LET IT RESOUND

Ivory A. Toldson, Ph.D.

Research, Action, and Practice for Historically Black Colleges and Universities
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Research, Action, and Practice for Historically Black Colleges and Universities
RAP for HBCUs

Ivory A. Toldson, Ph. D.
The QEM Network | Howard University
Washington, DC
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Since the founding of the first Historically Black College/University, Cheyney State University in 1837, HBCUs have served in the vanguard of building socio-economic and political viability within the Black community. Against all odds, (which includes blatant and subtle forms of institutional racism, exclusion and oppression) the building and sustaining of this viability has been grounded in ensuring high quality access to learning at all levels of our educational system. Although Payne (2013) addresses public HBCUs, her point below is pertinent to all HBCUs (public and private):

Indeed, this influence made public HBCUs a powerful force in the pursuit of scholarship and human aspirations. No one underestimates the beauty of these great universities where young minds are shaped and shifts in awareness of the world create vast contradictions in perspectives and understanding in their pursuit of life and liberty (p. 15).

Let it Resound: Research, Action, and Practice for Historically Black Colleges and Universities represents a critical step in the evolution of HBCUs on the HBCU historical continuum. It is a document that communicates the ongoing need for HBCUs to continue to work to survive and thrive in their local settings while speaking to the critical need to engage in more cross-institutional collaborative work in research (particularly STEM-related research) to advance socio-economic and political solutions within the Black community.

In its own way, the document promotes an eco-systemic approach to how HBUCs must operate to promote a collective approach to tackling key issues in the Black community. This eco-systemic approach fully recognizes the most vital needs faced by the Black community while recognizing our interdependence. This is particularly important to understand given what the document reveals:

- Continuing reductions in federal investments in STEM-related research support at HBCUs.
- The ongoing extreme disparity in federal investments in STEM-related research support to HBCUs relative to TWIs.
- The growing intensity of economic-poverty and economic vulnerability in the Black community and student populations.
- Health disparities in the Black community and STEM-related research that is relevant to this disparity.
- The lack of STEM-related research that is normed on Black populations.
- Facilities issues, which has implications for HBCU student and faculty recruitment and retention as well as the type and quality of STEM-related research that can be conducted on HBCU campuses.
The QEM Network under the leadership of Dr. Ivory A. Toldson is to be applauded for this work. In a significant way, the work provides “voice” to the HBCU network. This “voice” serves as a guidepost for HBCUs to follow in prioritizing STEM-related research strategies on moving forward. Lastly, the work of the QEM Network serves as a model for non-STEM units on our HBCU campuses (humanities, arts, and non-STEM areas within the social sciences) on how to bring a collection of HBCUs together and in an interdisciplinary way address critical issues that face the Black community.

Bruce Jones, Ph.D.
Professor and Vice President for Research
Howard University
EXECUTIVE SUMMARY

In 2018, the Quality Education for Minorities Network (QEM) launched the National Symposium to Build Research Capacity at Historically Black Colleges and Universities (HBCUs) through Collaborations with STEM Advocates and Practitioners in Washington, D.C. Its purpose was to address the issue of low representation of African Americans in Science, Technology, Engineering, and Mathematics (STEM).

Data for financial year (FY) 2016 revealed that federal obligations to HBCUs decreased by 6%, from $397 million in FY 2015 to $373 million in FY 2016, for 66 HBCUs (Pece, 2018). Further, data for FY 2017 indicated that federal agencies gave $32.4 billion to higher education institutions to support S&E, demonstrating a 2% rise. However, S&E support provided to HBCUs declined by 17% to $308 million (Pece, 2019), representing a 3-year consecutive decline in federal support to HBCUs.

To evaluate the Symposium, QEM developed and administered a survey to the HBCU representatives attending the event. Based on the findings, the Symposium's activities can empower HBCUs to develop STEM research, action and practice (RAP).

HBCU RAP

- **Research** – Building a robust research infrastructure at HBCUs that generates, supports, and sustains important scientific discoveries. Having the facilities, processes, culture and incentives necessary for HBCU researchers to engage in scientific inquiry and discovery. Building a research enterprise that connects research to external opportunities, including establishing centers of excellence, securing grants and contracts, consulting, patents, and publishing.

- **Action** - Strategically positioning HBCU research to advance advocacy and policy. Consider challenges facing the Black community, and the mission of the institution to set a research agenda that sparks social action and change. Connect HBCU researchers with institutions’ media and government affairs to leverage HBCU scientific leadership to empower individuals and communities.

- **Practice** – Foster meaningful research at HBCUs that impacts professional operations and individuals. Establish partnerships with trade organizations, educational institutions, government organizations, community-based services and grassroots activists to promote using the most accurate, relevant and up-to-date research to serve, protect and empower vulnerable communities.

THEORY OF CHANGE AND THE SOUL OF HBCUS

HBCUs' experiences educating Black students run parallel to the experiences of Black Americans navigating systemic racism. Noted scholar W.E.B. DuBois opined about the duality of the Black existence (Harris, 1997), as we try to affirm our culture, while conforming to mainstream standards, often as a strategy for survival.
Institutional theory helps us to conceptualize the dilemma of the modern HBCU, which, through normative and coercive isomorphism, must adhere to the same standards of PWIs, while striving to serve a student population with needs that may be incompatible with these standards. HBCU RAP Symposium helped to fortify the strengths and opportunities that HBCUs have by learning what works in developing a research enterprise through collaborative and strategic partnerships.

**Participants**

QEM aimed to involve researchers and administrators from multiple HBCUs. To achieve that, QEM contacted chief research officers and other administrators from HBCUs and invited them to recommend faculty members and other HBCU staff who could potentially participate in the event. In the end, a total of 52 representatives from 28 HBCUs took part in the Symposium.

**Critical Elements of Success**

The primary element of HBCUs’ success is finding external funding for research. Using the Symposium’s session notes, this report details information about critical elements of success that were found by the participants during the Symposium’s activities.

Drivers to **changing mindset** to pursue external funding

1. Have a mindset of success, which views faculty as a valuable part of the system.
2. Recognize the highest potential in the students, faculty, administrators and staff.
3. View administrators as being there, to work collaboratively with faculty.
4. Recognize the value in research and reward individuals for time and effort.
5. Foster innovation at every level including work with non-tenured faculty.
6. Cultivate a research identity and develop a strategic plan that includes measurable outcomes.
7. Explore how well your mission aligns with stakeholders such as your state, other IHE, students, and employers.
8. Adopt cultural diplomacy, which involves openness to exchanging ideas, information, and innovations with other professionals and institutions.

