



YEAR ONE

# Formative External Evaluation Report

QEM STEM • November 28, 2022

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# Table of Contents

Overview.....	6
Intellectual Merit.....	7
Broader Impacts.....	7
Context .....	7
Table 1: QEM S-STEM HBCUs Total Student Enrollment 2019.....	9
Site Liaisons.....	9
Evaluation Methods.....	11
Data Collection.....	11
Data Analysis .....	12
Results .....	14
Webinar One.....	14
Table 2: Pre-Survey Demographics: Faculty Position and Gender .....	15
Table 3: Gender, Primary Role, and Years of Teaching .....	15
Table 4: Perceptions of Threats, Weaknesses, & Challenges Conducting STEM Research.....	16
Table 5: Pre-Survey Familiarity with Policies and Research Administration .....	17
Table 6: Post-Survey Familiarity with Policies and Research Administration .....	18
Webinar Two .....	21
Table 7: QEM S-STEM Webinar 2 Participants.....	22
Table 8: Webinar 2: Role Clarification and Motivation.....	23
Table 9: Webinar 2: Frequency of Discussions and Application of Knowledge .	24
Table 10: Webinar 2: Access to External Evaluator and Shared Data Systems .	25
Support Towards IRB Approval.....	26

Table 11: IRB Status ..... 27

External Advisory Committee ..... 28

Table 12: QEM S-STEM Advisory Board..... 28

Figure 1: Geographical Location of QEM S-STEM Advisors ..... 29

Discussion and Recommendations ..... 31

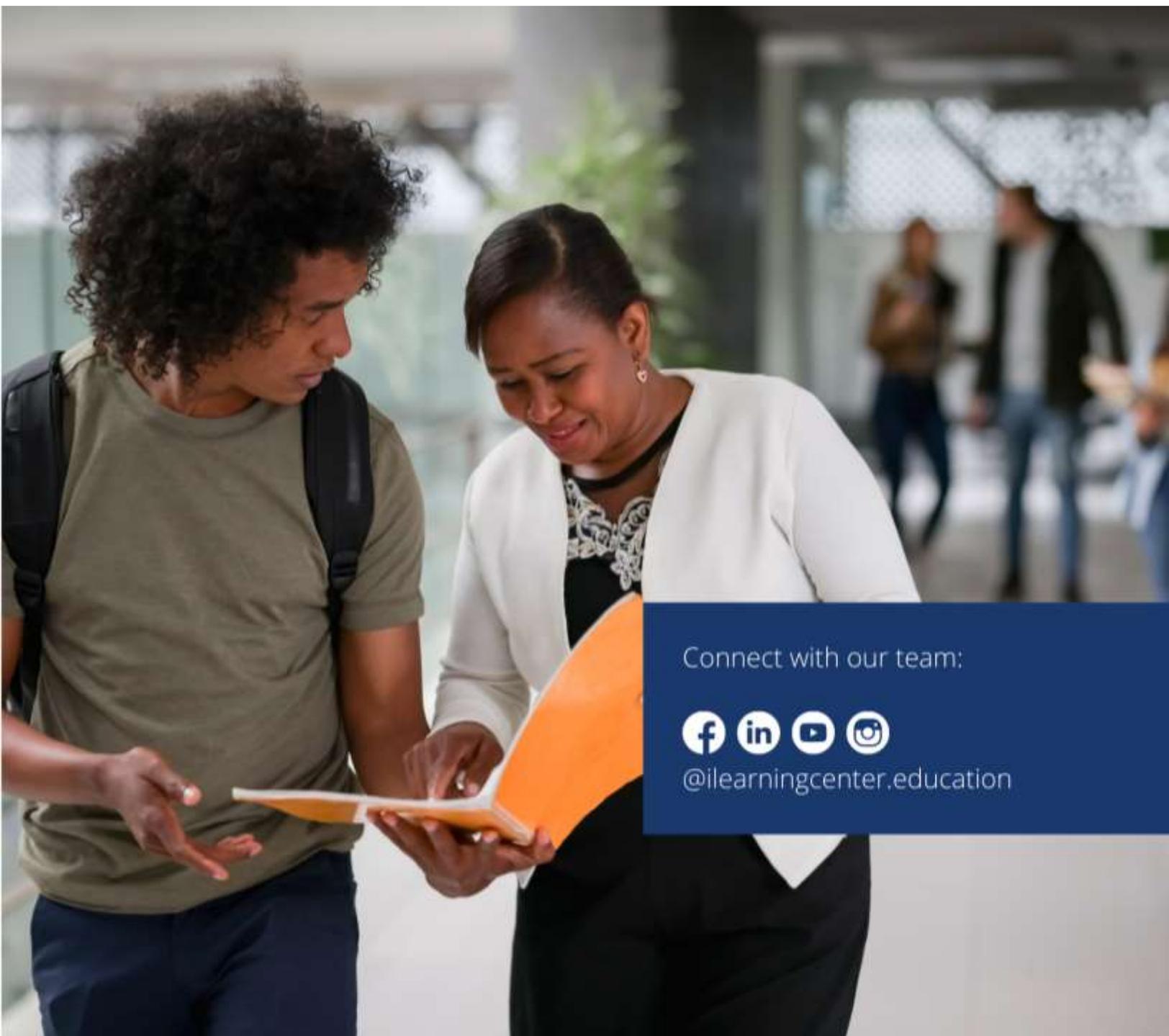
References ..... 34



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# Overview



## Overview

Cultivating and retaining STEM talent in the United States can positively impact the nation's economy (QEM S-STEM Proposal, 2021). Equitable and diverse representation of STEM talent in the current and future STEM workforce could increase the United States gross domestic product (GDP) (\$75 trillion over the next 80 years) and tax revenue (\$5.3 trillion) (Atkinson, 2019; Morrell et al., 2015). Yet, actualizing the full benefit of potential GDP dollars seems out of reach due to historical policy inequalities in STEM education.

The Quality Education for Minorities (QEM) Network, in partnership with the American Institutes for Research (AIR), proposed a research study to change policies and investigate the type of institutional support low-income students receive to develop and graduate from Historically Black Colleges and Universities (HBCUs). HBCUs were selected as optimal research sites because of their historical record of success in graduating students from low socioeconomic (SES) backgrounds.

Unfortunately, limited financial resources are a major barrier to higher education. According to the QEM S-STEM funded proposal (2021), understanding HBCUs' strategies for engaging and supporting low-income, talented students in STEM education could broaden the participation of low-income students in STEM fields.

