Strategies for Facilitating and Improving the Retention of Students At-Risk

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Abstract

Many of the students who are considered at risk are those who have been historically underserved by public schools. A large number of these students attend Historically Black Colleges and Universities (HBCU). Due to the demands of the workforce, HBCUs must ensure that the students attain a high level of intellectual skill and knowledge to be a participant in the world economy. At risk students have specific and overt needs that are not the normative needs of the general American college student. These students are more likely to have a wide variety of personal circumstances which can interfere with their ability to give full attention to educational matters. Secondly, interpersonal relationships between students and faculty are essential for academic success; faculty and staff are primary sources through which at risk students make judgments about themselves and their potential to be successful, especially in engineering. Studies at Howard University indicated that the best indicator of success is how well the students perform during the first year of college, hence good academic advising is a critical component during the first year. The objectives of this paper are: 1) define an at risk student based upon a predictive approach, 2) discuss the importance of reducing the risk of academic failure, 3) identify barriers to academic success in engineering to at risk students, 4) identify current trends and approaches used in colleges and universities and 5) present simple strategies and skills that can be incorporated to improve the chances of academic success in engineering for at risk students.

Introduction

The definition of an at risk student has changed overtime. Originally, at risk students were defined as those whose appearance, language, culture, values, communities, and family structures did not match those of the dominant white culture that schools were designed to serve and support. Currently the predictive and the descriptive approaches are the most commonly used strategies for defining the at risk student population by schools and policy makers [10]. The predictive approach defines at risk students as those who have certain kinds of conditions such as from a low socioeconomic status, living in a single parent household, or being a member of a minority group. While the descriptive approach defines at risk students as those who are already performing poorly or failing in school. This approach identifies the student as at risk after school-related problems occur. Since an "ounce of prevention is worth a pound of

cure", the predictive approach is preferred. Many studies support the predictive approach [21]. A study by Kaufman and Bradly in 1992 indicated that a student's demographic characteristics, gender, race-ethnicity, and socioeconomic status are identified as being associated with an increased probability of school dropout.

Importance of Reducing the Risk of Academic Failure

Globalization, changing demographics and technology are the driving factors for improving the retention of at risk students in engineering. Many key advances in worldwide transportation and communication, along with government de-regulation practices, have opened the doors for companies across the world to compete in the same markets. This trend has created a much more competitive environment for suppliers. Consumers and governments around the world are spending more and more on imported products and services. In order for American companies to compete, more scientist and engineers are needed in the workforce. To meet this need, an increased number of the college-age population must obtain a college education.

Projections by the 2002 U.S. Census Bureau indicated that within 30 years, Hispanics and African-Americans will constitute over one-third of the American population. These demographic changes suggest that in order to meet the needs of a highly skilled American workforce, more students from minority backgrounds need to be college educated, in particularly in math, science and engineering. Increasing the participation of minorities increases the nation's pool of technical talent [24].
Improved products and services, a higher standard of living, economic security, and military security are products of technological innovation. The technological future of our nation depends upon having a good supply of scientists and engineers. Technological creativity allows American companies to compete effectively and efficiently in the global marketplace [24]. According to the 2003 meeting summary of the Pan Organizational Summit on the U.S. Science and Engineering Workforce, the U.S. is not producing as many engineers as other countries. The United Kingdom, South Korea, Germany, Australia, Singapore, Japan, and Canada all produce a higher percentage of science and engineering graduates. In order to globally compete, the U. S. must increase the number of minorities in colleges and universities who enter the workforce over the next few decades. "Designing programs and policies that help minority students prepare for and successfully complete postsecondary education is vital if our country is to remain a world economic leader," [12].

Student retention not only impacts the workforce, the economic success of colleges and universities is impacted as well. Colleges and universities with consistent low retention rates eventually suffer from loss of tuition income, loss of faculty lines, and additional costs of recruiting new students. State-level funding patterns, facilities planning, and academic curricular offered are negatively impacted by low retention rates [6].

