loan programs (Wolanin, 1998).

Federal expansion into education was founded on the generally agreed principle that federal responsibility lay in opening the doors of higher education. There was a huge expansion of access in the 1990s, driven partially by an economy that needed highly-skilled individuals. At the same time, higher education grew considerably more complicated. College wasn't just about the 'traditional' 18-24-year-old set anymore; scores of adults began to come back to college or started attending for the first time. In addition, the rise of distance education, proprietary schools, and corporate universities began changing the face of higher education. Education became a market, and even Wall Street took interest.

These changes invariably made the definition of a college student difficult. And it also made the compartmentalization of dropouts, stopouts, repeaters, and transfers more difficult as well. For instance, of the 67 percent of students who "accessed" postsecondary education in 1982 directly from high school, only 55 percent received some type of degree (BA:40 percent; AA:9 percent; certificates:6 percent). However, what happened to the other 45 percent underlines the significance of the persistence issue (Adelman, 1997). Thirteen percent were incidental students with less than 10 earned credits. Of this group, 60 percent were gone by the end of their freshman year. Twenty-four percent earned less than two years' worth of credits, with large percentages of them attending multiple institutions. And 8 percent earned more than 60 credits but received no degree. That's a lot of earned-credit production with no bankable result.

In 1997, the National Postsecondary Education Cooperative held a conference to "reconceptualize" access in postsecondary education. Vincent Tinto, in his conference White paper, said that "The point of providing students access to higher education is to give them a reasonable opportunity to participate in college and attain a college degree" (Tinto, 1997, p. 1). But that is not always the case, and success and responsibility continue to be defined in terms of access.

As we enter the fifth century of higher education in America, it is perhaps a good opportunity for institutions to reconceptualize their role in society. While our colleges and universities have never been as accessible to the general public as they are now, that openness has, in the words of Levine and Nifficer, been "passive" (1996, p. 52). Throughout our history, government has intervened at various intervals to further open access to underrepresented groups. The Morrill Act of 1862 created the land-grant public institution, and thirty years later Morrill Act II provided the historically black colleges and institutions (HBCUs) to provide access for the Black population, who were not provided access at many of the land-grants. Given Tinto's comments about access, perhaps now is the time that government intervenes to talk about success rather than open doors. Future public policy needs to focus on prying open the exit doors to our institution while continuing to open those at the entrance.

Diagnosis by Numbers: The Education Pipeline for Racial/Ethnic Minorities

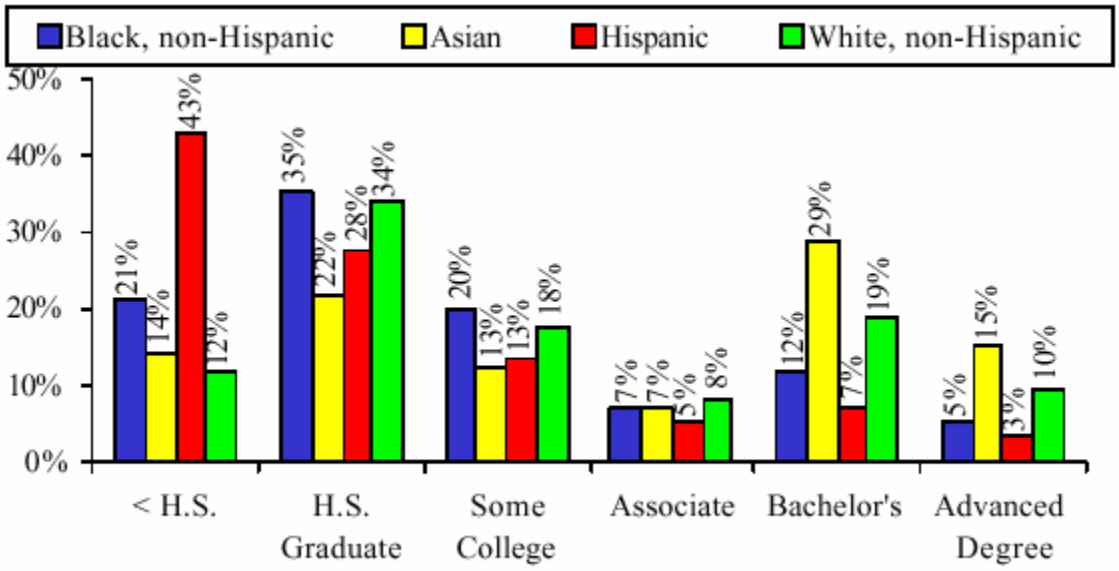
Educational attainment levels continue to be substantially lower for African Americans, Hispanics, and Native American than for Whites and Asians. Figure 1 shows that, in 2000, only 11 percent of Hispanics and 17 percent of African Americans in the U.S. population age 25 and older had attained at least a bachelor's degree, compared with 28 percent of Whites and 44 percent of Asians.

A review of available data suggests that increasing the share of students of color who attain a bachelor's degree requires attention to three critical junctures: graduating from high school, enrolling in college, and persisting in college to bachelor's degree completion. This chapter describes the racial/ethnic group differences at each of these three junctures and concludes by describing the importance of raising educational attainment levels for both individuals and society.

Critical Juncture 1: High School Graduation

The first critical juncture on the road to a bachelor's degree is graduating from high school. Figure 2 shows that, in 2000, 43 percent of Hispanics in the U.S. population age 25 and older had not completed high school, compared to 21 percent of Blacks, 14 percent of Asians, and 12 percent of Whites.

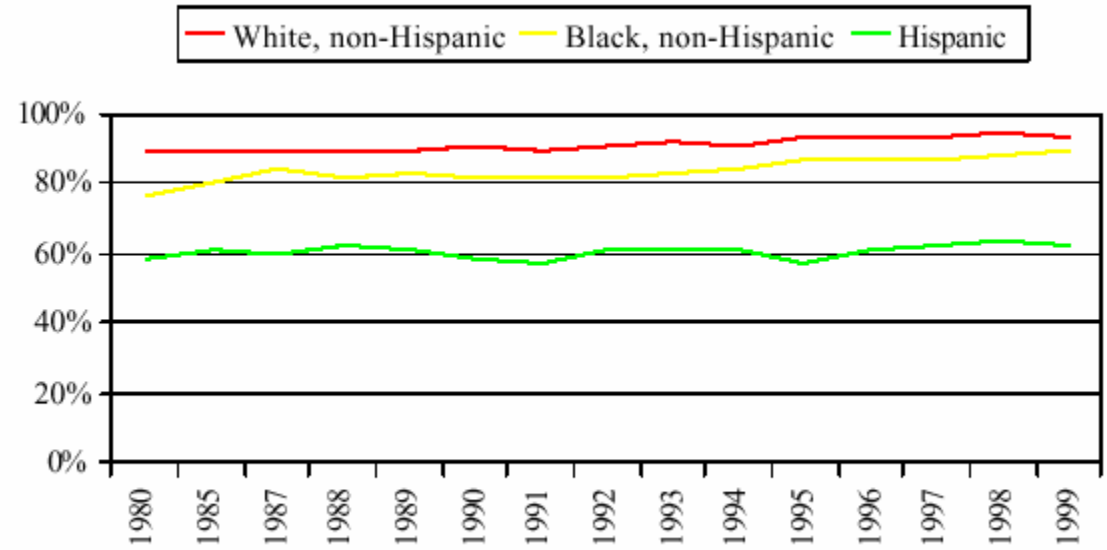
Figure 2. Educational Attainment of U.S. Population Age 25 and Older by Race/Ethnicity: 2000



Source: Chronicle of Higher Education Almanac, August 31, 2001

While useful, examining racial/ethnic group differences in educational attainment among the entire U.S. population age 25 and older may obscure the progress that has been made among younger segments of the population. Therefore, Figure 3 shows the share of the U.S. population between the ages of 25 and 29 that completed at least high school in selected years between 1980 and 1999. Among individuals between the ages of 25 and 29, the largest increase in high school graduation rates over the period was among African Americans: from 76.7 percent in 1980 to 88.7 percent in 1999. High school graduation rates also increased among Whites from 89.2 percent to 93.0 percent. Among Hispanics, high school graduation rates increased only slightly over this twenty-year period, from 58.0 percent to 61.6 percent. Consequently, while the gap in high school graduation rates between African Americans and Whites has narrowed over the past twenty years, the gap between Hispanics and Whites has remained virtually unchanged.

Figure 3. Share of Persons Age 25 to 29 who Completed at Least High School by Race/Ethnicity: 1980 to 1999.



Source: Digest of Education Statistics 2001 (NCES, 2001), p. 17

Disaggregating the trends by gender within each racial/ethnic group suggests that high school graduation rates have been comparable for women and men age 25 and older of the same racial/ethnic group over the course of the past two decades. In 1999, comparable shares of White women and White men (about 88 percent), African American women and African American men (about 77 percent), and Hispanic women and Hispanic men (about 56 percent) age 25 and older had completed at least high school.

Together, these data suggest that one source of observed racial/ethnic group differences in educational attainment levels is lower rates of high school graduation, especially among Hispanic men and women.

Critical Juncture 2: College Enrollment

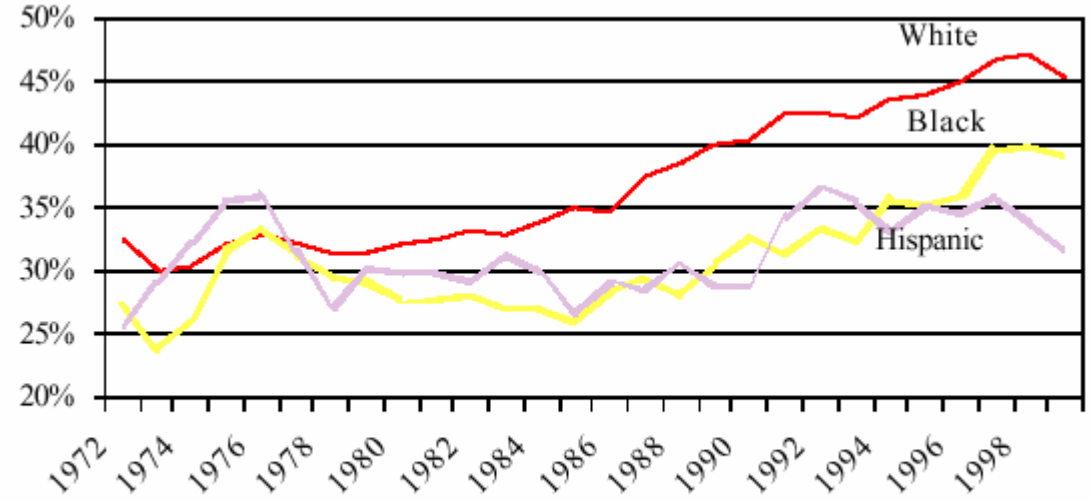
A second critical juncture in the road to bachelor's degree completion is enrolling in college. Several indicators can be used to illuminate differences related to race and ethnicity.

1. Percentage of Traditional College-Age Population

One indicator of racial/ethnic group differences in college enrollment is differences in the percentage of the traditional (18- to 24-year old) college-age population that graduated from high school and enrolled in college. Figure 4 shows that annual college enrollment rates have generally increased among high school graduates between the ages of 18 and 24 for Blacks, Hispanics, and Whites since the late 1980s (NCES, 2001). The share of Black high school graduates between the ages of 18 and 24 who were enrolled in a degree-granting institution remained virtually unchanged between 1979 and 1989 (29.4 percent versus 30.7 percent) but increased through the 1990s to 39.2 percent in 1999. Similarly, the share of Hispanic high school graduates between the ages of 18 and 24 who were enrolled in college was comparable in 1979 and 1989 (30.2 percent versus 28.7 per-

cent), but higher in 1999 (31.6 percent). In contrast, the share of White high school graduates enrolled in college increased between both 1979 and 1989, from 31.3 percent to 39.8 percent, and between 1989 and 1999, from 39.8 percent to 45.3 percent (NCES, 2001).

Figure 4. Enrollment Rates of 18- to 24-Year Old High School Graduates in Degree-Granting Institutions by Race/Ethnicity: 1972 to 1999.



Source: NCES (2001), Digest of Education Statistics 2000.

Despite these increases in college enrollment rates for all three groups, substantially smaller shares of Black and Hispanic high school graduates than of White high school graduates were enrolled in college in 1999. Figure 4 shows that 32 percent of Hispanic and 39 percent of African American high school graduates between the ages of 18 and 24 were enrolled in college in 1999, compared with 45 percent of White high school graduates between the ages of 18 and 24 (NCES, 2001).

2. Representation among Undergraduate Enrollments

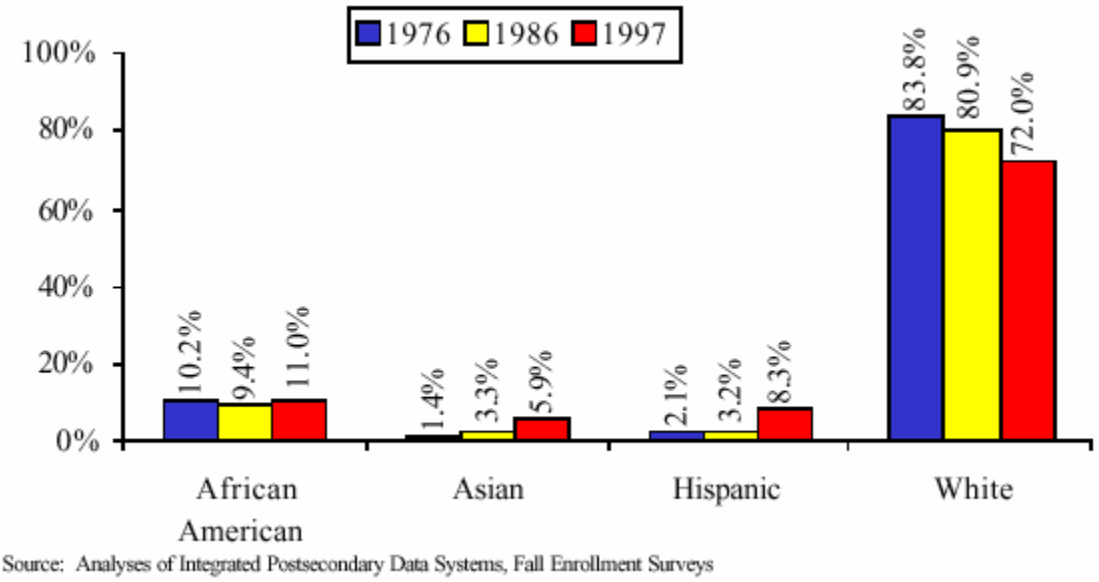
A second indicator of racial/ethnic group differences in college enrollment rates is differences in the representation of various racial/ethnic groups among undergraduate enrollments. At four-year colleges and universities, the representation of African Americans and Hispanics attending for the first-time on a full-time basis increased between 1986 and 1997.

Figure 5 shows an increase in representation from 9.4 percent to 11 percent for African Americans and an increase from 3.2 percent to 8.3 percent for Hispanics. Despite this progress, the representation of African Americans and Hispanics among first-time, full-time freshmen at four-year institutions continues to be lower than their representation in the traditional college-age population.

In 1995, of the traditional college-age (18- to 24-year-old) population, 14.3 percent was African American and 13.7 percent was Hispanic (Nettles and Perna, 1997).

Figure 5. Trends in the Representation of First-Time, Full-Time Freshmen at 4-Year

Institutions: 1976, 1986, and 1997.



Source: Analyses of Integrated Postsecondary Data Systems, Fall Enrollment Surveys

In addition to being less likely than Whites to enroll in a four-year college, African Americans, Hispanics, and Native Americans appear to be more likely to enroll in a two-year institution. Table 1 shows that, unlike Whites and Asians, African Americans, Hispanics, and Native Americans represented a higher share of first-time, full-time freshmen attending two-year institutions than of first-time, full-time freshmen attending four-year institutions in fall 1997.

The higher rate of enrollment in public two-year institutions compared to a four-year college or university is problematic for those interested in increasing bachelor's degree completion rates for traditionally-underrepresented populations. The reason is the low rates of transfer from public two-year colleges to four-year institutions. Research shows that only 22 percent of Whites and 15 percent of African Americans who first enrolled in a public two-year college in 1989 had transferred to a four-year college or university within five years (Nettles, Perna, and Freeman, 1999). Using the same database, other analyses suggest that only 11 percent of all students who first enrolled in a public two-year institution in 1989 were potentially eligible to transfer to a four-year college or university using the most stringent definition of transfer: pursuing an academic major and taking course toward a bachelor's degree (Bradburn and Hurst, 2001).

Table 1. Number and Distribution of First-Time Full-Time Freshmen Enrolled in Four-Year and Two-Year Institutions, by Race/Ethnicity: Fall 1997.

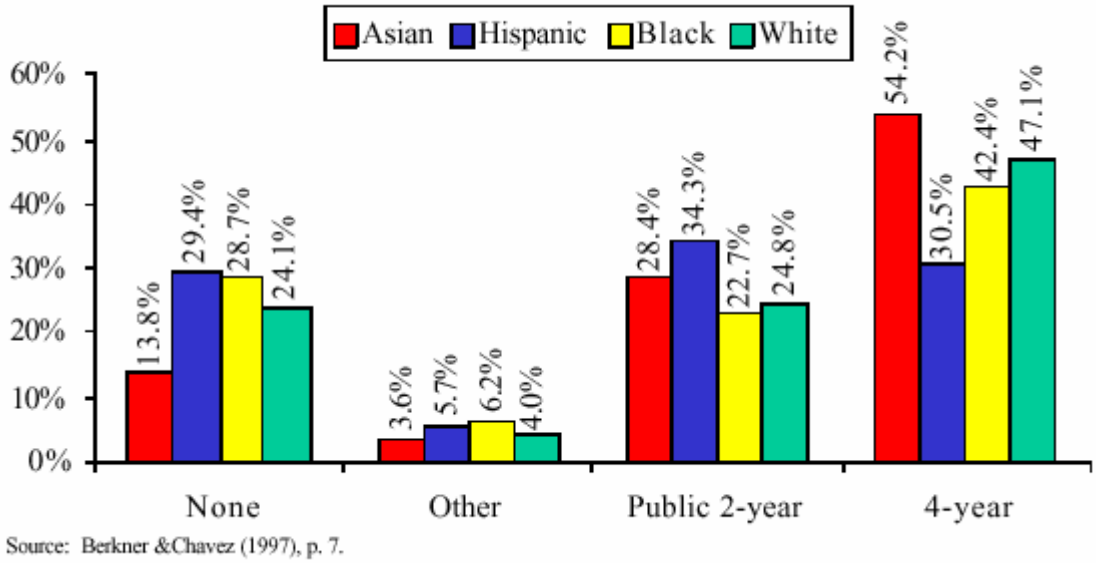
	4-year		Public 2-year		4-year		Public 2-year	
	N	%	N	%	N	%	N	%
	Representation				Distribution			
Total	**1,154,229**	**100.0%**	**546,427**	**100.0%**	**1,154,229**	**100%**	**546,427**	**0.473413**
African American	126,442	11.0%	69,163	12.7%	126,442	100%	69,163	0.5469939
Native American	9,008	0.8%	8,145	1.5%	9,008	100%	8,145	0.9041963
Asian	67,893	5.9%	25,817	4.7%	67,893	100%	25,817	0.3802601
Hispanic	95,600	8.3%	52,342	9.6%	95,600	100%	52,342	0.5475105
White	831,006	72.0%	381,231	69.8%	831,006	100%	381,231	0.4587584
Nonresident	24,280	2.1%	9729	1.8%	24,280	100%	9,729	0.4007002

SOURCE: Analyses of Integrated Postsecondary Education Data Systems (IPEDS), Fall Enrollment Survey, 1997

3. Postsecondary Enrollment within Two Years of Graduation

A third indicator of racial/ethnic group differences in college enrollment rates is provided by data from the National Educational Longitudinal Study of 1988 eighth graders (NELS:88). The NELS:88 tracks the educational and occupational experiences of a cohort of students every two years beginning in the eighth grade and into postsecondary education. Analyses of data from the third (1994) follow-up show that, among individuals who graduated in high school in 1992, a smaller share of Hispanics than of Whites and Asians enrolled in some type of postsecondary educational institution within two years of graduating from high school (Berkner and Chavez, 1997). Public two-year college enrollment appeared to be more common among Hispanics than among Whites or Blacks (Berkner and Chavez, 1997). Figure 6 shows that 34 percent of Hispanics enrolled in a public two-year college within two years of graduating from high school, compared with 25 percent of Whites and 23 percent of Blacks. More than one-half (54 percent) of Asian high school graduates in 1992 attended a four-year college or university by 1994, compared with only 30.5 percent of Hispanic high school graduates (Berkner and Chavez, 1997).

Figure 6. Postsecondary Enrollment by 1994 of 1992 High School Graduates by Race/Ethnicity.



Source: Berkner &Chavez (1997), p. 7.

4. Racial/Ethnic Composition of College Attended

A fourth indicator of racial/ethnic group differences in college enrollment is the racial/ethnic composition of the college attended. Understanding the racial/ethnic composition of the undergraduate institution students attend is important, given that racial/ethnic minorities enrolled at predominantly White campuses can face such additional obstacles to persistence as racism, hostility, prejudice, discrimination, "chilly" climate, institutional bias, negative stereotypes, self-doubt, alienation, isolation, and cultural insensitivity.

As a group, about one-half (53 percent) of African American, Hispanic, and Native American undergraduates attending four-year colleges and universities full-time in fall 1999 were enrolled in a predominantly White four-year college or university, equivalent to about 600,000 students. Analyses of data from the Integrated Postsecondary Education Data System (IPEDS) 1999 Fall Enrollment Survey show that the proportion of full-time undergraduates enrolled in a predominantly White four-year institution ranged from 84 percent of Native American undergraduates, to 59 percent of African Americans, to 42 percent of Hispanics.

Table 2. Undergraduate FTE enrollment by race/ethnicity according to institution type and control: Fall 1999.

	FTE Enrollment								
	Total FTE	Non-resident aliens	Black, non-Hispanic	Native American	Asian/ Pacific Islander	Hispanic	White, non-Hispanic	Students of Color*	Unknown
Public									
HBCU-	130,393	1,987	112,812	259	831	959	12,758	114,861	788
Hispanic serving	203,439	7,343	25,091	2,117	15,333	83,482	61,237	126,023	8,836
Tribally controlled	2,076	0	1	1,955	0	3	105	1,959	12
Majority minority	376,433	12,832	33,686	1,660	101,250	99,018	101,807	235,614	26,180
Other	3,432,023	73,724	256,164	32,442	139,306	131,629	2,702,086	559,541	96,672
TOTAL	4,144,364	95,886	427,754	38,433	256,721	315,091	2,877,993	1,037,999	132,487
Private									
HBCU	58,367	1,216	54,364	31	161	304	690	54,861	1,600
Hispanic serving	40,665	1,967	5,076	198	1,711	15,755	13,266	22,740	2,691
Tribally controlled	778	0	0	664	0	1	112	665	0
Majority minority	162,668	9,649	21,913	731	13,948	77,170	32,394	113,762	6,863
Other	1,651,207	59,754	103,328	7,738	75,332	65,913	1,249,621	252,311	89,521
TOTAL	1,913,684	72,586	184,681	9,362	91,153	159,143	1,296,083	444,339	100,675
ALL FOUR-YEAR INSTITUTIONS									
HBCU	188,760	3,203	167,176	290	993	1,263	13,447	169,721	2,388
Hispanic serving	244,104	9,311	30,167	2,314	17,045	99,237	74,503	148,764	11,527
Tribally controlled	2,853	0	1	2,619	0	5	217	2,625	12
Majority minority	539,101	22,481	55,599	2,392	115,199	176,187	134,202	349,376	33,043
Other	5,083,230	133,478	359,492	40,180	214,638	197,541	3,951,707	811,852	186,193
TOTAL	6,058,048	168,472	612,436	47,794	347,874	474,234	4,174,076	1,482,338	233,162

SOURCE: Analyses of Integrated Postsecondary Education Data Systems (IPEDS), Fall Enrollment Survey, 1999

The label for these institutions reflects the racial/ethnic composition of the undergraduate student body. In fall 1999, 92 percent of undergraduates who attended tribally-controlled four-year institutions full-time were Native American, 89 percent of undergraduates who attended historically Black colleges and universities (HBCUs) full-time were African American, and 41 percent of undergraduates who attended Hispanic-serving four-year institutions (HSI) full-time were Hispanic.

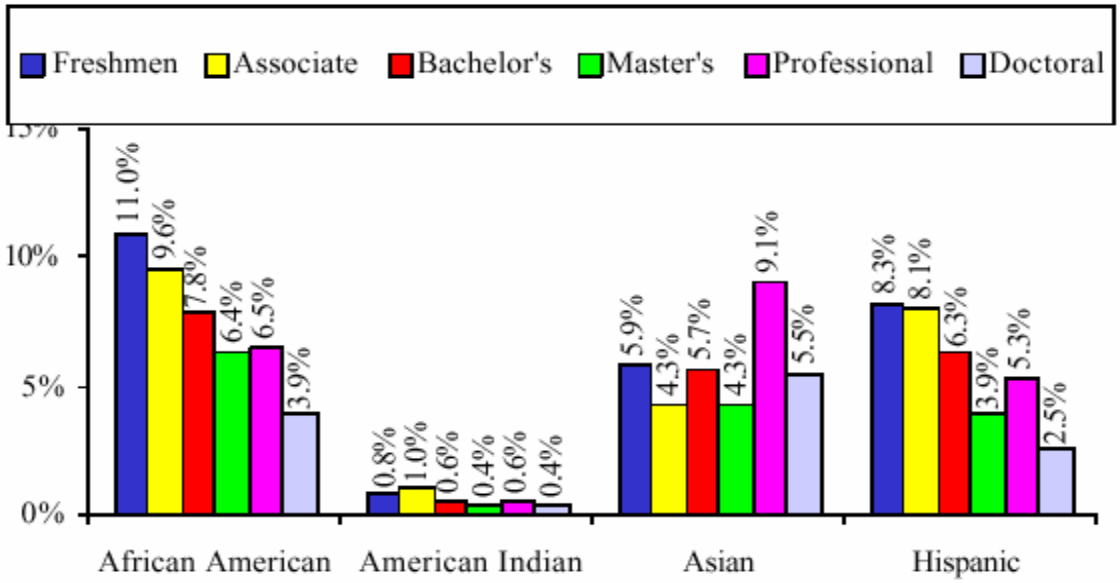
Nonetheless, these minority-serving institutions account for only a fraction of the nation's undergraduate enrollments. Less than 1 percent of all full-time undergraduates attending four-year colleges and universities nationwide in fall 1999 were enrolled at a tribal institution, 3 percent were enrolled at an HBCU, and 4 percent were enrolled at a HSI. Although racial/ethnic minorities are more likely than other undergraduates to attend these institutions, these institutions serve only a relatively small share of racial/ethnic minorities. Only 5.5 percent of Native American full-time undergraduates were enrolled at a tribally controlled institution, 27 percent of African Americans were enrolled in an HBCU, and 21 percent of Hispanics were enrolled at an HSI.

While about 7 percent of full-time undergraduates nationwide attended a four-year institution that was officially designated as a tribal college, HBCU, or HSI in fall 1999, 9 percent of full-time undergraduates attended colleges and universities with a student body that may be characterized as "majority-minority." These institutions appear to be relatively more popular with Hispanic and Asian American/Pacific Islander undergraduates; 37 percent of Hispanics and 33 percent of Asians were enrolled in "majority minority" institutions in fall 1999, compared with 9 percent of African Americans and 5 percent of Native Americans.

Critical Juncture 3: Persisting in College to Degree Completion

The third critical juncture on the road to a bachelor's degree is persisting in the selected four-year college or university until the degree program is completed. The lower representation of African Americans, Hispanics, and Native Americans among bachelor's degree recipients among undergraduate enrollments is one indicator of lower persistence rates for these groups. Figure 7 shows that African Americans received only 7.8 percent of the bachelor's degrees awarded in 1997, even though they represented 11 percent of first-time full-time freshmen enrolled in four-year colleges and universities nationwide in fall 1997. Similarly, Hispanics comprised only 6.3 percent of bachelor's degree recipients in 1997, but 8.3 percent of first-time full-time freshmen at four-year colleges and universities. Native Americans represented 0.6 percent of the bachelor's degree recipients and 0.8 percent of first-time, full-time freshmen.

Figure 7. Distribution of Enrollments and Degree Recipients by Race/Ethnicity: 1997.

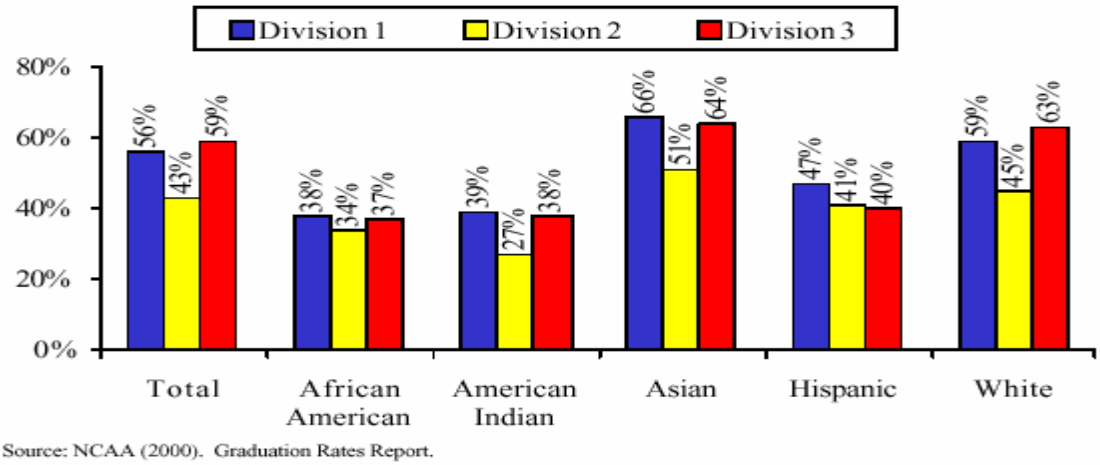


Source: Analyses of Integrated Postsecondary Data Systems, Fall Enrollment & Completion Surveys

Comparisons between the representation among bachelor's degree recipients and undergraduate enrollments are limited because they compare two different groups of students at one point in time. A better indicator of racial/ethnic group differences in undergraduate persistence rates is provided by studies that track the experiences of one group of students over a period of time. For example, the National Collegiate Athletic Association (NCAA)

annually reports six-year graduation rates for students of different racial/ethnic groups attending Division 1, 2, and 3 colleges and universities. Figure 8 shows that only 38 percent of African Americans, 39 percent of Native Americans, and 47 percent of Hispanics who first enrolled full-time in a Division 1 college or university in fall 1993 completed a bachelor's degree within six years, compared with 59 percent of Whites and 66 percent of Asians (NCAA, 2000).

Figure 8. Six-Year College Completion Rates for Full-Time Degree Seeking Students who Entered as Freshmen in Fall 1993.

