The Impact of College Success Courses for Low-Income, First-Generation, Students of Color to Promote the Pursuit of Science, Technology, Engineering, and Mathematics (STEM) in Higher Education

Allison Scott, Ph.D. and Alexis Martin, M.A.
Level Playing Field Institute
Oakland, CA

Abstract

To eliminate barriers to entrance, retention, and success in Science, Technology, Engineering, and Mathematics (STEM) fields in higher education, the Level Playing Field Institute has developed a programmatic intervention for underrepresented students of color. The College Success Course, taking place within an out-of-school STEM summer program, was designed to prepare underrepresented high school students for the college-going process. The College Success Course focuses on eliminating barriers facing low-income, first-generation students by focusing on college planning, financial planning, and career planning. Evaluation findings demonstrate increased college preparation and postsecondary enrollment outcomes for this population, particularly within STEM fields of study. This course has implications for improving STEM higher education outcomes for underrepresented students of color.

Background

Projections indicate that the fastest-growing and highest-paying jobs of the future are in the fields of Science, Technology, Engineering, and Mathematics (STEM; U.S. Department of Labor, 2009; U.S. Department of Commerce, 2011). However, African Americans and Latinos combined earn just 9% of all science and engineering degrees and represent only 11% of the entire science and engineering workforce (NSF, 2011). In order to increase STEM higher education participation for underrepresented students of color, it is critical to not only address disparities in academic preparation, but also disparities in knowledge about the college-going process.

College success courses thus comprise a key component in comprehensive efforts to diversify STEM fields of study. Because many low-income, first-generation students of color attend under-resourced high schools (Friedlaender & Darling-Hammond, 2007), they have less access to college counselors, private tutors and advisors, cultural/familial capital, and ultimately lack access to knowledge on how to apply for college and financial aid (Hoxby & Turner, 2013; Lareau, 2005). This can be a significant barrier for students who have the aptitude to pursue STEM studies but lack vital information and resources about the college-going process. Hence, this STEM intervention program sought to provide underrepresented students of color with a foundation in college planning and preparation in order to improve college-going outcomes and access to STEM fields of study and careers.

Methods and Findings

The College Success curriculum contains 3 components:

- **College Planning** provides students with vital college preparatory information, including:
  - Goal setting
  - College research
  - Creating list of potential colleges
  - Understanding of UC/CSU A-G entrance requirements
  - College entrance exams (SAT/ACT)
  - Personal statements

- **Financial Planning** provides students knowledge about how and where to access financial support for college, including:
  - Financial aid
  - FAFSA
  - Scholarships and grants

- **Career Planning** provides students with knowledge about STEM career pathways and career counseling, including:
  - STEM speakers and field trips
  - STEM role models of color (instructors and speakers)
  - STEM industry mentorships and internships
  - Interview techniques and resume writing

**Context: SMASH ACADEMY**

- 5-week, 3-year summer residential program held at UC Berkeley, Stanford, UCLA and USC.
- 214 students, 176 alumni
- 76% FRPL-eligible, 78% First Generation College

Program includes:
- (1) Accelerated STEM courses
- (2) Project-based and social justice-oriented curricula
- (3) College success courses
- (4) Exposure to STEM role models, professionals, and career opportunities
- (5) Community-building activities to promote networks of STEM peers of color
- (6) Coaching and tracking of alumni to ensure persistence in higher education

For further information: www.lpfi.org

K-12 education:
- Increase availability of college counselors, college preparation activities, and incorporate a college-going culture across the curriculum.
- Increase collaborations with higher education institutions, including bridge opportunities and networks of role models/mentors.

College and career engagement in out-of-school STEM settings:
- Increase availability of programs to assist students in college and financial aid planning during out-of-school periods.
- Increase collaborations between K-12 and higher education institutions to provide college mentorships and STEM role models.

Higher education:
- Increase opportunities for students to experience college-level coursework and campus climates through university-led initiatives and/or partnerships with K-12 and non-profits.
- Create support networks of STEM peers and mentors for students from secondary education through graduate school.

**References**


