Building STEM Education Research Collaborations at HBCUs/TCUs: Identifying Potential Collaborators and Establishing the Collaboration

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QEM NSF INCLUDES: A National Summit to Survey and Stimulate Broadening Participation Research (BPR) at Historically Black and Tribal Colleges/Universities

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BREAKING NEWS: New report from the National Academies of Sciences, Engineering and Medicine…

America’s historically Black colleges and universities (HBCUs), Tribal colleges and universities (TCUs), and other minority-serving institutions (MSIs) educate 30 percent of all U.S. undergraduates, and produce 20 percent of the country’s STEM bachelor’s degrees.

HBCUs represent 3 percent of all postsecondary institutions, but enroll 16 percent of Black students; TCUs represent less than 1 percent of postsecondary institutions, but enroll 19 percent of American Indian students.
MORE FACTS:

HBCUs and TCUs are historical. They were established with the deliberate purpose of serving African Americans and Native Americans, respectively. Most HBCUs are located in the South or Southeast. Most TCUs are located on reservations or other tribally controlled lands.

On average, students enrolled at public and private two- and four-year HBCUs are overwhelmingly Black or African American, and students at four-year public and two-year public and private TCUs are predominantly Native American or Alaska Native.

HBCUs and TCUs have more low-income students than all other institutions of higher education. Almost half of all HBCU and TCU students are the first in their families to attend college and 98 percent are Pell grant eligible students. With these and other factors, students attending HBCUs and TCUs are more likely to have lower levels of academic preparation for college.
BUT WAIT...

HBCUs produce more African-American graduates in STEM than all Ivy League institutions combined. For instance, HBCUs award approximately half of all degrees held by African Americans in mathematics, and educates 40 percent of all African Americans who earn doctorates in physics.

TCUs fulfill a dual mission: educating students and addressing Native American tribal priorities, such as contributing to not only the economic growth of the reservation, but also community development, and social renewal.

HBCUs and TCUs are effective in educating low-income, first generation, and under-represented students and are substantial contributors to the national college completion goals.

HOW?
Inquiring minds want to know!
OPPORTUNITY:

STEM Education Research at/on HBCUs/TCUs by HBCUs/TCUs.

But, I am a professional STEM scientist, not an educational researcher...
Educational Research

According to the National Research Council, on the topic scientific research in education, educational research projects should:

- Pose significant questions that can be investigated empirically,
- Link relevant research to theory,
- Use methods that permit direct investigation of the questions posed,
- Provide a coherent and explicit chain of reasoning,
- Replicate and generalize across studies, and
- Disclose research to encourage professional scrutiny and critique.

Sounds familiar professional STEM scientist who is not an educational researcher...
Still, you don’t have to go it alone….COLLABORATE!!
Who does this?

- STEM program evaluators
- Educational psychologist
- Social and Behavioral Science disciplines
- Emergence of Discipline-based Education Research (DBER)
- Growing number of professional STEM scientists
- Growth in STEM education research journals

DBER is grounded in the science and engineering disciplines and addresses questions of teaching and learning within those disciplines.

How do you get in; You might already be there...

- What is your area of interest in STEM Education space?
- Start with ... the STEM Educational problem(s) in which you are currently dealing...
- Why is “it” important to you to understand/solve?
- So What...
- What are your unit(s) of study—undergraduate African American, Native American students in STEM, HBCUs, TCUs...
- Is there a larger societal need for investigations on your unit(s) of study?
Be on the lookout for collaborators as you...

- Develop and define your research idea through search and understanding of the relevant literature... **Authors**
- Search for funding sources... **Grantees**
- STEM Education conferences... **Presenters**
- Sometimes they find you...
  - Look them up…
  - Call them…
  - Email them…
  - They are people too…
Through literature searches...

Google Scholar...Find me...”science identity”

Considering the Impact of Racial Stigmas and Science Identity: Persistence Among Biomedical and Behavioral Science Aspirants

In 2006, the U.S. Congress held numerous hearings about why a smaller proportion of undergraduates than in the past are undertaking studies in physical and life sciences. These concerns are driven in part by interests in preserving the nation’s economic competitiveness and position in technological leadership. Some legislators have called the U.S. science pipeline “leaker than warped rubber tubing” (Friston, 2006, p. 1). Indeed, roughly half of undergraduates who show an initial interest in majoring in the sciences decide to major in other fields within their first two years of study, and very few non-science majors switch to science majors (CIRP, Center for Institutional Data Exchange and Analysis [C-IDEA], 2000). The rates of science major completion for underrepresented racial minority students (African Americans, Latinas/os, and American Indians) are even more dismal. Looking at degree attainment, only 24% of underrepresented students complete a bachelor’s degree in science within six years of college entry, as compared to 48% of White students (C-IDEA, 2000).

Moreover, the Sullivan Commission (2004) reported that the gap in participation rates between underrepresented racial minority (URM)
Through NSF awards searches...

Fastlane...Find me...”self-efficacy”
The series consisted of six lectures, each delivered by a leading education researcher on a range of critical topics including English language learners, college affordability, predictors of learning, early childhood education, urban school reform, and school discipline. Following each lecture, there was an open discussion forum that helped connect to local issues and allow attendees to participate more fully in asking questions or presenting views.
# Final Comments

## MUSTS
- Seek critical expertise which you don’t have
- Recognize the value you bring to the enterprise
- Similar or related interest
- Similar or related goals
- Like-mindedness
- Lead/Co-lead versus liaising
- Truly collaborative

## BE AWARE
- Sub-servient roles
- Mis-matched resource sharing
- Cultural insensitivity

## BENEFITS
- Access to underserved population
- Access to population data
- Access to HBCU/TCU academic community
- Grant sub-awards or sub-contracts
- Authorship/Co-authorship