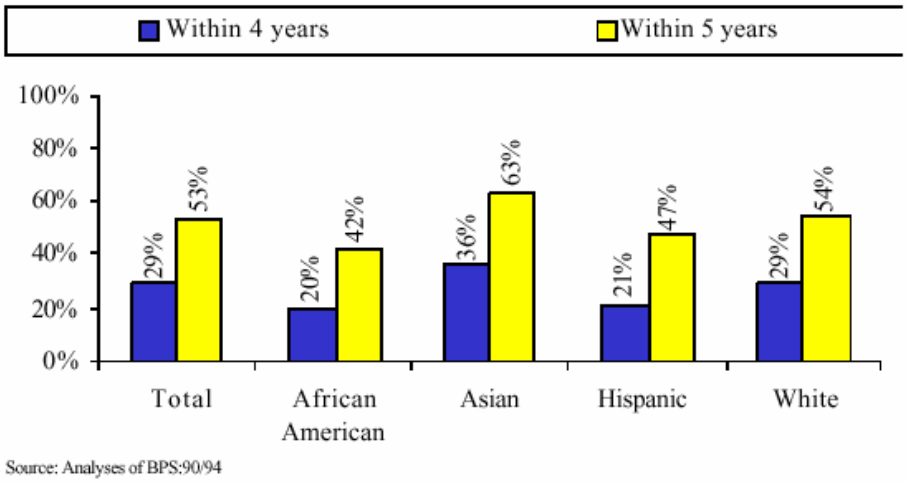


Source: NCAA (2000). Graduation Rates Report.

Another source of data tracking the undergraduate experiences of students is the Beginning Postsecondary Student Survey, a nationally representative survey sponsored by the U.S. Department of Education's National Center for Education Statistics (NCES). Figure 9 shows that only 42 percent of African Americans and 47 percent of Hispanics who first enrolled in a four-year institution in 1989 completed a bachelor's degree within five years, compared with 54 percent of Whites and 63 percent of Asians.

More recently, Table 3 shows that only 53 percent of African Americans, 52 percent of Hispanics, and 50 percent of Native Americans who first enrolled in a four-year institution in 1996 had earned a bachelor's degree or were continuously enrolled at the same institution three years later, compared with 64 percent of Whites and 71 percent of Asians.

Figure 9. Bachelor's Degree Attainment Rates for Students who first Enrolled in a Four-Year Institution in 1989 by Race/Ethnicity.



Source: Analyses of BPS:90/94

Table 3. Persistence Status in 1998 at the Institution in which First-Time Freshmen Initially Enrolled in 1995-96.

Enrollment status	Total	White	Black	Hispanic	Asian	Native American
Total 4-year						
Total	100.0	100.0	100.0	100.0	100.0	100.0
Not enrolled	13.2	12.6	19.0	15.8	7.2	13.7
Transferred	17.8	17.2	21.0	21.4	15.5	22.4
Enrolled, not continuously	6.7	6.0	7.6	10.9	6.2	14.1
Enrolled continuously	61.4	63.5	52.5	49.8	68.7	49.7
Earned bachelor's from initial institution	0.9	0.7	--	2.1	2.4	--
Public 4-year						
Total	100.0	100.0	100.0	100.0	100.0	100.0
Not enrolled	14.4	14.6	20.4	12.7	6.1	12.8
Transferred	17.8	17.6	18.4	23.5	11.1	24.4
Enrolled, not continuously	6.6	5.9	8.0	10.8	6.0	3.6
Enrolled continuously	60.3	61.5	53.2	51.0	73.0	59.2
Earned bachelor's from initial institution	0.9	0.5	--	1.9	3.9	--
Private, not-for-profit, 4-year						
Total	100.0	100.0	100.0	100.0	100.0	100.0
Not enrolled	10.0	8.8	16.6	16.1	7.6	18.0
Transferred	17.7	16.7	24.2	17.5	22.7	13.5
Enrolled, not continuously	6.9	6.3	7.1	11.3	6.7	61.1
Enrolled continuously	64.5	67.2	52.1	54.4	63.1	7.4
Earned bachelor's from initial institution	0.8	1.0	--	0.7	--	--
Public 2-year						
Total	100.0	100.0	100.0	100.0	100.0	100.0
Not enrolled	42.0	40.1	55.8	49.1	25.3	43.5
Transferred	24.0	26.8	16.5	11.2	27.5	41.5
Enrolled, not continuously	11.3	11.4	11.0	7.1	22.3	--
Enrolled continuously	22.7	21.7	16.7	32.6	24.9	15.0
Earned bachelor's from initial institution	--	--	--	--	--	--

SOURCE: Beginning Postsecondary Student Study, National Center for Education Statistics, 1999.

Importance of Raising Bachelor's Degree Completion Rates

The continued racial/ethnic group differences in bachelor's degree completion have at least three types of implications: 1) differences in economic and non-economic benefits for different racial/ethnic groups; 2) less than optimal economic and non-economic benefits to society; and 3) reduced racial/ethnic group access to advanced degrees and careers.

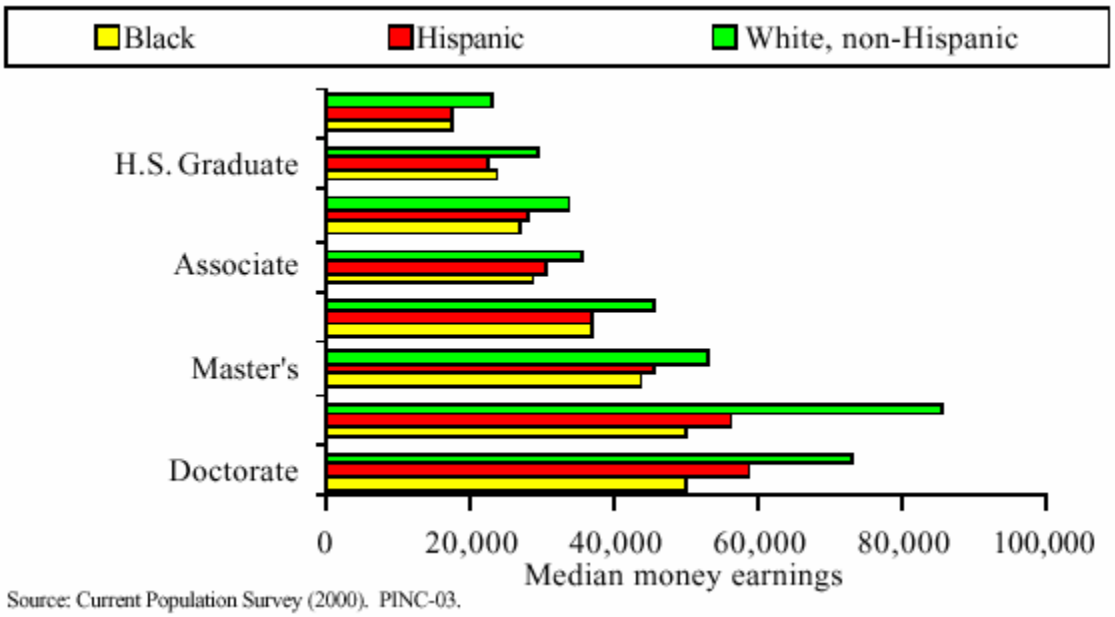
1. Differences in Economic Benefits

Continued racial/ethnic group differences in bachelor's degree attainment suggest that a substantially smaller share of Hispanics and Blacks than of Whites and Asians are able to take advantage of the economic and social benefits associated with earning a college degree. Research shows that individuals who attend and graduate from college realize a number of short-term and long-term economic and non-economic benefits (Adelman, 1999; Pascarella and Terenzini, 1991). The short-term benefits include enjoyment of the

learning experience, involvement in extracurricular activities, participation in social and cultural events, and enhancement of social status. Long-term or future benefits include higher lifetime earnings, a more fulfilling work environment, better health, longer life, more informed purchases, and lower probability of unemployment (Bowen, 1980; Leslie and Brinkman, 1988; McPherson, 1993).

The economic benefits of graduating from college are most clearly evidenced by comparing individual incomes with levels of educational attainment. Figure 10 shows that median earnings increase with the level of education attained, regardless of race/ethnicity. For Blacks, median earnings for full-time, year round workers age 25 to 64 increase from about $24,000 for those whose highest level of education is high school to about $37,000 for those whose highest level of education is a bachelor's degree. For Hispanics, the increase is from $22,600 to about $37,000.

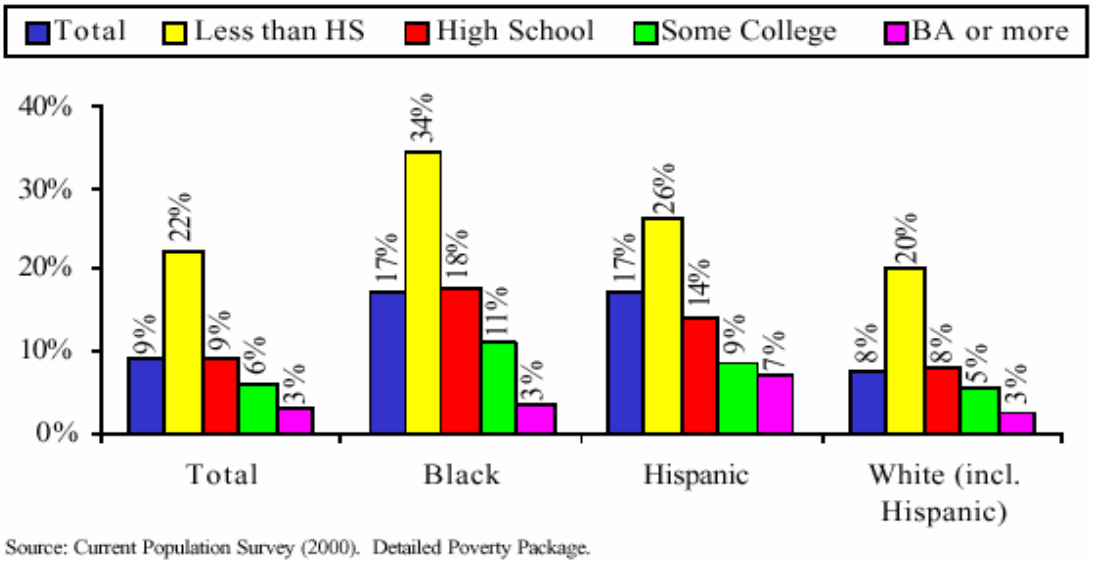
Figure 10. Median Earnings of Full-Time, Year-Round Workers Age 25 to 64 by Educational Attainment & Race: 1999.



Source: Current Population Survey (2000). PINC-03.

The economic benefits of earning at least a bachelor's degree are also reflected by the substantial decline in poverty rates that is associated with higher levels of educational attainment. Figure 11 shows that, regardless of race, the share of adults living below the poverty level declines as the level of education attained increases. The benefits to increasing levels of education appear to be particularly dramatic for African Americans. About 34 percent of Blacks age 25 and older who have not completed high school are living below the poverty level, compared with only 3 percent of Blacks age 25 and older who have completed at least a bachelor's degree.

Figure 11. Percent of People Age 25 and Older Below the Poverty Level by Race & Educational Attainment: 1999.



Source: Current Population Survey (2000). Detailed Poverty Package.

2. Benefits to Society

Increased levels of educational attainment also produce economic and non-economic benefits for society at large. They include reduced crime, reduced dependency on public welfare and Medicaid, increased volunteerism, higher voting rates, and greater civic involvement (Bowen, 1997). Based on his comprehensive assessment of the public and private benefits of higher education, Bowen (1997) concluded that the single most important effect of higher education is intergenerational, an effect that is manifested most clearly by the increased educational attainment of one's children. A review of the racial/ethnic group differences in educational attainment shows clear differences in the extent to which future generations are benefiting from the educational attainment of their parents.

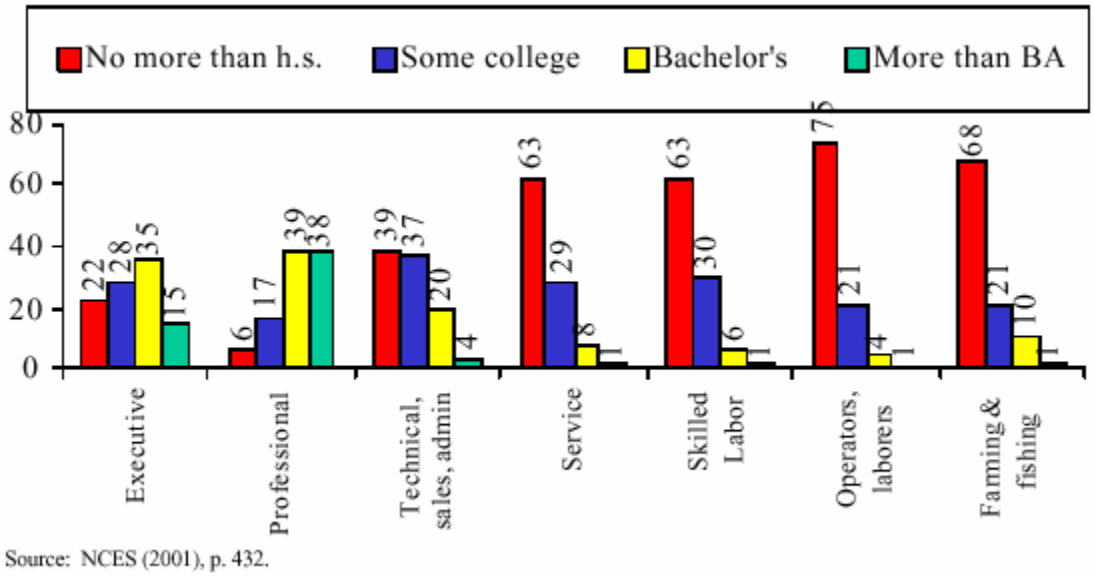
3. Access to Advanced Degrees and Careers

Third, because a bachelor's degree is a prerequisite for enrollment in a professional, master's, or doctoral degree program, continued racial/ethnic group differences in bachelor's degree completion mean that the share of African Americans, Hispanics, and Native Americans eligible to enroll in an advanced degree program is necessarily smaller than the share of Whites and Asians. The representation of African Americans, Hispanics, and Native Americans declines as the degree level increases. For example, African Americans received 9.6 percent of the associate's degrees and 7.8 percent of the bachelor's degrees awarded in 1996-97, but only 6.4 percent of the Master's degrees, 6.5 percent of the first-professional degrees, and 3.9 percent of the doctoral degrees. Hispanics received 8.1 percent of the associate's degrees and 6.3 percent of the bachelor's degrees awarded, but only 3.9 percent of the Master's degrees, 5.3 percent of the first-professional degrees, and 2.5 percent of the doctoral degrees.

Possession of an advanced degree typically provides access to the highest paying, highest status, most influential careers and occupations (Figure 12), Individuals who complete no

more than high school dominate the following occupational categories: service occupations; precision production, craft, and repair; operators, fabricators, and laborers; and farming, forestry, and fishing. In contrast, access to professional specialty occupations is clearly restricted to individuals who possess at least a bachelor's degree. Because smaller shares of African Americans, Hispanics, and Native Americans have attained at least a bachelor's degree, they have less access to these higher status occupations.

Figure 12. Distribution of Employed Persons Age 25 to 64 by Occupation and Educational Attainment: 1999.



Source: NCES (2001), p. 432.

Diversity 101: Affirmative Action in America

Most of the attention on the college enrollment experiences of racial and ethnic minority students has focused primarily on those who seek to attend predominately- or traditionally-white institutions through diversity or affirmative action programs (Redd, 2001; Reisberg, 2000). However, several recent federal court rulings and voter initiatives have eliminated the use of affirmative action programs at a number of public colleges and universities, and the substitutes to racial preference programs thus far offered by policy makers may not provide minority students with similar opportunities to attend selective higher education institutions. And, while enrollment of minority students has received much of the general public's attention, retention rates of students of color at predominately-white institutions may be a much bigger concern. Thus, the role that minority-serving institutions, particularly Historically Black Colleges and Universities (HBCUs) and Hispanic-Serving Institutions (HSIs), play in providing educational opportunities may become increasingly more important in the years ahead. But will these institutions have the resources needed to education an increasing number of minority students?

A Brief History of Affirmative Action in Higher Education

The term "affirmative action" originates with the administration of President John F. Kennedy. In 1961, the President issued Executive Order 10925, which created the Committee on Equal Employment Opportunity (later renamed the Equal Employment Opportunity Commission) and mandated that all projects financed with federal funds take "affirmative action" to "ensure that hiring and employment practices are free of racial bias" (Brunner, 2002). Later, beginning in the administration of President Lyndon B. Johnson, the concept of affirmative action was expanded to include "active measures…taken to ensure that blacks and other minorities enjoyed the same opportunities for promotions, salary increases, career advancement, *school admissions, scholarships, and financial aid* that had been the nearly exclusive province of whites. From the outset, affirmative action was envisioned as a temporary remedy that would end once there was a 'level playing field' for all Americans" (Brunner, 2002, emphasis added).

There has never been a complete consensus on exactly what strategies colleges and universities were to use to achieve a "level playing field" in higher educational opportunity. However, eventually affirmative action and racial/ethnic diversity programs in college admissions and financial aid programs were generally accepted by most selective higher education institutions under criteria established by the U.S. Supreme Court in its 1978 decision *Regents of the University of California v. Bakke*, 438 US 265 (1978). In *Bakke*, the Court ruled that "[w]hile the goal of achieving a diverse student body is sufficiently compelling to justify consideration of race in admissions decisions under some circumstances" (438 U.S. 265 (1978)) schools could not use inflexible quotas or numerical goals to reach their diversity targets (Brunner, 2002). For nearly the next 20 years, public and private colleges and universities generally considered *Bakke* the "law of the land" (Bakst, 2000) and used the Court's standards to implement affirmative action plans in admissions and financial aid to help achieve diversity on campus (Bakst, 2000). However, in more recent years, a series of decisions by federal appeals courts and voter initiatives have called into question the legality of affirmative action programs established under *Bakke*.

Setbacks to the Bakke Standard

One of the most important recent legal actions that began to limit the scope of affirmative action plans under *Bakke* is the *Hopwood v. Texas* decision of 1996, 78F. 3d 932 (5th Cir.), in which the U.S. Fifth Circuit Court of Appeals ruled that the goal of racial diversity was not a "compelling interest" for higher education institutions to use affirmative action in admissions (Bakst, 2000; Pine, 2001). Many observers initially believed that, for all intent and purposes, this decision made it illegal for public higher education institutions in Texas and the other states covered by the Fifth Circuit (Louisiana and Mississippi) to use "race as a factor in admissions, financial aid, or retention programs" (Lum, 1997).

In the fall of 1996, soon after the *Hopwood* decision, California voters approved Proposition 209 (Prop. 209), which outlawed the use of race in determining admissions to any of the state's public colleges and universities, and in state governmental hiring or contracting (Lynch, 2001). Two years later, voters in Washington state passed Initiative 200 (I-200), which, like Prop. 209, ended the use of racial preferences in state college admissions, hiring, and contracts (Bakst, 2000; Pine, 2001).

In addition, the Florida Board of Regents unanimously approved the "One Florida" plan, which, beginning in the fall of 2001, abolished the use of affirmative action in state college and university admissions and replaced the racial preference programs with a plan that would guarantee admission to the state's four-year public colleges and universities to any Florida high school senior who graduated in the top 20 percent of his or her class (Redd, 2001). And in Georgia, the U.S. Eleventh Circuit Court of Appeals, in *Johnson v. Board of Regents of the University of Georgia,* outlawed an affirmative action plan the university used to recruit minority students. Observers of the *Johnson* decision believed that "even a narrowly tailored race-based admissions process violates the Constitution" (Bean, 2001). And, as of this writing, a suit against the affirmative action policies developed by the University of Michigan is currently pending before the Sixth Circuit (Clayton, 2001).

Two key reasons help explain the recent push by the federal courts and voters to eliminate affirmative action in higher education. First, some whites believe the policies unfairly keep them out of the most selective undergraduate and graduate school programs. As Cheryl Hopwood, lead plaintive in the *Hopwood* case, argued: "the [University of Texas Law School] discriminated against me. It gave my spot to a minority student because I happen to be white" (Hentoff, 1997). Such claims of "reverse discrimination" by whites apparently have had some saliency with voters and federal judges in several jurisdictions. Richard Cohen, a columnist for the *Washington Post,* eloquently expresses the frustrations and resentment many whites feel about affirmative action in college admissions: "There is a growing, smoldering anger at a system of perceived racial favoritism. Away from university administrative offices…it is widely believed that the undeserving are being admitted, promoted, hired or whatever. Sometimes that happens to be the case" (Cohen, 2002).

Second, some believe affirmative action programs have outlived their usefulness and do not accurately reflect our nation's current racial climate and the gains made by persons of color, particularly African Americans. They believe our country has now reached the "level playing field" envisioned when affirmative action plans were developed 40 years ago. This view is best summarized by Cohen (2002):

> Of course, we all know the reasons for affirmative action. But a program devised to overcome the harmful effects of slavery and Jim Crow cannot persist as if racial discrimination has not abated. The secretary of state [Colin Powell] is black. The national security advisor [Condoleezza Rice] is black. Leaders at AOL-Time Warner [Richard Parsons], American Express [Kenneth Chenault] and Merrill Lynch [E. Stanley O'Neal] are black. So is the president of Brown University [Ruth Simmons]. America has changed. Affirmative action seems more like a patronage system than a way of achieving justice…
>
> It is almost 50 years since the Supreme Court struck down school segregation [in the landmark *Brown vs. Board of Education of Topeka* decision of 1954], yet we persist in seeing blacks as victims. The immediate victims of racism are quickly passing, but succeeding generations are considered

> just as victimized, regardless of circumstances of their birth. Paradoxically, though, the efforts to rectify that discrimination not only uses its methods—preferences based on race—but certifies its reasoning: On account of race, this person cannot compete on his or her own.

The "X-Percent" Solution

Despite the gains made by African Americans and other groups over the past four decades, evidence shows very clearly that, in general, racial/ethnic minorities still are less likely to attend a postsecondary education institution, particularly an institution with selective admissions criteria. From 1997 to 2000, the average college participation rates for financially dependent 18-to-24-year-old African American and Hispanic high school graduates were 46 percent and 40 percent, respectively, compared with 64 percent for white, non-Hispanics (Mortenson, 2001c). Further, according to preliminary data from the National Center for Education Statistics, just 36 percent of the African American undergraduates and 31 percent of Latinos at four-year colleges and universities in 1999-2000 attended schools classified under the Carnegie Classification system as Research or Doctoral (generally, these are the institutions with the most selective admissions criteria). Conversely, about 44 percent of white, non-Hispanic undergraduates attended Research or Doctoral institutions (U.S. Department of Education, 2001a).

The gaps between enrollment rates for minority and white students continue to persuade state higher education leaders to seek ways to diversify their college campuses, particularly those with selective admissions criteria, without using affirmative action plans that might be challenged in court. In addition to Florida, education leaders in California and Texas have initiated so-called "x-percent solutions," whereby some percentage of each of the respective state's high school graduating class is automatically eligible for admission to a public state university. For example, in California, the top 4 percent of the high school class is now automatically eligible for admission to a campus within the University of California system; in Texas, it is 10 percent (Selingo, 2000). Policy makers hope these plans will attract more students from high schools with large minority populations. California recently went one step further by establishing a "Comprehensive Review" system that seeks to look beyond traditional measures of high school academic performance, such as grade point averages and scores on the Scholastic Aptitude Test, when determining which students to admit (Pine, 2001).

But the success of these alternatives to affirmative action may be limited. "X-percent" solutions have been criticized for exploiting students at racially segregated high schools without improving the students' educational programs. The plans may also hurt minority students who do well academically at predominately white high schools, but do not graduate in the required top percentile (Selingo, 2000). Ironically, the "x-percent" solutions may prove to be a greater benefit for white students. In Florida, for example, white students accounted for 59 percent of the total number of high school seniors in 2000, but made up about two-thirds of the top fifth of the graduating classes. African Americans, on the other hand, accounted for 23 percent of the graduating seniors but constituted just 14 percent of the top fifth (Selingo, 2000).

An Expanded Role for Minority-Serving Institutions?

The "x-percent" solutions also do not address the concerns about minority student retention at traditionally-white schools. While affirmative action programs are designed to increase *enrollment* of students of color at majority-white institutions, some state leaders are now beginning to question their ability to *retain* these students toward degree completion. Research by Pascarella and Terenzini (1991) has suggested that African Americans at predominately white institutions are more likely than those at HBCUs to experience high levels of social isolation, alienation, personal dissatisfaction, and overt racism. Due to these factors, it is possible that minority students at predominately-white schools may be at greater risk of leaving their institutions before completing their degree programs.

Indeed, while college enrollments have gotten much of the attention of the popular media and the courts, the gap in retention rates between white and minority students are often a greater, overlooked concern. The most recent graduation report from the National Collegiate Athletic Association (NCAA) shows that the six-year graduation rate for African American undergraduates (athletes and non-athletes) at the 321 schools that are members of Division I of the NCAA was just 38 percent. That is, *only 38 percent of the blacks who entered Division I colleges in academic year 1993-1994 as full-time, full-year, degree-seeking freshmen had received a bachelor's degree from their original institutions by August 2000.* The rest had either transferred to a new school, dropped below full-time attendance status, took longer than six years to graduate, or dropped out of higher education altogether. The graduation rate for white students was 59 percent, and for Hispanics the rate was 46 percent (NCAA 2001a). At the 295 institutions that are members of NCAA Division II, which tend to have less selective undergraduate admissions criteria, the graduation rate for degree-seeking African American undergraduates was just 32 percent, versus 45 percent for white students and 39 percent for Hispanic (NCAA, 2001b).

The situation, therefore, for policy makers who seek to increase minority enrollments at traditionally-white schools appears to be precarious. They face several new obstacles: legal and voter challenges to the use of affirmative action programs and policies; perceived inadequacy of the alternative diversity strategies; perceptions of white institutions as being inhospitable to students from different racial/ethic groups; and low graduation rates among Latino and African American undergraduates. In the face of these challenges, minority-serving institutions—particularly HBCUs and HSIs—could play an even more important role in providing higher educational opportunities to minority students.

Minority-serving institutions have a history of successfully educating a number of African American and Latino students who otherwise could not have received a college degree (Merisotis and O'Brien, 1997). HBCUs account for just 4 percent of all the four-year colleges and universities in the United States, but they enroll 26 percent of all African American students and produce 28 percent of the black bachelor's degree recipients (Redd, 2001). Similarly, HSIs account for 52 percent of the total Latino postsecondary education student enrollment and 41 percent of the baccalaureate recipients (U.S. Department of Education, 2001b).

While minority-serving institutions have a demonstrated record of success (Merisotis and O'Brien, 1997), they still face two daunting challenges. First, when compared with many

predominately-white institutions, many HBCUs and HSIs have fewer financial and other resources. In 1996, the most recent year of available data, the average endowment at Historically Black Colleges was $4 million (equivalent to $2,960 per full-time equivalent student). The average endowment at all other four-year colleges and universities was $67.4 million, equivalent to $15,329 per full-time equivalent student (Sallie Mae, 1999). Additionally, many of the students at HBCUs and other minority-serving institutions come from low-income backgrounds and are the first in their families to enter postsecondary education. These students often need additional financial aid, tutoring, and mentoring programs in order to succeed. A number of HBCUs and HSIs simply do not have these additional resources, and as a result some have higher-than-average attrition rates (Sallie Mae, 1999).

Where Do We Go From Here?

The legal and voter limits to affirmative action could not have come at a more challenging time for all higher education institutions generally and minority-serving institutions particularly. Demographic projections show that the number of Latino high school graduates will jumped 67 percent over the next ten years, and the number of African American graduates will grow 17 percent (WICHE, 1998). Many of these students will want to attend postsecondary education after their high school years. At the same time, data from the National Center for Education Statistics (U.S. Department of Education, 2001a) show that African American and Latino high school graduates enroll in postsecondary education at lower rates than whites.

Two recent shifts in student financial aid may also adversely affect future postsecondary education enrollments among minority groups. First, over the past 20 years, more financial aid has been provided in the form of loans instead of grants. According to the College Board (2001), in 1980-1981, 55 percent of all student financial assistance was provided in the form of grants, and 43 percent was in loans (the remainder was work-study). By 2000-2001, the share of aid from grants had fallen to just 41 percent, with the percentage from loans rising to 58 percent. This trend may harm college access for prospective students from low-income families generally and people of color specifically because they tend to be more adverse to borrowing student loans than white students and those from higher income families (St. John, 2001).

Additionally, more and more of the available grant aid has been delivered in the form of merit scholarships, which base awards on students' high school grade point averages and other criteria instead of demonstrated financial need. Since 1990, the total amount of state merit-based scholarships grew 206 percent, but the amount of state need-based grants increased only 41 percent (National Association of State Student Grant and Aid Programs, 2001), and total spending for institutional merit scholarships and other "non-need" grants nearly doubled from 1989 to 1995 (Heller, 2001). African American and Hispanic students are much less likely to meet the criteria necessary to benefit from the additional state merit aid grants (Heller and Rasmussen, 2001).

These challenges may limit the ability of the HBCUs, HSIs, and other minority-serving institutions to support the larger number of students who may want to enter higher education. It is thus quite ironic that the affirmative action programs at predominately-white

public colleges and universities are being challenged at a time when they are needed most. The current challenges also present a number of policy questions for state leaders and others who have expressed a strong desire to improve enrollment and graduation rates among minorities:

- If states and federal courts continue to eliminate affirmative action programs, and no other legal alternatives can be found to increase the college-going and college retention rates of minorities, will the HBCUs and HSIs be able to expand their course offerings and facilities to meet the increased need? What role can minority-serving institutions play in increasing the number of persons of color who enter postsecondary education?

- Should states and institutions take action to reverse the trend toward merit-based financial aid? Can other types of aid programs be introduced that award more financial aid to under-represented groups without alienating others?

While most institutions, especially private colleges and universities, still consider *Bakke* the "law of the land" and want to use affirmative action programs to diversify their campuses, it may be only a matter of time before the Supreme Court revisits the issue and requires institutions to come up with a new standard. Only time will tell if minority-serving and other institutions are able to fill in any gaps in educational opportunity that come as a result of the any further limitations to affirmative action.

PART II. WHY STUDENTS LEAVE COLLEGE

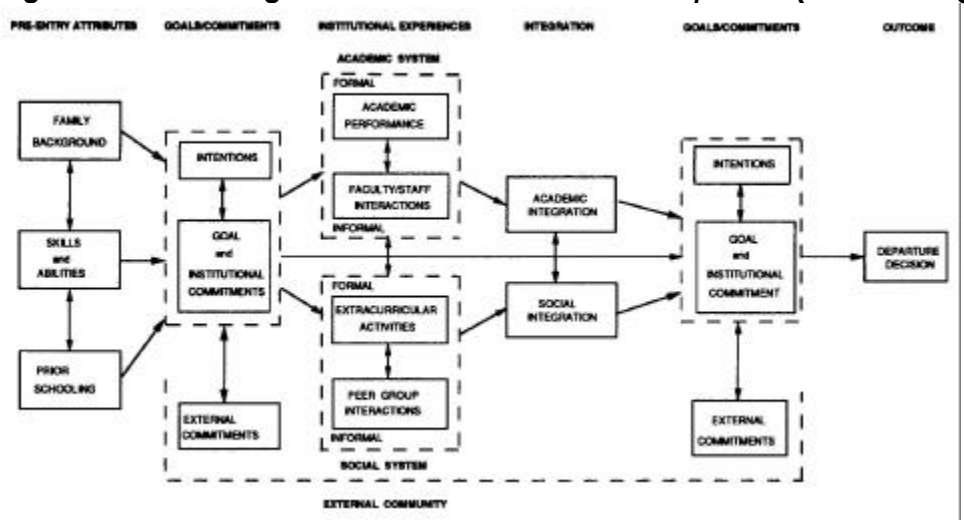
The literature regarding minority student dropout abounds with details of why and when students leave college. Many of the studies and literature reviews summarize similar sources and thus supply similar conclusions. Landmark studies by Tinto (1975), Pantages and Creedon (1978), Cope and Hannah (1975), Lenning, Beal, and Sauer (1980), and more recently, Tierney (1992) Cabrera, Nora, and Castaneda (1993), and Cabrera and LaNasa (2001), have shaped how researchers and practitioners view the issue of student retention and departure. In particular, Tinto's attrition model has become a foundation for most research regarding student departure.

