

THE LONG AND CROOKED PATH TO A BACHELOR'S DEGREE IN STEM FOR UNDERREPRESENTED STUDENTS IN CALIFORNIA: WHAT IS THE ROLE OF THE COMMUNITY COLLEGES?

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ABSTRACT

The Problem

Among all of the 109 California Community Colleges, 41 send a hundred plus students a year on to the University of California in all fields. The greatest number of transfers, however, is derived from 15 community colleges in relatively affluent areas. All of these colleges have science departments which offer basic courses in mathematics, physics, chemistry and biology, some of which are designated as "UC and CSU transfer courses." These 15 colleges vary in the qualifications of faculty, extent of transferable course offerings in STEM, the relation between remediation in mathematics and participation in transferable STEM courses, the presence of laboratories, and the overall competency level of entering students. 48% of STEM baccalaureates from UC and CSU were transfer students from community colleges. Community college students closely reflect the state's population: Hispanic students were 28% of full time enrolled students, African Americans 7.7% (2004) yet few of these students transfer to four year colleges in any field. In 2004, Latinos and African-Americans combined represented only 18 percent of the community college transfers to the UC system (CPEC online data system). Looking specifically at the 1,743 Fall 2004 transfer students to UC Berkeley, only 43 (2.5%) were African American, **only 7 entered a STEM discipline** and 135 (7.7%) were Chicano, **only 30 entered a STEM discipline**, while 442 (25%) were Asian and 649 (37%) were white (UCB OSR Applicant File Fall 2004). Transfer students to UCB in STEM fields comprise nearly one third of the junior class, but very few were Latinos or African-Americans. This route to a STEM bachelor's provides very narrow access for underrepresented students.

The Research Problem

There are almost no real studies of community college students and transfer in STEM, let alone a study of URM students in community college. Possible explanations and the working hypotheses for shaping this study is that if we understood issues such as the availability of transferrable science/mathematics courses, the quality of instruction, the role of remedial courses in mathematics in preparing students to take transferable STEM classes, and the availability of academic counseling we might better understand why URM participation is so low, and learn what steps could be taken to improve the situation. So, we are proposing a qualitative study of community colleges and their students limited at this time to six Bay Area community colleges. We hope to use this smaller scaled project as a means of testing our ability to acquire the information we seek, develop the qualitative tools to assess motivation and ambition, and after the trial and error involved, develop a state wide project focusing on URM students pursuing transfer programs leading to a bachelor's degree in STEM. The focus is underrepresented minority students, their academic preparation when entering a CC, their enrollment and

completion of remedial courses in mathematics, their ambitions, their income level, language competency, financial situation, family obligations, and their interest in getting a bachelor's in one of the STEM fields.

The Research Project in Brief

Combining quantitative and qualitative results, the project seeks to produce exacting analyses of how community college students of all ethnicities get on or off the STEM track (white and Asian students will be used as a “match” or “control”). Guiding research questions include: What effect does community college faculty and facilities have on them? What is the influence of educational, cultural, and SES background? What awakens transfer ambition and how is it sustained or destroyed? In what ways do CC classes and programs feed into successful transfer to a four-year institution?