In addition to investigating institutional support for low-income students, the QEM S-STEM research proposal was funded to develop a research infrastructure and network within and amongst the HBCU S-STEM Principal Investigators cohort. HBCU S-STEM Principal Investigators were invited to coordinate, collaborate, and expand their STEM education research knowledge to expand existing policies and practices supporting low-income, talented STEM majors.

## Intellectual Merit

HBCUs contribute to the nation's efforts to diversify the STEM workforce (Toldson, 2018). Understanding HBCU strategies for engaging and supporting low-income, talented students in STEM education generates knowledge that other higher education institutions could use to broaden the participation of underrepresented students in STEM departments on their campuses. Additionally, HBCUs could expand their reach and connections by working together to broaden the participation of more students with extreme financial needs.

## Broader Impacts

The QEM S-STEM research team has extensive experience conducting research, offering capacity-building webinars, and convening scholars to conduct STEM education research that broadens participation in the STEM enterprise. The QEM S-STEM research team proposed to collect and analyze data on institutional support for low-income students majoring in STEM at HBCUs. Because of HBCUs' track record of success in graduating significantly larger percentages of low-income Black American students in STEM, the QEM S-STEM proposal stated, *"It is paramount to understand HBCUs' roles in contributing to the increased economic prosperity of students from lower SES backgrounds."* This formative external evaluation report presents HBCU S-STEM Principal Investigators' perspectives about what they learned and how they plan to use new knowledge to advance policies on their campuses. It also describes activities the QEM S-STEM research team has implemented to move their research study forward.

## Context

The perspectives of HBCU S-STEM PIs were elicited after they attended two webinars. The first webinar was designed to advance site liaisons' knowledge about the strengths, weaknesses, opportunities, and threats related to conducting STEM education research on low-income students. The second webinar was designed to increase awareness of distinctions between researchers and evaluators within funded programs. A SWOT analysis of STEM education research and knowing the functional differences between researchers and evaluators, both of whom are responsible for the collection, analysis, and reporting of data, is critical to building a research infrastructure that is supposed to function to drive policy changes.