Tinto's Student Integration Model

Tinto's theoretical model (1975) was derived from previous work by Spady (1970). Spady, a sociologist, like Tinto, presented one of the early conceptual models of the student attrition process in higher education. Based on Durkheim's theory of suicide, Spady suggested that suicide is more probable when individuals are poorly integrated into the shared structure, and theorized that the social integration of students (shared group values, academic performance, normative congruence and support of friends) increases that student's institutional commitment, ultimately reducing the likelihood of student attrition. Tinto (1975) expanded Spady's theory to the process of student integration into the academic and social systems of a higher education institution. His aim was to clarify the effect of multifaceted interactions within the system on student persistence. As Tinto wrote, "It is the interplay between the individual's commitment to the goal of college completion and his commitment to the institution that determines whether or not the individual decides to drop out" (Tinto, 1975, p. 96).

Briefly stated, Tinto's Student Integration Model consists of six characteristics (See Figure 13). Prior to matriculation to postsecondary education, students develop certain attributes that are shaped by their familial upbringing. They also develop academic and social skills and abilities in both formal and informal settings. These, in turn, help form students' goals and commitments regarding college, the workforce, and their place within society as a whole. During college, formal and informal college experiences influence the student's level of 'integration' into the college, academically and socially. According to Tinto, this level of integration has in impact on the students' development of goals and commitments, resulting in either a decision to persist in or depart from college. Essentially, the match between student characteristics and institution shape students' goal commitments, which in turn influence persistence (Allen, 1994).

Figure 13. Tinto's Longitudinal Model of Institutional Departure (Student Integration Model)



SOURCE: Tinto, Vincent (1993). *Leaving College*. The University of Chicago Press: Chicago, IL. Pp. 114.

Tinto's model refocused the higher education community's understanding that persistence is the outcome of the interaction between students and their experiences in the campus environment (Brower, 1992). While Tinto's model accounted for student characteristics and campus experiences, it failed to include the interactions of students' off-campus academic and social systems (Tinto, 1982). Tinto acknowledged that these external, not-related-to- college variables, might force students to reassess educational goals and commitment to the institution. However, he failed to address in detail the impact of external campus factors such as finances, family obligations, and external peer groups in his student dropout model (Cabrera, Castaneda, Nora, and Hengstler, 1992; Tinto, 1982). Tinto also recognized that finances might have both long- and short-term and direct and indirect effects on college persistence decisions.

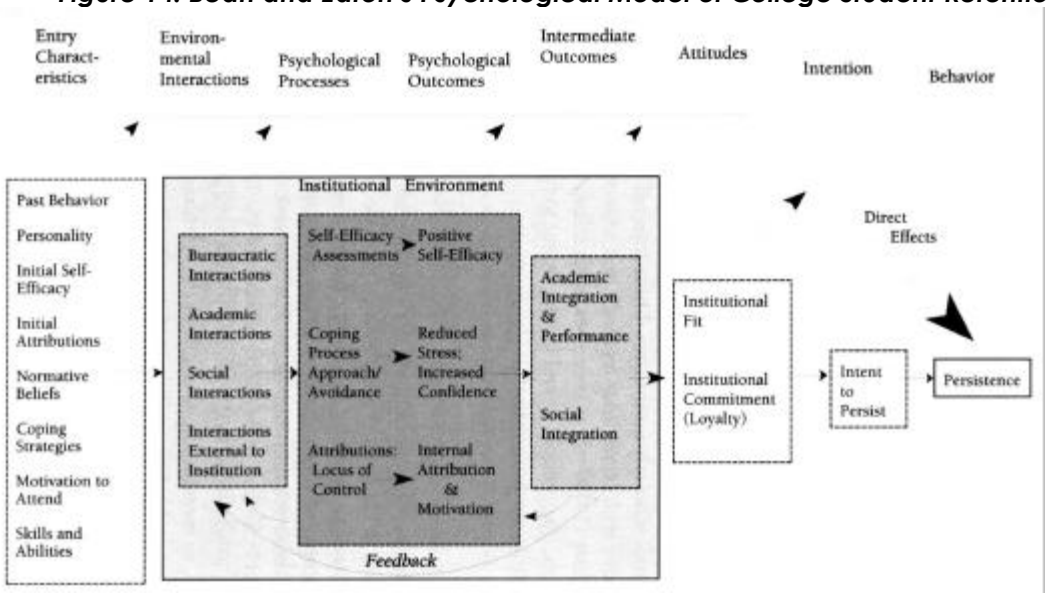
In 1988, Tinto expanded his view of student dropout to include a three-stage process: separation, transition, and incorporation. This model was adapted from Van Gennep's social anthropology theory, drawing a parallel between the movement of an individual from one group to another in tribal societies with the departure of a student from home and his or her incorporation into the new college community (Fernandez et al., 1998; Tinto, 1988). The separation stage refers to the student's parting from past habits and patterns of associations. Tinto suggests that in order for students to consider themselves part of the college community, they must in a sense leave their former communities. In the transition stage, students cope with stresses of departing from the familiar, while not completely understanding or integrating into the new college environment. The incorporation stage reflects students' competency as an institutional member. After incorporation, the student is no longer the person he or she once was—they have, in effect, become a new individual. This expanded view adds a time dimension in the form of longitudinal stages of the integration process (Figure 13); which specifically addresses the early stages of separation and transition and the sorts of difficulties students typically face academically and socially prior to their incorporation into campus life. Lack of integration into the college campus may also result from students' inability to separate

themselves from past associations in order to make the transition to the new community (Tinto, 1988).

Bean and Eaton's Psychological Model

Tinto's model has been revised or enhanced by a number of researchers (Bean, 1982, Stage, 1989, Brower, 1992, and Peterson, 1993). Bean (1982, 1986; Bean and Eaton, 1995; 2000) used important aspects of Tinto's academic and social integration theory in the development of a psychological, rather than sociological, model (See Figure 14). The purpose, according to Bean, was to help others "visualize how individual psychological processes can be understood in the retention process" (Bean and Eaton, 2000, p. 55).

Figure 14. Bean and Eaton's Psychological Model of College Student Retention



SOURCE: Bean, John P., and Shevawn Bogdan Eaton (2000). "A Psychological Model of College Student Retention". In Braxton (ed.) *Reworking the Student Departure Puzzle.* Vanderbilt University Press: Nashville, TN. (p. 57).

Bean's model is based on the organizational process models of turnover, which emphasizes the significance of behavioral intentions. Intentions to persist are influenced by student attitudes, which are shaped by their experiences with the institution. Bean's model incorporates background, organizational, environmental, attitudinal, and outcome variables.

Bean introduced student intention to stay or leave an institution into the attrition model, which was derived from psychological theories of Ajzen and Fishbein (1972, 1977), and further developed by Bentler and Spechart (1979, 1981). The theorists argue that a strong correlation exists between attitudes, intentions, and behavior in students, and that behaviors and attitudes often reflect one's intentions (Bean, 1986; Eaton and Bean, 1995). Thus, a student's attitude regarding college tends to influence the intent to persist or dropout.

Eaton and Bean (1995) injected coping behavior into previous attrition models to help explain a student's adaptation to the campus structure. The ability to adapt to the campus

environment is a reflection of the student's ability to cope, which is directly related to the repertoire of coping skills learned from his or her experiences. According to Bean, "Coping is also dependent upon the situation, timing, and the behaviors with which the individual is familiar and comfortable" (1995, p. 619). Both Bean and Tinto note the level of academic and social integration into the campus structure as indicators of an individual's adaptation to college life. "Adaptation, as measured by social and academic integration, should be an attitudinal reflection of a student's intention to stay or leave the institution…ultimately linked to the student's actual persistence or departure" (p.620).

Shortcomings of the Models

In 1992, Cabrera, Castaneda, Nora, and Gengstler looked at both Tinto's Student Integration Model and Bean's Model of Student Departure. The study found that a blend of the two models provided a more comprehensive understanding of persistence than either theory alone. As well, they incorporated finances into the student retention model. While they found no significant direct effect of finances on student attrition, there was an indirect effect through intervening variables like students' academic integration, socialization, as well as their resolve to persist in college.

As Cabrera et al.'s (1992) study suggested, Tinto and Bean's models are not mutually exclusive and have more similarities than differences. Both models argue that pre-college characteristics are determinants of college behaviors and actions; that the student/institutional fit are important issues; and that persistence is a result of a complex set of interactions (Hossler, 1984). But the research community, while embracing these theoretical models, has limited its enthusiasm due to the lack of empirical evidence to substantiate their effectiveness in describing the process of student integration and departure from college. A recent review of empirical analysis of Tinto's theory (Braxton and Lien, 2000) sorted studies (published only) into two categories: supportive or unsupportive. Although there was evident support for the theory in several areas, the authors concluded that there wasn't enough empirical support to substantiate much of Tinto's theory.

A number of authors suggest that Tinto's theory, and specifically his use of Van Gennep's social anthropology theory, is severely limited when applied to minority students (Tierney, 1992; Rendon, Jalomo, and Nora, 2000). To think that students, especially students of color, must or will disassociate with their culture, belief system, and familial support networks, to become integrated and accepted into their new life on a college campus is difficult to swallow; the reality is more complex:

> Nontraditional students often have to negotiate a new landscape, learn how to step in and out of multiple contexts, engage in double readings of social reality and move back and forth between their native world and the new world of college—all at an accelerated pace. Nontraditional students live in multiple realities and lead cyclical lives that demand a high degree of biculturalism. (Rendon, 1996, p. 19)

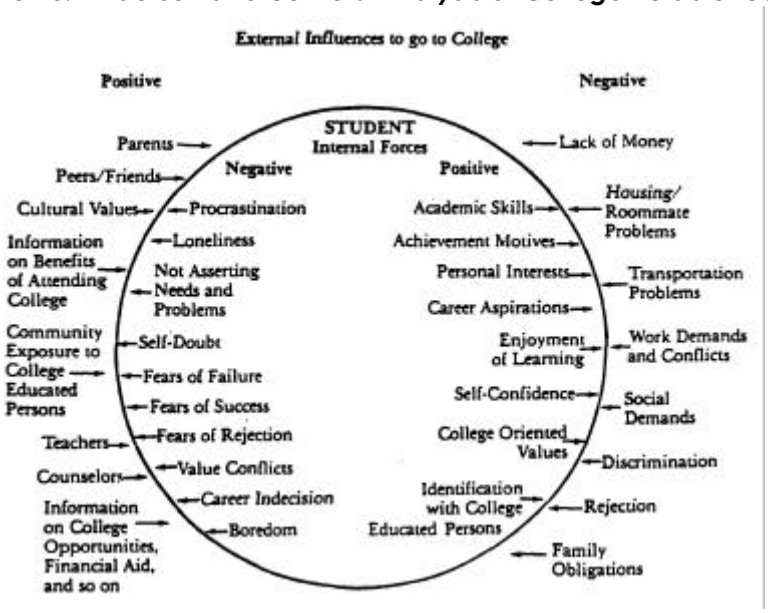
Rendon et al. (2000) suggest that minority and other underrepresented student populations live in a process of biculturation (Valentine, 1971), where individuals live

simultaneous lives in two cultures, two realities. Duster calls it "dual competency," where students must be competent in their own culture plus the culture of the institution (Rodarmor, 1991). Duster, a former University of California sociologist, not only saw this as a minority issue, but one that also affected White students:

> For the first time, our White students are having to navigate their way through cultural mine fields. They're encountering new terrain, and they don't know what it's all about. They're getting their hands slapped, metaphorically. They're getting a dose of wake-up reality. But in a remarkably important way … they're getting an education. And it may be a more important one than they're getting in some of our classrooms. (Duster, quoted in Rodarmor, 1991, p. 44)

Anderson's "Force Field Analysis of College Persistence" (1985) illustrates the many and various factors that researchers, including those just mentioned, identified (see Figure 15). The Anderson model integrates factors that are both external and internal to the student. Although other studies (Lenning, 1982; Bean, 1985) are more comprehensive in identifying factors, Anderson's model provides an representation of the factors in an easy-to-grasp model.

Figure 15. Anderson's Force Field Analysis of College Persistence.



Source: Anderson, E. (1985). Forces Influencing Student Persistence and Achievement. In Noel, Levitze, Saluri and Associates (Eds.) Increasing Student Retention (pp. 44-61). San Francisco, CA: Jossey-Bass, Inc.

As a final observation, it's important to keep in mind that the human condition is far too complex—as is our system of postsecondary education—to definitely prove the validity of one psychological or sociological theoretical model over another. The theories reviewed in this chapter are useful in describing the retention/attrition process for students, but always do so with the full knowledge and understanding that "one size doesn't fit all."

Factors Related to Retention

As the previous discussion pointed out, there are a number of factors related to retention, and researchers have found differences, as well as similarities, between White students and students of color.

Academic Preparedness

Academic integration and preparation are primary features of many models of retention. Research shows that between 30 and 40 percent of all entering freshman are unprepared for college-level reading and writing (Moore and Carpenter, 1985) and approximately 44 percent of all college students who complete a 2- or 4-year degree enrolled in at least one remedial course in math, writing, or reading (U.S. Department of Education, 2001, p. 49; Figure 16). Without the prerequisite skills needed to survive the rigorous curricula of most college campuses, many students underachieve and leave college during their freshman year or before their sophomore year begins (Astin, 1975; Tinto, 1975; Richardson & Skinner, 1992).

The educational community often defines "academic preparedness" on the basis of students' pre-college academic performance, as measured by one or more of the following: high school GPA, high school rank, college entrance tests scores (specifically math scores), high school college preparatory courses, advanced placement courses, the quality of high school attended, and quality and intensity of high school curriculum. A number of research studies have correlated academic preparedness of minority and non-minority students with their persistence and college completion rates (Adelman, 1999; Borman, Stringfield, & Rachuba, 2000; Fiske, 1988; Parker, 1997; Richardson, Simmons, & de los Santos, 1987). However, once the variables related to academic preparedness were controlled, the effects of ethnicity on college persistence disappeared (St. John, Kirshstein, and Noel, 1991). Still, high school GPAs accounted for only 9 percent of the variation in college GPA for African American students, compared to 25 percent for White students, suggesting that other factors besides academic preparedness influence students college achievement and persistence (Hall, 1999). Other studies also found significant correlations between academic preparation and persistence for low achievers (Porter, 1989) and Hispanic students (Astin, 1982; Astin and Burciage, 1981), further supporting Tinto's theory of academic integration and college persistence.

The following survey of major research studies illustrating gaps in academic preparedness by ethnicity focuses on the two key indicators of academic proficiency and college readiness.

The SAT Comparison

The SAT-I is the mainstay of high-stakes tests in America. Over two million students sit for the SAT-I each year, while another million-plus take the ACT test. These tests have been highly discussed over the past few years, and the recent passage of President Bush's education plan will subject the nation's children to even more high-stakes testing. The efficacy of these tests has been argued by a number of researchers and experts (Steele, 1999; Jencks and Phillips, 1998; Guinier, 2001). The University of California, the largest

user of the SAT-I, announced that it would stop using the test and will replace it with a subject-based test by 2006. Considering that California is the largest user of SATs in the U.S., this move ultimately forced the College Board to announce the development of the "SAT05" in 2002, to be prepared for use in 2005. Nevertheless, the SAT-I is still the prime gatekeeper for our nation's selective and moderately selective four-year colleges.

Consistent findings on the SAT-I show that ethnic minority and low-income students score well below White and Asian students. The most recent data available on the SAT from the 2001 college-bound seniors database verifies this long-standing finding. Table 4 provides a comparison, by ethnicity, on the relative scoring on the SAT-I verbal and mathematics tests. As can be seen in the table, ethnic minorities, with the occasional exception of Asian students, score considerably lower on both verbal and math portions of the test. African American and Mexican American students, respectively, averaged 96 and 78 points lower than White students on the verbal portion of the SAT, and 105 and 73 points lower on the math portion.

The SAT-I instrument has a statistical mean of 500 (with standard deviation = 100), which means that approximately half of the total SAT population will score above 500 and half below in any given year or test-sitting. A second look at the 2001 scores (not illustrated in Table 4) finds that approximately two-thirds of White students score above 500 on both verbal and math tests, while only a quarter of African American students, a third of Mexican American students, and slightly less than half of Native American students do the same.

Raising our standard higher reveals more dramatic findings (Table 4). Approximately 25 percent of White students register a score above 600 on the SAT (theoretically, about 16 percent of all students would score above that level given a normal curve). With the exception of Asian Americans/Pacific Islanders, who either equal or surpass these marks on the verbal and math tests, only a low percentage of ethnic minority students reach this higher level.

Table 4. SAT Verbal and Math Scores by Ethnic Group, 2001.

	Verbal Scores			Math Scores		
Ethnic Group	Verbal Score (V)	+/- versus White	% above 600* (V)	Math Score (M)	+/- versus White	% above 600* (M)
White	529	--	25	531	--	27
African American	433	-96	6	426	-105	5
Native American/Alaskan Native	481	-48	15	479	-52	14
Asian/Pacific Islander	501	-28	23	566	+35	43
Mexican American	451	-78	8	458	-73	9

*out of 800 possible points.
SOURCE: The College Board (2001). *Data from 2001 College-Bound Seniors cohort* (www.collegeboard.com).

The National Assessment of Educational Progress (NAEP)

More commonly referred to as the "Nation's Report Card," the National Assessment of Educational Progress (NAEP) reports every two years[2] in the areas of reading, math, and science. Since 1969, assessments have been conducted periodically in reading, mathematics, science, writing, U.S. history, civics, geography, and the arts.

Table 5. Percentages of twelfth-grade students within the proficient and advanced achievement ranges on the NAEP 1998 reading test, 1996 math test, and 1996 science test.

	Proficient			Advanced		
	Reading	Math	Science	Reading	Math	Science
White	40	18	24	7	2	3
Black	17	4	4	1	0	0
Hispanic	24	6	6	2	0	1
Asian	33	26	19	6	7	3
Native American	24	3	10	3	0	0

SOURCE: Table extracted from The College Board (1999), Table 1, p. 7. Actual data from: Bourque, M.L., et al., 1996 Science Performance Standards: Achievement Results for the Nationa and the States (Washington, DC: National Assessment Governing Board, 1997); Donahue, P.L., et al., NAEP 1998 Reading Report Card for the Nation and the States (Washington, DC: U.S. Department of Education, 1999); Reece, C.M., et al., NAEP 1996 Mathematics Report Card for the Nation and the States (Washington, DC: U.S. Department of Education, 1977).

As Table 5 illustrates, very small percentages of Black, Hispanic, and Native American students score at proficient levels in reading, math, and science. Only 1 in 25 African American students and 1 in 17 Hispanic students are proficient in math or science, compared to at least one in five white students. Almost none of Black or Hispanic students register on the advance level. Considering that reading ability is a primary factor in an individual's ability to learn (Adelman, 1999), the scores in Table 5 are not comforting indicators of the preparedness of these students.

A similar analysis using the National Education Longitudinal Study (NELS) dataset found that significant gaps in reading and mathematics achievement between White and Black students were already in place by eighth grade (US Department of Education, 1997). The difference between White and Black twelfth-grade students in reading was reported at 6.1 percentile points, but at the eighth-grade level, the difference was already 5.2 percentile points. This suggests that the academic damage was done before any of these students even thought about college. "By the time students get to the 12th grade, it is too late to improve college eligibility or to increase the numbers of students who are ready for college. In fact it could be said that students begin to drop out of college in grade school" (Rendon, 1997, p. 7).

[2] While NAEP testing occurs on a two-year basis, the reading, math, and science tests are rotated so that each test is conducted on a six-year rotation.

Interestingly, when NCES researchers controlled for reading level, the differences between White and Black students fell to 0.8 percentile points, almost negating any gap in learning. Similar differences in reading scores were found for Hispanic students vs. White students. The same outcome held true for mathematics.

Course Selection and Integrity

In an attempt to further understand the effect of academic preparation on college persistence, Adelman (1999) developed a composite measure for pre-college academic content and performance. Using transcript information in the High School & Beyond database (1982-1993), Adelman verified and accurately mapped high school and college courses. This unique and rich analysis has many implications for policymakers and practitioners, the most significant of which is that a rigorous (or as Adelman asserts, "intensive") mathematics curriculum path taken in high school results in high achievement levels for all students, regardless of race/ethnicity,.

Several studies point to the academic deficiencies among many minority students, particularly the inability of the school system to better serve underrepresented students (McDermott, Piternick, & Rosenquist, 1980; Fullilove & Treisman, 1990; Berryman, 1983; Astin, 1982; QEM, 1990). Astin (1982) has attributed much of the poor preparation of minority students to the poor quality of elementary and secondary education, while Berryman (1983) suggests that the public schools do not seem to serve any students particularly well in mathematics and science. Exposure to higher-order skill development is also a concern. As a result of lack of such exposure, students have not "developed the reasoning skills that are necessary for acquiring science concepts, for organizing them into a conceptual framework, and for applying them in appropriate situations" (McDermott, Piternick, and Rosenquist, 1980, p. 136).

A study of NAEP science scores of 17-year olds emphasized this lack of higher-order skills. The study found that while 9 percent of White students had the ability to integrate specialized scientific information, only 0.5 percent of African Americans and 1 percent of Hispanic students demonstrated this ability (American Association of Medical Colleges, 1992). Further exacerbating this issue is the perception that minority students cannot succeed in these higher-order disciplines. Bean (1985) found that teachers who thought this way were more likely to send negative messages to their students regarding their ability in math or science.

Aside from the development of higher-order thinking skills, many minority students lack other critical skills essential to their success in college (American Association of Medical Colleges, 1992; Epps, 1979; Halpern, 1992; Hanau, 1979; Humphreys, 1980; Ortiz, 1974). Reading, writing, test-taking, vocabulary, and study skills are often barriers to minority persistence in college. The underdevelopment of these skills severely hampers a student's ability to persevere through the onslaught of new information on a daily basis in college.

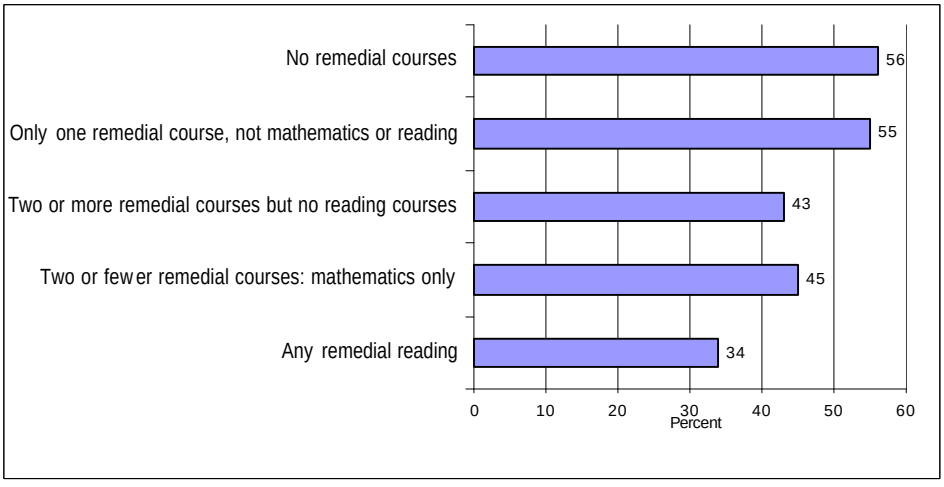
Course selection by high school students is a key variable in both the desire of a student to pursue study in the sciences and the preparedness of the student to persevere in post-secondary study. Studies by Fullilove & Treisman (1990) and Anderson (1989) found

that African American students were less likely than their White counterparts to take advanced courses, especially in physics and chemistry. Additionally, Anderson found that African American students scored nearly 70 points below the national norm on achievement tests in physics, biology, and chemistry, and were under-represented in college-prep courses based their percentage of the population. The limited access of these "gatekeeper" courses to minority students severely hampers their chances of achievement in the sciences, or even the likelihood that they will select or persist in such courses.

Many of the minority students that make it over the college admissions hurdle arrive on campus only to find they don't possess the requisite academic skills to succeed. Thus, a high percentage of these students end up on the remedial (developmental) track. As mentioned previously, almost half of all college graduates take at least one remedial class during their college experience. That alone isn't a negative finding. In fact, as Figure 16 illustrates, the completion-rate difference between students who took one remedial course (not in math or reading) and those who did not take any remediation was only 1 percent. The problem, as Adelman (1996) suggests, is in deficiencies in reading. "Deficiencies in reading skills are indicators of comprehensive literacy problems, and they significantly lower the odds of a student's completing any degree." When the remedial college course happens to be reading, completion rates drop to 34 percent.

The data examined here are not an indictment of our nation's children. Rather, they are an indictment of a system that has been unable to rectify inequities in how it educates *all* students, not just those from the higher rungs of the economic ladder or those with an educational legacy that opens up their future educational options. Wading through the countless research articles brings one to believe that the most significant factors in whether a student is prepared for and motivated to enroll in college, is the rigor of their pre-college curriculum and the support of peers, family, and friends—regardless of race, ethnicity, gender, income, or almost any other background variable.

Figure 16. Remedial course experiences of postsecondary education students who completed 2- or 4-year degrees: 1980-93



SOURCE; U.S. Department of Education (2001). The Condition of Education. National Center for Education Statistics: Washington, DC. (p. 49).

Campus Climate

While researchers tend to agree that "institutional "fit" and campus integration are important to retaining college students to degree completion, campus climate mediates undergraduates' academic and social experiences in college. The normal challenges associated with maneuvering through the college system are stressful to most students; however, minority students at predominately White campuses (PWIs) encounter additional stresses that come from having a minority status. Smedley et al (1993) found that minority students at PWIs experienced stress on five separate factors, including social climate, interracial stresses, racism and discrimination, within-group stresses, and achievement stresses. Major issues identified by students included:

- Not having enough professors of my race
- Few students of my race
- Racist institutional policies and practices
- Difficulty having friendships with non-minorities
- Rude and unfair treatment because of race
- Being discriminated against
- People close to me thinking I'm acting "White"
- Doubts about my ability to succeed in college.

Minority students who are inadequately prepared for such non-academic challenges can experience culture shock. Lack of diversity in the student population, faculty, staff, and curriculum often restrict the nature and quality of minority students' interactions within and out of the classroom, threatening their academic performance and social experiences. Qualitative data on African Americans attending PWIs suggests the availability of ethnic and cultural organizations and the "critical mass" of African American students help reduce isolation and alienation often found on predominately White campuses (Hall, 1999). At the same time, Tracey and Sedlacek argue that noncognitive factors like self-concept, an understanding of racism, and the ability to use coping mechanisms can have a positive effect on students' academic performance and persistence in college.

The research literature has shown that Historically Black Colleges and Universities (HBCUs) support campus climates that foster opportunity for student self-pride and confidence and lead to academic and social success. While most African Americans at HBCUs do not experience culture shock associated with race, they do experience the culture shock of transitioning from a secondary educational system to a higher educational one. These institutions traditionally have used holistic approaches for developing students intellectually and socially. Activities have ranged from pre-college outreach programs to extensive academic and career counseling (Reyes, 1997). One characteristic of many HBCUs that has remained constant throughout the institutions' history is the personal academic relationships that HBCU faculty establish with their students. This partially explains the tendency of HBCU students—despite any academic and economic difficulties—to demonstrate higher levels of psychosocial adjustment, academic gains, and greater cultural awareness than do their African American counterparts at PWIs (Himelhock, 1997). However, as HBCUs' non-African American student population continues to increase, they also must ensure that a nurturing campus climate exists for all students, regardless of race and ethnicity (Swail, 1995).

Unfortunately, biased practices of many PWIs inadvertently contribute to minority students' cultural shock and alienation. Just (1999) argues that racial climate influences almost every aspect of minority students' college experience, leading to academic and social marginalization. Gonzalez (1999) reported that two Chicano males attending a western PWI felt that the institutional members at large trivialized their culture by not accepting their styles of bilingual communication, dress, and music, and by excluding physical and academic representations of their culture. In addition to marginalizing minority cultures, pervasive racial remarks demean ethnic minorities on campus. Tolerence.org, a web site operated by the Southern Poverty Law Center to monitor and promote racial and cultural tolerance estimated one million bias incidents occur every year on our national campuses, with the majority of them going unreported to the authorities. Liu & Liu (2000) characterized the alienation of minority students on campus as a structural issue rather than an individual one, making colleges and society in general partially responsible for these students' lack of college persistence.

Empirical studies investigating student perceptions of and satisfaction with campus climate are ambiguous. Some studies found significant racial and ethnic differences in these perceptions while others did not. Ancis (2000) found African Americans and Asians perceived and experienced greater pressure to conform to stereotypes. They also had less favorable interactions with faculty and staff (which strongly correlates with student persistence). In addition, other studies indicated that students who were satisfied with campus life often persisted. Bennett and Okinaka (1990) found that Hispanic and White college students' attrition behavior and satisfaction with campus experiences correlated closely. However, the researchers found that satisfaction with campus life and persistence appears to be a separate issue for African and Asian Americans. This study revealed that as these students persisted to their fourth year of college, they appeared more dissatisfied with campus life than those African American and Asian American students who left prematurely. It appears that the longer these students persisted at this institution, the greater their trauma and dissatisfaction with campus life, compared with the students in the subgroups who did not persist. This finding is consistent with research which showed that greater social integration at a prominent PWI increased the probability of attrition (Feagin & Sikes, 1995). Some African Americans were willing to suffer through the racial degradation at prominent institutions in order to benefit from the added returns on education. Yet, such research results are inconsistent with findings by Liu & Liu (2000), which showed that minority students did not have any greater tendency to be dissatisfied with the college environment than their White counterparts.

What the research suggests, therefore, is that while campus climate and campus satisfaction are important to many ethnic minority students' college retention, campus climate alone will not sustain high graduation and retention rates at colleges (Arrington 1997, AASCU).

Special programmatic efforts including bridge programs, structured campus residences, mentoring, and other ethnic and cultural programs designed to support ethnic minorities academic and social integration have eased some students' transition to college. However, these structured programs tend to limit participating students' social and cultural

networks to program experiences, which alienate them even further (Feagin & Sikes, 1995; Fiske, 1988; Himelhoch, Nichols, Ball, & Black, 1997).

Many PWIs want to create inclusive and safe-learning environments that meet the needs of every student, but most higher education institutions must also adhere to constitutional law protecting freedom of speech. While higher education institutions consider freedom of speech central to scholarly inquiry, they also recognize that this law and others inadvertently allow many perpetrators of biased and racist acts to go unpunished. As Palmer, Penney, and Gehring (1997) state in a research report on campus codes of conduct:

> "As student populations become more diverse, it becomes more critical that administrators develop policies and programs conducive to campus learning environments where safety and civility will predominate." (p.118)

Actively supportive, nondiscriminatory campus environments are associated with greater college satisfaction, adjustment, and persistence. PWIs with successful minority graduation rates have:

> Shifted from tolerance to acceptance when the minority enrollments reach a certain threshold
>
> Provided opportunities for cultural, social and educational development to maintain a "comfortability factor"
>
> Examined and improved institution's relationships with community minority organizations
>
> Committed institutional resources, such as visible leadership (including minority leadership) funds for educational intervention
>
> Employed a comprehensive and systemic approach
>
> Were supported by State legislation (Richardson, Simmons, & de los Santos, 1987)

PWIs have approached campus climate from programmatic and legal perspectives designed to ease ethnic minorities' college transition and protect their legal integrity. Yet, Richardson and Skinner (1990) point out that while many PWIs address campus climate issues, they are hesitant about advocating systemic change because of the belief that campus diversity diminishes academic quality. The authors offer a model for diversity that harmoniously integrates access and achievement into the organizational culture through appropriate institutional goals and strategies. Ultimately, institutions that successfully support minority access and achievement focus on learning environment rather than race or ethnicity. Institutions that support diverse learning experiences are those that emphasize quality instruction and learning.

