WHITLOWE R. GREEN COLLEGE OF EDUCATION

Doctoral Proposal Defense Announcement

ABSTRACT

AN EXAMINATION OF FACTORS THAT CONTRIBUTE TO THE SUCCESS OF AFRICAN AMERICAN STUDENTS MAJORING IN BIOLOGICAL SCIENCE AT HISTORICALLY BLACK COLLEGES AND UNIVERSITIES

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Participation by diverse groups in the science, technology, engineering, and mathematics (STEM) academic and workforce communities is severely lacking, particularly in the context of the nation’s shifting demographic landscape. Rising concerns surrounding the ability of the
United States to compete in the global economy have led to numerous calls for national efforts to increase the number of diverse students pursuing degrees and careers in STEM fields. At present, too few people from diverse populations, including women, participate in the STEM academic and workforce communities. To illustrate, in 2008, African Americans represented 12% of the U.S. population and 11% of all undergraduate students but earned just 9% of STEM bachelor’s degrees in 2009 (American Institute for Research, 2012). If America is to regain its position as an international leader in education, participation by underrepresented minority groups must be increased.

The National Academy of Science has emphasized that development of an innovative workforce requires improvements in education in science and mathematics. People of color are projected to be the majority in the United States by 2050, with African Americans accounting for a significant percentage of this group (Karanja & Austin, 2014). Historically Black Colleges and Universities (HBCUs) have been shown to exact an impact on African American professionals and educational success, particularly in the STEM fields. HBCUs represent just 3% of the nation’s higher education institutions but contributed 19% of the bachelor’s degrees in science and engineering awarded to African Americans in 2010 (Foster, 2015).

The Higher Education Research Institute (2010) reported that from 1972 to 2007, approximately one third of all freshmen planned to study science and engineering; this proportion gradually rose to 38% by 2010. Increases in the proportion of freshmen planning to major in biological/agricultural sciences in recent years have accounted for a large percentage of the growth. For most racial/ethnic groups, about 9% to 18% planned to major in biological/agricultural sciences. In 2010, African Americans received 7% of all bachelor’s degrees awarded in the biological sciences (American Institute for Research, 2012). HBCUs are
responsible for producing 31% of all biological science degrees and 17% of all health profession degrees earned by African American students (Postsecondary National Policy Institute, 2015).

The accomplishment of HBCUs in this area is worth understanding, thus this study will focus on the success of African American students in STEM education at the top HBCU producers of biological science majors in an effort to address retention rates and obstacles to degree completion. Quantitative data will be obtained from the National Survey of Student Engagement (NSSE). The study will employ multiple regression analyses to examine the NSSE themes of academic challenge, learning with peers, experiences with faculty, campus environment, and how these constructs contribute to the success of African American biological science majors at these high-producing HBCUs.

First, the proposed study will contribute to scholarly research that examines institutional, instructional, and individual factors related to African American students’ success in STEM education. Second, the study will arm institutions with an understanding of the types of resources and experiences that support inclusion of all members in the STEM community. Third, it is the hope of the researcher that the study will empower African American students to view STEM education and careers as possibilities for themselves that will lead to engagement, retention, and STEM success.

The study will be guided by four research questions:

1. To what extent is academic challenge a factor in the success of African American students majoring in the biological sciences at HBCUs?

2. To what extent is learning with peers a factor in the success of African American students majoring in the biological sciences at HBCUs?
3. To what extent are *experiences with faculty* a factor in the success of African American students majoring in the biological sciences at HBCUs?

4. To what extent is the *campus environment* a factor in the success of African American students majoring in the biological sciences at HBCUs?

Keywords: STEM, biological science, success, historically Black colleges and universities

Date: May 10, 2016  
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References


