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# peerReview

EMERGING TRENDS AND KEY DEBATES IN UNDERGRADUATE EDUCATION

## At the Soul of Leadership

Authentic Perspectives  
on STEM Reform  
from HBCUs



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# CONTENTS

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## FROM THE GUEST EDITOR

### Tone Begins at the Top: Broadening Participation in STEM Higher Education

Kelly Mack, Orlando Taylor, Camille McKayle, Goldie S. Byrd, Charles McClintock, Melvin Hall, Margaret Kanipes, Comfort Okpala, Kate Winter and Maria Qadri . . . . . 3

## PRACTICE

### Inclusive Research Excellence: Deconstructing the Research Enterprise to Facilitate Responsible STEM Research

Tonya L. Smith-Jackson, North Carolina A&T State University and National Science Foundation; Goldie S. Byrd, Wake Forest School of Medicine . . . . . 5

### Successful Strategies for Enhancing Research Capacity Among Early-Career HBCU STEM Faculty

Triscia W. Hendrickson and John K. Haynes; both of Morehouse College . . . . . 10

### A Call for Transformative Leadership: Addressing the Lack of Female Full Professors in STEM at HBCUs

Monica Stephens, Spelman College; and Zakiya S. Wilson-Kennedy, Louisiana State University . . . . . 14

### Faculty Perceptions of Designing and Implementing Course-Based Research Experiences to Broaden Participation in STEM at an HBCU

Isi Ero-Tolliver, Hampton University . . . . . 18

### Fostering the Professional Advancement of Minority STEM Faculty at HBCUs

Mohammed A. Qazi, Tuskegee University; and Martha Escobar, Oakland University . . . . . 22

### Using Mindfulness to Reduce Math Anxiety in Preservice Elementary Teachers

Wanda McCoy, Coppin State University . . . . . 26

### Metacognition: A Tool to Overcome Discrimination

Scott Horrell, Jana Marcette, and Sudarsan Kant; all of Harris-Stowe State University . . . . . 30

### Reducing Attrition from STEM Disciplines: Understanding the Student Athlete's Perspective

Anthony Emekalam, Elizabeth City State University . . . . . 34

### Using Adaptive Learning Courseware as a High-Impact Practice to Improve Students' Learning Outcomes in General Chemistry II at an HBCU

Conrad W. Ingram, Eric Mintz, and Daniel Teodorescu, all of Clark Atlanta University . . . . . 38

### Implementing a Corequisite Algebra Gateway Course

Eric L. Buckles, Nia W. Haydel, Janice Thompson-Sanchez, and Yolanda W. Page, all of Dillard University . . . . . 42

### Overcoming Advising Barriers to Retain STEM Majors

Michelle D. Peterson, University of the Virgin Islands . . . . . 46

## REALITY CHECK

### HBCUs and Black STEM Student Success

Claudia Rankins, National Science Foundation . . . . . 50



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# Tone Begins at the Top: Broadening Participation in STEM Higher Education

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*Self-made men [and women] are [those] who, under peculiar difficulties and without the ordinary helps of favoring circumstances, have attained knowledge, usefulness, power and position and have learned from themselves the best uses to which life can be put in this world, and in the exercises of these uses to build up worthy character. They are the [women and] men who owe little or nothing to birth, relationship, friendly surroundings; to wealth inherited or to early approved means of education; who are what they are, without the aid of any favoring conditions by which other [women and] men usually rise in the world and achieve great results. . . . They are in a peculiar sense, indebted to themselves for themselves. If they have traveled far, they have made the road on which they have traveled. If they have ascended high, they have built their own ladder. . . . Such [women and] men as these . . . are entitled to a certain measure of respect for their success and for proving to the world the grandest possibilities of human nature, of whatever variety of race or color.*

—Frederick Douglass, “Self-Made Men,” 1872

**R**ecent shifts in US higher education demographics, along with increasing threats to our nation’s global competitiveness in science and technology, have focused national attention on the centuries-old systems that marginalize certain groups

and deny them access to quality STEM education and, indeed, a better quality of life. This contemporary reality makes clear what Hippocrates, the Greek physician, noted about the state of disease—for extreme circumstances, extreme methods of intervention are most suitable.