Commitment to Educational Goals and the Institution

Tinto (1993) hypothesized that commitment to occupational and educational goals (goal commitment) and commitment to the institution in which one enrolls (institutional commitment) significantly influence college performance and persistence (Okun, Benin, & Brandt-Williams, 1996). The stronger the goal and institutional commitment, the more likely the student will graduate (Cabrera, Nora, & Castaneda, 1993)). Tinto (1993) claims the scope of students' educational or occupational goals correlates positively with the probability of degree completion.

Astin's (1977) study investigating the relationship between career goals and student persistence found that students whose academic majors corresponded closely with their career goals were more likely to achieve their goals than were students with no identifiable career goal. In a subsequent study (1982), Astin concluded that career goals and intended academic majors were the strongest predictors of students' plans, suggesting that "the student's initial choice of a career or major is not a random event, and that it has considerable influence on the student's long-range career development." (p.96). Pantages and Creedon (1978) also concluded that when students' values, goals, and attitudes correspond with those of their institution, the probability of graduation increases. In addition, the authors indicated that integration of a specific occupational goal into students' educational goals also increases their motivation and persistence.

The level of institutional commitment exhibited by a student is dependent upon the congruence between the educational goals of students and the mission of the institution. Although individuals may enter college with educational goals that are, as Tinto (1975) states, "either more limited than or more extensive than those of the institution (p. 33)," the level of congruence between student and institution is a primary factor influencing student's persistence. When educational goals of undergraduates are incongruent with those of the institution, the students are less likely to persist. Tinto (1975) also notes that over time, goal and institutional commitment generally intensify, as students clarify goals and focus on degree attainment

Although literature examining goal and institutional commitment have been equivocal (Okun, Benin, & Brandt-Williams, 1996), research has shown that congruence between student goals and institutional mission is mediated by academic and social components (Cabrera, Nora, & Castaneda, 1993). Tinto (1993) suggests that increased integration into academic and social campus communities causes greater institutional commitment and student persistence. One study (Beil, Resien, & Zea, 1999) confirmed that institutional commitment mediated the impact of students' first semester academic and social integration on student persistence. The data seems to contradict previous findings indicating academic and social integration have a direct impact on student retention. A student's integration into the campus determines that student's level of commitment to the institution, which directly influences decisions to persist. Kennedy, Sheckley, and Kehrhahn (2000) identified persisters as students who either improved their grade point averages over the course of the year, found their grade point averages to be consistent with their expectations, or adjusted academically to college. This research supports previous findings that students who integrate into the academic campus culture are more likely to persist. The research indicates that institutional practices should integrate stu-

dents into the campus culture early and help them clarify career and academic goals through extensive and collaborative academic and career counseling.

Social and Academic Integration

Much of the literature regarding retention issues focuses on the social and academic integration of students with the university. Tinto's (1975) longitudinal model of student dropout posited that the students' level of academic and social integration with the university (in addition to their goal and institutional commitment), are the major factors in their ability to persist in college. Building upon Durkheim's suicide theory, Tinto posited that, like suicide victims who were totally removed from the social fabric of society, students who are likewise removed from the social fabric of the college community were more likely to leave college than persist. As Tinto noted,

> In Durkheim's view, individual integration into the social and intellectual life of society and the social and intellectual membership which that integration promotes are essential elements of social existence in human society. Societies with high rates of suicide are those whose social conditions are such as to constrain such membership. (Tinto, 1993, p. 102).

Tinto's theory suggests that the ability of the student to either conform or integrate into the social and intellectual membership of the university is pivotal to their ability to persevere through graduation. Griffin (1992), summarizing the attrition theories of Terenzini & Wright (1987), Spady (1970), Terenzini & Pascarella (1984), and Tinto (1975), further theorized that early integration into the social and academic fabric of the institution is not only correlated with persistence in college, but is also conducive to the academic and social growth of the student. Rootman (1972) and Astin (1987) also subscribe to the theory of social and academic integration, but suggest that the important issue to be considered is the student's environmental "fit" into the social confines of the institution. How a student's values fit in with the institutional values and those of the faculty and student population will affect the quality of that relationship.

There are a variety of ways that students actually "fit" into the college environment, and also a number of ways that the college can assist in that integration. The development of new friendships and peer interaction are perhaps the most recognized methods of social integration. This development can help students bridge the often traumatic first weeks of the freshman year and offer other areas of personal and academic support. Several studies, including those conducted by Tinto (1975), Pantages & Creedon (1978), and Astin (1977), have found that friendship support is directly related to persistence in college, and that college dropouts perceive themselves as having less social interaction than those students who persist in college. For African American students, students who engage in social activities become a part of the social environment and are more likely to persist (Griffin, 1992).

The process of becoming socially integrated into the fabric of the university has also been found to be both a cumulative and compounding process. Terenzini & Wright (1987) suggest that the level of social integration within a given year of study is part of a cumulative experience that continues to build throughout one's college experience. Therefore,

the experiences that a student encounters in his freshman year will influence and support integration in subsequent years.

HBCUs have also been found to provide more positive social support for African American students than predominantly White institutions offer. Berg & Peplau (1982) concluded that African American students on Black campuses exhibited fewer adjustment problems, engaged in more social activities through their student networking, had higher GPAs, exhibited greater satisfaction in their college experience, and had higher occupational expectations than their counterparts at PWIs.

The establishment of peer relations during college also supports a student's academic integration into the university. Capella, Hetzler, and MacKenzie (1983) found that a positive peer influence favorably influenced the study habits of college students. Several studies, including a 1983 study of exemplary pre-college science, engineering, mathematics, and computer science intervention programs for female and minority students, concluded that peer relationships were important in keeping students interested in the sciences (Matyas, 1991; Malcom, 1983). Many intervention programs build upon this theory of peer support, including UC Berkeley's Mathematics Workshop Program, Xavier's Project SOAR, and UC San Diego's Summer Bridge Program, all of which encourage group interaction and peer integration.

The development of role models and mentors has also been defined in the literature as important factors in student integration, both academically and socially. A positive role model provides students with a number of equally positive experiences. As Tinto (1993) suggests, the availability of role models extends beyond the social integration of the student:

> It is not surprising that a number of studies have found that social interaction with the college's faculty is related to persistence in college. Spady (1971) suggested that these findings arise from the fact that interaction with the faculty not only increases social integration and therefore institutional commitment but also increases the individual's academic integration. (Tinto, 1993, p. 109)

On the college campus, faculty members are often role models. The interaction between faculty and student has been identified as a major factor in the ability of students to persist in college, while also increasing their level of satisfaction (Astin, 1977; Beal & Noel, 1980; Terenzini and Pascarella, 1979). Positive role models provide guidance, direction, and most importantly, a good example for students to learn from. Faculty/student interaction outside of class time is even more beneficial to students. Informal contact between students and faculty members has been found to increase the persistence of the student (Ugbah & Williams, 1989; Griffen, 1992; Astin, 1982). Endo & Harpel (1982) concluded that informal contact with faculty was a foundation for the development of friendly relationships between students and faculty that had a positive influence on students in terms of their personal, social, and intellectual development (Griffen, 1992). Terenzini and Pascarella (1977, 1980) had similar findings, but were unable to duplicate the outcomes at

another campus, concluding that each individual campus may react differently to the interactions of variables (Pascarella, 1984).

With regard to underrepresented minorities at the university level, contact with positive role models is even more significant than it is for majority students. A study of a mentoring program at Ohio University in Athens, Ohio, found that 91 percent of the African American protégés felt more confident as a result of their mentor (Ugbah & Williams).

Unfortunately, the availability of positive minority role models on campus and in our society is not at a level that adequately represents these populations on a national scale. In PWIs, the number of minority faculty is a minute fraction of the White faculty. In fall of 1987, less than 11 percent of faculty positions were filled by persons of color. The largest representation was 3.2 percent by African Americans (NCES, 1994). In the natural sciences, African Americans constituted only 2 percent of the instructional faculty and less than 0.5 percent in engineering. Other minority groups, with the exception of Asians, had even lower representation. Equally disturbing is the fact that minority faculty hold less prominent positions and are less likely to receive tenure (Commission on Minority Participation in Education and American Life, 1988). Even among administrators, minority representation deficiency is very evident. Of the 3,800 post-secondary institutions in the nation, only 100 are headed by African Americans (2.6 percent). And half of these are HBCUs (Mooney, 1988), which means that only 1.35 percent of all non-historically-Black colleges (approximately 3,700 in total) are headed by an African American.

As Franklin (1988) notes, the lack of positive role models, advocates, and mentors has an impact upon students and their ability to do well in elementary and secondary schools. Also, their risk of leaving school is much higher. Therefore, informal faculty/student contact is more critical than ever, and institutions must work diligently to provide positive faculty role models for the students (Justiz, 1994).

Successful academic and social integration is also more likely for students who live on campus. Several studies have shown the positive effects of on-campus residence (Pascarella, 1984; Chickering, 1974; Astin, 1977; Pantages & Creedon, 1978). Pascarella (1984) found that even when background traits and institutional controls were held constant, on-campus living was positively correlated with higher student interaction, although he was not able to significantly determine the academic affects. Astin (1977) also found a greater interaction with faculty and peers, and in addition found that students were more satisfied with college, had more focused career and educational goals, and in turn were more likely to persist to graduation.

Financial Aid

Economic theory and educational research suggest that in order for students to persist toward a college degree, the returns for receiving the degree must outweigh the costs (over time) of attaining it. Because attending college has direct, indirect, and opportunity costs for students, financing decisions have both short- and long-term effects on college persistence decisions.

For most students, enrollment and persistence decisions are driven by labor market returns for receiving a degree. Most research suggests that attending college and persisting to degree completion will be rewarded with higher annual and lifetime earnings. In 1998, for instance, the median annual earnings for men age 25 and older and employed full-time was $31,477 for those with a high school diploma, $40,274 for an associate's degree, $51,405 for a bachelor's degree, $64,244 for a master's degree, $75,078 for a doctoral degree, and $94,737 for a first professional degree (U.S. Department of Education, 2001a). There are, of course, other rewards for persisting in college; degree holders have greater participation in voting and other civic responsibilities (Institute for Higher Education Policy, 1998). But, in order for most students to persist—particularly low-income and minority students— the benefits of attaining a degree usually must be greater than the direct, indirect, and opportunity costs required to attend an institution.

For many low-income and minority students, enrollment and persistence decisions are driven by the availability of financial aid. In 2000, the median family income of African American families headed by a householder age 45 to 54 (the families most likely to have traditional college-age children) was $47,112 and $42,912, compared with $73,410 for White, non-Hispanic families (U.S. Census Bureau, 2001). Thus, by definition, more African American and Latino families will require financial assistance in order to attend and persist in college.

Students from low-income families were more likely to receive grant aid to attend college. In 1999-2000, 77 percent of financially dependent students from families with less than $20,000 in family income received some financial aid, with an average award of $6,727. In contrast, 44 percent of those from families with income of $100,000 or more received aid, with an average award of $7,838 (higher income students received higher average awards because they tended to be enrolled at higher-cost institutions). Once in college, three quarters of the low-income undergraduates received grant aid, with an average award of $4,309; this compares with 29 percent of higher-income students who received grants, with an average award of $5,100 (U.S. Department of Education, 2001b).

However, even with the availability of financial aid, students from racial/ethnic minorities and low-income families are less likely than Whites and those from higher-income families to enroll in a four-year college and earn bachelor's degree (Advisory Committee on Student Financial Assistance, 2001; Gladieux and Swail, 1998; Thayer, 2000). More than one half of African American, Hispanic, and Native American dependent students come from families with incomes of less than $30,000 (King, 1999a). In 1999, the most recent year of available data, about 57 percent of high school graduates from families in the lowest income quartile entered college, compared with nearly 86 percent of those from the highest income quartile. Even more troubling is the fact that the percentage of low-income students who completed college by age 24 has remained at less than 10 percent for the past 30 years, while the percentage of students from the highest-income families who received bachelor's degrees rose from 40 percent to about 60 percent (Mortenson, 2001a and 2001b).

Recent Financial Aid Policy Developments

Recent financial aid policy developments have led to disparities between the availability of grant and loan aid (Advisory Committee on Student Financial Assistance, 2001; Christman, 2000; Fossey and Bateman, 1998; Mortenson, 1999; Thayer, 2000). According to the College Board, the proportion of financial aid from grants has declined from about 50 percent in 1990-1991 to 40 percent in 2000-2001 (College Board, 2001a). A series of federal financial aid policies created during the 1980s and 1990s led to this shift in grant and loan aid availability:

- *The reduced purchasing power of need-based grants, relative to increases in college costs.* In inflation-adjusted value, appropriations for the Federal Pell Grant grew by 23 percent over the last decade, but tuition and fee charges at four-year public colleges and universities rose by 40 percent (College Board, 2001a and 2001b; American Council on Education, 2000; Cunningham and O'Brien, 1999).

- *More grant aid has come from state and institutional sources rather than the federal government* (Cunningham and O'Brien, 1999). In recent years, funding for institutional and state grants has grown by more than 90 percent, while federal grant aid grew just 31 percent.

- *The shift in federal aid to student loans and tax credits.* Federal student loan volume has grown from $17.1 billion in 1990-1991 to $37.1 billion in 2000-2001. Much of this growth occurred in the Federal Stafford Unsubsidized Loan program, which jumped 50 percent since 1995-1996. Additionally, under the Taxpayer Relief Act of 1997, students will be eligible for more than $40 billion in tax credits (through the Hope Scholarship Tax Credit and the Lifetime Learning Tax Credit) over the next decade to pay for college (Reindl and Redd, 1998). Because low-income students are less likely to have tax liability, they are less likely to benefit from these new federal tax credits (Reindl and Redd, 1998).

- *Shift of institutional and state grant aid from need- to merit-based criteria.* During the 1990s, more states and institutions began to use more of their grant funds to award merit and other "non-need" based aid (Heller, 2000; Redd 2000; Reindl and Redd, 2000). Institutions used more merit aid to entice more students with high SAT scores and other characteristics to enroll on their campuses. Some states, particularly those in the south, reacted to the concerns of middle- and upper-income families who did not qualify for Pell Grants and other awards that are distributed based on families' demonstrated financial need, but wanted additional funds to send their children to college. Institutional and state funding for merit and other non-need grants nearly doubled during the early and mid-1990s, while need-based aid grew by 30 percent and 41 percent in the same periods. These non-need awards tend to favor students from middle- and upper-income families; during the 1990s, Heller (1999) points out, the number of low-income students who received non-need grants at private colleges and universities fell 10 percent, while the number of awards to high-income students grew 24 percent.

Fundamentally, these policy shifts mean that relatively more low-income students will have to borrow in order to enroll in college and persist toward a degree. Prior research and anecdotal evidence has suggested that low-income students and minority students are much less willing to borrow to attend college than Whites, or students from higher-income families (Olivas, 1985; Mortenson and Wu, 1990; Mortenson, 1989). Recent data indicate Pell Grant recipients, who are often low-income, first-generation students, are more likely to borrow than are students who do not receive Pell Grants. These students tend to graduate with an average debt 30 percent greater than do students receiving other types of financial aid (American Council on Education, 2000). Thus, the shift from grants to loans may have implications for persistence levels of low-income and minority students.

Financial Aid and Persistence

In the light of these recent policy developments, it is important to understand the linkages between financial aid, enrollment, and persistence for students in general and racial/ethnic minority students in particular. Fortunately, research on these questions is abundant. Some of these prior researchers (Bean, 1985; Bean and Vesper, 1990; Bean and Metzner, 1987, Cabrera, Castaneda, Nora, and Hengstler, 1992; Cabrera, Nora, and Castaneda, 1992) suggest that students' ability to pay for college consists of two dimensions: an objective component, reflecting students' availability of resources, and a subjective component, reflecting students' perceptions of their capacity/difficulty to finance a college education. It is likely that these factors also influence students' decisions about college choice and persistence.

Further research (Mumper, 1996; St. John, Paulsen, and Starkey, 1996; St. John and Starkey, 1995) measures students' response to a set of prices, rather than a single price, and found that students with different needs respond to tuition and financial aid quite differently. Therefore, different combinations of tuition and student aid yield different levels of enrollment and persistence. Price choices are influenced by type of institution, attendance status, and residence status. Students are also influenced by type of aid (grants, loans, work-study, other) within their aid packages. Further, low–income students have been found to be more responsive to tuition increases than are middle- and upper-income students (Heller, 2001).

And yet, the research investigating the effects of the types, amounts, and combinations of financial aid on college persistence is, at best, ambivalent. This ambivalence shows direct and indirect influences on persistence, and reflects the financial aid policies of the period studied (Fenske, Porter, and DuBrock, 2000; Heller, 2001; Murdock, 1990; Perna, 1998). Earlier research in this area found financial aid to be unrelated to college student persistence (Moline, 1987; Peng and Fetters, 1978), but more recent findings indicate its importance to the recruitment and retention of low-income students (Murdock, 1990; St. John, in press). Recent path analyses, on the other hand, have indicated that the receipt of financial aid has only marginal effects on students' persistence and completion. Receiving financial aid and the amount received ranked eighth among total effects on persistence (Perna, 1998).

Persistence by Race/Ethnicity and Grants versus Loans

Such findings vary by type of aid received and the time period under study. Need-based institutional grants tend to facilitate persistence (Fenske et al., 2000; Murdock, 1990; Pantages and Creedon, 1978; Porter, 1989; Jenson, 1983: Astin, 1973b). Porter (1989), for instance, found that 90 percent of students who received grants in their first year, regardless of race/ethnicity or type of institution, were still enrolled in the second semester. Meanwhile the persistence rate of students who did not receive grant aid was 75 percent overall and 60 percent for African American students. Further, the highest completion rates were associated with aid limited to grants and packages consisting of grants, loans, and work-study. Completion rates were lower for students whose packages emphasized loans (Murdock, 1990; Perna, 1998, St. John, in press). These disparities were even more evident in the 1970s, when a higher proportion of aid came from grants and persistence rates between non-White and White students were equal (after controlling for receipt of aid and other factors—St. John, in press). Blanchette (1994) used the High School and Beyond data set to conclude that additional grant aid increased graduation rates for some minority students.

Loans, however, may not be as effective in retaining low-income or minority students. Some studies have concluded loan aid is unrelated to persistence, while others have found students who receive loan aid are less likely to persist. Student background tends to influence the effect of loan aid on persistence. For example, loans have been found to be less consistent in facilitating access for minority students than for White students (St. John, 1991). Other research (Blanchette, 1994) found that a $1,000 increase in loan aid would increase the probability of dropping out for African American students, but for Hispanic students the probabiity is slightly lower. While Ekstrom (1991) found that students who were willing to accumulate debt to finance college enrollments were more likely to persist, other research (Olivas, 1985; Mortenson and Wu, 1990; Mortenson, 1989) demonstrated that African American and Hispanic students were less willing to finance their education with loans than were their White counterparts.

College employment also appears to have an influence on persistence (Horn, 1998; Pascarella, Bohr, Nora, Desler, and Zusman, 1994). The type and extent of influence of employment on student outcomes depends on the number of employment hours, location of employment, and the degree to which the students' job is related to their academic or career goals. Horn and Maw (1994) found that while receipt of financial aid had little effect on whether students worked or did not work; it did influence the amount of hours that students decided to work. Undergraduates who received higher amounts of student aid were less likely to work full-time than those who received lesser amounts of student aid. Likewise, students with higher net education costs were more likely to work and work full-time than undergraduates with lower net costs. Students who worked 15 hours or less per week were more likely to have high academic grade point averages than were those who worked more hours.

The Federal Work-Study program, which provides part-time jobs to financially needy postsecondary education students, has been found to increase student persistence, but external employment (non-work-study) through full-time and off-campus employment

tends to decrease student persistence, unless related to area of study (Horn and Maw, 1994).

These research findings suggest that there is a link between receipt of financial aid—particularly grant aid—and persistence. Low-income and minority students who receive grants generally are more likely to persist than those who receive loans. However, given the rising costs of attending college, it is unlikely that low-income students will be able to receive bachelor's degrees without *any* loan aid. The key may be in educating these students in strategies for borrowing wisely; that is, borrowing only what is truly needed to persist in college. Many of the students who have trouble with debt are those who borrow beyond their financial need (King 1999b). At the same time, the research also suggests that the shifts in aid from grants to loans and from need- to merit-based programs adversely affects both enrollment and persistence for minority students. Reversing these shifts may be needed to increase college access and success for low-income and minority students.

PART III. A FRAMEWORK FOR RETENTION

A New Perspective on Student Integration

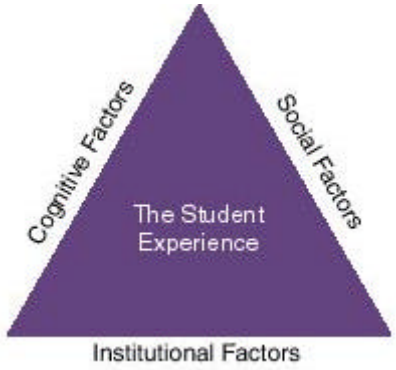
As discussed in the last section, a number of theories and models have been developed to explain student attrition in higher education. In particular, Tinto's Attrition Model (1975), Bean's Synthetic Model (1982), and Anderson's Force Field Analysis (1985) are among those theories that attempt to describe and categorize the attrition process. However, as with all theories, these models are open for interpretation, and, depending upon a number of variables and constructs, cannot be used to describe all peoples, organizations, and situations.

While these models are very useful in illustrating the problems and processes relating to student persistence, lost between the simplicity and complexity of the different models is the relationship between college and student. Without a clear explanation of what the model represents, it is difficult for administrators and practitioners to fully comprehend the significance of the model and how it relates to campus policy. Introduced here is the geometric model of student persistence and achievement that focuses on student attributes and the relationship with institutional practice. The model simultaneously describes persistence and achievement because of the inextricable relationship between the two variables. For example, the intervention of a motivational instructor may not only prompt certain students to persist, but may also cause them to study more and likely score better on exams and assignments.

The geometric model differs from others by placing the student at the center of the model, rather than an indifferent element to a flow chart or structural equation model. As Tinto (2000) has commented, none of the models discuss the connection between classroom and retention, the one place where the institution has the closest connection to the student. The same can be said for how the models address students.

The purpose of this model is to provide a user-friendly method for discussion and focus on (a) the cognitive and social attributes that the student brings to campus; and (b) the institutional role in the student experience. The ultimate question is simple: what can an institution do to help each student get through college? Additionally, how can institutions help integrate students, both academically and socially, into the campus, as well as support their cognitive and social development?

Figure 17. Swail's Geometric Model of Student Persistence and Achievement.

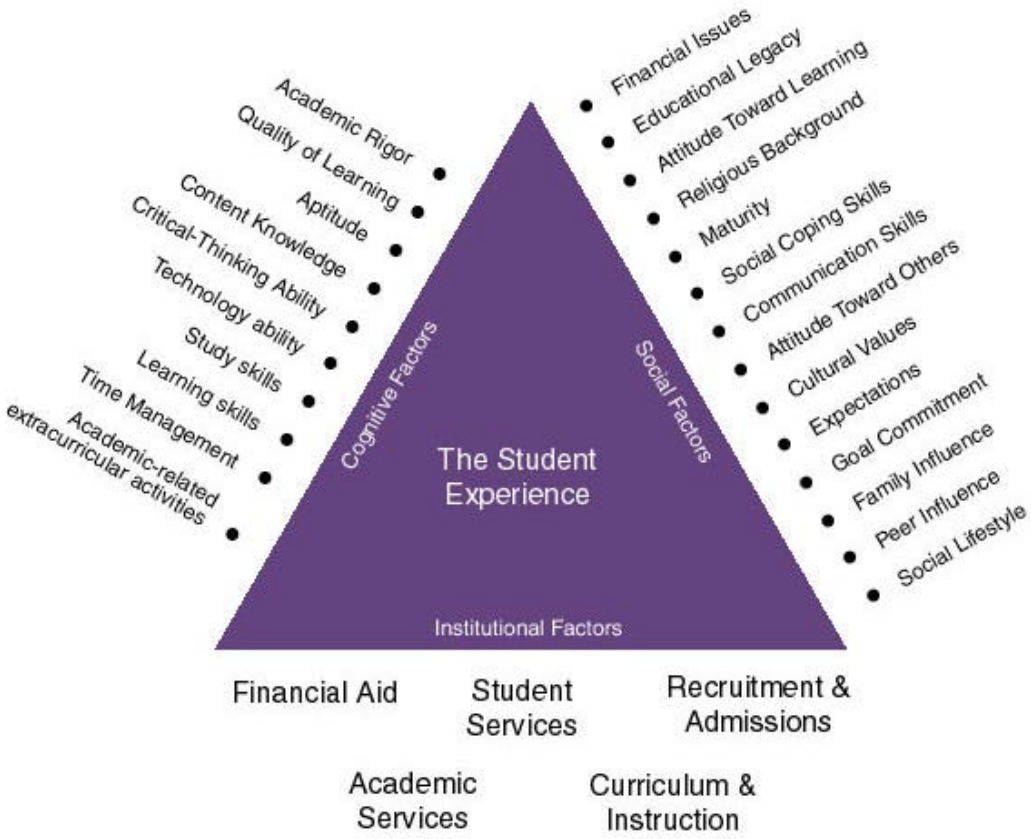


As can be seen in Figure 17, The model has three sides, each representative of a particular force upon the student, who is represented by the area inside the triangle. Similar to Anderson's Force Field Analysis, the triangle represents the complex internal processes within each student that foster his or her ability to persist and achieve. The area external to the triangle is representative of all outside variables impacting upon the development and decision-making of the student.

Three Forces Affecting Student Persistence and Achievement

In terms of college persistence and achievement, there are three particular forces that account for the entire spectrum of student outcomes: cognitive, social, and institutional factors. Briefly stated, the cognitive factors form the academic ability—the strengths and weaknesses—of the student, such as the level of proficiency in reading, writing, and mathematics. Social factors, such as the ability to interact effectively with others persons, personal attitudes, and cultural history, form a second set of external factors that characterize the individual. The third set of factors, institutional, refers to the practices, strategies, and culture of the college or university that, in either an intended or unintended way, impact student persistence and achievement. Examples include faculty teaching ability, academic support programming, financial aid, student services, recruitment and admissions, academic services, and curriculum and instruction. These are described more completely later in this section.

Figure 18. Forces Acting on the Geometric Model of Student Persistence and Achievement.



Cognitive Factors

The cognitive factors relate to the intelligence[3], knowledge, and academic ability that a student brings with him or her to the college environment. These factors may be measured by such variables as course selection and completion in high school, aptitude, or extracurricular involvement in academic-related areas. Cognitive factors are important because they directly relate to the student's ability to comprehend and complete the academic portion of the college curriculum.

An important element of the cognitive factors relating to student persistence and achievement is the decision-making and problem-solving ability of the student. The decision-making process is an important part of the models described earlier. Tinto (1975, 1993) describes the decision-making process regarding goal commitment and dropout; Bean (1992) describes an "intent to leave," and Anderson identifies value conflicts and career indecision among the important variables that a student controls via the set of social and cultural values instilled in him or her. The decision-making process of the student occurs within the confines of the geometric shape represented in the model pre-

[3] Intelligence is meant in the form akin to Gardner's multiple intelligence theory, where it is not just an academic sense of intelligence, but the intellectual ability of an individual to work through many different mediums, such as music.

sented above. It is here that the social and cognitive factors interconnect to form the decision-making process.

Social Factors

The second factor related to student persistence and performance is the set of social factors impacting upon students. Such factors include parental and peer support, the development or existence of career goals, educational legacy, and the ability to cope in social situations. The social issues facing college students are of ever-increasing interest to higher education personnel. The research field is generally in agreement about the importance of social integration with regard to student retention, and the fact that students have a difficult time persisting in a situation where they are not socially integrated into the campus life. Thus, the factors identified on the social side of the geometric model are uniquely important to student stability.

The social underpinning and opportunities of a student have obviously crossover impact on his or her cognitive development. A student who is brought up in a culturally and educationally rich environment will develop skills that will be critical to postsecondary, career, and personal success. Students that hail from environments that are less supportive may bring with them deficiencies in their self-esteem and efficacy, especially as those relate to academics when compared with students from more advantaged backgrounds.

Institutional Factors

College is undoubtedly the biggest social change a traditional-aged student has ever undertaken. College presents stresses, at some level, to all students. Substantial research exists on the stresses of freshman year, especially on minority and low-income students. Regardless of one's subscription to either Gennep's social anthropology theory (Tinto, 1988) or to Valentine's biculturation theory (Rendon et al., 2000; Valentine, 1971), how the institution reacts to students is of primary importance to retention, persistence, and completion.

The institutional side of the triangle relates to the ability of the institution to provide appropriate support to students during the college years, both academically and socially. Issues related to course availability, content, and instruction affect the ability of a student to persist, as do the support mechanisms, such as tutoring, mentoring and career counseling. While this axis has a direct effect on student stability during college, it also can be seen as a flexible set of programs or conditions that the college can mold to meet the diverse needs and attributes of individual students.

The significance of setting institutional factors on equal ground with cognitive and social factors is to illustrate the importance of campus participation and knowledge in the social and academic development of the student. The geometric model places this set of factors at the base of the triangle because it is the college that forms the foundation for college success. It is here that the institution can identify and match the needs of individual students, a student cohort group, or the student body as a whole.

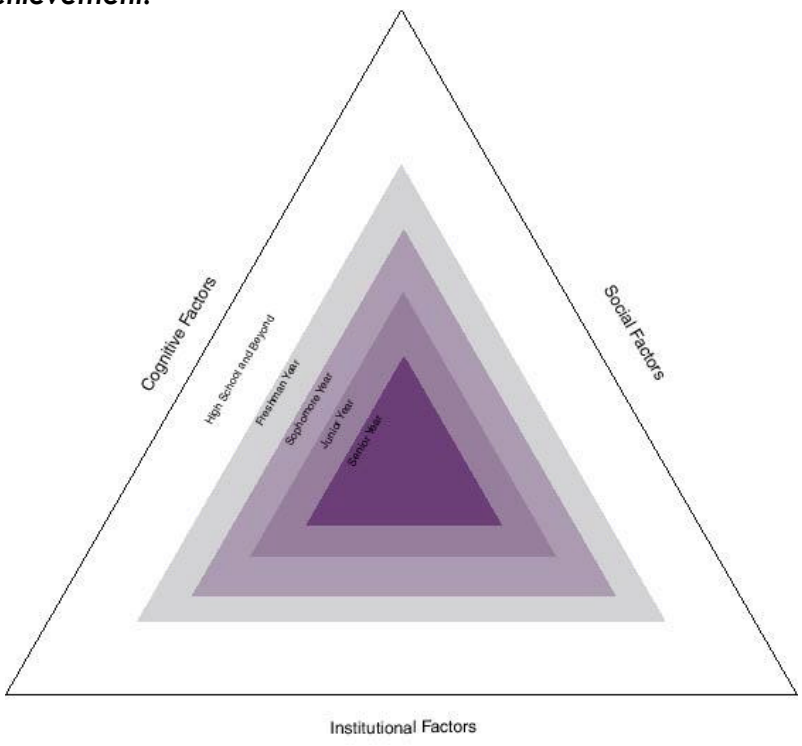
Time

The geometric model allows for a representation of student attributes and ability in relation to time, where the triangle represents the present and the area beyond the triangle represents all prior influences and experiences. This concept is especially important at the time of student matriculation to the college, for it can provide college administrators, faculty, and staff a snapshot of a student's cognitive and social attributes at the entry point into college. Given that the triangle sides represent the present, the institution must have a process for identifying the impacts and abilities of the student beyond the triangle: that is, measuring their capabilities based upon their progress over the K-12 years. Colleges typically use standardized test scores, GPAs, course transcripts, and even support letters and interviews to gauge a student's past.

