

## The Impact of Different Early-College/Dual-Enrollment Programs on Minority Student Persistence in Science Disciplines

### Background

There is considerable evidence that minority students benefit from early exposure to college-credit courses while in high school. Researchers have also studied minority students' predisposition to pursue higher education. However, the question of whether the benefits of dual enrollment for minority students include increased persistence *specifically in science fields* has been largely unexplored. This study aims to explore this question in a specific context: two dual-enrollment interventions implemented in a large majority-minority school district. To this end, the study was designed as a mixed-method, longitudinal case study involving the two different dual-enrollment programs.

The context of this ongoing study is a large-scale Math Science Partnership project (funded by the NSF) that aims to expand the minority-student pipeline into science fields in higher education. The project includes two different early-college/dual-enrollment programs for high school students, following different instructional models, which have been running for the past four years:

1. *A concurrent-enrollment program:* Science faculty from Prince George's Community College (PGCC) come to area high schools and teach credit-bearing science courses during the regular school year. To date, 225 students have participated.
2. *A summer residential program:* On the campus of Bowie State University (BSU), area high school students enroll for three consecutive summers during their high school careers. Students get supplemental courses and tutoring in mathematics and college skills along with credit-bearing science courses. To date, 70 students have participated.

The unique structure of this intervention allows for comparisons to be made between the two types of dual-enrollment programs employed to help determine what factors are most important for increasing post-secondary matriculation and choice of science major among underrepresented minorities. In particular, we are guided by the following research questions:

1. Does exposure to college-credit courses in high school result in higher college attendance rates by underrepresented minorities?
2. Do opportunities to take college-level science courses in high school increase the likelihood that minority students will consider majoring in science?
3. What differences can be found on these questions between the two programmatic models, and what factors may account for them?

Our primary quantitative data sources include a longitudinal unit-record database, which will enable us to track the course-taking behavior and retention of student participants (and appropriate comparison groups) through their high school careers and (in many cases) into college. In addition, written surveys are administered to each student at the beginning and end of each early-college course, focusing on interest in science and in attending college. Focus-group interviews on the same topics were conducted with a subset of 25 students.

### **Documented Results**

There were no statistical differences between pre-program and post-program surveys, and none between the participants in each kind of dual-enrollment program (summer residential vs. in-school). Participant students are already highly motivated to attend college and pursue science. The focus groups revealed various trends in students' thinking, including these key findings:

- Students are generally positive about the prospect of attending college. However, they are somewhat anxious about choosing the college that best suits their needs. Students do not think that high schools have an atmosphere that supports discussions about college and life after high school with teachers or other students.
- Students see family and media/marketing as important factors in the college choice process.
- Students' top reasons for going to college are directly related to enhancing their opportunities for career and earning power.

### **Potential Applications**

With this study, we hope to learn a great deal about how to help minority students persist in college science. For example, if we find differences in some measures between students of the summer early-college program and those of the in-school courses and can attribute them to the programs' different structures, it would have implications for how best to design future dual-enrollment programs. Ultimately, we would like institutions to incorporate those practices that positively impact underrepresented groups' persistence to science degrees and careers.

### **For More Information**

General information about the (MSP)<sup>2</sup> project may be found online at <http://mspsquared.mspnet.org>. This specific research study has not yet been published, but you can contact us for more information at [dmay@usmd.edu](mailto:dmay@usmd.edu).