Drivers to **changing institutional culture** to pursue external funding

1. Set the tone for what needs to be accomplished through campus leadership.
2. Invest in the mission with using productivity metrics such as retention, research outcomes, and external funding.
3. Define and respect the organizational chart and hold leaders accountable.
4. Incentivize researchers and catalog what those incentives would be for faculty and students engaging in research.
5. Implement policy to sustain cultural changes especially when leadership is unstable.
6. Provide incentives and honor things such as release time, and indirect cost.
7. Strengthen cross-disciplinary research.
8. Implement a policy that addresses fairness and fidelity in the grants management process.
Drivers to seizing opportunities to pursue external funding
1. Provide trainings to enhance the competency in staff, faculty and research administrators.
2. Decrease class sizes and in turn the student/faculty ratio to allow for hands-on approach.
3. Pursue targeted opportunities that are beneficial to the university and the larger community.
4. Elevate the understanding of program/funding opportunities.
5. Provide financial assistance to students.
6. Advertise student assistantship and research opportunities.
7. Leverage the institutions proximity to diverse communities and resources, such as local foundations and government offices, to exert leadership, gain access to human capital, and generate revenue.
8. Assert the institutions’ status as a research institution by promoting research findings and developing a clear statement of research capability.

CONCLUSION
The findings suggest that HBCU faculty and administrators are interested in communication and collaboration with each other and NSF program directors, as well as in obtaining the information that will help them to learn about relevant research opportunities. Program Officers, policymakers, and STEM advocates can respond to this need and promote STEM research, as well as reduce the gap in funding between HBCUs and HWI. By fostering collaboration and meaningful relationships, the different stakeholders can empower HBCUs to seize the crucial research funding opportunities and sustain the mindset and culture that would promote STEM education and research within them.

“ The environment has to be correct. If the soil is not conducive whatever seed you plant, the appropriacy will not germinate. The institutional culture has to align with the innovation that the faculty follows.”

Dr. Godwin Mbamalu, Vice President for Research, Benedict College
BACKGROUND

In 2018, the Quality Education for Minorities Network (QEM) launched the National Symposium to Build Research Capacity at Historically Black Colleges and Universities (HBCUs) through Collaborations with STEM Advocates and Practitioners in Washington, D.C.

The Symposium was held at The Walter E, Washington Convention Center during the Congressional Black Caucus Foundation’s Annual Legislative Conference (CBCF ALC). Its purpose was to address the issue of low representation of African Americans in the Science, Technology, Engineering, and Mathematics (STEM) disciplines.

Historically Black Colleges and Universities (HBCUs) receive disproportionately fewer STEM grants and awards when compared to Traditionally White Institutions (TWIs), representing systemic inequities that continue to impact institutions that serve underrepresented students. While the QEM Network recognizes the impact of selection bias and other systemic issues on the ability of Minority Serving Institutions (MSIs) to thrive in STEM research, the organization also promotes harvesting the untapped potential inherent in building STEM capacity at HBCUs. Therefore, the Symposium focused on promoting change by focusing HBCUs on acquiring STEM funding through technical assistance and strategic partnerships. The Symposium addressed the National Science Foundation’s (NSF) Dear Colleague Letter (DCL) titled, “Further Strengthening Research Capacity at Historically Black Colleges and Universities.”

HBCU RAP

- **Research** – Building a robust research infrastructure at HBCUs that generates, supports, and sustains important scientific discoveries. Having the facilities, processes, culture and incentives necessary for HBCU researchers to engage in scientific inquiry and discovery. Building a research enterprise that connects research to external opportunities, including establishing centers of excellence, securing grants and contracts, consulting, patents, and publishing.

- **Action** - Strategically positioning HBCU research to advance advocacy and policy. Consider challenges facing the Black community, and the mission of the institution to set a research agenda that sparks social action and change. Connect HBCU researchers with institutions’ media and government affairs to leverage HBCU scientific leadership to empower individuals and communities.

- **Practice** – Foster meaningful research at HBCUs that impacts professional operations and individuals. Establish partnerships with trade organizations, educational institutions, government organizations, community-based services and grassroots activists to promote using the most accurate, relevant and up-to-date research to serve, protect and empower vulnerable communities.
The letter encouraged building STEM capacity and HBCU research capability and promoted STEM education through accessing National Science Foundation (NSF) programs.

These observations shaped the agenda for the Symposium. Establishing a “community of practice” was included in the content to encourage HBCUs to collaborate, thereby promoting STEM research and institutional capacity.

To evaluate the Symposium, QEM developed and administered a survey to the HBCU representatives attending the event. In addition, QEM obtained the participants’ session notes for this report. By using the raw data from these two sources, the report provides a narrative of the lessons learned from the Symposium, with a focus on the elements critical to successful funding outcomes. Furthermore, the report provides recommendations to various stakeholders, including HBCU researchers and administrators, policymakers, STEM advocates, and program directors at the agencies that fund institutions of higher education. Based on the findings, the Symposium's activities can empower HBCUs to develop STEM research, action and practice (RAP).

**Disparities in Federal Grant Funding to HBCUs**

In the academic year of 2016 to 2017, three TWIs received more federal revenue from grants and contracts than all HBCUs combined. In total, 101 HBCUs collectively received $1.5 billion for grants and contracts from the federal government (U.S. Department of Education, 2018). By comparison, as a single institution, John Hopkins University received $2.8 billion. On average, each HBCU receives $15 million from the federal government for grants and contracts annually. The total annual average for all institutions of higher education is $21.1 million (U.S. Department of Education, 2018).

Additional data for financial year (FY) 2016 revealed that federal obligations to HBCUs decreased by 6%, from $397 million in FY 2015 to $373 million in FY 2016, for 66 HBCUs (Pece, 2018). Further, data for FY 2017 indicated that federal agencies gave $32.4 billion to higher education institutions to support S&E, demonstrating a 2% rise. However, S&E support provided to HBCUs declined by 17% to $308 million (Pece, 2019), representing a 3-year consecutive decline in federal support to HBCUs.

For NSF, in FY 2014, HBCUs accounted for only 0.8 percent ($34.8 million of $4.1 billion) of all funds allocated to all institutions of higher education (IHEs) for Research and Development (Toldson & Preston, 2015). Also, HBCUs are underrepresented in NSF’s education research-focused programs. A 2017 review of active NSF awards reveal that among the 286 active “Core Research” awards from the Directorate for Education and Human Resources, only one was awarded to an HBCU. Further, among the 3,302 active NSF CAREER awards, only 4 were awarded to HBCUs (National Science Foundation, 2017).