For the institution, the ability to learn about a student's history is more than about testing and analysis. It is an opportunity to connect with the student and become cognizant of his or her goals and aspirations. With this information, the institution can modify individual programs to meet specific needs of the student. The entire admissions process allows an institution the opportunity to match their goals with those of the student.

Of course, time doesn't hold still during the college years. In fact, the college experience represents the "coming of age" and entrance into adulthood for most traditional-aged students. Therefore, it is important for the institution to note that the student's goals, aspirations, and abilities change during his or her time on campus, and strategies, self identified by the student, must be matched by subsequent changes on the part of the institution.

Figure 19. Time as a Variable on the Geometric Model of Student Persistence and Achievement.



As can be seen in Figure 19, the geometric model can be used to conceptually track a student's progression through graduation. Remembering that the main triangle represents the here-and-now, and that every piece of time that passes moves further outward from the center, we can layer on each progressive period of time as it occurs. Thus, the model has the ability to consider all prior history, including high school and beyond. This is significant, because it gives us a philosophical picture of how students progress and change over time. For an institution, this can be used to gauge the institutional practices and make alterations to the individual learning plans associated with each student. For example, on the social side of the model, an institution can and should track the student's development, as measured through appropriate inventories. Likewise, the academic progression of the student can be measured through credits earned and course grades, and potentially exit examinations.

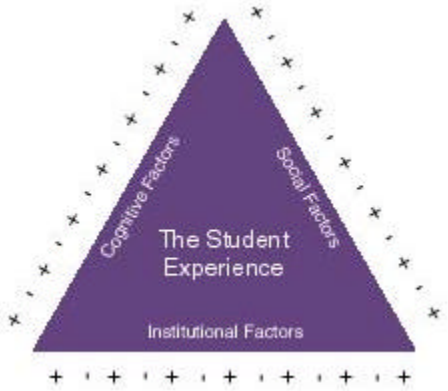
Stability

The geometric model allows us to discuss the dynamics between cognitive, social, and institutional factors, all of which take place within the student. We suggest that the student must remain in a stable state in order to persist in college. That is, the forces of cognitive, social, and institutional factors must combine to provide a solid foundation for student growth, development, and persistence. When stability is lost, students risk reducing their academic and social integration with the institution, and therefore risk dropping or stopping out (Spady, 1970; Tinto, 1975). This process can be described as follows:

Stage One. Each side of the geometric model represents a series of variables that define the cognitive, social, and institutional structure of the student experience. Each variable, in its own right, has an impact on the persistence process. In fact, each variable has one of three consequences for the student: it can positively, negatively, or neutrally impact student persistence and growth. As illustrated in Figure 20, the net result is a series of plus and minus experiences that mold the behavior and characteristics of the student. It is important to note that each force or impact on the student is unique and different. Thus it should not be inferred that the effect of one variable can be equally neutralized by another. However, it is reasonable to assume that certain variables can alter the effect of other variables. Thus, the individual impact of variables can combine and work with or against other variables. This is what we term "reciprocity." If we could algebraically calculate the impact of these variables, we would end up with a "beta value" to describe the cognitive, social, and institutional value. While theoretically possible, this would be a massively challenging practice to equate all inputs to a singular coefficient.

An example of reciprocity would be the combination of academic motivation, appropriate learning environments, and academic support. The net effect of these three variables (and surely dozens of others) could have a dramatic effect on student achievement, and ultimately, persistence at the college level. This combination of forces—the reciprocity of variables effect—gives us a net effect for each of the three planes of the geometric model.

Figure 20. Impact of Individual Factors or Attributes on Student Persistence and Achievement.

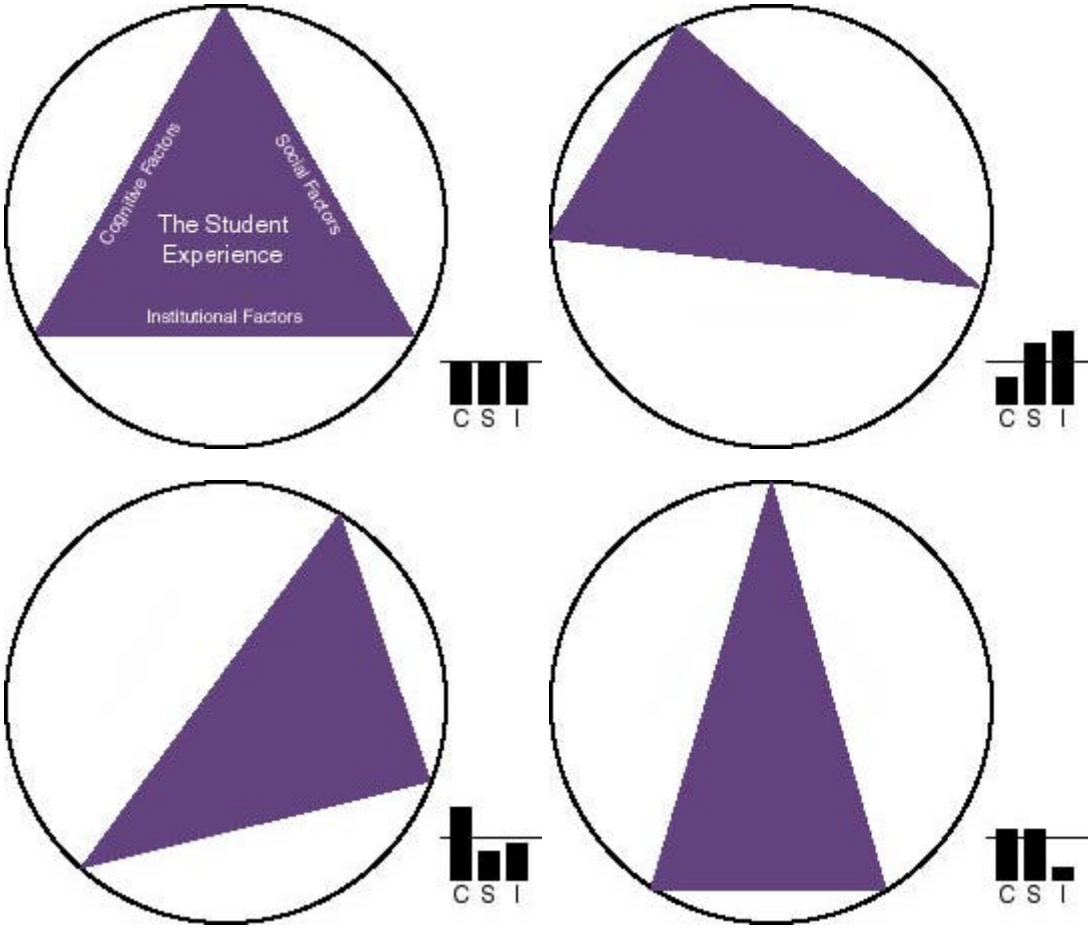


<u>*Stage Two*</u>. The second stage refers to the continuation of our reciprocity theory to the entire spectrum of variable interaction: that is, between cognitive, social, and institutional variables. The force generated by all variables—either individually or across axes—accounts for the stability or instability of student persistence and achievement.

Although balance may be achieved on each axis of the triangle (as shown in the prior figures), it is naïve to suggest that an equal balance exists between the three sides of the model, even if we could define what that balance would look like. In other words, rarely would the triangle be equilateral. The complexity of human behavior and learning theory suggests that there is an infinite combination of variables from each of the three axes that can result in an outcome measurable through student persistence and achievement. However, we use the term equilibrium when the three forces combine in a manner that supports student persistence and achievement—that is, the model is stable and supports persistence and achievement.

Also, a seemingly perfect, equilateral polygon triangle (i.e., had equal effect from each resource) does not necessarily constitute the 'best' model of stability for a student. Not only is this seemingly impossible, but it is illogical to assume that an equilateral model is a reasonable description of human ability and behavior. Rather, the individuality of the student necessitates that the model must shift and sway and evolve in a variety of ways, and still provide a model of stability. The human condition is very much an ebb-and-flow, far-from-static situation, where shifts in one social or cognitive area prompt a protective response to counterbalance that shift. To illustrate this point, Figure 21 introduces four variations of model stability, all of which are in a state of equilibrium, therefore supporting student persistence. The illustration at the top left represents our so-called 'perfect' situation where the student has relatively equivalent levels of cognitive and social resources, and requires a similar level of institutional commitment to aid their persistence and performance. The bar chart to the side of the illustration is used to help define the relative force of each axis apart from the illustration. In this case, the three levels, cognitive, social, and institutional, are similar.

Figure 21. Variations on Model Stability.



The figure top right illustrates a student with low academic resources, but excellent social skills and strong institutional intervention and support. Through social networks, strong will, and the appropriate assistance from the institution, the student may be able to apply the necessary cognitive skills, while also developing new skills, to succeed in college. An example would be a good-natured student who lacks the academic fortitude, due perhaps to below-average quality of education during middle and high school. With diagnosis from the institution and the implementation of appropriate support programs, the student could persist in college and build up his or her cognitive resources.

The figure on the bottom left represents a student with high cognitive resources and low social resources. The cognitive ability of the student is so strong that even the institutional forces are below average level. A person who may fit this model could be the stereotypical brilliant thinker whose social skills leave something to be desired. In most cases, we would think that this type of student will persist to graduation. However, because the college experience is about more than completion, and about developing the individual to their full social and academic potential, it is important for the institution to

consider interventions to help that student develop social skills that will be beneficial throughout his or her life.

The last example (lower right) illustrates a student with extremely high cognitive and social ability, therefore negating much of the need for institutional support beyond those related to basic instruction. As with our second example, the need for institutional intervention is minimal for this student. In fact, it is likely that the institution acts more as a barrier than a conduit to goal attainment for students that fit this mold. With such strong academic and social skills, plus related resources, these students probably tear through the curriculum (the classic distance education student).

As described, the graphic representations in Figure 21 illustrate four different student models, but all are considered stable because of the ability of the institution to deliver the appropriate level of support services to the student. If one component of the model is forced to overcompensate for too many negative factors attributed to the other two sides of the triangle, then the student is likely to run into problems. Thus, a student with low net cognitive resources and low net social resources is unlikely to persist in college, regardless of what the institution may provide in terms of support services.

Policy Implications of the Geometric Model

The strength of the geometric model introduced in this paper lies in the snapshot it can provide administrators and practitioners regarding the relationship between institutional practice and the academic and social needs of the campus population. If the institution is to support these needs, it is necessary that they identify and understand them. Just because a particular student population has previously exhibited certain tendencies through their academic ability does not assure an institution that all students will be representative of that behavior. Therefore, the institution must base its policy decision-making on a continual assessment of student needs, on an individual basis.

Tinto (1993), Pantages and Creedon (1978), and others have suggested the importance of institutional and student fit with regard to persistence. It is often the incongruence between the institutional goals and student goals that leads to dropout (Tinto, 1975). The nature of the person-environment fit theory also explains these phenomena (Kaplan, 1987). Differences between the commitment of students to the institution and the institution to the student may well define the comfort level of the student in terms of persistence. Part of the human condition is the need to comfort and be comforted, and institutions must provide a culture that supports these values. It is through the matching of student goals and attributes and institutional mission that a positive state of equilibrium can be developed.

This model works to help describe the persistence process, and the delicate balance between student resources (e.g., what the student brings to campus) and institutional resources (e.g., what the institution provides for the student). But the strength in the model and the conceptual framework that follows is in its ability to help institutions work proactively to support student persistence and achievement. For instance, if the institution has requisite knowledge of individual student background and goals, they can then provide a menu of programs and support opportunities to make up for any social or academic

deficiencies. Most college diagnosis is limited to the collection of SAT scores, high school GPA, and course grades, which is far from exhaustive in terms of understanding the student persona. In fact, this provides a unidimensional perspective of the student. Very little is done to observe students' affective and social talents or challenges, which are important during the transition to college. Furthermore, the standard diagnostics do not account for any "intelligences" other than the mathematical-rational. Institutions need to collect data that provide administrators and faculty with a more concise picture of their students to better understand how best to serve them. More colleges are beginning to use diagnostic assessments before matriculation to ascertain the level of academic ability of students. The next step would be to begin to ask questions regarding the social development and preparedness of students.

Let us first ask what type of data is representative of our needs. Beyond that of academic scores or ranking, institutions could develop an entirely different process for recruiting and admitting students (Guinier, 2001). The process might include the development of a portfolio of student work that covers his or her entire high school experience, including art, music, physics, languages, and even extracurricular activities. The interest and involvement of a student in the Young Astronauts Club or the Technology Student Association may be just as compelling as a physics grade, because it illustrates the student's desire, motivation, and development of knowledge within a particular discipline.

The institution might also require statements from teachers about the nature of the student, much like a letter of reference for a job application. At a certain stage, colleges should interview students and get to know them on a personal level, where appropriate. Although some colleges do this, it is not a widespread practice, especially at large campuses. The formation of pre-college outreach programs can bring students closer to the college, metaphorically speaking. Alumni clubs, recent graduates, and undergraduate and graduate students can all be used as intermediaries in the recruitment process.

Diagnostic and supplementary knowledge of the student is a vital component of the geometric model, because without knowledge, the institution is incapable of making prudent decisions on whom to admit. In fact, this process works both ways, because the initial phase of getting to know the student is also the stage where the student gets to know the institution, and only through this information sharing exploitation can either party effectively assess the "goodness of fit" between them.

It is also reasonable to assume that through the college experience, students change, both cognitively and socially. As Tinto (1992) states, "we have reasons to believe that the forces that lead to dropout in the early stages of the academic career can be quite different from those that influence dropout later" (p. 693). Therefore, institutions must provide support at each step of the process, not just during the freshman year.

A Conceptual Framework for Student Retention

Purpose of the Framework

This campus-wide retention framework that follows was designed to provide administrators with a strategy and framework to build a student retention plan that incorporates the individual needs of their students and institution. It was designed with the hope that this framework will allow administrators and planners to devote more of their time to planning and management rather than to the uncovering of research to support their actions. This is a most important provision, as the literature is often equivocal. That is, the sheer complexity of student retention and the plethora of factors that impact students before and during college makes it difficult to assess the final meaning of the aggregate research available on retention. We hope this framework helps ameliorate that problem.

With respect to program development and operation, an important aspect of the framework is the identification of organizational strategies that best support the planning and implementation of the student retention program. Regardless of the knowledge acquired and assessed by the institution, the need to follow a practical course of planning and implementation is essential to the ultimate success of any endeavor. Thus, the identification of successful organizational and planning strategies is imperative to this study and to institutions interested in fostering systemic change. These are discussed in Part IV.

From an administrative perspective, the strategies introduced in the framework are not prescriptive. They are applied as examples of institutional practices that are consistent with current thinking within the various communities as well as what we have been able to ascertain through research.

Finally, this framework will be particularly significant in providing an understanding of the various roles that will be expected and required of administrators, faculty members, and staff members on campus if the effort is to be successful.

The genesis of this research framework was a doctoral research study by Swail (1995), which focused on minority student retention in the science, engineering, and mathematics (SEM) areas. Swail's study was based on an extensive review of pertinent literature, which resulted in the development of a series of research-based institutional practices that had been shown to effectively increase minority student persistence. These were placed into five categories: student services, academic services, curriculum and instruction, recruitment and admissions, and financial aid.

The second stage involved the formation of a national panel of experts and scholars in the area of minority student persistence. Based on nominations from established scholars and practitioners, 16 experts—including vice presidents of educational foundations, senior scholars at national associations, and nationally-recognized researchers and professors—were selected to participate. Participating in a two-stage Delphi technique, the panel responded to the five-category framework introduced above.

The first Delphi round formed the foundation of the study by allowing panelists to comment on the five-category framework. Panelists were asked to rate individual objectives

of the framework on a four-point Lickert-type scale and add comments regarding each objective. After the responses were analyzed, a second round was conducted and focused on ranking and clarifying the objectives within the framework.

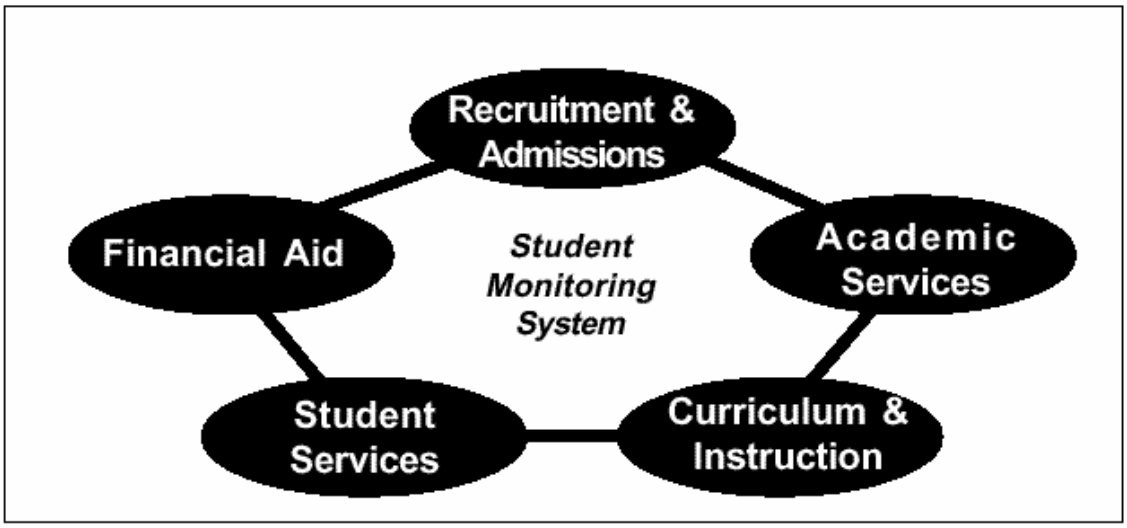
Panelists were asked to comment and modify the framework based on their specific expertise and experience. The result of this two-stage Delphi inquiry was a research-based framework that outlines a series of practices that may help reduce student attrition in the science, engineering, and mathematics fields.

In the seven years since that study concluded, a number of pertinent research studies have been conducted, and the importance of student retention has once again been recognized. Based on subsequent literature reviews and research, it was believed that the framework could easily be modified to encompass other disciplines beyond SEM.

A Research-Based Framework

Studies and issues regarding minority student persistence are not new, and many of the practices identified and outlined in this research-based framework have been presented before. Two main differences between this framework and previous efforts include the broad scope of coverage across a variety of campus issues and the specific recommendations for institutional practice. The framework provides administrators and practitioners with a menu of activities, policies, and practices to consider during the planning and implementation of a comprehensive campus-based retention program.

Figure 22. Five Components of the Student Retention Framework (Swail, 1995).



The retention framework is classified into five components based upon an extensive review of current literature (Figure 22). Four of the five components—financial aid, recruitment and admissions, academic services, and student services—are generally major departments in most four-year institutions. The fifth component, curriculum and instruction, is receiving more attention and consideration at colleges, and was added to this study because of the direct impact it has on student retention. The framework com-

ponents are further broken down into categories based on areas of specialization, and subsequently into specific objectives.

It is important that practitioners understand the relationship between framework components. Most notably would be the ability of campus departments to work together toward common goals and focus on student needs (Noel et al., 1985; Smith et al., 1985). From an organizational perspective, it is difficult to imagine how any of the components could work effectively without linkages to other areas. For instance, financial aid offices work closely with recruitment and admissions offices, while academic services must work in tandem with departmental efforts of curriculum and instruction. The framework attempts to develop additional linkages, such as those between student services and academic services, where the notion of Tinto's theory of academic and social integration (Tinto, 1975, 1993) is most relevant. The linkage of recruitment practices with pre-college academic support programs is a good example of how a campus-wide support network can help students persist toward graduation. Thus, interrelation of the five components within the framework should be a major consideration for practitioners and developers.

As viewed in Figure 22, the research-based framework is supported by a student-monitoring system. The system, identified from literature and panel discussion as an important component of a campus-wide retention program, is a resource that supports the linkage of campus components or services. Such a system, when developed to capture data that reflects the true nature of student and faculty life, provides institutions with a snapshot of student experience in terms of academic and social development (Tinto, 1993). It is with this knowledge that campus offices and personnel can generate more appropriate methods of supporting student needs. To make this system useful, institutions must ask the appropriate questions and be willing to enact systems to collect data that can answer those questions. This can be a huge amount of work, but it is undoubtedly the only way of answering the difficult but important questions that relate to student persistence.

Component One: Financial Aid

Four categories were used to describe financial aid (See Figure 23). The use of grants and scholarships, student loans, financial counseling, and assistantships/work study programs were all identified in the literature and supported by the panel to be important factors in student retention.

Although research has shown that grants are a much better predictor of student persistence compared to loans (Astin, 1982, GAO, 1995), the finite limitations on grant/scholarship availability suggest that loans and work-study options must remain open avenues for students to gain access into the nation's post-secondary institutions. Princeton, Stanford, and a host of other Ivy League campuses have made news in recent

years by making large commitments to need-based aid.[4] However, the reality outside of a handful of institutions in our entire postsecondary system suggests that colleges must develop increasingly creative and alternative ways to increase institutional aid for needy students, especially at moderately-priced private institutions.

Although some ethnic groups historically are averse to financial debt (Thomas, 1986), loans are nonetheless a standard component of most financial aid packages. Institutions must consistently review their packaging procedures and ensure that students and families are educated about the loan process, and that the loan represents a long-term investment against future returns. The delivery of accurate and easy-to-follow information regarding loan availability and regulations is an important factor for families.

A major barrier to access and persistence is the lack of information for parents and students regarding grants, loans, and scholarship opportunities. Colleges must be proactive in advising families of the price[5] of college, selection criteria, and availability of financial aid opportunities. The application process must also be designed such that it does not deter families from applying for financial aid (Astin, 1982; Collison, 1988). In the late 1990s, the U.S. Department of Education conducted focus groups and video profiles of parents and families completing the Free Application for Student Aid (FAFSA) form, which must be completed by all students applying for federal aid in the U.S. The Department found that most families, from all income levels, had trouble completing the form. While the Student Financial Aid (SFA) office within the U.S. Department of Education has made strides in this area, the financial aid process is still a maze and deterrent for many families.

One other area for consideration is the availability of emergency loans and grants for students who occasionally require additional financial support mid-way through a semester due to unanticipated costs associated with books, health care, and travel. The availability of quick turnaround funds for students can help students focus on their studies and persist through the semester.

Assistantships and work study programs can be an important part of a student's college education, especially for science majors. Astin (1975), for example, found that work study programs could increase student persistence by 15 percent. These opportunities provide students with money, experience in the field, and perhaps most importantly, networking capabilities for future employment and research possibilities. However, recent

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[4] In early 1998, Princeton University made public that it would spend an additional $6 million a year providing aid to low-income students. Within a month, both Yale and Stanford followed suit with similar promises. Although most financial aid experts applauded the news, the underlining comment from the majority was that these institutions "could afford it."

[5] Much of the discussion of the "cost" of college has been confusing to those within higher education, let alone parents and students. To this end, and in accordance with the recent report from the National College Cost Commission (1998), the amount that students/parents pay as "price" and "cost" refers to the cost associated with supplying education.

research by NCES (1998) supports Astin's finding that there is a threshold where the amount of work per week distracts students from their studies and lowers the chances of student persistence.[6]

Financial counseling is the foundation for each of the three areas previously discussed. Counseling allows campuses to reach out to families and students and offer a variety of avenues to finance college attendance. College financing is arguably one of the most important and costly endeavors a family may make, and financial aid staff must be cognizant of the burden these decisions place on families, and provide excellent support them during the decision-making process. Additionally, families need information early. Colleges can work with school systems to develop Financial Aid Nights.[7]

Figure 23. Financial Aid Component.

1 Financial Aid

1.1 Financial Aid Counseling/Training

- **1.1.1** Improve the flow and ease of information to students and families regarding college financing options.
- **1.1.2** Ensure that prospective students and families receive aid and other college information early.
- **1.1.3** Collaborate with financial management professionals to offer financial management seminars to students and families.
- **1.1.4** Provide financial aid counselors with cultural diversity/sensitivity training.

1.2 Grants and Scholarships

- **1.2.1** Maximize availability of grant and scholarship aid compared with student loans
- **1.2.2** Create additional sources of grant and scholarship aid through the private sector.
- **1.2.3** Ensure that funds are available to provide emergency grants to students as required.

1.3 Loans

- **1.3.1** Educate students and family members about student loan obligations.
- **1.3.2** Streamline bureaucracy and forms to simplify loan application process.
- **1.3.3** Integrate mandatory career development with student borrowing.
- **1.3.4** Provide emergency loans to students in need.

1.4 Assistantships and Work-study

- **1.4.1** Expand assistantships and work-study programs for undergraduates
- **1.4.2** Restrict assistantships and work-study to 15-25 hours per week for full-time undergraduates
- **1.4.3** Partner with area businesses in close proximity to campus to forge assistantships and research opportunities for undergraduates
- **1.4.4** Create opportunities with public and private businesses that lead to employment after graduation with "loan forgiveness" compensation plans

Major Objectives for Financial Aid

1) *Information dissemination*. In order to make informed decisions, appropriate information must get to students and families regarding student financial aid. The use of new technologies to deliver this information, such as computer networks and computer-interactive systems, can help families plan for college and learn more about the college environment and requirements. A number of college cost calculators are on the web, and institutions can link into these, if not have their own. However, these are only useful if the targeted constituencies are utilizing them. Institutions must devise efficient and co-

[6] Both Astin's and NCES' research found that students who worked about 15 hours generally persisted more than other students. Those who worked more hours tended to have higher rates of departure.

[7] The National Association of Student Financial Aid Administrators (NASFAA) helps coordinate Financial Aid nights around the country. For more information, see www.nasfaa.org.

herent communication paths to interested families in a method that is both informative and supportive. Yet access to these new technologies, especially computers and the Internet, is heavily influenced by family income. Thus, traditional information or access to computer-aided information must also be made available.

2) *Increase availability of need-based aid.* Colleges should attempt to revise current lending practices to increase availability of grants, scholarships, work studies, and loans to needy families. Much of this is based on federal authority, but institutions still make key decisions on institutional and other aid. A case in point is the trend to move toward merit-based aid on campus. Colleges should consider the impact of those decisions and maximize aid to needy students. The revision of current national financial aid policies, although beyond the control of individual colleges, must be watched carefully by college administrators and national collegiate association representatives.

3) *Reconsideration of aid packaging.* Steady increases of tuition and fee charges require creative packaging, especially for students from low-income backgrounds, but nonetheless for all students. The packaging of federal aid is legislatively controlled, and some private aid, such as the 'last dollar' programs, have certain restrictions on how they are packaged with other aid components. However, institutions have more flexibility with their institutional aid and can use it in a variety of ways (e.g., merit, supplementary need-based grants). Some research shows that frontloading student aid packages (i.e., coordinating financial disbursement so that students receive more money during the freshman year with diminished amounts in subsequent years) results in a more efficient use of loan money (GAO, 1995) and can help students get 'over the hump' of their college experience. However, many financial aid practitioners are wary of that practice, and would rather use it in other ways.

Component Two: Recruitment and Admissions

The three categories under the classification of recruitment and admissions include student identification, admissions, and orientation.

Tinto (1993) and other researchers (Astin, 1975; Cope and Hannah, 1975) discuss the importance of matching student goals and expectations to a college's mission. The role of the recruitment and admissions offices must be clarified to: (a) first identify students whose career and educational goals are closely matched to the institutional mission and (b) admit only those students to college.

Focus areas under this category include the recruitment of students who have been involved in pre-college preparatory programs; promotional visits to local-area secondary schools; the development of outreach programs within the target area of the institution; and the utilization and promotion of alumni clubs to recruit students.

Although traditional admissions practice incorporates some level of student assessment to verify institutional "fit," the process is not as sophisticated as it could be. Colleges should

utilize a number of assessment/evaluation practices in the admissions office to determine the extent of student-institution congruence. Although SATs and other norm-referenced tests are widely used for gatekeeping by the majority of four-year colleges, they are by no means the only measures of student ability or aptitude. Even the College Board strongly advises that the SAT should only be used in conjunction with other measures, such as GPA, class rank, and other non-cognitive measures, such as essays and interviews.[8] Additionally, colleges should consider that the admissions process is also an opportunity to accept the reciprocal responsibility of ensuring that the institution fits the student. The admissions process is primarily about service to students, not gatekeeping, even though that is a definitive role in the admissions process.

Finally, the campus orientation aspect of this component is an important part of student integration on campus, both socially and academically. Orientations should look beyond the student and offer opportunities to families and significant others, as the college experience is truly an experience for the entire family and not just the person in attendance. The Lubin House experience at Syracuse University (Elam, 1989) remains an exemplary model of satellite orientation practice and should be studied carefully by other colleges. Additionally, on-site orientations and extensive communications with families should become standard practice for any college.

Figure 24. Recruitment and Admissions Component.

2 Recruitment and Admissions

2.1 Student Identification

2.1.1	Collaborate with pre-college programs and high school counselors to identify prospective recruits.
2.1.2	Develop outreach programs that target the student demographics of interest to the institution.
2.1.3	Monitor the participation of students enrolled in pre-college programs.
2.1.4	Conduct on-campus orientation activities for counselors and teachers from local secondary school and pre-college.
2.1.5	Include work-study students and education majors on college recruitment teams to inform middle and high school students of the academic, social, and financial requirements for college participation.
2.1.6	Coordinate recruitment with alumni associations to identify prospective students.

2.2 Admissions

2.2.1	Identify students' academic and career goals and use to develop match with those of the institution.
2.2.2	Establish admissions criteria using a holistic approach for a more comprehensive assessment of students' commitment to college and compatibility with the institution.
2.2.3	Evaluate the use of college admissions tests scores in admissions profiles to ensure an appropriate mix of criteria in the admissions formula.

2.3 Orientation

2.3.1	Provide opportunities for pre-college secondary school students to live on campus.
2.3.2	Provide early student orientation activities for students and families.
2.3.3	Involve all campus departments in the student orientation process.
2.3.4	Provide orientations at satellite locations for non-local students.
2.3.5	Ensure personal communications with students and families via telephone and visitations.
2.3.6	Institute freshmen orientations as credited course requirements.

[8] The College Board, in its annual *College-Bound Seniors* Press Release each September (the release of SAT and AP data), prominently makes note of the limitations of standardized test scores and the dangers of using them without other indicators. Further information on this issues may be found from www.collegeboard.org.

Major Objectives of Recruitment and Admissions

1) *Pre-College Programs.* To ensure the efficiency of campus offices related to student recruitment, coordinators should capitalize on student data and involvement in pre-college programs offered by the institution. Students in these programs generally have already shown college aspiration, academic potential, and have been oriented to the college. Therefore, pre-college programs offer institutions an opportunity to recruit and assess student ability based upon previous contact with students and schools.