The conventional workaround approaches that we’ve habitually come to rely upon—usually aimed at fixing the student or ignoring opportunities to develop the responsible faculty—are no longer suitable. Rather, extreme method reform—or implementation of a specific range of authentic, culturally sanctioned interventions aimed at broadening participation—has become necessary for redressing current trends in undergraduate STEM education. Chief among these interventions is building the leadership capacity of STEM faculty who, in every way imaginable, determine the cultural and climatic tone of undergraduate STEM classrooms, laboratories, and departments.

Indeed, tone begins at the top. Money alone cannot set a new tone. Our federal and nonfederal funding agencies have made significant financial investments in broadening participation in STEM, yet students from racially and ethnically diverse backgrounds continue to be marginalized within and excluded from full participation in these critically important fields. The growing body



of research on pedagogical reform will not change the tone either. Despite our knowing what works, culturally responsive pedagogies aimed at broadening participation are still not consistently implemented with fidelity or at scale. How, then, do we ensure higher education delivers on its promise and chart a course that is not only suitable, but daring?

In this issue of *Peer Review*, we posit that higher education, and certainly the nation, need to look no further than to the leaders of our Historically Black Colleges and Universities (HBCUs), who are ideally suited for extreme method reform by setting and preserving an institutional tone that recognizes, desires, fosters, and requires the actions and outcomes that are necessary for inclusion in undergraduate STEM education (Mack et al. 2018). Historically and currently, HBCUs have significantly outpaced all other institutions of higher education in graduating Black STEM students (NSF 2017). To date, researchers have identified a wide range of strategic approaches that are believed to give rise to the unparalleled academic success of STEM students attending HBCUs.

Every indication from these and other studies, though, suggests it is not just these approaches in and of themselves, *but effective leadership of them*, that is responsible for broadening participation success at HBCUs (Waters, Marzano, and McNulty 2003; Allen-Ramdial and Campbell 2014). However, mainstream STEM education research rarely considers the leadership strategies and styles employed by HBCU leaders to support their successes in broadening participation (Hurtado et al. 2009). Additionally, the negative and incomplete depictions of these institutions, both in media and scholarly lit-

erature, have shifted them from the center of the national undergraduate STEM enterprise to the margins. Collectively, these complications give rise to a problematic narrative that ignores the influence of extreme method leadership in setting an institutional tone for broadening participation. Revising this narrative will require, as Dhunpath suggests (2000), understanding not only what HBCU STEM leaders know about broadening participation but also—and more importantly—how they have come to know it.

This issue of *Peer Review* takes on that challenge. It is guided by the nascent work of the Center for the Advancement of STEM Leadership (CASL), generously funded by the National Science Foundation HBCU Undergraduate Program. One of CASL's principal goals is to provide STEM faculty with access to immersive and world-class leadership development opportunities. This mission represents an initial step in quieting, if not silencing, the limited narrative that situates HBCUs and their cultural capital as dispensable to a robust undergraduate STEM enterprise. More importantly, this issue of *Peer Review* features research findings, commentaries, opinions, and recommendations—from HBCU STEM leaders themselves—to help institutions broaden participation. Each article, in its own way, showcases how the institutional conditions of HBCUs can be manipulated by extreme method leaders to yield broadening participation success. Each article also demonstrates how the strategic use of symbolic, structural, political, and human-resource frames of leadership (Bolman and Gallos 2010) can shape an individual's leadership stance for broadening participation and, indeed, feed their leader-

ship soul. In many instances, these authors, who represent a growing community of HBCU leader-scholars, unveil for us the unwritten codes that undergird how they, as Frederick Douglass suggested, “make the [broadening participation] roads on which they travel ... [and] build their own ladders.” What emerges from the following pages is a blueprint for all of us to follow—one that shows us how to integrate our own unique personal histories into an all-encompassing leadership practice that serves, with intentionality and specificity, positive outcomes from broadening participation. ■

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