**Theory of Change and the Soul of HBCUs**

For this project, we selected institutional theory as a framework to understand how HBCUs address limited financial resources against their mission to serve underrepresented students.
The main idea of the theory is that it explains how institutions change, develop, or remain stable in the context of changing environments and the impact of authorities, social norms, and principles (I. I. Crawford, 2017; J. Crawford, 2012). Each institution organizes its structure according to specific guidelines to function as an effective social structure, and certain societal values, perceptions, and practices affect an organization’s performance.

At HBCUs, administrators give considerable attention to decreasing the impact of processes associated with institutional pressures on operations. The focus is on guaranteeing an education for minority students, including positive changes with respect to S&E grant productivity. Institutional theory explains how and why HBCUs adapt to social changes, economic tensions, and a lack of funding to promote policy changes (I. I. Crawford, 2017). Still, HBCUs remain highly dependent on their environment as these institutions address the needs of minority students in spite of the fact that institutional isomorphism accentuates legitimacy instead of efficiency, and HBCUs facing financial issues can serve as legitimate but inefficient institutions (J. Crawford, 2012).

HBCUs’ experiences educating Black students run parallel to the experiences of Black Americans navigating systemic racism. Noted scholar W.E.B. DuBois opined about the duality of the Black existence (Harris, 1997), as we try to affirm our culture, while conforming to mainstream standards, often as a strategy for survival. Institutional theory helps us to conceptualize the dilemma of the modern HBCU, which, through normative and coercive isomorphism, must adhere to the same standards of PWIs, while striving to serve a student population with needs that may be incompatible with these standards. HBCU RAP Symposium helped to fortify the strengths and opportunities that HBCUs have by learning what works in developing a research enterprise through collaborative and strategic partnerships.

"For years we have taught science from an empiricist perspective. The brain doesn't work that way. The integration comes from the constructivist perspective- how we learn- we scaffold and make connections. That allows us to make connections across disciplines so that we can learn more about the pure science that we can use to solve problems in our community."

Dr. Erin Lynch, Research Director, Center of Excellence and Learning Sciences, Tennessee State University

"There are so many different ways of looking at the same problem and when you get different people in a room who have a different perspective, you go against groupthink and you can address it from so many different angles. I think when we can incorporate different fields and disciplines, we get a better answer."

Dr. Michelle Penn-Marshall, Vice President for Research and Associate Provost, Hampton University
Figure 1: The 2018 ALC HBCU RAP Symposium helped to fortify the strengths and opportunities that HBCUs have by learning what works in developing a research enterprise through collaborative and strategic partnerships. This figure illustrates the process by which HBCUs can build their capacity for Research, and inform the larger STEM Action and Practice community.
The Symposium evaluation tool was a 15-item survey. Four items were multiple choices, and three were five-point Likert scales, which provided ratings to different statements. The remaining questions were open-ended. This section of the report will narrate the survey’s findings and interpret them to extract valuable lessons about the Symposium, its organization, content and attendees.

**Participants**

QEM aimed to involve researchers and administrators from multiple HBCUs. To achieve that, QEM contacted chief research officers and other administrators from HBCUs and invited them to recommend faculty members and other HBCU staff who could potentially participate in the event. In the end, a total of 52 representatives from 28 HBCUs took part in the Symposium. (See Table 1.)
Table 1
Institutional characteristics of Historically Black Colleges and Universities that participated in the 2018 RAP Conference