2) *Alternative Assessment Methods.* Colleges can revise current selection criteria to include a variety of assessment techniques, including portfolios, interviews, and perhaps other non-traditional methods of pre-testing. While there is concern over the cultural bias of SAT testing (Kalechstein, 1981, Dreisbach, 1982; Steele, 1999; Jencks and Phillips, 1998; Guinier, 2001), most empirical research finds the SAT and high school academic rigor and course selection as the best predictors of student persistence and success (Sedlacek and Prieto, 1990, Adelman, 1999).

3) *School Visitations.* The use of work/study students, graduate assistants, and other student personnel to make visits to local high schools (especially their alma maters) in the capacity of recruiter is a cost-effective way of reaching out to the community. This practice is appealing because of the close connection between college students and high school students as opposed to trying to bridge the gap via recruitment personnel. These interactions also help generate a peer relationship between the college and high school that may be an important part of a student's decision to attend college or a particular campus.

4) *On-Campus Living Orientation.* Providing high school students enrolled in pre-college programs with on-campus experiences, especially living opportunities, can have long-term positive impacts on their aspiration for postsecondary studies. This practice has practical application for both students and colleges, first by giving students opportunities to test the college environment and become more familiar and comfortable with the college, and second, to allow colleges a much better chance of recruiting students who have had extended visits to the campus.

5) *Freshman Orientation.* Linking freshman orientation programs with course credit generally increases the interest and attention of students and justifies its importance to students in relation to their academic pursuits. Some universities have designed one, two, or three-credit hour programs for first semester students. Although the establishment of mandatory orientations without credit is a standard practice on many campuses, students often resent this use of their time. This is particularly true when orientations are poorly planned and offer students little in terms of increased knowledge regarding university services and regulations or useful skills.

Component Three: Academic Services

The academic services component is the most diversified and expansive component explored within the framework. The focus of academic services in terms of student retention and persistence is on providing supplementary support to students in addition to classroom/lecture practice. This component is divided into six categories, including: academic advising, supplementary instruction, tutoring/mentoring activities, research opportunities, pre-college programming, and bridging programs.

Effective academic advising is important to laying out an appropriate course map for students. Forrest (1982) and Beal (1978) are among those researchers who suggest that academic advising is an important part of an effective student retention program. To be effective, it is important that students receive guidance that reflects their needs while also incorporating the knowledge of campus programming and bureaucratic practices. Prospective advisors need to be trained accordingly to handle a variety of issues during advising sessions.

Many campuses have initiated computer-based advising systems. While these systems are cost effective, they do not allow for the development of relationships or the interaction between advisor and student, an important opportunity to talk with the student about his or her progress.

Beal (1978) also noted the importance of using faculty as student advisers. This has many potential benefits, including role modeling and mentoring in addition to the academic guidance that may be offered. However, faculty members must be appropriately briefed and trained on various issues and policies of the institution. This practice is not often followed at institutions.

Supplementary instruction programs are prominent on many colleges and university campuses. The Supplementary Instruction (SI) program developed at the University of Missouri-Kansas City is perhaps the most widespread program in use. However, in addition to providing remedial activities and supplementary support, departments must also continue to develop better strategies that increase knowledge acquisition and improve the learning process for all students.

Tutoring and mentoring practices form another support network for students. Colleges must make tutoring support available and affordable to students with such need. Faculty members should also make themselves available for academic assistance. This “out-of-classroom” contact between students and faculty members has been substantiated by many researchers as an important factor in student persistence (Ugbah and Williams, 1989; Griffen, 1992), and has ramifications on the student’s personal, social, and intellectual development (Griffen, 1992).

Students in science-based disciplines (social and physical) can benefit greatly from research opportunities. The link between classroom theory and real-world practice has positive implications upon a student’s retention of knowledge while also making him or

her more marketable after graduation. The development of local business partnerships and encouragement of on-campus research can create excellent opportunities for students.

Pre-college programs provide an opportunity for the campus to work actively with elementary and secondary students (Swail and Perna, 2000). The federally-funded TRIO programs (including Upward Bound, Talent Search, and Student Support Services) have provided support to low-income and other students for over 30 years. As well, partnerships through the federal GEARUP (Gaining Early Awareness and Readiness for Undergraduate Programs) initiative has heightened awareness and interest among many colleges. In addition, other regional programs, such as MESA (Mathematics, Engineering, and Science Achievement) and MSEN (Mathematics and Science Education Network) programs are examples of how pre-college programs can help motivate students toward those areas. Colleges can benefit greatly from the establishment of these and other programs and the ensuing partnerships with K-12 schools and community organizations.

Bridging programs are an off-shoot of the pre-college program, but are more specific in nature. Colleges can effectively utilize a student's senior year or summer before matriculation to help further develop and orient the student's knowledge and ability to meet freshman program requirements. Study skills, time management, and course-related study are popular content strategies.

Figure 25. Academic Services Component.

3 Academic Services

3.1 Academic Advising

- **3.1.1** Provide ongoing professional development opportunities for counseling staff.
- **3.1.2** Provide appropriate academic advising and counseling to students throughout the college experience.
- **3.1.3** If faculty members act as academic advisors, ensure that they are properly trained and are cognizant of specific policies, course structures, and credit requirements within the institution.

3.2 Supplementary Instruction

- **3.2.1** Encourage the development of peer study groups to foster learning.
- **3.2.2** Incorporate more practical application exercises with class assignments.
- **3.2.3** Integrate a variety of instructional methods to support student learning.
- **3.2.4** Employ peer instructors for supplementary instruction, when possible.
- **3.2.5** Develop academic learning centers to provide supplementary support for students.
- **3.2.6** Provide non-classroom opportunities for student-faculty interaction.

3.3 Tutoring/ Mentoring

- **3.3.1** Provide regularly scheduled, easy access tutoring to students for all courses
- **3.3.2** Use Teaching Assistants (TAs,) Research Assistants (RAs) and exemplary undergraduates as tutors.
- **3.3.3** Encourage peer tutoring and group studying within class population.
- **3.3.4** Encourage faculty members to support the academic development of students outside of class time.
- **3.3.5** Create incentives for faculty participation in mentoring programs.
- **3.3.6** Recruit a diverse mentoring staff of students, faculty, and staff.

3.4 Research Opportunities

- **3.4.1** Support the development of faculty-student research projects.
- **3.4.2** Integrate regular research activities into curricula.
- **3.4.3** Develop partnerships with industry for research opportunities.
- **3.4.4** Collaborate with business and industry on in-class presentations and experiments.

3.5 Pre-College Programs

- **3.5.1** Develop pre-college programs at elementary and secondary education levels.
- **3.5.2** Offer pre-college programs on and off campus
- **3.5.3** Monitor students' progress in pre-college programs.

3.6 Bridging Programs

- **3.6.1** Provide summer academic and social support for students requiring additional support during the summer before matriculation.
- **3.6.2** Provide on-campus residency to students during bridge program participation.
- **3.6.3** Monitor all students' progress in bridging programs.

Major Objectives for Academic Services

1) *Academic Advising.* Colleges should implement a regular and standard practice of academic advising for students required by each office. Student attitudes are also directly related to persistence, and a pro-active advising system of checks-and-balances would require scheduled meetings to catch problems before they occur. This should be face-to-face, and not computer-moderated.

2) *Diversity in Instruction.* Supplementary instruction programs should utilize a combination of successful instructional techniques that support learning preferences of the entire student audience. Online and distance education has helped raise the bar for teaching and learning on campus, and faculty need to be more aware of the interaction of teaching styles and pedagogy with student learning styles (Whimbey et al., 1977; Hyman, 1988).

3) *Bridging Programs.* Colleges should focus on developing academic bridge programs between senior year in high school and the freshman year in college. On-campus intervention programs afford students a number of potential benefits, including the opportunity to (a) become acclimated to the campus, (b) work through some of the freshman problems before the fall semester begins, (c) receive academic support in areas

of weakness, and (d) become accustomed to the pace associated with academic learning at the college level.

4) *Pre-College Programs.* To help develop the pipeline of students interested in attending college, institutions should place considerable resources into the development of pre-college programs wherever possible and practical. These programs, provided at levels as early as elementary school, help motivate students, get them thinking about the possibility of college, and provide important academic support and 'college knowledge' to students and their families (Swail, 2000).

5) *Encourage Informal Faculty-Student Contact.* Colleges should try and promote informal contact between faculty members and students to build trust, support, and motivation during the college experience. Out-of-class contact with a student can create a bond and a sense of self-worth that can positively effect a student's locus of control and impact future decisions regarding college. Extra assistance on projects, informal discussions regarding academic subjects, and special social gatherings can encourage this type of interaction.

Component Four: Curriculum and Instruction

The continued development of curricula and pedagogical practice is perhaps the most important and fundamental need that colleges must address in terms of student retention. The need to revise current practices, especially in gatekeeper courses, stems from what Tobias acknowledges as the practice of designing courses that are "unapologetically competitive, selective and intimidating, [and] designed to winnow out all but the 'top tier' " (Tobias, 1990).

Of primary importance to academic offices should be the continuous process of curriculum review and revision. This process should, in fact, become a mainstream component of curriculum development. Especially in terms of science, engineering, and mathematics, academic content must reflect the current dynamics of industry practice to be worthwhile and effective. Therefore, to prepare students for employment within SEM fields in the near future, it follows that SEM curricula must not only relate to current industry trends and practices, but also to anticipated practices and procedures (e.g., cutting edge technology/research). Colleges should attempt to gain access to new equipment and provide instruction that utilizes state-of-the-art instructional technologies to ensure that materials are presented in a fashion that is commensurate with student learning preferences. The communication age has radically altered traditional learning and teaching styles, especially for students currently in elementary and secondary classrooms. Computers are second nature to new students matriculating to college or attending pre-college programs. Within a few years, virtual reality, a technology embodied as the ultimate in applied scientific and medical training, may also be second nature to undergraduates. Thus, colleges must allocate resources to the development of new teaching strategies that incorporate the latest in educational and industrial technology. Without these considera-

tions, students may find that their knowledge is not aligned with the needs of society upon their graduation, when they should be on the cutting edge.

With the revision of curricular and instructional approaches also comes the need for a revision of assessment practices on campus. If new curricular practices focus on a higher level of knowledge and understanding on the part of the learner, assessment practices must be able to document this higher learning. Thus, traditional methods of student evaluation are not appropriate to meet the needs of emerging teaching practice. The incorporation of instruments which: a) measure student comprehension rather than memorization; and b) use a variety of assessment methods, may offer a more accurate picture of student development and comprehension.

The instructional capacity of faculty to deliver materials in an exciting, interesting, and motivating manner is also essential to the quality of education delivered by an institution. Research has shown that student achievement benefits from the use of smaller classes and group practice. The hands-on and group collaborative approach made popular by the Emerging Scholars Program at Berkeley (Fullilove and Treisman, 1990) has shown that students, with specific reference to African Americans, are more likely to increase their academic performance than students not involved in these programs. In effect, instructors must begin to employ practices more popularly related to K-12 education in order to reach students effectively.

Finally, if these areas are to become standard practice, faculty must receive appropriate training and support. Faculty development activities, with specific focus on teaching and assessment strategies, must become a basic foundation for instructional practice at colleges. The possible implementation or restructuring of faculty reward systems could provide incentive for teaching on campus.

Figure 26. Curriculum and Instruction Component.

4 Curriculum and Instruction	
4.1 Curriculum Review and Revision **4.1.1** Design curricula with interdisciplinary and real-world emphasis to stimulate interest and profound understanding on behalf of students. **4.1.2** Develop a continuous review process of curricula utilizing faculty, student and outside consultation. **4.1.3** Incorporate current and innovative technologies into the curriculum	**4.3 Assessment Strategies** **4.3.1** Develop assessment instruments that require students to utilize diverse cognitive skills **4.3.2** Perform regular student testing and assessment to monitor student progress (e.g., standard question/answer tests, lab assignments, out-of-class assignments, observation, portfolios, etc.) **4.3.3** Employ early intervention programs to identify and assist students experiencing academic difficulty in each semester. **4.3.4** Develop digital monitoring system for instant trend analyses of student's achievement as determined by assessment tools.
4.2 Instructional Strategies **4.2.1** Incorporate interactive, relevant, hands on, exploratory, instructional practices. **4.2.2** Establish learning communities **4.2.3** Integrate Supplemental Instruction into the curriculum **4.2.4** Provide students with short- and long-term research and application assignments. **4.2.5** Utilize educational technologies to complement instruction.	**4.4 Faculty Development/Resources** **4.4.1** Provide appropriate in-service development opportunities for teaching faculty. **4.4.2** Establish teaching faculty reward system. **4.4.3** Create a center for teaching excellence to support faculty development. **4.4.4** Identify and/or provide grant opportunities for classroom research.

Major Objectives for Curriculum and Instruction

1) *Instructional Practices.* Colleges should attempt to utilize various methods of delivering content to students, focusing on comprehension rather than rote memorization. The use of hands-on, exploratory, and peer learning groups are a few methods of motivating students to learn. A good balance between is the use of a variety of instructional methods rather than one dominant method.

2) *Curricula Review.* Colleges should develop an integrated process of curriculum review to ensure that all curriculum pieces are up-to-date and relevant to the society's needs. At many universities, individual faculty members are left in isolation to decide what to include in a course syllabus, leaving much to be desired in terms of "quality control." This is a greater issue considering that most faculty have little or no background in learning theory or educational practice. Therefore, a systemic and cyclical review process that allows for faculty to review all curricula on a rotating basis would help control the content delivered in classes. Additionally, it also serves to keep curricula current.

3) *Professional Development.* Colleges need to provide extensive and ongoing professional development to faculty and staff to incorporate new teaching strategies and assessment techniques. With regard to the discussion of curriculum revision and assessment, faculty cannot be expected to teach specific, if not more standard, courses without opportunities to share and learn from others with differential experience. If colleges and universities are serious about teaching as a focus of their mission, then it is incumbent upon them to provide support for their instructional staff.

4) *Assessment Techniques.* Campuses should design and implement new assessment techniques which are multi-faceted and regard the integrity of human learning and understanding. Teaching and learning practices that require students to evaluate, synthesize, analyze, and create, also require new methods of assessing student progress (Ryan and Kuhs, 1993; Bird, 1990).

Component Five: Student Services

As Tinto (1993) and others have suggested, the "social integration" of students with the institution is an important factor in their ability to persist. The role of the student services office has evolved to deal with many of the issues facing students on campus. The atmosphere and climate of a university, reflected by how the institution treats and supports students and by the positive nature of peer relations on campus, is important to the self-esteem and confidence a student generates. Neisler (1992) concluded that personal, emotional, and family problems, in addition to feelings of isolation and adjustment to college life, are strong barriers to retention for African American students. Therefore, the campus must focus on developing an atmosphere that is supportive, safe, and pluralistic. The outcomes of this study found that campus climate, accessibility to campus, campus housing, and career and personal counseling are areas that should be considered in terms of their effect on student retention.

Campus climate is not some intangible, abstract concept that 'just happens.' More accurately stated, campus climate is the development of the beliefs and practices of the administration, faculty, staff, and students belonging to that institution. Therefore, it can be created, and to some degree, controlled. To develop a positive campus climate supportive of learning and human development, campuses should promote diversity on campus and extol the virtues of shared culture (Justiz, 1994). This practice allows colleges and universities to better reflect the changes in society and promote pluralism. Ensuring safety for students and providing social opportunities for students to forge new friendships and build trust with their fellow classmates are examples. The existence of student groups and organizations can also support a positive climate by integrating students into the campus environment.

Accessibility to campus is also an important concept for institutions to consider. Administrators must consider the use of flexible scheduling practices to allow students with different schedules to be able to enroll in classes required for graduation. The use of weekends and evenings are alternative methods for class scheduling, as are online course opportunities. An additional consideration is the linkage of public transportation systems to campus. Students who have difficult times accessing the campus are less likely to persist. However, the utilization of distance learning technologies may also help alleviate these problems.

On-campus housing is an important element directly related to student persistence due to the integration of the student to the campus (Pascarella, 1984; Chickering, 1974; Astin, 1977; Pantages and Creedon, 1978). However, colleges must ensure that housing is ac-

cessible and affordable for the student population, and offer choices in terms of type of housing. Poor housing options can be a major deterrent to persistence.

Studies of the effects of counseling and at-risk students (Steinmiller and Steinmiller, 1991), African Americans (Trippi and Cheatham, 1992), and first-generation students (Richardson and Skinner, 1992) confirm that counseling services are important components of student retention programs. Colleges must deal with the added stress and burden that today's students bring with them to campus. Counseling services must provide support for students in terms of social needs and career counseling, and make them accessible to the student population.

Figure 27. Student Services Component.

5 Student Services

5.1 Campus Climate

5.1.1 Build a supportive pluralist environment for students by embracing multiculturalism through campus leadership, faculty, staff, student enrollments, curricula, programming, and campus artifacts.

5.1.2 Provide a safe campus for all students, faculty, staff, and visitors

5.1.3 Support campus student organizations that help develop a positive campus culture.

5.1.4 Work with academic services to provide non-classroom opportunities for student-faculty interaction.

5.1.5 Develop social activities that build community among all campus constituencies, e.g., intramural sports and academics, convocations, homecoming, entertainment, etc.

5.3 Housing

5.3.1 Ensure affordable housing and meal plans.

5.3.2 Encourage on campus residency for undergraduates.

5.3.3 Provide the appropriate number of housing slots to meet the needs of the student body.

5.3.4 If college experiences a campus housing shortage, ensure on campus housing for underclassmen.

5.3.5 Provide campus residents housed off site with additional services to support campus integration.

5.3.6 Incorporate special living-learning housing options to further academically integrate students.

5.4 Accessibility/Transportation

5.4.1 Ensure transportation link with local area transit system for increased access to campus.

5.4.2 Offer classes in a variety of timeslots to permit flexible scheduling by students, including weekends and Friday-Saturday course combinations.

5.4.3 Utilize distance-learning technologies and practices to broaden and support student participation and allow increased flexibility of courses schedules.

5.5 Counseling

5.5.1 Provide counseling, psychological, and other health services to students to enhance coping strategies.

5.5.2 Provide career counseling that connects academic and financial advising to ensure students are following the proper path to reach their goals.

5.5.3 Offer counseling services cultural and racially sensitive.

5.5.4 Offer a variety of counseling resources (e.g.. legal services and family counseling) and techniques, including individual, group, peer, computer, and video sessions, as necessary.

Major Objectives for Social Services

1) *Diversity and Multiculturalism.* Colleges can build a pluralistic environment by promoting diversity and multiculturalism through special programming and activities. Studies by Astin (1993) and Justiz (1994) found that campuses embracing diversity and multiculturalism attracted student populations that were very positive, capable of change, and were academically skilled.

2) *Flexible Scheduling.* Allowing the scheduling of classes in a variety of timeslots allows a broader constituency of students to attend classes. Many universities have fixed schedules which allow for little flexibility in course selection, mostly because of budget reasons. However, there are instances when this occurs due to the inflexibility of faculty to try different schedules. Adding Saturday courses, or moving courses around the schedule, may allow students to enroll in more of the classes they need during a semester rather than wait for a rotation where they have no conflict. The targeted use of distance education can also provide flexibility in scheduling.

3) *Career Counseling.* Colleges must ensure that students are sent on an academic track that will direct them toward their career destination. Occasionally, students are advised to take certain courses that in reality are poor choices and may extend their attendance. Career and academic counselors need to be well-versed in the requirements, schedules, and policies regarding graduation as well as a keen knowledge of what business and industry are looking for. This can only be done through an expansive knowledge of the student by qualified counselors.

4) *Faculty-Student Interaction.* Informal contact between faculty members and students are part of a rich atmosphere of sharing and caring at college campuses. Students feel much more relaxed and cared for when faculty are committed to their success. The sister version of this objective was presented under the academic services component. As stated previously, the social integration of students is paramount to student persistence, enjoyment, and achievement in college. The willingness and acceptance of staff to "rub shoulders" with students beyond the confines of the classroom can have long-lasting effects.

5) *Room and Board.* Affordability and comfort are important considerations for students in terms of housing and meals. Campuses should look at numerous plans which allow students to choose the type of housing which best meets their financial ability and living requirements. This impacts mature students with families, economically disadvantaged students, and those students living far from home.

Monitoring Student Progress

At the center of the conceptual framework is "Monitoring Student Progress." This is an important aspect of retaining students and, from an organizational perspective, is a critical part of a continuous-improvement process. Simply put, without data there is no normative relationship with where an organization once was to where it is now, let alone where it might be tomorrow. The use of a monitoring system allows several events to take place. First, it allows university personnel to follow a student's progress and anticipate an expected need on behalf of the student. For example, a student's downward spiral of grades in physics, if identified by a faculty member or other staff member, can issue a warning that the student requires tutorial assistance and support in order to get back on track. However, unless someone or some department is privy to the appropriate information, this student, like countless others, are likely to "fall through the cracks."

A student monitoring system is also necessary in terms of assessing the impacts of interventions and other retention strategies. Tinto (1993) suggests that the development of such a system must first be student-centered. That is, it must collect information on every aspect of student development and focus on that progress. The collection of information provides the institution with a "snapshot" of student progress, and according to Tinto, should detail the social and academic experiences of the student, "as understood by students" (p. 214).

Tinto's (1993) description of a retention assessment system emphasizes three main requirements in order to be successful: the system must be comprehensive, longitudinal, and recursive:

The process must be comprehensive. The system must incorporate both quantitative and qualitative methods of data collection to ensure that a representative portrait is developed of each student. Surveys and other instruments can collect important information on student progress, but are susceptible to low response rates. The use of qualitative methods, in the form of focus groups, interviews, and other designs help fill information gaps and triangulate the information.

The process must be longitudinal. Since the process of student withdrawal from higher education is longitudinal in nature, so must student assessment. Therefore, collection and monitoring of student progress must involve more than the freshman experience, and preferably commence before students are officially admitted to the college. The advantage of this practice is that school officials may become aware of potential needs before the student comes to the campus. Thus, the college can prepare in advance for the social and academic needs of each student.

The process must be recursive. Recursive refers to the continuing process of data collection in order to develop university-wide trends among the student body. Only through an ongoing collection and analysis of student and organizational data can trends be developed, and analysis of those trends provides the normative reflection to identify successes and remaining challenges on campus. This is, in nature, an important component of continuous improvement.

PART IV. IMPLEMENTATION, LEADERSHIP, AND CONCLUDING THOUGHTS

> "It's impossible to really innovate unless you can deal with all aspects of a problem. If you can only deal with yolks or Whites, it's pretty hard to make an omelet." (Gene Amdahl, in Levitz and Noel, 1985, p. 351)

The above philosophy is key to any success that a retention program may have at any university. The look at the "big picture" is an important need as suggested by much of the literature. Martin (1985) suggests that too many schools have focused on admission exercises and recruitment programs instead of focusing resources on an institution-wide program to reduce attrition. In order to put things in the right perspective, Astin (1994) states that educators must do two things: (1) look at issues from a system perspective rather than an institutional perspective and (2) view educational institutions in the same light as other public services providers, such as hospitals and clinics. Higher education is now at a stage where it must begin to look at the "big picture" and anticipate the needs of society as a whole and match that with the needs of the student.

Tinto (1993) developed three principles of an effective retention program. First and foremost is that any program must be committed to the students that they serve. The focus of program attention should be to the targeted population and not to other factors that may cause the direction of the program to go "out of focus." Second, an effective retention program must be committed to the education of all students, and not just some. Thus, a retention program, while it may incorporate special interventions for special populations, must address the needs of all students in order for the institution to meet its mission of providing quality education to all. Third, an effective retention program must be committed to the development of supportive social and educational communities on campus. Again, ensuring the social and academic integration of students is, according to Tinto, the most important issue to contend with in terms of student persistence.

Important Organizational Considerations in Developing an Institution-Wide Retention Program

The development of any program at any university requires a multi-faceted process incorporating all individuals involved. In terms of an institution-wide project, the advice of Flannery et al. (1973) must be remembered: that the entire institution must take part. From an institutional point of view, there are many things that must happen on campus to ensure that positive change can take place.

Clewell and Ficklen (1986), in their examination of effective institutional practices at four-year institutions, identified the following characteristics which each of the institutions employing effective practice shared:

(a) the presence of stated policy;

(b) High level of institutional commitment;
(c) Institutionalization of the program;
(d) Comprehensive services, dedicated staff, and strong faculty support;
(e) Atmosphere that allows students to participate without feeling stigmatized; and
(f) Collection of data to monitor student progress.

Institutional focus is the key ingredient of the above set of characteristics. Stated policy, institutional commitment, comprehensive service, supportive atmosphere, and the ability to assess progress all point to the importance of a collective vision and ownership on the part of the entire campus, including administration, faculty, staff, and especially students. As will be discussed, leadership and faculty ownership are key variables in a successful equation, and messages sent down from the top are critical to support from underneath.

A very useful set of action principles for implementation of a retention program are offered by Tinto (1993: See Table 6). As has been established by other models, the importance of assessment, ownership, collaboration, institution-wide coverage, and commitment are essential to Tinto's principles. In addition, the development of appropriate skills by the faculty and staff is acknowledged, as well as the principle of frontloading the program for freshman students.

Table 6. Tinto's Seven Action Principles of Successful Implementation.

1.	Institutions should provide resources for program development and incentives for program participation that reach out to faculty and staff alike.
2.	Institutions should commit themselves to a long-term process of program development.
3.	Institutions should place ownership for institutional change in the hands of those across the campus who have to implement that change.
4.	Institutional actions should be coordinated in a collaborative fashion to insure a systematic, campus-wide approach to student retention.
5.	Institutions should act to insure that faculty and staff possess the skills needed to assist and educate their students.
6.	Institutions should frontload their efforts on behalf of student retention.
7.	Institutions and programs should continually assess their actions with an eye toward improvement. (Tinto, 1993)

The issue of institution-wide change and the coordination of effort across all departments and levels are essential to real change. However, as Kanter (1983) notes, any change at the institutional or individual level is a complex phenomenon. In describing the interdependent nature of campus change, Smith, Lippett, and Sprandel (1985) discuss the organizational nature of the college institution. In their discussion, the authors describe a set of four interdependent parts of the higher education structure that must interact in order to support change. First is a vertical set of relations between system levels, such as Trustees, administrators, and faculty members. Second is a set of horizontal relations between departments, administrations, student organizations, and others. The third part is the element of time: past, present, and future. Smith et al. claim that the tradition of the past, the practice of the present, and the goals and perspectives of the future all are important perspectives to consider. Finally, the relation of the system and the environment, including political, physical, and economic, provides the final interdependent component.

The pursuit of institutional change, according to Smith et al. (1985), is dependent upon the ability of those leading the change to orchestrate all of the parts described above, a process which often takes too much of the project energy. These different interdependent parts of the organization are barriers to change. In addition, they also become barriers to communications between colleagues and levels.

In fact, the energy required to push through a large-scale retention program can often derail the entire process. While it is true that much effort must be spent on coordination and team building to ensure buy-in across campus, the leadership of the effort must carefully weigh how much energy goes into planning and operations as it does into the actual interventions that make up the program. Team members that are burned out by the time the actual intervention comes to fruition will tend to "buy-out" of the project when it truly counts.

Regardless of the structure of institutional change, Smith et al. (1985) also acknowledge the process of change. In particular, four levels of readiness must be attained in order to produce desired results and must involve each of the four parts already acknowledged. Level One is a stage of *latency*. As suggested, there is no action at this point, and no leadership or sanction. Not until the institution has reached Level Two, the *Awareness* level, is there much acknowledgment of the project. At this level, the need for system-wide action is realized, but rarely without the aid of an internal or external consultant/expert. Level Three is the *Intent to Act* stage. Leadership lends its support publicly at this point, sending out supportive and formal messages. Finally, Level Four is the *Energy* stage, where the project is put into action.

Implementing Campus-Wide Programs

Developing and implementation a comprehensive student retention program requires a commitment from leaders, faculty, and staff. Through our discussion with some of these individuals, as well as our review of related research, we were able to come up with a short list of essential factors in establishing such a program. According to our research, a comprehensive student retention program must:

- **Rely on proven research.** Given the resources and effort that must go into a campus-wide retention program, the final plan must be based on solid, proven evidence of success. It's an awful long way to travel with no idea of the outcome. If such an effort fails, the task of putting the pieces back together would be daunting, to say the least. Spend time looking at what works, and borrow from the best.
- **Suit the particular needs of the campus.** Not all campuses are equal. That said, no "boxed" retention program works the same on any two campuses. All efforts must be shaped to meet the specific needs of each campus.
- **Institutionalize and become a regular part of campus service**. At the start of any program, it is usually a special project supported by outside funds. However, in the end, any successful effort must be institutionalized with respect to funding, policy, and practice. Outside funding does not last

forever, and stated policy ensures that any interventions can become a mainstay in campus-based practices.

- **Involve all campus departments and all campus personnel.** Everyone must be involved at some level. The most successful practices engage the entire campus, while the least successful strategies are very compartmentalized. We have seen "campus-wide" programs that individuals in certain parts of campus didn't even know about. Needless to say, they weren't successful. However, those institutions that had a broad outreach among faculty and staff, with clearly stated policy and practical objectives tended to be successful.
- **Take into consideration the dynamics of the change process and provide extensive and appropriate retraining of staff.** Change is difficult and uncomfortable. Do not underestimate the impact of change on one's ability to push through policy changes on campus. Team members must be brought along and be given all opportunities to learn about the interventions and develop appropriate skill sets as necessary.
- **Focus on students.** While this sounds like a given, many programs end up making the effort about themselves and not the clients. Everything should point to how it affects students and persistence on campus. This is a good mindset for all institutional practice that often gets lost in the "career" mindset of board members, administrators, faculty members, and staff. Students are central to all operations on a campus.
- **Ensure that the program is fiscally-responsible.** Soft monies (e.g., grants) provide a good foundation for start-up, but are not a long-term solution to persistence issues at any institution. An important component of a strategic plan for retention is the building in of a long-term fiscal plan to ensure that the program can operate internally without external support.
- **Support institutional research in the monitoring of programs and students.** Data and analysis on all interventions, programs, and ultimately students are the saving grace of any campus change model. One must have the numbers to show whether movement has been made, positively or negatively.
- **Be patient.** All change takes time, and change theory tells us that change usually takes a negative tack before the eventual positive change occurs. Understand that this trend is a normal mode, so some negative changes will happen before the positive yield will be seen. So, leaders and other team members must be patient and understand that this is a long-term effort that will have its rough spots.
- **Be sensitive to student needs and target the most needy student populations.** All students can benefit from a retention effort on campus, whether through improved tutoring programs or increased need-based aid opportunities. However, any program should target the most needy students on campus, knowing that others will benefit from any changes made.

The development of a campus-wide retention program requires: (a) supportive leadership; (b) the willingness to evoke change on campus; and (c) a careful planning effort. If any of these essential factors are missing, the chances for success are limited. Once institutions

have ensured that the climate for change exists and the support and guidance of campus leadership is present, there are several steps or stages that need to take place. These consist of pre-planning, planning, implementation, and program monitoring. This is a strategic process that can be developed in line with an institution's strategic planning schedule.

Stage 1- Pre-Planning

The pre-planning stage provides campus leadership with the information necessary to identify challenges and issues that the campus must face. During this initial stage, the institution must:

- Analyze the size and scope of retention issue on campus'
- Identify student needs on campus;
- Assess the status and effectiveness of current retention strategies and programs on campus;
- Identify institutional resources that may be utilized or redirected;
- Identify successful retention strategies at other campuses.

