In 2007, the AEMES (Achieving Excellence in Math, Engineering and Science) programs were launched to increase the success of our underrepresented students in STEM majors at Smith College. Elements of Smith’s AEMES programs include peer mentoring and faculty-mentored research opportunities as a means of building community and increasing academic success for underrepresented students. Since the implementation of the AEMES programs, our students of color have shown significant gains in introductory biology and chemistry course GPA as well as greater participation in advanced research in the sciences as a whole, dissolving previously observed gaps between students of color and majority students on each of these measures. Rates of persistence in the sciences as a whole for our students of color are equivalent to majority students before AEMES’ launch and remain high, exceeding national rates. Within our institution, work continues to evaluate outcomes across program components. In an effort to propel program efforts aimed at achieving inclusive excellence in the sciences beyond our institution, we pose a series of questions that, in our experience, helped AEMES’ planning and success and continues to move our work forward.

**THE AEMES PROGRAMS**

In 2006, a Smith delegation attended the meeting, “Symposia on Diversity in the Sciences,” sponsored by the Howard Hughes Medical Institute (HHMI), where participating institutions were charged with analyzing key academic outcomes for its students of color in STEM. At that time, there were gaps between our students of color and majority students on some important measures of academic success. Through the generous support of HHMI and other benefactors, Smith scientific faculty launched the AEMES (Achieving Excellence in Mathematics, Engineering, and Science) programs in 2007 with the goal of advancing inclusive excellence for our students. One central component of the first AEMES program was faculty and peer mentoring. The AEMES Scholars program, our flagship initiative, matched admitted students who have declared an interest in a STEM major and are students of color, first generation students, or both to a faculty mentor who provides research and academic mentoring. AEMES scholars receive a rich array of additional resources during their first two years, including a stipend for their mentoring program to articulate why they wanted to become mentors and how they hope to make the student feel as if they are helpless and cannot reach out to mentors who offer advice and support through regular contact and face-to-face meetings.

Since the launch of our AEMES program, gaps between students of color and our majority students in introductory life science (biology and chemistry) gateway courses (Katz et al., 2015; see Figure 1) and advanced research participation across the sciences (see Figure 2 and Table 1) have disappeared.

**OUTCOMES AND OBSERVATIONS**

**Figure 1. GPA performance in gateway biology and chemistry courses from Katz et al., 2015**

Since the launch of our AEMES program, gaps between students of color and our majority students in introductory life science (biology and chemistry) gateway courses (Katz et al., 2015; see Figure 1) and advanced research participation across the sciences (see Figure 2 and Table 1) have disappeared.

**Figure 2 and Table 1. Participation in advanced research in junior and/or senior years**

This year, we asked students applying to serve in our peer mentoring program to articulate why they wanted to become mentors themselves, providing some insight into the various ways in which mentoring might influence the positive outcomes observed with our AEMES programming (see Table 3).

**Table 3: Student observations about the importance of mentoring**

**DISCUSSION**

Smith College, the largest women’s liberal arts college in the United States, has a strong commitment to educating diverse women in the sciences. Since the launch of our AEMES programs, Smith has increased gaps between students of color and majority students on important academic measures. Although our AEMES programs take a multifaceted approach to advancing access, we hypothesize that the material and social support provided by its mentoring programs from both peers as well as faculty—may play a significant role in creating belongingness and building community while fostering the intellectual and social capital necessary for navigating higher education. As we look forward, we hope to more deeply assess each pillar of our programmatic efforts and our student outcomes and to think about translatability to other areas of the college as well as other institutions where goals are the same as ours.

As we reflect on the past eight years of mentor program building, there were a number of important questions that helped us to hone and develop our understanding of the students we were trying to serve. We share these questions below so that other individuals, programs, and institutions can use them to guide their thinking in their own work in fostering inclusive access and persistence in the sciences. Such investments can contribute to the diversification of STEM fields and allows us to reap the benefits of a broader set of approaches and perspectives (Bianchini, 2013).

**REFERENCES**


The AEMES Programs have been generously supported by the McKinley Fund of Smith College with additional support from The Hearst Foundation, The Howard Hughes Medical Institute, and the special grant program of the Camille and Henry Dreyfus Foundation. Thanks also to Mink Ly, Kathryn Aloisio, and Martha Miller for their assistance in this poster’s creation.