Female Participants’ Lived Experiences towards Successful Matriculation in
Engineering Programs at a HBU
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Kashan Ishaq, B.S., University of Houston;
M.Ed., Prairie View A&M University
Chair of Advisory Committee: Lisa D. Hobson, Ph.D.

According to the National Center of Education Statistics (2007), the number of African
American high school graduates choosing majors in science, technology, engineering, and
mathematics (STEM) fields at the university level are relatively low compared to their
counterparts, White and Asians, (NCES, 2007). Among the African American college students at
the bachelor’s level in the STEM fields at Southwest University, Texas, there is a continuous
problem of a gender gap currently existing in the engineering and technology programs.
According to the Association of American Universities (2006), the shortages of well-qualified
STEM graduates could diminish technical innovation at the national level, undermining U.S.
living standards, economic growth, and national security. The continuous shortage of well-qualified STEM graduates across diverse ethnic groups can impact economic growth nationally and hinder consumer usage of products.

The purpose of this phenomenological case study is to examine the context within which female African Americans engineering students succeeded in a STEM program. Focusing on an engineering program encompasses the science, technology and mathematics in the STEM program because engineering course work requirements include students’ proficiency in mathematics, science, and technology.

To determine the context within which female African Americans engineering students succeeded in a STEM program, in this the qualitative, case study, I will examine the following questions:

1. What are the factors that encourage African American female students’ persistence in any engineering program?
2. What contextual supports do participants feel contributed to their ability to persist in STEM fields?
3. How well are African American female students prepared academically to persist in an engineering program?
4. How do African American female students’ backgrounds influence their persistence in an engineering program?

Social cognitive career theory undergirds the conceptual framework of this study as well as for conceptualizing student persistence (Bandura, 1997). The conceptual framework of this study encompasses students’ experiences through institutional factors such as social integration,
academic and curriculum and students’ background that contribute to the persistence of African American female senior students in an engineering program. Social cognitive career theory provides the conceptual framework to understand the impact of contextual supports and barriers on persistence for African American female senior students in the engineering program.

I chose to use phenomenological case study approach because of its detailed approach to inquiry, which focuses on the facilitative factors that contribute to African American female senior year students persisting in engineering majors. I will use purposeful sampling to recruit the participants using the case study method with the bounded system representing African American college students’ experiences in different context within engineering at a HBU (Creswell, 2007; Stake, 2006).

This study will contribute to the literature on women and minority participation in STEM discipline concerning how they are supported and challenged in their academic pursuits in engineering programs, specifically at a mid-size historically black university (HBU) in the southwestern United States. In this study, I desire to utilize the findings for consideration by HBCU institutions through offering recommendations based on data from my study in order to implement programmatic improvements. This goal is important as gender disparity in the science, technology, engineering, and mathematics fields seems to be an ongoing problem occurring over many years.

This study is important in that it can enhance understanding of the factors and experiences of African American female graduating seniors and their persistence in an engineering program at an HBU. The study results may be helpful or of interest to others in similar context especially educational leaders in facilitating the STEM programs.
References


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Dissertation Chair: Lisa Hobson, Ph.D.

Dissertation Committee Members: John O. Attia, Ph.D.

Judith Hansen, Ed.D.

Clement Glenn, Ph.D.