<table>
<thead>
<tr>
<th>HBCU</th>
<th>Carnegie Class</th>
<th>Size</th>
<th>Endowment</th>
<th>Federal Grants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alabama State U. (AL)</td>
<td>M2</td>
<td>5,029</td>
<td>$92,584,413</td>
<td>$28,410,891</td>
</tr>
<tr>
<td>Albany State U. (GA)</td>
<td>M2</td>
<td>4,679</td>
<td>$1,813,699</td>
<td>$24,772,631</td>
</tr>
<tr>
<td>Alcorn State U. (MS)</td>
<td>M2</td>
<td>3,598</td>
<td>$15,898,677</td>
<td>$26,311,307</td>
</tr>
<tr>
<td>Benedict College (SC)</td>
<td>Baccalaureate</td>
<td>2,447</td>
<td>$22,949,714</td>
<td>$6,514,103</td>
</tr>
<tr>
<td>Central State U. (OH)</td>
<td>Baccalaureate</td>
<td>1,635</td>
<td>$2,573,365</td>
<td>$15,511,050</td>
</tr>
<tr>
<td>Cheyney U. of Pennsylvania (PA)</td>
<td>Baccalaureate</td>
<td>747</td>
<td>$1,967,933</td>
<td>$5,351,601</td>
</tr>
<tr>
<td>Claflin U. (SC)</td>
<td>Baccalaureate</td>
<td>2,050</td>
<td>$24,597,296</td>
<td>$7,432,262</td>
</tr>
<tr>
<td>Clark Atlanta U. (GA)</td>
<td>R2</td>
<td>3,719</td>
<td>$62,217,637</td>
<td>$13,948,931</td>
</tr>
<tr>
<td>Delaware State U. (DE)</td>
<td>M2</td>
<td>4,130</td>
<td>$25,784,651</td>
<td>$29,184,136</td>
</tr>
<tr>
<td>Dillard U. (LA)</td>
<td>Baccalaureate</td>
<td>1,244</td>
<td>$81,871,091</td>
<td>$8,403,806</td>
</tr>
<tr>
<td>Fayetteville State U. (NC)</td>
<td>M2</td>
<td>5,481</td>
<td>$19,684,970</td>
<td>$16,583,056</td>
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<tr>
<td>Grambling State U. (LA)</td>
<td>M1</td>
<td>4,361</td>
<td>$7,376,829</td>
<td>$21,344,669</td>
</tr>
<tr>
<td>Hampton U. (VA)</td>
<td>M2</td>
<td>4,817</td>
<td>$253,813,936</td>
<td>$32,879,416</td>
</tr>
<tr>
<td>Howard U. (VA)</td>
<td>R2</td>
<td>8,462</td>
<td>$771,132,000</td>
<td>$53,763,000</td>
</tr>
<tr>
<td>Jarvis Christian College (TX)</td>
<td>Baccalaureate</td>
<td>822</td>
<td>$10,494,519</td>
<td>$2,303,259</td>
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<td>Kentucky State U. (KY)</td>
<td>Baccalaureate</td>
<td>1,454</td>
<td>$15,373,614</td>
<td>$20,845,730</td>
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<tr>
<td>Lane College (TN)</td>
<td>Baccalaureate</td>
<td>1,425</td>
<td>$5,209,986</td>
<td>$3,110,701</td>
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<tr>
<td>Lawson Community College (AL)</td>
<td>Associate's</td>
<td>2,404</td>
<td>$585,300</td>
<td>$17,998,615</td>
</tr>
<tr>
<td>Lincoln U. (PA)</td>
<td>M2</td>
<td>2,001</td>
<td>$34,482,237</td>
<td>$3,933,561</td>
</tr>
<tr>
<td>Morgan State U. (MD)</td>
<td>R3</td>
<td>8,462</td>
<td>$771,132,000</td>
<td>$53,763,000</td>
</tr>
<tr>
<td>North Carolina Central U. (NC)</td>
<td>M1</td>
<td>7,645</td>
<td>$28,468,571</td>
<td>$41,162,680</td>
</tr>
<tr>
<td>Philander Smith College (AR)</td>
<td>Baccalaureate</td>
<td>786</td>
<td>$9,340,847</td>
<td>$3,518,178</td>
</tr>
<tr>
<td>Prairie View A &amp; M U. (TX)</td>
<td>R3</td>
<td>8,120</td>
<td>$71,156,576</td>
<td>$39,325,644</td>
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<tr>
<td>Saint Augustine's U. (NC)</td>
<td>Baccalaureate</td>
<td>913</td>
<td>$15,154,006</td>
<td>$4,117,609</td>
</tr>
<tr>
<td>South Carolina State U. (SC)</td>
<td>M2</td>
<td>2,637</td>
<td>$8,990,964</td>
<td>$24,282,104</td>
</tr>
<tr>
<td>Southern U., A &amp; M College (LA)</td>
<td>M1</td>
<td>7,362</td>
<td>$9,204,878</td>
<td>$42,252,950</td>
</tr>
<tr>
<td>Southern U. at New Orleans (LA)</td>
<td>M2</td>
<td>1,992</td>
<td>$2,978,023</td>
<td>$15,310,698</td>
</tr>
<tr>
<td>Southern U. at Shreveport (LA)</td>
<td>Associate's</td>
<td>2,308</td>
<td>$703,965</td>
<td>$16,550,939</td>
</tr>
<tr>
<td>Tennessee State U. (TN)</td>
<td>R3</td>
<td>7,443</td>
<td>$49,657,818</td>
<td>$50,629,876</td>
</tr>
<tr>
<td>U. of Arkansas at Pine Bluff (AR)</td>
<td>Baccalaureate</td>
<td>2,611</td>
<td>$3,698,057</td>
<td>$23,616,393</td>
</tr>
<tr>
<td>U. of the District of Columbia (DC)</td>
<td>M3</td>
<td>3,285</td>
<td>$46,541,860</td>
<td>$22,621,774</td>
</tr>
<tr>
<td>Virginia Union U. (VA)</td>
<td>Baccalaureate</td>
<td>1,764</td>
<td>$29,244,908</td>
<td>$3,549,069</td>
</tr>
<tr>
<td>RAP Participant Average</td>
<td></td>
<td>3,529</td>
<td>$48,621,254</td>
<td>$20,886,512</td>
</tr>
<tr>
<td>HBCU Average</td>
<td></td>
<td>2,616</td>
<td>$35,121,853</td>
<td>$15,689,400</td>
</tr>
</tbody>
</table>

Note: The shorthand Carnegie Classification labels for the Doctoral and Master's Colleges and Universities were used (R1, R2, R3, and M1, M2, M3). Size denotes 12-month full-time equivalent enrollment for academic year 2016-17. Endowment denotes the value of endowment assets at the beginning of the fiscal year 2017. Federal grants include grant and contract revenues from federal agencies for specific actions such as research, programs and training during the fiscal year 2017.

Source: The Integrated Postsecondary Education Data System (IPEDS)
HBCU representatives that participated in the Symposium included STEM researchers and administrators. Many of the representatives also showed notable experience of working at an HBCU. More than 60 percent of the participants worked for more than five years at their HBCU. Seven of the participants said that they worked at their HBCU for more than 20 years. Most of the participants held the posts of Vice Presidents for Research, associate professors, or full professors. Apart from that, Sponsored Program Office Staff and directors made up a large portion of the participants. A few assistant professors and deans reported participating. See Table 2 for the complete list of the positions of the participants.

<table>
<thead>
<tr>
<th>Table 2. Participants’ Positions (Survey Options)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Position</td>
</tr>
<tr>
<td>VP of Research</td>
</tr>
<tr>
<td>Full Professor</td>
</tr>
<tr>
<td>Associate Professor</td>
</tr>
<tr>
<td>Assistant Professor</td>
</tr>
<tr>
<td>Chair</td>
</tr>
<tr>
<td>Sponsored Program Office Director</td>
</tr>
<tr>
<td>VP of academic affairs</td>
</tr>
<tr>
<td>Provost</td>
</tr>
<tr>
<td>Sponsored Program Office Staff</td>
</tr>
</tbody>
</table>

NOTE: Other positions include: Center Director; Associate Vice Chancellor for Research; Associate Vice President for Academic Affairs; Research Director; Director; Dean; Director of Institutional Research; Associate VP of Research.

**Perspectives**

Most of the respondents (98%) agreed that the Symposium helped them to learn more about the national priorities in STEM research in education. Forty-two (80.77%) reported a strong agreement with the idea. Similarly, most of the participants (42) strongly agreed that the Symposium helped them to learn more about NSF’s directorates, and seven people simply agreed with it. Also, seven people agreed and thirty-seven people strongly agreed that the Symposium provided them with new information about NSF’s funding opportunities, and a large number of participants either agreed (16 people, which amounts to 31.37%) or strongly agreed (33 people, which amounts to 64.71%) that they learned a lot about NSF’s internal mechanisms.

Slightly more than 50% of the participants expressed a strong belief that the Symposium expanded their knowledge regarding the critical elements for success for building HBCUs’ research capacity. Twenty-three more people (44.23%) also agreed with the idea, and only two people (3.85%) remained unsure about this. Another area in which most of the participants agreed was the advancement of their knowledge concerning the value of partnering between HBCUs: 35 people (70%) strongly agreed with this statement, and 12 more (24%) simply agreed with it. Also, most participants (41 people) strongly agreed that the Symposium helped them to understand the significance of the community of practice for STEM research promotion, and the rest simply agreed with the idea. Finally, 63.46% of the participants reported strongly
agreeing with the suggestion that the Symposium taught them about the significance of connecting research to policies with 16 more people (30.77%) agreeing with the statement.