This is, in effect, an information-collecting stage that may be done internally, but sometimes carries more weight when handled through an outside consultant in partnership with the leadership team. With a solid foundation of evidence, the project team stands a much better chance of enhancing the buy-in of other institutional partners. As well, this information will allow the committee to make prudent decisions on what direction to follow in *Stage 2 - Planning*.

Stage 2 - Planning

The planning stage is the longest stage of the developmental process, as special care must be taken to involve the entire campus in the creation of the program. This is where the buy-in occurs across campus. The planning stage must carefully assess the research conducted in Stage 1, develop a redefined sense of purpose and goals, and develop an appropriate retention plan that meets those goals. The main activities of Stage 2 include:

- The refinement or enhancement of the college mission statement and goals;
- The development of organizational strategies;
- The identification of key stakeholders on/off campus and their roles within the retention process;
- The assessment, presentation, and discussion of pre-planning data;
- The development of retention program components and operation strategies; and
- Development of implementation plan.

Stage 3 - Implementation

The implementation of the retention program should be according to the plan devised in Stage 2. It is critical for the administration to provide support, both political and finan-

cial, during the implementation stage for any unforeseen circumstances and difficulties encountered.

Stage 4 - Program Monitoring

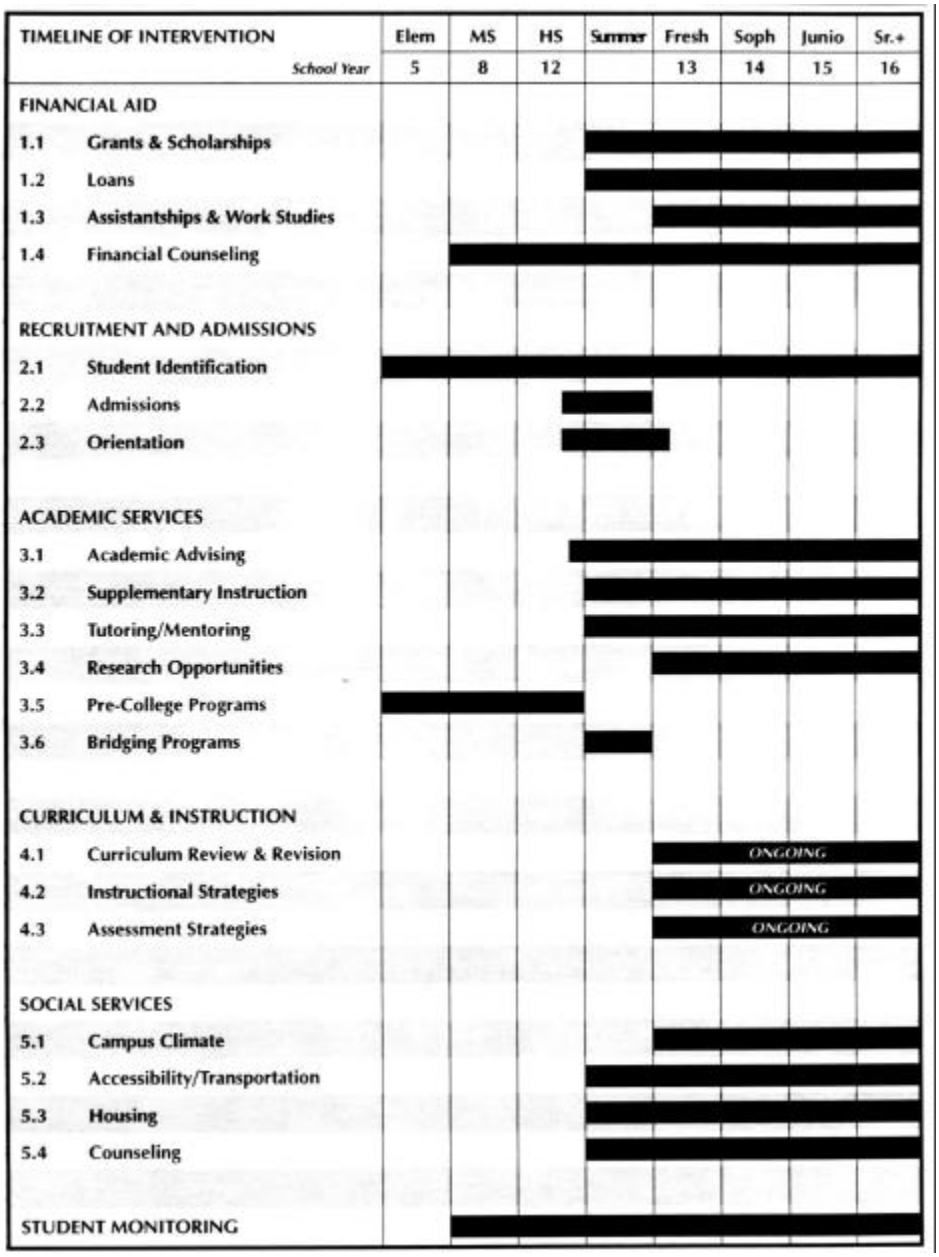
The monitoring of the retention program is an essential practice that must be entrenched in the design of the system. Without the careful planning of an assessment strategy, the true value and effect of the program components can never be measured. The monitoring system should provide ongoing data to all campus personnel involved in the operation of the retention effort. The main practices that must be conducted include:

- ? Data collection and analysis of program components and student performance;
- ? Dissemination of data to stakeholders; and
- ? Ensure that conclusions based on program monitoring are incorporated in program revisions.

Strategic Timing

With regard to the conceptual framework introduced in Part III, the following GANTT chart provides a look at the timing of particular strategies. This chart helps us understand the scope of involvement and outreach by the institution. As can be seen, some of these strategies follow back to elementary school, while other college-age interventions last throughout the college experience.

Figure 28. Timeline of Interventions Relative to the Conceptual Framework for Student Retention.



The Importance of Leadership on Student Retention

Many campuses have launched recruitment and retention programs geared toward improving the success rates of low-income and other disadvantaged students. These programs often use several strategies, such as faculty and student mentoring, peer advising, and academic and social counseling to encourage at-risk students to remain enrolled (Sallie Mae, 1999).

However, less discussed is the role of the president and other campus leaders in developing, designing, and implementing successful retention efforts. Yet, prior research has demonstrated that senior leadership on campus is often the key ingredient needed to implement these programs. For example, Redd and Scott (1997) used data from the *AASCU/Sallie Mae National Retention Project* to illustrate the effects of senior leadership on retention. On successful campus efforts, senior leadership plays two important roles. First, the president and his or her key cabinet officers regularly monitor their institutions' progress toward clearly stated campus retention goals. Redd and Scott (1997) noted: "Nearly 90 percent of the high-rate colleges said that *senior administrators regularly monitor information about progress in increasing retention and graduation rates of students* was descriptive or very descriptive of their institutions, compared [with] 69.3 percent of the low-rate colleges."

Second, the campus' chief executive officer is usually the one person at the institution who can bring all the interested parties—students, parents, other campus administrators, faculty, and staff—together toward the goals of retention. Sallie Mae, in its *Supporting the Historically Black College and University Mission: The Sallie Mae HBCU Default Management Project* (1999), noted that the president must coordinate "strategies [that] can be developed to help increase student success…The president must remain fully informed of the [campus'] activities and help each of these units contribute to the goal of raising student achievement. Only leadership from the president or chancellor can bring [campus] units together" for the purposes of raising retention rates (Sallie Mae, 1999).

The president can play other roles as well in their institutions' efforts to improve retention. According to Earl S. Richardson, president of Morgan State University, an HBCU in Baltimore, MD, the president should emphasize four areas on his or her campus in order to improve retention (Alliance for Equity in Higher Education, 2001):

- Increase need-based financial aid for low-income, at-risk students;
- Require attention in classroom advising;
- Use the campus' social and cultural activities to keep students focused; and
- Encourage academic advising outside of the classroom.

However, according to Richardson, presidents "need to deal with all four areas together… [The] campuses must become a community for students" in order for retention efforts to succeed (Alliance for Equity in Higher Education, 2001). In many instances, the president is the one person on campus who can integrate all four areas and strategies to work cohesively and simultaneously for students (Alliance for Equity in Higher Education, 2001).

James Shanley, president of Fort Peck Community College, a Tribal College in Poplar, MT, adds that chief executives also "need to engage students and families. Students are driven by family issues. However, student services are often designed for working with students but not for working with families" (Alliance for Equity in Higher Education, 2001). Older, non-traditional students are particularly affected by "day care and other family issues that hinder retention" (Diversity and Multi-cultural Initiatives Committee,

2001). Senior administrators are best able to use their influence on campus to deal with these issues effectively.

Chief administrators' attitudes about retention can also influence its importance on campus (Diversity and Multi-cultural Initiatives Committee, 2001). For example, one institution reported that its senior administrators use retention goals as part of the staff evaluation system. All faculty and other staff are evaluated on what efforts they have made to improve the recruitment and retention of minority students (Diversity and Multi-cultural Initiatives Committee, 2001).

Many Presidents Are Not Engaged in Retention Issues

Despite the possible influence of presidents on retention efforts, most presidents do not appear to be engaged in these issues. One former college president says that "few presidents understand retention, and fewer still have the courage to make the systematic changes necessary to improve retention (Redd, 2001). Another campus official adds that institutional leaders sometimes give "lip service" to retention efforts (Diversity and Multi-cultural Initiatives Committee, 2001). Partly, this is due to other pressures presidents face, such as fundraising, faculty issues, etc. For this reason, "[most] retention efforts usually emanate from other sources on campus—student affairs, academic affairs, or [the] student service office, where they understand and value…retention" (Redd, 2001).

The financial aid office is another area that can be used to fill the void on retention that presidents may leave (Diversity and Multi-cultural Initiatives Committee, 2001) Often, "aid administrators need to be the ones to make contacts with students to go the extra mile" in achieving their degree goals (Diversity and Multi-cultural Initiatives Committee, 2001). Aid administrators at some institutions have, on their own volition, set up programs to attract and retain students of color, such as early awareness programs, campus visits, freshmen class seminars, and academic advising (Diversity and Multi-cultural Initiatives Committee, 2001). Aid administrators and other campus officials have tried to make a "more proactive effort on retaining students" (Diversity and Multi-cultural Initiatives Committee, 2001).

Policy Questions to Consider

While financial aid, alumni relations, and other administrators and departments on campus play an important role in retention, the major thrust for improving success for students—particularly students of color—must come from the president. The chief executive is the one person who can bring together other senior staff, faculty, and financial aid for the common purpose of improving retention. Unfortunately, presidents also have many other burdens to carry, particularly fund raising, relations with faculty, and other pressing needs of students and alumni (Redd, 2001). For this reason, on many campuses retention for minority students may get little attention or resources from the president's office. This situation may lead to several important questions for campus officials and policy makers interested in increasing success of students of color on college campuses:

? What incentives can be developed that will encourage campus leaders to become more directly involved with retention efforts? Should states begin to tie increases

in allocations to public colleges and university systems with increases in retention rates? Or should trustees on individual campuses base increases in presidents' salaries and other benefits to the share of students who complete successfully?

? What models of successful campus leadership exist and can these models be replicated? Can successful leadership strategies that are developed for White students also be used for students of color at Historically Black Colleges and other minority-serving institutions?

? If senior administrators cannot or will not become more involved with retention issues, can other groups outside the campus community (e.g., state policy makers, community service organizations, potential outside donors, etc.) increase their involvement?

These and other questions may help determine the extent to which college presidents and other senior campus leaders are willing and able to use their positions, expertise, and resources to increase retention. While the future changes presidents may make seem cloudy at best, it is clear that, at a number of higher education institutions, presidents have not done enough to increase the number of under-represented students on their campuses who leave school with degrees.

Final Thoughts

We have presented an enormous amount of information in this report: background information and data analysis related to minority student retention; theoretical underpinnings of student retention and persistence; and the illustration of concrete resources and activities for consideration and implementation of retention programs on college campuses. We close this report with some final perspectives related to student retention.

Institutional Leadership. The ultimate success of a campus-wide retention effort depends on a number of leadership issues. First, retention programs must have unequivocal support from the Office of the President or Provost, involve the entire campus in shaping program operations, and keep ideology focused on the student. Increasing student-retention rates is a complex issue requiring the involvement of the entire campus. Although departments and offices may conduct their own programs, it is not until the entire campus directs a unified effort at reducing attrition that large-scale changes can be seen. The development of a Cross-University Retention Task Force sends both a message of urgency as well as a sign of support from the administration. This task force can help plan across the departmental silos inherent in most university systems.

Funding Priorities. Retention costs money, but the savings are easily recouped. If increased student persistence is the end goal, appropriate funding must be made available in the general budget. Funding sends an important leadership message to all faculty, and helps crystallize campus priorities.

Faculty Reward Systems. If faculty members are to turn more of their attention to student needs and teaching as a whole, the institution must incorporate these actions into the tenure structure. Current reward structures at most institutions deter faculty members from focusing on teaching. Tenure and promotion decisions are, by and large, based on a history of research and scholarship, which includes a candidate's record of academic publishing and success in obtaining sponsored-research funds.

Student-Teacher Interaction. Faculty support isn't just a tenure issue. Classroom instruction requires time to develop the student-teacher interactions that can make a difference. Most faculty believe they are overburdened with advisees, faculty and dissertation committees, and bureaucratic affairs. To make real differences in these interactions, such burdens must be reduced.

Flexible Planning. Student retention programs must be designed to match the characteristics and conditions at each campus. Programs that work well on one campus do not necessarily work well on another campus. The students, faculty, and institutional mission bring different aspects to the campus that makes it unique and special, and these characteristics must be considered in the planning cycle.

Institutional Research. Feedback is perhaps the most important aspect of program development, implementation, and sustainability. The campus institutional research (IR) office is potentially the greatest resource for campus leadership and faculty. With appropriate fiscal and material support, IR offices can provide responsive feedback regarding

the impact of major initiatives or programs down to the student level. Empirical information should be the foundation of any retention effort, and careful planning must be taken to ensure that appropriate indicators are selected and high-quality data collected. Additionally, systems must be put in place to ensure that this information is disseminated on a systematic basis to inform key stakeholders about progress toward goals.

Academic Preparation and Admissions. Recent affirmative action litigation, as described in the last section, has forced campuses to rethink their admissions practices. One brief year after Proposition 209, California institutions showed dramatic decreases in the admission rates of Black and Latino students. One answer to this problem for colleges is to further encourage and develop the academic preparation of minority students. The divisions between PreK-12 and postsecondary education are becoming more blurred all the time. College and universities are coming to the understanding that they need to play a stronger role during the pre-college years. Short of radical educational reform, institutions interested in admitting students of greater academic capacity must wade into the pool themselves. Pre-college outreach programs have enjoyed great success in increasing the academic ability and motivation of young students at the elementary-, middle-, and high-school levels.

College Affordability. College pricing is a major factor in whether students go to college, as well as where they go. Since 1980, tuition and Fees at four-year public and private institutions has risen about 90 percent after adjusting for inflation, student aid has increased around 40 percent and median family income[9] has only increased 9 percent (College Board, 2001). Thus, for many low-income students, many of whom are non-Asian minorities, there is an affordability crisis with regard to postsecondary education. Colleges and state systems must continue to address price as a major disincentive for needy students.

Technology. Recent developments in web-based technologies have begun to impact how colleges and universities can deliver instruction, and how students and professors may communicate. The birth of the virtual university and proliferation of distance education courseware is forcing institutions to rethink how they do business. But the ability to benefit from technology is a product of technological access. While technology has the potential to remove barriers of time and distance, it simultaneously may widen gaps in access between low- and high-income students--between the technological haves and have-nots. Technology is clearly a double-edge sword. It is difficult to imagine the collegiate experience without computer assistance in this day and age. However, colleges and universities must take special care to ensure that students from all backgrounds enjoy access and comfort with technology.

[9] For families with parents aged 45-54 years old (the approximate age of families with college-aged dependents).

Appendices

Appendix A. Selected Practices From the Field

Promising College Student Retention Practices

AMERICAN RIVER COLLEGE
Beacon Program-Peer Assistant Learning (PAL)
***Program Goal*:** Help students master course materials and skills to improve academic success and retention.
Program Description: Trained Learning Assistants (students who successfully completed the class) work with groups of currently enrolled students for two hours each week outside of the classroom. Collaborative activities that encourage participants to interact are the focus of the group work
***Key Components*:** Faculty identifies students who have "people" skills and who did well (grade A or B) or are doing well a course. Ask students to participate. They must be willing to go through a one-semester "Group Tutoring" training program (1 unit); meet with their Learning group for 2 hours/week outside of the classroom and meet with you for 1 hour each week. (They are paid $6.00/hour for some of their training time and for all of the hours they meet with you and their group.)
***Evidence of Effectiveness*:** Data gathered over the last seven semesters show success rates average (achieving an A, B or C) for Beacon participants is 85% while that of non-participants in the same class is 57%. Fewer Beacon students drop classes (7%) when compared to their non-Beacon counterparts (27%). Received Exemplary Program Awards, sponsored by the California Community Colleges Board of Governors (American River College, 1993, 2001)
***Contact Information*:** Contact Information Kathie Read or Marsha Reske Beacon Program, American River College, 4700 College Oak Drive, Sacramento, CA 95841, Telephone 916 484-8693.

SAINT XAVIER UNIVERSITY
Student Success Program (SSP)
Program goal: Provide academic and personal support services for academically, economically, and physically challenged students until the participating students complete a baccalaureate degree.
Program description: The Student Success Program (SSP) is one of 800 Student Support Services programs on college campuses across the nation that receives Title IV TRIO grant funds. Counselors, advisors, and academic instructors work as a team to promote academic success. Students receive class advising, counseling (academic, career, and personal), freshman orientation, advocacy, peer mentoring cultural programming, and service learning
Key components: The program consists of four full-time professional staff–a director, an academic advisor, a personal counselor, and a mathematics specialist and 20 to 30 employed peer tutors/ mentors. While program staff invites all incoming students to apply to the program, they select applicants based on socioeconomic and academic need as well as their level of goal commitment. Peer mentors meet with student participants weekly and

are responsible for their academic and social integration into the campus by modeling appropriate student behaviors and providing referrals to program services. The mathematics specialist teaches semester long math workshops that include technology use, problem solving and critical thinking. The staff monitors students' academic performance continuously and provide special interventions for students experiencing academic difficulties.

Evidence of effectiveness: While SSP and Non-SSP 1997 graduating cohorts had comparable ACT composite scores, high school grade point averages, and college semester course loads, data showed the SSP cohort had a higher total persistence rate after seven semesters than the total persistence rate of the Non-SSP cohort (58.9 percent vs. 53.7 percent). In addition, the program appears to have a greater impact on the persistence rates of minority students who participate in the program than the rates of those who do not (Murphy & Fath, 1996).

***Contact information*:** Iraetta Lacey, Director, Saint Xavier University Room 3700 West 103rd Street:, Room L111, Chicago, IL 60655 Phone: 773-298-3330 Email: lacey@sxu.edu

THE UNIVERSITY OF TEXAS SAN ANTONIO

The Risk-Point Intervention Program

***Program Goal*:** Provide interventional academic support to first-year, first-time freshmen at a series of specified points when academic risk becomes observable

Program Description:Program consists of five interventions to address risks which occur during the freshmen year

Key Components: The **"**Risk Point 1" intervention consists of an-Academic Development Program (ADP, which is a five-week summer bridge program for freshmen admitted on a provisional basis. Risk Point 2 College Success Seminar, EDP 1702 New freshmen admitted on probation are required to enroll. The midterm Checkpoint conference is a mid-semester intervention program developed for first-time freshmen who receive D's or F's on their Midterm Progress Reports. Academic counselors and freshmen students meet to carefully review the student's performance to date, area(s) in which academic difficulty has been Phoenix is a probation recovery workshop wherein small groups of first-time freshmen who entered in good standing but have earned a GPA below 2.0, which places them on academic probation at the end of their initial semester, work out a highly-structured recovery plan. This plan involves strategic advising recommendations, reduction of outside workload, future course sequencing and improved use of available institutional resource programs. Reentry provides academic assistance/guidance for specially readmitted, academically dismissed students. This program provides a careful evaluation of each student's academic skill levels, attitudes, awareness, and previously exhibited academic behaviors. Reentry students are required to repeat failed courses, reduce work, course loads, and participate in a structured program of support.

Evidence of Effectiveness: ADP participants have a one-year retention rate that is twice that of non-participants. During its first semester of implementation, probation students enrolled in the seminar were dismissed at a 15% lower rate than were non-participants. Checkpoint conference participants go on probation at a 7-15% lower rate than do non-

participants. Phoenix participants are dismissed at a rate that is 8-12% lower than other first probation students who do not attend (University of Texas San Antonio, 2001).
Contact Information: Tomás Rivera Center for Student Success, University of Texas at San Antonio, 6900 North Loop 1604 West San Antonio, TX 78249, Telephone (210) 458-5170, Facsimile: (210) 458-4695

WILLIAM PATERSON COLLEGE
Sponsored Student Program
Program goal: Improve retention rates of special admit students, who are 10 percent of the student population.
Program description: The program allows the college to admit and support a limited number of students whose academic credentials fall below the institution's standard admissions criteria. While special admit students do not possess the College's academic requirements, they do show indication that they can be successful in college. The Program combines developmental advising, mandatory personal academic counseling, and referrals to tutoring and other academic support services.
Key components: Program participants take college placement exams and receive special academic advising for selecting courses and tutorial assistance. In addition, students with more demanding schedules or responsibilities are limited to taking 13 credit hours per semester. Once a student achieves an acceptable grade point average and completes all prerequisites, he/she can declare an educational major
Evidence of effectiveness: Since 1990, Sponsored Student Program participants consistently have had higher retention rates after one year than regular admit student, Educational Opportunity Program student, and nontraditional student cohorts (Spatz, 1995).
Contact information. Mary Ann Spatz, Academic Support Center, Hunziker Wing 218 William Paterson University (previously William Paterson College) 300 Pompton Road, Wayne, NJ 07470 Telephone (973)720-3324 e-mail: SPATZM@WPUNJ.EDU

WAYNE STATE UNIVERSITY
Wayne State University Retention Program–Excel
Program goal: Increase rate of student re-enrollment; to facilitate academic success and undergraduate achievement; and enhance graduation rates.
Program description: The program served as a pilot for offering high level advising and academic support services to regular-admit undergraduates who exhibit academic and demographic risk for college persistence
Key components: The program uses qualified staff to provide mandatory orientation sessions, developmental student advising, early academic warning system, personal tutoring, weekly Supplemental Instruction participation, and if recommended, enrollment in developmental reading, learning theory and/or vocabulary building courses.
Evidence of effectiveness: Students participating in Wayne Excel had lower stop-out/dropout rates than did students with similar risk factors who did not participate. Excel students entered probation status at a lower rate than did comparison groups. The institu-

tion expanded undergraduate retention services to all students because the pilot program was effective in retaining students (Wilhelm & Wallace, 1997).
Contact information: Academic Success Center, Wayne State University, 2100 David Adamany Undergraduate Library, Detroit, MI 48202 Telephone (313) 577-3165.

SOUTHEAST MISSOURI STATE UNIVERSITY
First-year Learning Team (FLighT) Program
Program goal: Offer a top-quality curriculum, enhance student success and retention, and optimize and stabilize enrollment
Program description: The program provides freshmen with one of six holistic learning/living community experiences which assist them n the academic and social transition to college life..
Key components: A First-year Learning Team (FLighTconsists of 25 students who are enrolled in 2 courses that are centered around a particular theme or area of interest. Each FLighT has a Peer Mentor, a veteran student who works closely with the group.
Evidence of effectiveness: The Fall 1998 to Spring 1999 retention rate for the FLighT students was 89 percent. The institution is tracking subsequent semesters' retention rates (Myers & Birk, 1998).
Contact information New Student Programs, 308 Academic Hall, Mail Stop 3850, One University Plaza,
Cape Girardeau, MO 63701, Telephone: 573-651-5166, Facsimile: 573-651-5168

FAYETTEVILLE STATE UNIVERSITY
Freshmen Year Initiative (FYI)
Program goal: Ensure students' successful transition to college by identifying and providing those students who experience difficulties in their first year of college
Program description: The comprehensive retention program provides of gamut of academic and personal support services.
Key components: Newly admitted students receive information about FYI and encouragement for participation. Students complete profiles and register in a block of courses based on intended major. Some students must complete math laboratory and/or reading/writing center assignments. All students enroll in Freshman Seminar I and II where a Peer Academic Leader is available.
Evidence of effectiveness: Assessment data of freshmen cohorts receiving FYI services reflect improved retention rate and increased student satisfaction (Young, 1999).
Contact information. Olivia D. Chavis, Vice-Chancellor For Student Affairs, Fayetteville State University, W. R. Collins Building, Room 224, 1200 Murchison Road, Fayetteville, NC 28301.4298 Telephone Number (910) 672-1201 Facsimile 910.672.1456.

LOYOLA UNIVERSITY NEW ORLEANS
Campus-wide Student Success Initiative
Program goal: develop and provide services to assist students and faculty with improving student writing skills in order to successfully complete coursework
Program description: help faculty design writing assignments for their courses and helps students develop the skills they need to make the most of their learning experiences.
Key components: WAC services include full-class tutoring services through the Advise/Revise program, workshops in writing, grammar, documentation, and research, writing resource library and faculty resource bank, and WAC Works, a student newsletter on writing-related issues.
Evidence of effectiveness: None found
Contact information: Dr. Melanie McKay, Director, Bobet 100, Campus Box 40 Loyola University New Orleans, 6363 St. Charles Ave., New Orleans, LA 70118 (504) 865-2297, wac@loyno.edu www.loyno.edu/wac/index.html

NORTHERN ILLINOIS UNIVERSITY
Office of Retention Programs (ORP)
Program goal: develop, coordinate, and implement programs and services to assist students with successful degree completion.
Program description: The Office of Retention Programs fosters interaction among students, faculty, and staff to provide the academic and personal support necessary for students to complete degree requirements.
Key components: This holistic university retention model includes academic support services, orientation programs and courses; innovative learning opportunities and initiative by each college. Programs include: Office of Instructional Assistance, Educational Services and Programs (ESP), Learning Assistance and Study Skills Lab, Academic Information and Referral Services, and tutoring, New Student Welcome Days, University 101m, NIU Passport to Success, Undergraduate Research Apprenticeship Program, Academic Residential Programs, University Honors Program, and Smart Classrooms(Northern Illinois University).
Evidence of effectiveness: None found
Contact information: Don Bramlett, Director, Office of Retention Programs, Northern Illinois University, Adams Hall, Lucinda Ave,Telephone 815-753-7822 fax: 815-753-7830 http://www.niu.edu/retention/

LONG BEACH CITY COLLEGE
Student and Teacher Achieving Results (STAR)
Program goal: Increase success and retention rate of underrepresented students
Program description: STAR creates a learning community by developing communities of student cohorts and linking courses through a theme.
Key components: STAR students participate in linked courses that developed communication skills, utilized interdisciplinary curricula and cooperative learning, facilitated student involvement with faculty, built self-esteem, and provided academic and social support.

Evidence of effectiveness: Data indicates STAR significantly improved participants reading and writing skills, advanced increased numbers of underrepresented students to higher-level courses, reduced the number of underrepresented students on probation, and increased retention and completion rates for underrepresented students (Couch, R. and Holmes, B., 1997)
Contact information: Long Beach City College 4901 E Carson Street 90806-5797, Long Beach, CA 90808-1706. Web address http://compass.lbcc.cc.ca.us/

LONG BEACH CITY COLLEGE
"Orientation for College Success" Course
Program goal: Increase academic success, student persistence, and reduce student-loan default
Program description: The one-half credit course teaches students how to meet academic objectives.
Key components: The course emphasizes course catalog use, course selection, and time management. The institution offers the course through traditional classroom instruction and Internet formats for one, three or nine weeks. Students complete the course with a formally approved educational plan.
Evidence of effectiveness: Data indicates that students who take the course persist at higher rates and get better grades than students who do not enroll in the course.
Contact information: Long Beach City College 4901 E Carson Street 90806-5797, Long Beach, CA 90808-1706. Web address http://compass.lbcc.cc.ca.us/

GLENDALE COMMUNITY COLLEGE
The Student Pal Program
Program goal: Target and identify at-risk student characteristics to improve the retention and success of minority students.
Program description: The system provides data on specific student groups to fulfill the needs of administrators, faculty, student-support staff, and researchers.
Key components: Readily available data allows for analyses of student stop out and dropout patterns, GPAs, and other data relevant to students' success and retention.
Evidence of effectiveness: The system has enhanced the Multicultural Affairs Program's ability to fulfill goals and initiatives. The program also helped the institution initiate an early warning retention system for at-risk students. (Mendoza, J. and Corzo, M., 1996)
Contact information: Jose Mendoza, , Director, Multicultural Affairs Program, 6000 West Olive Avenue, Glendale, Arizona, 85302, Telephone: 623-845-3565

BRONX COMMUNITY COLLEGE
Freshman Year Initiative Program (FYIP)
Program goal: Promote student growth, academic achievement, and retention
Program description: The program is a comprehensive academic and counseling program for selective group of first-semester students who require at least three remedial courses.

Key components: This program consists of five major components, which offer intensive counseling. The components includes: (1) the Freshman Outreach, Caring, Understanding, and Support (FOCUS) Center, a holistic counseling center that offers personal and confidential counseling services, (2) psycho-educational testing, (3) peer counseling, (4) rapid contact counseling for early intervention, and (5) revised orientation and career development courses for personal development and improved coping skills.
Evidence of effectiveness: Data shows 76.5 percent of FYIP students continued enrollment from fall 1993 to fall 1997 compared to 59.3 percent of nonparticipants.
Contact information: Dr. Jason Finkelsein, Freshman Year Initiative Program, University Ave at West 181 Street, Bronx, NY, 10453, 718/289-5138

UNIVERSITY OF SOUTH CAROLINA
University 101
Program goal: Support first-year students' college success.
Program description: The three-credit hour elective course consists of a maximum of 25 students who interact with instructors to develop note taking, study, time management, and coping skills. The Freshman Year Experience and The First-Year Experience are trademarks of the University of South Carolina.
A license may be granted upon written request to use these terms in educational programs
Key components: Students are able to develop these skills through frequent writing assignments, mid-term and final exams, a library research project, and the use of course textbooks.
Evidence of effectiveness: Studies show that students who take University 101 tend to graduate and exceed their predicted GPAs at higher levels than students who do not take the course (National Resource Center for The First-Year Experience and Students in Transition, 1999; Stanley & Witten, 1990).
Contact information: Dan Berman, Director of Instruction and Faculty Development, National Resource Center for The First-Year Experience and Students in Transition/ 1629 Pendleton Street, University of South Carolina, Columbia, SC 29208 PH: (803) 777-6029 - FX: (803) 777-4699
www.sc.edu/fye/101/u101.htm

UNIVERSITY OF SOUTH CAROLINA
University 401
Program goal: Support student's transition out of the University and document learning outcomes of institution's core curriculum.
Program description: The program integrates seniors' major programs of study and general education into a larger context, provides opportunities for advance research, and transitions seniors for graduate school and/or employment;
Key components: The program requires reading, writing, computing, and research that include a class team project; a portfolio; a liberal arts interdisciplinary exercise/project; and self-assessment and career planning exercises.
Evidence of effectiveness: None found
Contact information: www.sc.edu/fye/401/401infopiece/content.htm

INDIANA WESLEYAN UNIVERSITY
Program goal: Improve student retention
Program description: The program adopted a team approach to assess and counsel students regarding academic performance and financial aid.
Key components: The institution developed regular academic and financial checkpoints to monitor academic performance of student borrowers and identify warning signs. The team adjusts financial aid and course-taking strategies to facilitate student program completion.
Evidence of effectiveness:
Contact information: Lois Kelly, Assistant Vice President for Financial Aid
lkelly@indwes.edu Telephone (765) 677-2116
Indiana Wesleyan University, 4201 South Washington Street, Marion, Indiana 46953-4974

WEST VIRGINIA UNIVERSITY
Structured Academic Year (STAY) Program
Program goal: Retain students on academic probation by providing support to succeed academically.
Program description: The two-semester program requires students to live in structured campus environment with two resident assistants, so they can improve their study skills and raise their grades.
Key components: Students adhere to rigorous program requirements, such as, curfews, structured study periods and tutoring, group meetings, biweekly meetings with assigned academic advisors, career exploration, and regular interactions with mentors. Parental involvement is a critical component of the program
Evidence of effectiveness: Program participants raise their cumulative GPAs an average half a letter grade after one semester and one whole letter grade after two semesters. Most students complete the programs successfully and remain at WVU (West Virginia University).
Contact information: Maria Watson, Senior Program Coordinator, Academic Services Center P.O. Box 6212 West Virginia University, Morgantown, WV 26506-6212, Telephone (304) 293-5805, ext. 320

WEST VIRGINIA UNIVERSITY
EXCEL
Program goal: Improve students' academic success and retention
Program description: The structured voluntary program supports freshman with high school GPA of 2.0 to 2.6.
Key components: Students attend a special Orientation class; receive assistance with academic skills; and participates in Orientation 101, which the assigned academic advisor facilitates.