Barriers to Academic Success in Engineering to At Risk Students

Many minorities of low socio-economic status are faced with unique factors which result in low retention rates. Several of these factors are: limited financial resources, being first-generation college-goers, low level of preparation for college, and the educational system is not optimally developed for minority students. The curriculum does not sufficiently address the cultural backgrounds of the students. In addition to the unique challenges, these students are also faced with the challenges of general American college students.

According to the 2005 National Satisfaction and Priorities Report, the top challenges identified by general college students are: 1) students are able to register for classes with few conflicts, 2) student seldom get the "run-around" when seeking information, 3) the institution shows concern for students as individuals, 4) faculty provide timely feedback about student progress in a course, 5) faculty are fair and unbiased in their treatment of individual students, 6) students notified early in the term if they are doing poorly, 7) faculty are understanding of students' unique life circumstances, 8) academic advisor concerned about student as an individual, 9) academic advisors are knowledgeable regarding major/program requirements, 10) academic advisors are knowledgeable regarding transfer requirements, 11) the school does what it can to help students reach their educational goal, 12) there is a good variety of courses

provided on this campus, 13) classes are scheduled at times that are convenient, and 14) there are adequate services to help decide upon a career [17]. In order to improve retention of minority students both the unique challenges and the general student challenges must be addressed.

Current Trends and Approaches used in Colleges and Universities

According to the October 2004 ACT Policy Report, retention practices that result in college success are: 1) advising interventions with selected student populations, 2) increased advising staff, 3) comprehensive learning assistance center, 4) integration of advising with first-year programs, 4) center that combines academic advising with career planning, 5) summer bridge program, 6) non-credit/credit freshman seminar, 7) recommended course placement testing, 8) performance contracts for students in academic difficulty, and 9) residence hall programs. Of the nine practices, the three which made the greatest contribution to retention were: (1) freshman seminar for credit, (2) learning communities, and (3) advising interventions with selected student populations [12]. The Schnell & Doetkott study found that students who enrolled in first year seminar classes had significantly higher retention rates than those who did not. About 70% of the American universities and colleges offer freshman seminars. These programs focus on academic and social integration to increase college success [23].

Bridge programs are very popular. Many summer bridge programs offer 4 to 6 weeks of instruction in math, writing, reading and study skills, along with other activities, to prepare students for the transition to college. The Bridge program at Georgia State University (GSU) is an example of a successful program. The Bridge program at GSU has served for 13 years as a four-week summer enrichment program for African-American students. The program integrates college orientation and academic assistance with social inclusion and personal success for student participants. "The objective of this program is to integrate academic assistance, based not only on skill acquisition but also on critical thinking, with social inclusion for student participants" [22].

Another effort which has lead to a significant increase in retention of minority students is the program at the University of Missouri-Columbia. The university's strategy involves learning communities, where groups of students are enrolled together in general-education courses and are assigned to the same housing unit. Peer assistants coordinate activities such as group study meetings. The goal is to give students a greater sense of belonging and to ease their involvement in the academic and social systems of the institution. The program has a 90% retention rate for the sophomore enrollment [16].

Mentoring has been shown to help African-American men in overcoming barriers which impact successful completion of college. Several examples of successful mentoring programs are: "The Black Man's Think Tank," "The Student African-American Brotherhood (SAAB)," "The Black Male Initiative," "The Bridge," "Project BEAM," "Faculty Mentor Program" at the University of Louisville and "The Meyerhoff Program," [15]. The Meyerhoff Scholars Program is one off the most successful retention programs in the nation. The retention rate of the Meyerhoff Scholars Program in science, engineering and mathematics is greater than 95%. Approximately 80% of those participating in the program go to graduate school [25]. The program includes mentoring, training, academic and career advising, group study and research opportunities.

Recommendations

The recommendations presented were developed from personal experiences as an at risk student, experiences as a professor of engineering at an HBCU, research findings and lessons learned from successful programs.