Less cohesion was shown in the participants’ assessment of the impact of the Symposium on their understanding of the research that was conducted at other HBCUs: only 32.69% of the participants strongly agreed that they learned something new in this regard, and 38.46% more also agreed with the idea. However, 19% of the respondents remained unsure, two people disagreed (3.85%), and one person strongly disagreed (1.92%). These figures still show a high percentage of participants (around 70%) learning new information in this area, even though this item of the survey demonstrates a less overwhelming approval of the Symposium than other ones. As a result, most of the participants learned a lot from the Symposium.

**The Value of the Diverse Activities of the Symposium.** Most of the participants reacted favorably or somewhat favorably to all the activities. The panel discussion by Program Officers appears to have received the greatest approval with 39 participants (75%) describing it as extremely valuable and 10 participants (19.23%) labeling it as somewhat valuable. Furthermore, almost 60% of the respondents described networking opportunities as extremely valuable, and 57.69% assigned the same label to plenary sessions. Fifty percent of the participants suggested that the Panel discussion by HBCU Chief Research Officers was extremely valuable, and roundtable discussions received that assessment from 48.98% of the Symposium’s attendees.
In providing individual comments, the participants offered both positive statements and criticisms. The plenary sessions received seven comments, and the participants described the staff as knowledgeable and content as “excellent” and “insightful.” One comment suggested that the activity could benefit from taking more time so that it could be less “compacted.” Also, one of the participants found it difficult to engage in the activity since they had not had the opportunity to rest after their trip. Finally, one participant said that the activity did not provide them with new information; they would rather consider another topic the campus infrastructure and its adjustment to the needs of stakeholders.

The roundtable discussion comments were complimentary of active participants and their expertise; one of the attendees also noted that the discussions were program-specific, which was a plus.

However, two of the seven comments described the lack of time as a disadvantage of the activity, and two participants reported the lack of information that would be relevant for them. In addition, one participant faced an organizational issue; they were unable to take part in the roundtable discussion because of being involved in another activity at the time.

The panel discussion by Program Officers received six positive comments and no negative ones. The participants described it as informative, helpful, and “the absolute best;” they said that the discussion expanded their knowledge. While one comment mentioned the time issue, it was more positive than the previous ones: instead of implying that the discussion did not have enough time to accomplish its objectives, the participant stated that they wanted to have a longer discussion. The panel discussion by HBCU Chief Research Officers received a similar comment, in which a participant reported wanting more of this activity. Other comments noted the value of the activity, but one participant also suggested that the breaks for the discussion were not needed. In general, though, each of the four comments for this activity had a positive component.

To summarize, the individual comments reflect the Likert-scale-based assessments, but they can also help to understand the latter. In particular, the comments showed that the networking reception might have received its relatively lackluster response because it took place very late, which left many participants rather tired. In addition, the comments provide direct suggestions on improvement, which are concerned with the time given to different activities. However, most of the participants found at least some value in all the activities, and most received favorable responses and often very enthusiastic comments. The Symposium’s choice of activities was a success.

**The Most Valuable Aspect of the Symposium.** The survey ended with three open-ended questions that provided the participants with the opportunity to express their impressions without having to choose options. The first item was concerned with the most valuable aspect of the Symposium. At least two people suggested that everything about the Symposium was valuable. However, 49 people provided more specific responses. The opportunity to meet with NSF staff was directly described as the most valuable Symposium’s activity by 17 people. In addition, a few participants commented on the availability of the information about
programs and grants as a major plus without mentioning NSF or its staff.

Six people described networking as the most valuable aspect of the Symposium. Furthermore, multiple participants mentioned the opportunity to discuss and cooperate with other people in different ways; for example, some praised the opportunity for meeting and sharing ideas or learning from colleagues while others focused on the discussion activities and commended them. Some people commented on the possibility of forming connections as the greatest asset of the Symposium.

The participants praised the information the Symposium provided; for example, they commended the possibility of learning about NSF programs (particularly, grant opportunities), the national STEM priorities, and future research directions. At least two people commented on the way the Symposium helped them to see new opportunities. Furthermore, the attendees described individual activities as very valuable, including meetings, discussions, and presentations.

**Recommended Improvements.** A key concern of the participants was time. At least fourteen people commented about it in different ways with most recommending extending the Symposium to more than two days. One of the participants pointed out that the reason for the duration of the event was connected to costs, but they still insisted that the two-day period was not sufficient. Another participant pointed out that the daily programs needed to be shortened because participants became too tired to take part by the end of each day. As an alternative, they proposed adding more breaks. In addition, people commented on more time being required for activities as they had in the responses to previous questions.

In summary, most of the participants’ recommendations reflected their concerns and uncovered certain issues about the symposium. Organizational problems were reported, especially time management. The recommendations on the content of the Symposium were scarce, which seems to fit the findings showing the participants’ approval of this aspect of the event. Therefore, the results of the analysis of this question of the survey are in line with those of the Symposium’s overall rating.

**Other Comments.** The final open-ended question of the survey was included to provide the participants with the opportunity to leave any other comments or suggestions that they might have. Thirteen more used the opportunity to thank QEM and everybody involved in the event for launching it while praising the Symposium for being “eye-opening,” “encouraging,” and “informative.”

To summarize, several participants used this question to make recommendations and point out issues. As a result, the survey’s design, which may appear redundant, shows the usefulness of including items that allude to similar topics and prompt similar responses. This way, the analysis of all the items helps to investigate the participants’ impressions in greater detail. The fact that the responses about issues generally cover the same concerns suggests that the survey might have achieved data saturation. As for the rest of the responses, they can suggest the value of the Symposium since they indicate genuine gratitude for the opportunities presented to the attendees.
**Critical Elements of Success**

A primary element of HBCUs’ success is finding external funding for research. Using the Symposium’s session notes, this report details the critical elements of success that the participants reported during the Symposium’s activities. QEM offered the four elements presented below as the key themes established through analyzing the Symposium’s materials. The themes unite the factors that can affect one’s success in obtaining funding, including ones that promote (driver) and restrict (barriers) it. These factors are especially important for recommending how to successfully promote STEM education and research at HBCUs.

**Changing Mindset**

**Drivers.** Drivers in this category are concerned with paying attention to the assets available to an institution. First, researchers, students, and administrators are important: it is crucial to recognize their potential and, with the help of supportive leadership, promote their collaboration and success. Second, notable attention needs to be paid to research: acknowledge the need for funding research and reward the people who conduct research. The rewards do not have to be exclusively money; the recognition that a researcher receives is also significant. Also, innovation is a driver for research and needs to be fostered at different levels. Finally, leadership connects the above-mentioned assets in that a leader is the one expected to support and promote the researchers and administrators collaborating, foster innovation, and ensure the recognition of research. The important aspects of leadership that the Symposium reported include cultural diplomacy and creative use of incentives. By promoting the proper mindsets, HBCU faculty and administrators can enable the drivers for their institutions’ success.