Evidence of effectiveness: EXCEL students achieved a quarter point higher GPA than WVU freshmen with comparable high school GPAs who were not in the program (2.15 vs. 1.88); retention was 96% for EXCEL students as opposed to 84.5% for the control group (West Virginia University).
Contact information: Maria Watson, Senior Program Coordinator, Academic Services Center P.O. Box 6212 West Virginia University, Morgantown, WV 26506-6212, Telephone (304) 293-5805, ext. 320.

UNIVERSITY OF COLORADO AT BOULDER
"Building Community" Model
Program goal*:* Recruit, retain, and graduate underrepresented students.
Program description: The integrated model consists of five primary components for student development and retention.
Key components*:* The integrated program consists of Summer Bridge Program, SEED Freshmen Leadership Course, Academic Clustering, Academic Excellence Workshops, and Financial Aid Tutoring, counseling and mentoring are an integral part of the program.
Evidence of effectiveness: Approximately 85 percent of the 40 new MEP students registered for the fall of 1996 returned for the following academic year.(University of Colorado at Boulder).
Contact information www.colorado.edu/UCB/AcademicAffairs/ArtsSciences/masp/

BOWIE STATE UNIVERSITY
Model Institutions for Excellence (MIE)
Program goal: Serve as a model for the successful recruitment, education, and production of quality-trained Science, Engineering and Mathematics (SEM) baccalaureates.
Program description: The MIE program provides support for institutional development and student support activities that contribute to the successful recruitment and retention of SEM undergraduates throughout the SEM pipeline. Conceived by Dr. Walter Massey, then Director of the National Science Foundation (NSF), MIE is an eleven-year program collaborative effort. The National Aeronautics and Space Administration (NASA) sponsor the Bowie MIE program in collaboration with NSF. Other institutions with MIE programs are Oglala Lakota College, SD, Spelman College, GA, Universidad Metropolitana, Puerto Rico, University of Texas at El Paso, TX, Xavier University of Louisiana, LA
Key components: Students receive financial aid, and participate in academic enrichment activities, early research, mentoring, counseling and orientation to SEM graduate school.
Evidence of effectiveness: Statistical data for Fall 1995 to Fall 2000 showed an increase in the institution's SEM undergraduate enrollment by 115%, from 340 to 733. Data also indicated an increase in retention of SEM first-year students by 28 points, from 52 percent to 80 percent and by 39 points for SEM second-year students, from 26 percent to 62 percent. SEM student graduation rates increased 62%, from 56 to 91.

Contact information*:* Thurgood Marshall Library, Suite 272, 14000 Jericho Park Road, Bowie, MD 20715 Telephone: (301) 860-3875 Facsimile: (301) 860-3887 mie@bowiestate.edu

LEWIS-CLARK STATE COLLEGE
Student Support Services TRIO Program
Program goal: Help students achieve academically and integrate into campus culture
Program description: The Student Support Services TRIO program is a federally-funded, student oriented program designed to provide free academic and developmental support to enrolled students who are eligible.
Key components: The participants enroll in four courses, English composition, public speaking, introduction to psychology, and an introductory social science course. The learning community is supported by a credited (SSS) course that provides advising and develops student writing, study, and computer skills. Participants are required to attend the SSS learning lab.
Evidence of effectiveness: Data shows a one-semester retention rate of 84 percent for degree seeking provisional students accepted into the SSS program compared to 76 percent for all provisionally accepted students.
Contact information Patricia Clyde, Director, Lewis-Clark State College, Student Support Services TRIO Program 500 8th Avenue, Lewiston, Idaho 83501 Telephone 208-792-2300 Facsimile 208-792-2057 pclyde@lcsc.edu

UNIVERSITY OF ALABAMA
Student Support Services Program
Program goal: Increase retention and graduation rates of eligible students
Program description: The comprehensive federally-funded TRIO program offers academic assistance to 200 undergraduate students at the University of Alabama.
Key components: Students receive individualized support services including academic, career, financial, and personal counseling and advising, tutoring, peer mentoring
Evidence of effectiveness: None found
Contact information: Student Support Services**,** 225 Osband Hall, Box 870304, Tuscaloosa, AL 35487-0304 Telephone 205-348-7087, Facsimile 205-348-5585

ARKANSAS STATE UNIVERSITY
Upward Bound Program
Program goal: Ensure high school students from low-income families or potential first-generation college students participate in and are successful in postsecondary education.
Program description: The program serves 75 students in grades 10-12 who are on campus on Saturdays during the academic year and participate in a six-week summer residential program.
Key components: The program offers secondary education students career assessment and planning, college preparation and planning, bridge programs, cultural enrichment activities, tutoring, counseling, and guidance, and an on-campus residential program.
Evidence of effectiveness: None found

Contact information: Tony Thomas, Associate Director of Upward Bound, PO Box 1390, State University, AR 72467, Telephone 870-972-2080 Facsimile 870-972-2520

KEEN STATE COLLEGE
Aspire Program
Program goal: Encourage and empower students to be self-advocates and play an active part in developing a personal academic support strategy
Program description: The federally-funded TRIO program works closely with Academic and Career Advising *to* assist students in attaining academic success.
Key components: The program offers individualized peer tutoring, study-skills work-shops, skill building, academic and financial counseling, computer lab and supplemental instruction.
Evidence of effectiveness:
Contact information: Maria Dintino, Associate Director of Aspire, the Elliot Center, 229 Main Street, Keene, New Hampshire 03435 Telephone 603/358-2390 mdintino@keene.edu.

Appendix B. Annotated Bibliography

Adelman, C. (1999). *Answers in the tool box: Academic intensity, attendance patterns, and bachelor's degree attainment.* Washington, DC: U.S. Department of Education, Office of Education Research and Improvement.

> This study, based on the High School & Beyond/Sophomore longitudinal data base, uses both linear and logistic regression to explore the power of 24 variables in explaining long-term (11-year) bachelor's degree completion for students who attended a 4-year college at any time during that period. Adelman identified academic resources—intensity and quality of a secondary education—and continuous college enrollment as powerful predictors of degree attainment, which the author identifies as the bottom line of all postsecondary retention and persistence discussions. The comprehensive analyses of college retention literature and of an integrated national data set produced significant results for college retention policy. He concludes that the true challenge of degree attainment for the higher education community requires remedying its ailing pipeline at the elementary and secondary levels.

Native American Higher Education Consortium (2000). *Creating role models for change: A survey of tribal college graduates.* Alexandra, VA, Native American Higher Education Consortium.

> This study surveyed tribal college graduates to assess their fundamental characteristics. Descriptive analyses indicate average tribal college graduates are nontraditional female, first-generation Native Americans who receive associates degrees and certificates and remain in the local community upon graduation. Many of these graduates also have dependents under the age of 18. The average graduate majored in more vocational/technical fields like business, health care, computer technology, education, and human services programs. Many tribal college graduates are employed and/or continue to enroll in postsecondary courses and some even transition to predominately White institutions. Since tribal colleges only enroll about 600 students, on average, the classes are small, allowing faculty more time to cultivate and mentor students. Although tribal college graduates clearly earned higher salaries as a result of attaining a postsecondary degree, these graduates still earned much less than the national average of those in similar fields. Approximately 80 percent of tribal college graduates were satisfied with their academic higher educational experiences; however, they were less satisfied with the institutions' facilities and equipment. Like HBCUs, tribal colleges seem to have a unique role in the higher education community of successfully providing Native Americans with postsecondary.

Beil, C., C. A. Resien, et al. (1999). "A longitudinal study of the effects of academic and social integration and commitment on retention." *NASPA Journal* 37(1): 376-85.

> The researchers explored the effects of academic and social integration and commitment on the persistence of first year undergraduates at a midsize university.

> Empirical analysis indicated first-semester commitment mediated the effect of early academic and social integration on persistence over time. Students' level of commitment rather than academic and social integration has a direct impact on retention. Results supported the premise that early institutional adjustment is central to influencing long-term retention.

Bennett, C. and A. M. Okinaka (1990). "Factors related to persistence among asian, Black, hispanic, and White undergraduates as a predominately White university: Comparisons between first and fourth year cohorts." *Urban Review* 23: 33-60.

> Bennett and Okinaka examined the attrition of minority and non-minority college students at Indiana University. The researchers used a revised model of Black student attrition to focus on student campus life. Study findings showed White and Hispanic students who complete college are more satisfied and less alienated than African and Asian American students who graduate. However, persistence and satisfaction with campus life appear to be separate issues for African and Asian Americans, since African and Asian Americans who persisted to their fourth year of college appeared more dissatisfied with campus life than those who left the institution. These suggest some ethnic students who persist in college experience more trauma over time than those who drop out.

Gladieux, Lawrence E., and Swail, Watson S. (May, 2000). "Beyond Access: Increasing the Odds of College Success." *Phi Delta Kappan*. Indianapolis, IN.

> Gladieux and Swail, formerly with the College Board's Policy Analysis unit, describe in brief the preparation, access, and completion rates of students of various economic and racial backgrounds. They follow with a discussion of why we haven't done better in opening the doors of higher education, and, more importantly, why we haven't been able to improve retention and completion rates at the post-secondary level. In the end, the authors sum that improving opportunities for poor and minority students is a shared responsibility of higher education and the public sector, warning that, regardless of public policy solutions, the solution requires hands-on, one-on-one interventions.

Gonzalez, K. P. (1999). *Campus culture and the experiences of chicano students in predominantly White colleges and universities.* Annual Meeting of the Association for the Study of Higher Education, San Antonio, TX.

> Gonzalez explored campus culture of a predominantly White metropolitan university in the Southwest to determine if the community supported or hindered Chicano student persistence. After observing two Chicano males for a two-year period, the researcher interpreted the study findings using three asymmetrical systems of representation: social world, physical world, and epistemological world Research findings indicate that the two students studied felt this particular institution marginalized their culture by not completely accepting their bilingual communication styles, their dress, music, and through the absence of physical representations of their culture. In addition, the students felt the institution failed to

incorporate Mexican American history and culture into educational programs. In contrast, the two students seemed to appreciate and even expand the relationships with their families and communities. Ethnic and cultural campus organizations, including Chicano faculty, Chicano literature and studies, and physical symbols provided these students with a sense of community and pride.

Hall, C. (1999). *African American college students at a predominantly White institution: Patterns of success.* Annual Meeting of the Association for Institutional Research, Seattle, WA.

The study examined the interactions between the student, institution, and the external environment of successful African American students enrolled at an urban Catholic commuter university. The study used a combination of qualitative and quantitative data collection and analysis methodologies to determine how students perceived campus climate, environmental factors impeding and contributing to success, the effect of students' perceptions and expectations of the university on their experiences and knowledge; and the actions these students take to succeed academically. Research findings suggest there are more quantifiable differences between White college students than African American students who persist than between African Americans who persist and those who do not, which supports previous findings that institutional climate and other noncognitive factors are more important determinants to the academic success of African Americans than Whites. Qualitative data suggests the availability of ethnic and cultural organizations and "critical mass" of African American students helped reduce isolation and alienation often found on predominately White campuses. African American coping strategies include high self esteem, high aspirations, parental support and expectations, on campus support (African American mentors) and involvement in cultural and ethnic organizations.

Himelhoch, C. R., A. Nichols, et al. (1997). *A comparative study of the factors which predict persistence for African American students at historically Black institutions and predominantly White institutions.* Annual Meeting of the Association for the Study of Higher Education, Albuquerque, NM.

The researchers tested Bean's (1982) synthetic retention model as an accurate predictor of African American student persistence. Regression analyses of a stratified sample of the Cooperative Institutional Research Program (CIRP) data set for a cohort of 1986 entering freshmen and 1990 follow up showed faculty mentoring as a predictor of African American persistence at both four-year HBCUs and predominately White institutions. In contrast, data showed changing majors and careers as a predictor of African Americans persistence at HBCUs only. Implications for policy suggest heightening faculty-student mentoring programs at both institutional types and heightening academic and career counseling at HBCUs to affect student persistence. Further research findings are presented, and study implications are outlined.

Horn, L. J. (1998). *Undergraduates who work.* A Postsecondary Education Data Analysis Report (PEDAR) using data from the National Postsecondary Student Aid Study (NPSAS:96). Washington, DC: U.S. Department of Education, National Center for Education Statistics.

> Horn uses data from the 1996 National Postsecondary Student Aid Study to profile undergraduates who were enrolled in postsecondary institutions in the academic year 1995-96. Data analyses show that 50 percent of undergraduates in the research sample reported working to help pay for their education. Working students were employed an average of 25 hours per week, with 20 percent of full-time students also working full-time. In addition, students who worked indicated that their class schedules were limited by their work schedules, and about 25 percent reported that work adversely affected their academic performance. A negative effect was found between work and one-year persistence. In addition, the data showed that students who worked a few hours per week were more likely to borrow to pay for their education than those who maintained a rigorous work schedule.

House, J. D. (1998). "High school achievement and admissions test scores as predictors of course performance of Native American and Alaska native students." *Journal of Psychology* 132(6): 680-2.

> House examined the predictive relationships between admissions test scores, high school achievement, and grades in specific college courses in order to identify factors that are predictors of Native Americans' postsecondary achievement. Using the two predictor variables of ACT composite scores and high school class percentile rank, House tracked students' grades during their first year of college. Data analyses showed significant correlations between ACT and certain courses, including Chemistry, Introduction to Philosophy, Introduction to Sociology, and Introduction to Psychology. However, none of the correlations for mathematics were significant. In addition, significant correlations were found for Introduction to Geology, Introduction to Sociology, and Rhetoric and Composition. Additional research findings showing are presented.

Just, Helen D. (1999). *Minority retention in predominantly White universities and colleges: The importance of creating a good "fit."* ERIC Document Reproduction Service No. ED439641.

> Just examines retention theories and approaches for integrating students of color into predominantly white college environments. Students of color face similar college adjustment difficulties like other students. However, a hostile campus climate further complicates their ability to integrate and adjust to campus life, ultimately influencing their college persistence. The study suggests that connection to home significantly helps students adjust to college. Just also discusses policy for aggressively recruiting culturally diverse students to create larger communities of diverse student subgroups. Similarly, recruiting minority college personnel will

provide role models for students and create an environment that embraces diversity.

Kennedy, P. W., B. G. Sheckley, et al. (2000). *The dynamic nature of student persistence: Influence of interactions between student attachment, academic adaptation, and social adaptation.* Annual Meeting of the Association for International Research, Cincinnati, OH.

The researchers investigated a series of variables to determine which combination would discriminate persisters from nonpersisters after a year of college. Research findings suggest persistence is related to dynamic interactions that occur over the course of an academic year and involve students' self-evaluations. These findings are consistent with Tinto's research, which depicted persisters as students who adapted academically, improved academically over the course of the year, and/or achieved within their own expectations. In addition, the results support Pascarella and Terenzini research findings that students will persist despite their academic predictions if they have successfully integrated into the campus organization. Research implications for policy include faculty should provide students with academic feedback to help them gauge academic success within a reasonable contextual framework defined by faculty and that colleges and universities should provide students with continuous experiences for academic and social adaptation.

Martin, D. C. and D. R. Arendale (1994). *Supplemental instruction: increasing achievement and retention.* San Francisco, CA: Jossey-Bass, Inc.

The authors describe the Supplemental Instruction (SI) program of the University of Missouri-Kansas City and its program development, specific goals and objectives, student and institutional outcomes, and the potential for adaptation by other institutions. The program contains a number of innovative features, including identifying high risk courses instead of high risk students, offering assistance to every student in the high risk courses; using SI leaders to conduct supplemental instruction in small group sessions and incorporating student and faculty satisfaction surveys into measurable institutional change. The SI program has been certified as an Exemplary Educational Program by the United States Department of Education, and has received National Diffusion Network funding

Mortenson, T. (1998). "Freshman-to-sophomore persistence rates by institutional control, academic selectivity, and degree level 1983 to 1998." *Postsecondary Education Opportunity* 74.

Mortenson reports on the trends and patterns of freshman-to-sophomore persistence between 1986 and 1998. Analyses of ACT data evidenced an overall decline in persistence rates. Yet, the results also supported previous study findings that selective private colleges enroll academically prepared high income students who are more likely to earn degrees and open public institutions serve less academically prepared lower income students. Although private colleges maintain higher persistence rates than public colleges, the gap is closing. This is attributed partly

to public four-year colleges increased academic selectivity. Enrollment persistence continues to be a challenge once students graduate high school and enroll in college, yet the deviations for the average persistence rates regardless of institutional type indicate some schools are more successful at getting their freshmen to persist to sophomores.

Mortenson, T. (1999). "Refocusing student financial aid: from grants to loans, from need to merit, from poor to affluent." *Postsecondary Education Opportunity* 82: 1-4.

Mortenson presents a critique of federal, state, and institutional financial aid policies. Over the past two decades, policies have reversed student financial aid's original purpose of providing low income citizens with access and equity to higher education. During the 1980s and 1990s, the federal government continued to provide middle and high income citizens with access to more student financial aid while restricting the financial aid specifically created to facilitate low-income citizens' college access and persistence. Mortenson contends the policy decisions were solely based on capitalism and politics and describes the practices as the "plantation economics" of higher education where the rich get richer and the poor get poorer. Likewise, states reduced grant aid and institutions reduced need-based aid in favor of merit-based aid to attract strong academic students who would improve their college rankings. It is evident that educational opportunity is the key to private and social warfare and society has clearly compromised the public interest by failing to help those in need.

Murdock, T. (1990). "Financial aid and persistence: An integrative review of the literature." *NASPA Journal* 27(3): 213-221.

Murdock use meta-analysis to explores the effect of financial aid on student persistence among different student groups and across types of institutions. Data analyses indicated that financial aid was an important factor affecting persistence and promoting persistence among minority groups. In addition, the dollar amount of financial aid significant positive effect on persistence. The researcher also found a stronger effect for private institutions than for public ones.

Nagda, B. A., S. R. Gregerman, et al. (1998). "Undergraduate Student-Faculty Research Partnerships Affect Student Retention." *Review of Higher Education* 22(1): 55-72.

This study assessed the effect of the University of Michigan Undergraduate Research Opportunity Program (UROP), which brokered intellectual relationships between faculty and first-year students and sophomores on college student retention. Based on retention frameworks, which advocate student college integration, the researchers used a participant-control group research design. Research findings indicated partnerships (student-faculty and student-student) are successful in promoting retention of some students. Specifically, the program increased the retention of participating African American students and African American students with lower academic achievement. These findings are consistent with previous research that showed integration is critical to underrepresented minority students at

PWIs, specifically African Americans The effects were less significant for White and Hispanic students. The authors suggest the challenge of integration may be different for Hispanic students than African American students, particularly since most of the Hispanic students attending the institution resided out-of-state and may have experienced deeper feelings of isolation due to the absence of immediate family support.

Pavel, D. M., R. R. Skinner, et al. (1999). "Native Americans and Alaska Natives in Postsecondary Education." *Education Statistics Quarterly*.

Statistical analyses compare data of Native Americans involved in postsecondary education with the general population of postsecondary students. The Native American population has significantly increased from about 237,000 recorded in 1970 to slightly under 2 million in 1990. Proportionately Native Americans make up .08 % of the population. Some of the growth is attributable to the self-identification by individuals as Native Americans. Research indicates that while Native Americans have made substantial gains since the 1970s, they still lag behind the general population in college attendance; persistence; and completion. Native American students are more likely to be first generation, low incomes students and 62 % of the students enrolled depend on student financial aid to pay for college. They are also to receive academic preparation for college than the overall students. The majority of Native Americans attending college, 87% attend 2-year and public institutions compared with 78% of all students. There has been a noticeable increase (52%) in the number of Native American females attending college since 1970. College enrollments are concentrated in areas with high Native American populations, western states like New Mexico, Oklahoma, and Arizona.

Redd, K. E. (2000). *Discounting toward disaster: tuition discounting, college finances, and enrollments of low-income undergraduates.* Indianapolis, IN, USA Group Foundation.

To examine the effects of college tuition discounting, Redd compared data from annual Institutional Student Aid Surveys of private colleges and universities to to enrollment and Pell Grant data from the U.S. Department of Education. Data analyses indicated that: (1) at least one quarter of the colleges and universities used discounting strategies that resulted in large losses of tuition revenue; (2) institutions with the greatest increases in discount rates raised their spending on institutional grants by $3,375 per undergraduate, but their tuition and fee revenue grew by just $3,069; (3) discounting strategies do not appear to have significantly improved the academic profiles of admitted undergraduates when measured by changes in median admissions test scores of entering first-year students; (4) tuition discounting does appear to have helped institutions increase their numbers of low-income undergraduates; and (5) the increased use of tuition discounting does appear to have made it possible for more students from all income levels to enter higher education.

Rodriguez, A. L., F. Guido-DiBrito, et al. (2000). "Latina college students: issues and challenges for the 21st century." *NASPA Journal* 37(3): 511-27.

> This article discusses the barriers to Latina participation in higher education, factors contributing to the success of high-achieving Latinas, and strategies for student and academic affairs administrators to promote the success of Latina students. The Latino population still remains one of the most underrepresented groups in the higher educational system, which can be traced to Latinos low socioeconomic status. Barriers facing Latinas in postsecondary education include cultural stereotyping, financial, academic and social stresses, and institutional marginalization. To support the success of Latinas in higher education, institutions should provide adequate and realistic financial aid that includes more grants and scholarships than loans; offer more academic support to integrate students academically, more social and cultural support systems that value the Latina culture and create a campus that embraces diversity.

Smedley, B. D., H. F. Myers, et al. (1993). "Minority-status stresses and the college adjustment of ethnic minority freshmen." *Journal of Higher Education* 64(4): 434-452.

> Non-white students attending PWIs are likely to view these campuses as hostile, alienating and socially isolating and less responsive to their needs and interests. This study confirmed the hypothesis that minority status stress confer an additional risk to the academic adjustment of non-white students beyond those normally experienced by White students, the researchers proposed a multidimensional stress-coping model of individual characteristics that moderate or enhance student's vulnerability to academic failure, psychological and cultural stresses students encounter during their academic careers, and student's coping strategies as important in non-white college students' adjustment and achievement. Chronic strains associated with being a student and life events are important correlates of psychological distress in non-white freshmen, and that minority status stresses make a substantial additional contribution to this correlation. However, research also supported previous findings that regardless of the sources of stress, they are not as important as academic preparation when accounting for present academic achievement.

St. John, E. P., M. B. Paulsen, et al. (1996). "The nexus between college choice and persistence." *Research in Higher Education* 37(2): 175-220.

> Initial college choices are considered an influence on persistence, but the impact of students' choices have seldom been considered in studying their persistence and student outcomes. According to these researchers two distinct sets of theories and research have evolved regarding college choice and persistence, as a result of considering them as two separate managerial functions in higher education. College choice research often supports marketing and recruitment efforts, while persistence research support student retention and completion. Using data from the National Postsecondary Student Aid Study, this study examined the influence of finance-related reasons for college choice on persistence decisions. Data

showed that finance-related choices had direct and indirect influences on college persistence, and market-based, monetary measures of financial aid, tuition, housing costs, and other living costs had substantial direct effects on persistence.

Stewart, G. L., R. B. Russell, et al. (1997). "The comprehensive role of student affairs in African American student retention." *Journal of College Admission* 154: 6-11.

The authors contend that student affairs personnel and professionals concerned with the matriculation and retention of minority students must be aware of the need to create an accepting and supportive atmosphere for African American students on PWI campuses. They discuss developing supportive campus using a series of concepts and interventions, including precollegiate outreach, orientation, academic advising, tutoring, career planning and placement, financial aid, residential life, and structured student activities

Strage, A. A. (1999). "Social and academic integration and college success: similarities and differences as a function of ethnicity and family educational background." *College Student Journal* 33(2): 198-205.

Strage examined college students' social and academic integration and college persistence to discern similarities and differences among cutural and educational subgroups of the "new" college-going population, which consists of more students of color, part-part-timers, and older students. Data analyses of psychosocial survey responses show differences in students' social and academic integration by cultural subgroups. White and Hispanic students were slightly more confident in their academic abilities than Asian American students. However, White and Hispanic students were much more socially confident than Asian American students. They felt that they had better rapport with instructors and they reported more internal locus of control. No significant differences were found between first and later generation students for academic and social integration. The relationship between grades and academic and social integration was much weaker, than the relationship between achievement and motivation and integration.. Academic confidence, leadership and teacher rapport were positively correlated with persistence for Whites. Academic confidence and teacher rapport were predictive of persistence for Asian Americans. Academic confidence and locus of control were significantly correlated with persistence for Hispanics.

Swail, Watson S., and Perna, Laura W. (2002). "Pre-College Outreach Programs: A National Perspective." In Tierney and Hagedorn's *Increasing Access to College.* Albany, NY: State University of New York Press.

This chapter uses data from the National Survey of Pre-College Outreach Programs to describe the landscape of programs in operation around the U.S. Included in this review are discussions of funding, location, types of interventions, staffing, and size of programs. The chapter begins with a brief discussion of federal and non-governmental programs to increase access for underrepresented students, and concludes with 10 viewpoints collected during focus groups with

program directors from around the country for improving program services and stablity.

Swail, Watson S. (2000). "Preparing America's Disadvantaged for College: Programs That Increase College Opportunity." In Cabrera and La Nasa's (Eds) *Understanding the College Choice of Disadvantaged Students.* A New Directions for Institutional Research Publication. San Francisco, CA: Jossey-Bass Publishers.

This chapter uses selected indicators from the National Survey of Pre-College Outreach Programs to describe how these programs work within the scheme of public schooling in America. The author describes the importance of education to lifting the minds, spirits, and opportunities of our less-advantaged youth, and how early intervention programs can be a primary tool to make that happen. The chapter concludes with four points on how to alter public policy to improve the practice of early outreach efforts.

Terenzini, P. T., A. F. Cabrera, et al. (2001). *Swimming against the tide: The poor in American higher education.* New York, NY, College Entrance Examination Board.

This report presents profiles of low-income college students and the nature of their collegiate experience. Low-income students are likely to be nonWhite, have parents with high school diplomas or less, come from single-family homes, make decisions to attend college without parental guidance, attend public two-year institutions; and have limited academic resources. Low-income students are equally involved in academics as high income students, but significantly less involved in out-of-class campus activities. While financial considerations are important to facilitate students enrollment and persistence in college, it does not fully explain why low-income students attend and persist in higher education.

Terenzini, P. T., L. Springer, et al. (1996). "First-generation college students: Characteristics, experiences, and cognitive development." *Research in Higher Education* 37(1): 1-22.

This study compared the characteristics and college experiences of first-generation students with traditional students to determine any differences between the groups and the educational impacts of the differences to address the increasing numbers enrolling in higher education. The conceptual model posits six sets of constructs defining a causal sequence which begins when students enter college with an array of academic resources. The precollege characteristics are presumed to influence students course taking patterns, formal classroom experiences, and out-of-class experiences during college, which ultimately influence educational outcomes. The researchers used first-year student data collected as part of a three-year longitudinal national sample from precollege characteristic survey, a cognitive assessment instrument, and a college experience questionnaire. Research findings of precollege characteristics showed first-generation students were more likely to come from low-income families, to be Hispanic, to have weaker cognitive skills (reading, math, and critical thinking), to have lower degree aspirations,

and to have been less involved with peers and teachers while in high school. Research findings also indicated that hours spent studying positively impacted first-generation students gains in reading skills during their first year, which suggests a need to increase these students study time, possibly through study groups, peer tutoring, and financial assistance to reduce students off campus work hours.

Thayer, P. B. (2000). "Retention of students from first generation and low income backgrounds." *Opportunity Outlook.* The Journal of the Council for Opportunity in Education, Washington, DC: Council for Opportunity in Education.

Based on theoretical models of retention, Thayer presents critical analyses of the characteristics of first-generation and low-income students, their challenges to higher education, and programming that supports their postsecondary participation. Thayer offers a dual strategic approach for facilitating college degree attainment, which consists of admissions selection and student support components. His discussion of student support services centers on integrating students into the academic and social structures of institutions. Thayer expects these strategies to provide increased higher education opportunities for low-income and first-generation students. While the recommended strategies are targeted toward "at-risk" students, they are applicable to all college student populations.

Tinto, V. (1975). "Dropout from higher education: A theoretical synthesis of recent research." *Review of Higher Education* 45(1): 89-125.

Tinto's landmark theoretical model provides the framework for numerous college student retention studies. It posits that student-institutional fit shapes students' goal commitment and commitment to the institution, which ultimately influences student persistence decisions. The model explored the multifaceted functioning of interactions between the student and the college academic and social systems on student persistence. While the model failed to address in detail the effect of external campus factors, such as finances, family obligations, and external peer groups on student persistence, it has remained the foundation of student retention studies and practice for over twenty-five years.

Volle, K. and A. Federico (1997). *Missed opportunities: A look at disadvantaged college aspirants.* Boston, MA, The Education Resource Institute, Inc. (TERI).

Volle and Federico examined three factors that significantly influence the college access, persistence and degree attainment of some first-generation, divorced and students on welfare. While students in these subgroups face barriers unique to each subgroup, financial and academic limitations hinder degree attainment across subgroups. The authors recommended investing in early intervention and pre-college programs; increasing availability of college awareness information; increasing availability of support services; promoting greater consistency and clarity in financial aid policies regarding parental contributions to college; and lessening restrictions prohibiting welfare recipients from participating in college.

Wallace, D., R. Abel, et al. (2000). "Clearing a path for success: Deconstructing borders through undergraduate mentoring." *Review of Educational Research* 24(1): 87-102.

> The researchers use qualitative research methodology to examine the effectiveness of formal mentoring programs for high risk undergraduates at a southern, comprehensive, four-year, regional university. Formal mentoring was defined as a deliberate matching of university personnel with high-risk students, a group which may include nonWhite, female, low-income, physically challenged, and first-generation college students. Study findings indicated that formal mentoring appeared to positively affect student participation, retention, and success in college. Students who had been involved with student support services, Veterans Upward Bound, and the educational opportunity center reported commitment to continuing their education as a result of support personnel's counseling, tutoring, and guidance.

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