Driving policy changes to provide even more support to low-income students is one of the key outcomes of the QEM S-STEM study. Although this research study is inclusive of HBCUs with varying student enrollment sizes, currently, student enrollment size is not a major variable in the ability to drive policy change. Important to note, nevertheless, is this. There are 13 HBCUs (representing 65% of the HBCU S-STEM awards) with S-STEM awards participating in this research study. In 2019, these 13 HBCUs impacted a combined 68,098 students collectively. And, although there are 729 active NSF S-STEM awards, only 30 S-STEM awards have been awarded to 20 HBCUs (19%) in nine states, DC, and one territory. Table 1 shows the total student enrollment in 2019 for the 13 HBCUs in this research study.

Table 1: QEM S-STEM HBCUs Total Student Enrollment 2019

HBCU	Total Enrollment Fall 2019
Alabama A&M University	6,172
Albany State University	6,122
Elizabeth City State University	1,769
Fort Valley State University	2,624
Howard University	9,399
Jackson State University	7,020
Lane College	1,627
Norfolk State University	5,601
Prairie View A&M University	8,940
Savannah State University	3,668
Tennessee State University	8,081
Tuskegee University	2,876
University of the District of Columbia	4,199

*Data Source: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS)*

## Site Liaisons

Each S-STEM project has a Principal Investigator (PI). PIs are site liaisons within the QEM S-STEM research study. Site liaisons play a pivotal role in leading their S-STEM programs, advancing policies within their institutions, and conducting research as key members of the QEM S-STEM study. They help the QEM S-STEM research team (1) collect data; (2) recruit participants for semi-structured interviews; administer student surveys, (3) co-facilitate focus group discussions; and (4) disseminate findings. There are 14 site liaisons in the QEM S-STEM research study.



# Methods



## Evaluation Methods

The external evaluator used participatory evaluation to assess the development and preparation of site liaisons toward understanding their roles as co-inquirers and the strengths, limitations, and threats to doing STEM education research. Three objectives guided the external evaluation process. They were to: a) support the research team in progressing successfully towards the stated goals and objectives, b) support the research team in conducting research *on* and *with* site liaisons, and c) support the research team in the early dissemination of findings or lessons learned. This evaluation report describes participatory evaluation strategies implemented to accomplish these objectives.

## Data Collection

Participatory evaluation involves program staff and participants in all aspects of the evaluation process to increase evaluation understanding and use while also building capacity for future inquiries (Baker & Sabo, 2004; Cousins & Chouinard, 2012; King, Cousins, & Whitmore, 2007; King, 2005; King & Stevahn, 2013). Participatory evaluation involves working *with* people (Patton, 2015). Instead of being “subjects,” the people in the evaluation study become ‘co-inquirers.’ Thus, at the beginning of the QEM S-STEM research study, progress toward the *evaluation objectives* occurred through participant observations of research implementation activities from February 2022 until November 2022. Evaluation data collection included observing and reviewing written correspondence, documents, artifacts, and team meeting notes, conducting unstructured interviews, and collecting survey responses. In addition to attending research team meetings and analyzing meeting notes, the external evaluator administered pre- and post-surveys to site liaisons attending two webinars. The research team meeting notes were analyzed to respond to the evaluation inquiry on the research team’s progress with research activities. Pre- and post-surveys were administered to determine differences in site liaisons’ knowledge and dispositions related to changing policies that improve the success pathway of underrepresented STEM students. This formative external evaluation report describes research activities and illuminates the impact of two webinars

created to build site liaisons' knowledge, capacity, and infrastructure. It includes the first phase of the participatory evaluation process. This process revealed how site liaisons were engaged as co-inquirers (or co-collaborators) in the research process.

## Data Analysis

Qualitative and quantitative data were analyzed using constant comparative analysis (Fram, 2013) and descriptive research (Loeb et al., 2017). Descriptive analysis is a type of analysis that helps describe, show or summarize data constructively so that patterns might emerge that fulfill every data condition. Descriptive analysis is vital in assisting researchers in observing a phenomenon, identifying additional research questions, and generating hypotheses based on observations (Loeb et al., 2017). This evaluation study captured the implementation of the QEM S-STEM research study using descriptive analysis as a core component. We used participant observations, program stakeholders' feedback, and document analysis to identify questions, generate hypotheses, and uncover "not so obvious" and challenging-to-measure insights. Descriptive analysis was used to support the program during the pre-implementation phase. Findings generated from the descriptive analysis will help the program attain increased readiness to support site liaisons in facilitating policy change at their institutions.