**Barriers.** The key barriers to this element of success are the lack of resources and means of promoting it. Thus, the lack of relevant infrastructure, programs, equipment, and even staff prevents an institution from successfully sustaining research. Similarly, insufficient understanding of the significance of transformative and applied research can become a mindset-related issue since basic research is less likely to be funded.

Not communicating opportunities is a barrier, as well as the lack of motivation among the faculty. Finally, high turnover rates may worsen the mentioned issues, especially motivation- and staffing-related ones.
Table 3. Drivers to changing mindset to pursue external funding

- Have a mindset of success, which views faculty as a valuable part of the system.
- Recognize the highest potential in the students, faculty, administrators and staff.
- View administrators as being there, to work collaboratively with faculty.
- Recognize the value in research and reward individuals for time and effort.
- Foster innovation at every level including work with non-tenured faculty.
- Cultivate a research identity and develop a strategic plan that includes measurable outcomes.
- Explore how well your mission aligns with stakeholders such as your state, other IHE, students, and employers.
- Adopt cultural diplomacy, which involves openness to exchanging ideas, information, and innovations with other professionals and institutions.

Changing Institutional Culture

Drivers. The Symposium stressed the significance of the mission and strategic plan of an institution in directing its activities, as well as the policies (including cost policies), procedures, and productivity metrics that are in place. Also, the reputation of an institution was mentioned as an asset. The stakeholders of an institution are also very important, especially leaders and senior managers who are likely to promote HBCU success. In addition, the environment matters because certain locations and resources are a driver. Furthermore, the structure of an institution needs to be considered; organization charts can help to determine accountability. Other than that, it is important to engage stakeholders; after all, researchers require incentives, and they need to be informed about opportunities available to them. STEM research advocacy is a vehicle to achieve that, as well as different forums that can be established for faculty and administrators. Finally, it is important to pay attention to leadership and the cultural competencies of the leaders. The Symposium found numerous culture-related facilitators to HBCU success.

Barriers. The theme of cultural change is associated with the greatest number of barriers to successful funding. First, instabilities were described as a problem; they included problematic turnover rates, unstable leadership, as well as inconsistencies in leadership and obscure leadership (the lack of transparency). Furthermore, deficits were noted, and they included the lack of relevant programs, infrastructure, time, funding, and staff; the notion of deficit mentality was also brought up during the Symposium. In addition, the bureaucracy was described as a major barrier. Silos working, communication issues, inefficient or insufficient planning, distant administrators, insufficient policies, and inappropriate resource allocations are leadership-related concerns. Furthermore, reputation might not be an asset; ineffective branding can prevent an institution from receiving funding. Finally, institutional habits and status quo might constrain any change; therefore, they make up a prime example of a cultural change-related barrier to proper funding.

This element of success shows that the barriers and drivers are interrelated; while effective activities, policies, and leadership choices are a driver, ineffective ones are barriers.
Developing Relationships

Drivers. At least six drivers were identified during the Symposium for developing relationships. First, a good strategy on relationship development is crucial; if an institution has a clear mission-linked understanding of which relationships it wants to pursue, the process obtaining external funding will be facilitated. Second, the engagement of stakeholders was noted as a major factor. This leadership activity presupposes identifying the people who could potentially have a stake in the activity that an individual or institution attempts to foster (that is, stakeholders) and engaging them in said activity. In addition, the development of cross-disciplinary research and promoting awareness and collaboration between the stakeholders is necessary. Third, modern-day technology was commended for its ability to bring people together. Examples that were offered during the Symposium included phones, as well as applications, for instance, WebEx, which can facilitate relationships that promote researchers’ collaborations. Finally, varied symposiums, conferences, and similar meetings were discussed. This factor demonstrates the significance of the Symposium and the reasoning for launching it; the event was geared toward achieving collaboration between HBCUs, which is synonymous to the described element of success.

Barriers. Multiple barriers to this element of success were identified as well. First, despite the existence of modern-day technologies, people are still separated by significant traveling distances that are also associated with notable costs. As a result, certain institutions and their faculties may benefit from being located close to an institution that they wish to foster relationships with (for example, NSF), but others are denied this opportunity. In addition, the organization of institutions themselves may be a factor. For example, the design of a campus can affect the likelihood of people in it interacting, which can result in reduced interactions in certain cases and prevent relationships from forming.

Seizing Opportunity

Finally, the lack of strategic alignment between the agenda and the mission of an institution can be a problem; ensure that the development of relationships is strategically sound and likely to be beneficial in the long term.
Table 5. Drivers to developing relationships to pursue external funding

- Define the type of relationships we want to build with program officers, funding resources, and the community, and how they relate to the mission.
- Build unique and long-term opportunities through the alignment of academic, research, and business partners and collaboration with other entities such as businesses, other universities, and the government.
- Increase access to technology to enhance communication.
- Create awareness and meet with other IHEs and private institutions.
- Attend meetings directed toward building research capacity.
- Bridge the gap between faculty and administrators.
- Engage senior management.
- Provide supportive and committed leadership.

Seizing Opportunity Drivers. A primary driver for seizing funding-related opportunities is the staff, particularly their competence. Setting targets for them is a good idea since it will promote the search for the opportunities that are likely to benefit the institution. In addition, the Symposium’s activities identified the drivers present in small-sized classes; a low student-to-faculty ratio is associated with more hands-on learning, which, in turn, fosters research and, therefore, promotes the likelihood of successful search for external funding.

Barriers. The barriers associated with seizing opportunity are more numerous than its drivers. They include biases, especially internal ones, about HBCUs not producing high-quality research, as well as the lack of time and effort that the faculty could dedicate to research. Furthermore, misconceptions of research in general are also important, including, for example, those about the areas of research that are especially significant for the modern-day society. Finally, the lack of information or understanding of opportunities available to researchers is a barrier, and so is the limited exposure to them.