Consistent findings in the literature indicated that the factors with the strongest relationship to retention were academic self-confidence, academic goals, academic related skills, availability of a strong support person, involvement with peer groups, and informal student/faculty interaction outside of the classroom. The factors found to have a moderate relationship were institutional commitment, and financial support [23]. According to Tinto's (1993) work, a student's sense of belonging is directly related to their persistence. This sense of belonging is affected by interactions with the academic and social environments of the university. Successful retention programs, such as the Meyerhoff Scholars program, has provided

environments which incorporate these factors. In alignment with the findings in the literature, the key components to my own academic success were, self-confidence, constant availability of mentors in my area of study (faculty or someone from industry), tutoring, a nurturing relationship with my advisor who understood my non-academic problems and financial support, respectively. Although, I did not form strong relationships with my peers and was not very active in academic organizations due to working and living off-campus, I believe that the six year academic experience to obtain the undergraduate degree would have been decreased had I participated. The main reason for the persistence was my belief that one should never give up on goals, including achieving the goal of becoming an electrical engineer, and constant support of mentors and family. The concept of never giving up, probably came from pervious experiences as an athlete.

Academic advisors are the link between the student and the institution. They play a major role in the students decision to stay in college. It is critical that advisors assists students in building relationships with each other and faculty, while learning the importance of strong study habits, group study and useful time management skills.   Many minorities lack these skills when entering college. Academic advisors should be well trained to deal with the special problems of minority students. They should understand the background of the students. Since most minority students are first generation college goers, many enter college with little knowledge of degree requirements and academic regulations. Hence, the role and influence of the academic advisor is even more critical for these students. The students depend on academic advisors to explain graduation requirements, discuss course selection, plan a course of study, explore career options, explain registration procedures, and talk to students about of college life.   Upon entry to the program freshman students are not aware of the importance of academic and social integration into the university, hence it is up to the advisor to make sure the students understand the critical need. The advisor should make sure the student is aware of the importance in working with peer groups, faculty and obtaining leadership roles. The advisor should make sure the students are aware of research opportunities and internships. Students should also be encouraged to participate in study groups and take advantage of tutoring. The advisor should also keep up with the academic progress of each student and advising should be constant throughout the undergraduate years. Students in the Meyerhoff Scholar Program are ____ Finally, the advisor should incorporate effective evaluation strategies. The influence of the academic advisor on college retention is significantly reduced if the institution does has to clearly indicate to students that advising should have high importance. Students may not rate advising as very important and thus benefit. On the downside, the disadvantages of advising at risk students is that successful advising require training to address the unique needs of these students, time and in many cases the department does not have reward incentives (e.g., merit increases, credit toward tenure/promotion) for efforts.

Mentoring is also a critical component for retention of at risk students. When students enter into a program a mentor should be assigned to them. The mentor could be a faculty member, a senior student, someone from industry or someone outside of the department. In cases when the students' low-socioeconomic background has excluded them from the benefits of relationships and social networks and the kinds of social capital that lead to school success, a mentor from industry is valuable. In other cases, such as situations with personal problems, it is good practice to have a mentor independent of the group making performance decisions on the person. The mentor should be someone the student can go to with special problems without the fear of their perception being changed. When students want to discuss personal problems. A mentor from outside of the department or a senior student may be more appropriate than an instructor or advisor, reducing the feeling of reluctance to talk.

Faculty's role is recognizing signs of trouble in the students. Students who are struggling should be paired with a tutor and encouraged to participate in study groups for additional support. Also the faculty should try to engage the student in research projects.

Conclusion

Many studies have shown that the strongest variables affecting student retention are student involvement and academic and social integration. Several existing retention programs have produced significant increases in retention by incorporating these variables. In order to have a successful retention program, academic advisors, mentors and faculty play a major role. They are responsible for developing a strong social network for at risk students and integrating them into the institution. This creates a sense of

belonging to the student which results in persistence toward the goal of graduation. By increasing the retention of at risk students, America's ability to compete in the global market increases because retention affects the future labor market, resulting in a more secure nation. The universities and colleges benefit by obtaining increased state-level funding. Society and individuals benefit in terms of lifetime earnings and unemployment rates. Retention of at risk students is every ones' responsibility.

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