Furthermore, the evaluation results are expected to inform the literature on research activities that raise awareness and build capacity at HBCUs to utilize research findings to modify existing policies geared to improve the success of STEM majors from low-income backgrounds. The results were compared to the program goals and objectives to determine the degree to which the program is moving towards accomplishing stated goals and objectives. Also, data were analyzed to determine the degree to which the research team increased the awareness and capacity of site liaisons to use research findings emerging from this project to improve policies and practices on behalf of minority students in STEM.



# Results



## Results

In determining the degree to which the research team increased the awareness and capacity of HBCU site liaisons in using findings to change policies and practices, a descriptive analysis of survey responses was completed before and after webinar one and after webinar two.

Following are the conclusions of the first webinar.

### Webinar One

The first webinar was virtual and designed to provide site liaisons with information on the strengths, weaknesses, opportunities, and threats related to researching low-income students majoring in STEM while attending HBCUs. Pre- and post-surveys were administered to measure site liaisons' change in a) awareness of *promising opportunities* for conducting research with low-income STEM students at HBCUs, b) awareness of *potential threats* of conducting research with low-income STEM students at HBCUs, c) awareness of *potential challenges* of conducting research with low-income STEM students at HBCUs, and d) awareness of *successes* from previous studies of low-income STEM students at HBCUs. Additionally, the first webinar was organized to increase liaisons' awareness about data collection activities within the S-STEM study.

During webinar one, the project team described the IRB approval processes, expectations, and publication opportunities. Presenters described strategies to refine research, develop research plans, and use research to improve the success pathway of low-income STEM students. The evaluator selected survey questions to measure changes in liaisons' awareness about specific factors related to researching low-income students.

Five participants responded to the survey administered before the start of the virtual webinar. Table 2 shows the demographic profile of participants. Three males and two females responded to the pre-survey. Two females were full professors, while the males were full, associate, and assistant professors.

Table 2: Pre-Survey Demographics: Faculty Position and Gender

College Role	Faculty Title	Gender
Faculty	Associate Professor	Male
Project Coordinator	Assistant Professor	Male
Division Chair	Full Professor	Female
Director	Full Professor	Male
Executive Director	Full Professor	Female

Table 3 shows that all site liaisons are Principal Investigators. Most have 10-15 or more years of teaching experience. One participant indicated having 7 to 10 years of teaching experience.

Table 3: Gender, Primary Role, and Years of Teaching

Faculty Title	Gender	Primary role	Years Teaching
Assistant Professor	Male	Principal Investigator	7 to 10 years
Associate Professor	Male	Principal Investigator	10-15 years
Full Professor	Female	Principal Investigator	10-15 years
Full Professor	Male	Principal Investigator	15 years or longer
Full Professor	Female	Principal Investigator	15 years or longer

One of the survey questions asked participants to share their perspectives on anticipated or real threats to their ability to conduct research on low-income STEM students. Some of the threats mentioned included staff not having access to funding for materials, supplies, and incentives, a significant decrease in retention of STEM majors, and low participation in surveys. One participant said, *“Our student population is small; therefore, it is impossible to conduct a larger research study with statistical power.”* Another participant described time commitment as a limiting factor. This participant said, *“We tend to be over-committed to various duties (academic, service, scholarship, overloads, etc.) at the institution.”* Also, participants noted challenges like student engagement, sporadic student participation, and maintaining the S-STEM program model in a virtual environment.

**Table 4: Perceptions of Threats, Weaknesses, & Challenges Conducting STEM Research**

Faculty Title	Gender	Role	Perception of weaknesses challenges conducting your S-STEM research study.
Associate Professor	Male	Principal Investigator	The challenge is students’ engagement.
Full Professor	Female	Principal Investigator	Our biggest challenge has been the impact of COVID-19 on our project. Our cohort model was difficult to maintain within a virtual environment.
Full Professor	Female	Principal Investigator	Sporadic participation of students, due to a variety of reasons, in activities resulting in low numbers for data analysis
Associate Professor	Male	Co-Principal Investigator	Funding for materials for student incentives