Table 6 Drivers to seizing opportunities to pursue external funding

- Provide trainings to enhance the competency in staff, faculty and research administrators.
- Decrease class sizes and in turn the student/faculty ratio to allow for hands-on approach.
- Pursue targeted opportunities that are beneficial to the university and the larger community.
- Elevate the understanding of program/funding opportunities.
- Provide financial assistance to students.
- Advertise student assistantship and research opportunities.
- Leverage the institutions proximity to diverse communities and resources, such as local foundations and government offices, to exert leadership, gain access to human capital, and generate revenue.
- Assert the institutions’ status as a research institution by promoting research findings and developing a clear statement of research capability.
**Summary**

The Symposium identified more barriers to pursuing and obtaining funding than drivers. However, a lot of the elements that were grouped into different themes are similar or directly connected.

The key drivers for success include empowered stakeholders, strategic planning and alignment, effective and culturally sensitive leadership, good organization, conducive environment, and continuous information dissemination. On the other hand, ineffective leadership and organization, as well as various deficits, especially the lack of information, infrastructure, and motivation, are significant barriers. By changing the mindset and organizational culture to enable HBCUs to develop relevant relationships and seize existing opportunities, HBCU leaders and faculty can help them to achieve success in obtaining funding and, as a result, promote STEM research and education.

Among other things, the Symposium was supposed to provide its participants with the information and motivation for future action. The Survey gathered data describing the intentions of the participants to form partnerships and promote research and STEM education. These data implies the effectiveness of the Symposium in affecting its participants, and it indicates their interests and the potential for sustainable improvements in HBCUs the event prompted.
PARTNERSHIPS
Promoting collaboration was one of the key objectives of the Symposium. The survey attempted to determine if it was achieved. Ninety percent of the participants found that the networking and other activities of the Symposium resulted in potential collaboration. Furthermore, 44 participants specified their collaboration plans.

Three of them said they wanted to collaborate with all the HBCUs that participated in the Symposium. According to this group, the Symposium provided them with the information and perspective to facilitate such decision-making in the future. Many of the participants provided specific, direct comments about the individual HBCUs that they wanted to choose as their partners, which suggests that the Symposium achieved its goal of promoting collaboration.

NSF PROGRAM PROPOSALS
As one of the primary goals of the Symposium, the participants were provided with crucial information about NSF and their grant programs. The survey found that all 52 participants planned to submit proposals to NSF programs, and only three noted that they had not decided on the specific program yet. Also, one more person responded broadly, suggesting that they would be trying different programs. The majority specified programs, and some included HBCU UP, EAGER, INCLUDES, BIO, DRK-12, and GEO. Therefore, the Symposium successfully informed attendees about NSF research opportunities, achieving its goal.

FUTURE STEPS TO PROMOTE STEM EDUCATION
The participants shared plans to promote STEM education. Forty-nine responses were gathered, and most participants introduced one or two potential future actions. A common theme was collaboration; two participants used the words “partnership” and “collaboration,” but a few others also described their plans for meeting with other people, indicating their willingness to collaborate. In addition, a participant noted the desire to keep the partnerships that they had created during the event. Thus, the attendees reported using collaboration to advance STEM education, and partnerships within an institution and outside of it (between different HBCUs, for example) were mentioned.

Another theme that was present in some responses was the sharing of the information obtained at the Symposium with other people, especially with their colleagues. Some of the participants intended to use roundtable discussions, workshops, and webinars to this end, but others considered the possibility of meeting with various administrators. Some of the participants also expanded this theme to include the recommendations from the Symposium and their use for forming direct plans with their HBCU’s administrators.
Given that most of the participants were researchers, several them also highlighting their research-based contribution to STEM education promotion. They discussed their current or future papers and considered the possibility of using NSF programs for funding. On the other hand, many of the participants were administrators, which also affected their responses. Their comments described the intention to conduct assessments in their institutions and eventually, build their research capacity. Developing relevant strategies and plans and creating new STEM-promoting programs and workshops would achieve the latter outcome. The programs, in turn, appear to consist of reviewed, revised, or new policies, training, and new incentives for the faculty to pursue STEM research. Furthermore, attracting funding for the development of such programs was also mentioned.

Thus, the participants’ responses to this question demonstrated several things. On the one hand, the Symposium appears to have achieved its aim of calling people to action. No participant failed to respond to it, and everybody specified their personal plans that would have a positive impact on STEM education at their HBCU. In fact, some participants planned actions that would affect other HBCUs as well, for example,

> For years we have taught science from an empiricist perspective. The brain doesn't work that way. The integration comes from the constructivist perspective- how we learn- we scaffold and make connections. That allows us to make connections across disciplines so that we can learn more about the pure science that we can use to solve problems in our community.

**Dr. Erin Lynch, Research Director, Center of Excellence and Learning Sciences, Tennessee State University**
through collaboration. Furthermore, the responses of the participants reflect the objectives of the Symposium. Thus, the Symposium intended to improve the participants’ knowledge regarding NSF, and some participants already started making plans about applying that knowledge. Similarly, the Symposium promoted collaboration between participants and other HBCUs, and this fact appears to have affected the participants’ plans as well. Also, the responses reflect the content of the Symposium’s activities, suggesting that the attendees internalized relevant lessons. Since the primary aim of the Symposium was building research capacity in HBCUs, every plan the participants detailed will contribute to this outcome, which highlights the effectiveness of the Symposium in achieving its goals.

On the other hand, a few issues can be reported. First, most participants did not provide detailed plans; many were satisfied with specifying one step that they wanted to take. As a result, many of the participants did not mention the possibility of sharing the information from the Symposium, which may have limited its dissemination. Similarly, most participants did not discuss using the information from the Symposium to form strategic plans for building their HBCUs’ research capacity. Given that not all the participants were administrators, this tendency makes sense, but the primary goal of the Symposium was fostering change in HBCUs. As a result, this limited attention to driving systemic change in institutions may be a problem. Still, the participants might not have detailed all of their plans; they were asked to consider the actions that would promote STEM education, and each provided a short response, indicating they would use other means to foster change in their institutions.

RECOMMENDATIONS

Recommendations for HBCU Administrators and Researchers

The findings of the Symposium can provide HBCU researchers and administrators with crucial recommendations on obtaining external funding, as well as developing an infrastructure, which would sustainably enable it. First, given the number of barriers to effectively searching for funding, we recommend investigating and assessing an institution for potential issues. They include the lack of necessary policies, procedures, or strategies. Furthermore, non-transparent leadership and lack of accountability can result in misallocating resources, which is another major problem. In general, ineffective leadership can be an issue, and one of the factors that can serve as an indicator is high turnover rates. Bureaucracy, the lack of strategic alignment, negative institutional habits can all be rectified, although it can be difficult. Budget deficits and campus design that is not conducive to collaboration should also be determined. Finally, examine the ways in which the information about the research is disseminated and researchers are incentivized to seize relevant opportunities.

