

The Effects of Undergraduate Research on Minority Students' Graduation Rate: Case of the Diversity Scholars Research Program at Indiana University Purdue University Indianapolis (IUPUI)

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Undergraduate Research (UR) is defined as “An inquiry or investigation conducted by an undergraduate student that makes an original, intellectual, or creative contribution to [a] discipline.” The Council of Undergraduate Research (CUR) has proclaimed UR to be the pedagogy of the 21st century. Undergraduate Research is “a powerful pedagogical tool”, significantly enhancing the quality of the undergraduate science education. There is a strong body of evidence supporting the theory that UR should be a critical component of undergraduate education. The Boyer Commission Report (Boyer 1998) and the National Science Foundation named UR as critical component of their strategy for the integration of research and education. Research studies have shown that students participating in undergraduate research programs (URP), such as the Diversity Scholar’s Research Program (DSRP) at IUPUI, increase their independence and self-confidence (Seymour, Hunter et al. 2004), benefit from higher learning (Kardash 2000) and are likely to enroll in graduate study (Summers and Hrabowski 2006).

This paper discusses and establishes general conclusions derived from surveys and studies about the benefits of undergraduate research. It focuses on how undergraduate research helps increase the rate of retention and graduation within minority students and others. Furthermore, the paper analyzes the finding that students who experience undergraduate research are at an increased likelihood of pursuing post-graduate programs. Finally, the paper presents the DSRP as a case-study, and explains the benefits of undergraduate research program to minority students at IUPUI.

Graduation rates for minority students at IUPUI from 1990-1998 averaged 15% with African American student rates below 15% (Bantz 2006). In contrast, internal data from DSRP students (N=35) from 1997-2002 showed a six year graduation rate of nearly 69% with nearly 46% of them earning an advanced degree or were enrolled in graduate school. Therefore, it was the purpose of the study to compare DSRP student data with a similar cohort of students at IUPUI and to determine if minority students that participate in DSRP took less time to graduate, had a higher graduation rate, and had better GPAs than minority students that did not participate in structured URP such as DSRP.

As a result of this assessment, we gathered data that would allow us to determine the following outcomes:

1. Graduation rate of minority students that participated in DSRP between 1997-2002
2. Graduation rate of minority students that did not participate in DSRP from 1997-2002
3. Effect of DSRP on graduation rate, time to graduation, and final GPA.

Assessment methods

Demographic, admission, and graduation data for underrepresented minorities that entered IUPUI from 1997-2002 was gather from The Office of Information Management and Institutional Research (IMIR) and DSRP with permission of the Institutional Review Board. Demographic data included race/ethnicity, age, and gender. Admission data comprised of the date of the first semester at IUPUI, SAT/ACT scores, and class rank (when available). Academic and graduation data included freshmen year cumulative GPA, year of graduation, and final cumulative GPA. Graduation was defined as any student who graduated from any Indiana

University (IU) campus. If a student left the IU system and graduated from another institution, the student was considered as a “non-graduate”.

Data Analysis

Descriptive statistics were used to represent and facilitate cohort comparisons. Differences between cohort graduation rates were determined using Chi Square techniques, while differences between cohorts on final GPAs and years to graduate were analyzed using Two-Way ANOVAs for independent groups and post-hoc comparisons were analyzed using Tukey HSD. Statistical analyses were performed using SPSS (Statistical Package for the Social Sciences) with an alpha level of $p = .05$ for all the tests.

Results

IMIR data were obtained from underrepresented minorities (Africa-American, Hispanics and Native American) that entered un-conditionally at IUPUI in the fall semesters from 1997-2002 (N=342). From that group of students, three cohorts were developed. Cohort A (N =26) was comprised a group of students with similar characteristics as DSRP students (HS Rank top 25% and SAT above 1070 or higher). In Cohort B (N=35) were students that participated in DSRP and Cohort C was the group admitted to IUPUI that did not meet the entry requirements for DSRP. Of the total of 342 URM students in the groups only 61 met the entry requirements for DSRP, and 35 of them were in the DSRP program. The large majority (82%) of the URM fell in the third cohort of students that did not meet the DSRP requirements. The average SAT score of this group was below 1000 and high school ranking below 75%.

Both Cohort A (57.6%) and B (69%) had significantly better graduation rates than Cohort C (33%). Cohort B, the DSRP group had higher graduation rate than Cohort A made of students with similar admission requirements as DSRP. There were no significant differences between cohorts regarding final GPA and time to graduation. Although the results seems to indicate that the males in cohort A took longer to graduate than males in the other two cohorts, this average graduation time was affected by two of the seven subjects taking 7.3 and 5.8 to graduate.

Between 1997 and 2002 DSRP students graduated at higher rate (69%) when compare to similar cohort of students with same entry characteristics (56.7%) and to the overall population of underrepresented minorities attending IUPUI (33%). In addition, DSRP students were less likely to transfer from IUPUI even when they no longer were affiliated with DSRP.