Having identified the issues, it is also necessary to consider the advantages. Various cultural elements, including the institutions’ mission and mindset, might be helpful, as well as its attitudes toward research and
incentivizing and recognizing researchers. Similarly, good, supportive leadership and clear, transparent organization are assets. Effective policies are important as well, but the most important advantage of any institution is its stakeholders. The researchers and potential researchers are the mechanisms through which STEM research is promoted, and appreciating this fact is a primary driver of obtaining funding. In addition, partnerships, especially existing ones, are necessary, but allocating time and effort to fostering prospective relationships and collaboration is also justified.

Next, the topic of disseminating information about research and research opportunities needs to be considered. The survey of the Symposium provided crucial lessons. First, it demonstrated that disseminating information is vital for HBCUs. The positive responses of the participants suggest that they needed the information the event delivered and were able to gain a lot of necessary data from it. The survey also showed that the interest of the participants particularly gravitated toward NSF-related data and developing partnerships.

Moreover, the experience of the Symposium helped to identify some effective methods of disseminating the information, including plenary sessions, various discussions (especially with the representatives of Program Officers), and networking. The survey cannot prove the effectiveness of these methods, but it demonstrates the participants’ approval, which is also associated with their impression of obtaining crucial information through these activities. Therefore, they are at the very least viable and can be employed in other similar events. Finally, the Symposium demonstrates the significance of paying attention to the organizational aspects of the launching of such events. Given the importance of motivated, engaged stakeholders, considering their tiredness, hunger, and logistics of transportation seems to be worthwhile.

**Recommendations for Program Directors at Federal Agencies**

The Symposium was focused on informing HBCU representatives of the ways in which they can obtain funding and otherwise promote STEM research. Program Directors participated in preparing and conducting the event, however given that the Symposium reflects a real-world issue of HBCUs remaining underfunded when research is concerned, Program Directors from various federal agencies can still obtain some information from it, especially in case they want to work with HBCUs and promote STEM research within them.

One of the primary findings of the survey is that HBCU representatives are very interested in communicating with Program Directors. At the same time, there is a possible lack of cooperation between them, which is reflected in the fact that, as the survey evidenced, the Symposium’s participants required more information about research opportunities and NSF procedures. Therefore, a sensible solution for Program Directors who want to change the existing disparity between HBCUs and TWIs would be to foster relationships between governmental institutions and HBCUs. Those relationships can enable information exchange, which would ensure the engagement of HBCUs in STEM research. Furthermore, this cooperation can help to dispel the persistent internal and
external biases about the value of research HBCUs conduct. Thus, in accordance with QEM’s objectives of enabling cooperation and information dissemination, the Symposium provided the data, which demonstrates the significance of these two outcomes and can call Program Directors to action.

**Recommendations for Policymakers and Advocates**

The Symposium provides some valuable lessons to other STEM research and HBCU stakeholders, including policymakers and advocates. First, the existing approaches to disseminating information about research opportunities might be ineffective to the Symposium’s attendees, given their expressed need for more data on the topic. As a result, considering policies that could enhance them is an option. Among other things, recommendations to federal agencies on informing institutions (both HBCUs and TWIs) about prioritized areas of research, funding opportunities, and other details could be helpful. Also, STEM advocates are a major factor in promoting information dissemination, which they can do independent of policymakers.

Second, the survey suggests that the Symposium was a success from many perspectives, but a lot of organizational issues affected it. As some of the participants indicated, funding shortages may have resulted in such problems; a better-funded symposium could last longer and might offer better food, accommodations, or transport. Both policymakers and advocates can, therefore, promote the funding of future similar events, which, in turn, would result in more opportunities for communication and collaboration between HBCUs and other stakeholders.

Moreover, the session notes demonstrated that very common issues, which can hinder funding, are associated with leadership and organization. It is especially noteworthy that transparency and accountability problems are a barrier. Various forms of disregard, including misallocating funds, can also be described as a part of this set of concerns. All of them can be mitigated with the help of policymakers propose effective policies and tailored them to the needs of a region or state. Thus, both policymakers and especially STEM advocates can promote STEM in HBCUs by fostering or even creating communication, research, and collaboration opportunities. Even though the Symposium was not targeted at these populations, its experience has provided some information that they can use if they intend to support HBCUs.

> It's amazing how much students don't know about STEM and how it impacts their lives and how it can be integrated into the things they love and the things that motivate them. All we have to do is present the opportunities to them and get them out to see it because it's in their blind spot.

Dr. Calvin Briggs, STEM Director, Lawson State Community College
CONCLUSION
The present report focused on narrating the information that was gathered about the Symposium with the help of its evaluation survey and session notes. It further used this information to suggest recommendations for diverse groups of stakeholders. While the survey contained a lot of information about the technical details of launching the Symposium, the session notes offered the data about its content. The findings suggest that HBCU faculty and administrators are interested in communication and collaboration with each other and NSF program directors, as well as in obtaining the information that will help them to learn about relevant research opportunities. Program Officers, policymakers, and STEM advocates can respond to this need and promote STEM research, as well as reduce the gap in funding between HBCUs and TWI. By fostering collaboration and meaningful relationships, the different stakeholders can empower HBCUs to seize the crucial research funding opportunities and sustain the mindset and culture that would promote STEM education and research within them.

Senior researchers at HBCUs who participated in the 2019 HBCU RAP Conference, along with Dr. Claudia Rankins, Program Director, National Science Foundation, and Dr. Ivory A. Toldson, president, QEM Network. Pictured above are HBCU center directors, associate vice chancellors for research, associate vice presidents for academic affairs, research directors, deans, directors of institutional research, and vice presidents of research.

"It’s about time to change the narrative about our students, ourselves as faculty, our institutions. As long as we come from the deficit model, how are we going to be the best that we know we are?"

Dr. Claudia M. Rankins, Program Director, National Science Foundation
REFERENCES


QEM “Giant in Science” Physicist Warren Wesley Buck, III. He became a full professor at Hampton University in 1989. He also helped create the Ph.D. program in physics, which was the first Ph.D. degree program at Hampton University.
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• Ms. Mellissa Williams, Associate VP Research, Claflin University
• Dr. Cherese Winstead, Chair, Department of Chemistry, Delaware State University
• Dr. Louise Wrensford, Director, Sponsored Programs Office, Albany State University

"There are so many different ways of looking at the same problem and when you get different people in a room who have a different perspective, you go against groupthink and you can address it from so many different angles. I think when we can incorporate different fields and disciplines we get a better answer."

Dr. Michelle Penn-Marshall, Vice President for Research and Associate Provost, Hampton University