Table 5: Pre-Survey Familiarity with Policies and Research Administration

Likelihood to use research findings to change policies	Familiarity with college policies and practices	Familiarity with the IRB processes at your college or university	Familiarity with opportunities within QEM S-STEM	Familiarity with publishing opportunities
Likely	Somewhat familiar	Very familiar	Not so familiar	Very familiar
Very likely	Very familiar	Very familiar	Somewhat familiar	Somewhat familiar
Very likely	Extremely familiar	Extremely familiar	Not so familiar	Very familiar
Likely	Very familiar	Very familiar	Very familiar	Very familiar
Likely	Very familiar	Very familiar	Somewhat familiar	Somewhat familiar

In addition to asking site liaisons to share their perspectives on threats, weaknesses, and challenges, they were asked to share their likelihood to use research and familiarity with college policies and practices before the workshop. Table 5 shows that most participants will likely use research findings to change policies toward improving the success pathway for low-income STEM students. Also, site liaisons described being very familiar with policies related to enhancing the success pathways for low-income STEM students and familiarity with the IRB process at their college or university before the webinar.

Regarding familiarity with opportunities in the QEM S-STEM program, on the pre-survey, site liaisons expressed not being familiar with QEM S-STEM opportunities before the webinar. Two people said they were not familiar, and two expressed being somewhat familiar. One person responded being 'very familiar' with the opportunities in the QEM S-STEM program. In terms of familiarity with publishing, most participants said they were very familiar or somewhat familiar with publishing opportunities.

A post-survey was administered after site liaisons attended the 60-minute webinar on strengths, weaknesses, opportunities, and threats in conducting STEM education research on low-income students attending HBCUs. Table 6 shows that on the post-survey, most participants again indicated that they were likely to use their research findings to change policies to improve the success of low-income STEM students. On the post-survey, all participants stated familiarity with IRB processes and opportunities within the QEM S-STEM project. Post-survey responses on familiarity with publishing were uneven. Some participants were somewhat familiar, while others indicated being very familiar with publishing opportunities. All site liaisons expressed feeling that the content delivered was worth their time. See Table 6 for each participant's response.

**Table 6: Post-Survey Familiarity with Policies and Research Administration**

Years Teaching	Likelihood to use research findings to change policies	Familiarity with opportunities within QEM S-STEM?	Familiarity with publishing opportunities?	Did you feel that the content delivered was worth your time?
10-15 years	Very likely-4	Very familiar-4	Somewhat familiar-3	Yes
15 years or longer	Very likely -4	Very familiar-4	Extremely familiar-5	Yes
10-15 years	Very likely -4	Very familiar-4	Very familiar-4	Yes
15 years or longer	Likely -3	Very familiar-4	Somewhat familiar-3	Yes

The last question on the post-survey was, *"What are some of the ways you plan to use research findings to change policies and pathways to improve the success of low-income STEM students?"* Two participants responded, *"I plan to share our results with college administrators and gain their support in making the changes needed to improve student success."* Another liaison said, *"Share information with pertinent offices at the institution such as Academic Advising and Retention and Enrollment & Student Success units."* These responses indicate that site liaisons have started conceptualizing how to use their research findings to change policies and practices. Their responses reveal an immediate need to increase college administrators' awareness of the research. Site liaisons recognize that administrators need to understand exactly how the college or university supports low-income students before they can gain the administrators' support to make changes in policies designed to improve student success. Site liaisons stated that sharing information is a strategy to increase awareness. They were specific about where data should be shared in the academic units. The academic departments for advising retention and enrollment for student success are two of the most important departments for one site liaison to share their research findings.



# Plans for Using S-STEM Research

“I plan to share our results with college administrators and gain their support in making the changes needed to improve student success.” — **Webinar Participant**

## Webinar Two

The second webinar had a hybrid format to support site liaisons in understanding the difference between educational research and program evaluation. Seven S-STEM PIs attended the webinar hosted during the AAAS meeting on October 1, 2022. Five site liaisons joined virtually via Zoom. The QEM S-STEM research team and external evaluator co-designed the webinar presentation to help site liaisons differentiate the roles of evaluators and researchers within a project. Webinar two was designed to enhance site liaisons' knowledge about the functions of researchers and evaluators within a study designed to engage HBCU faculty in collaborative research. Webinar two was designed to increase site liaisons' awareness of data collection strategies to reduce data evaporation (e.g., data loss due to a lack of understanding of methods to collect it unobtrusively). Lastly, this webinar was designed to build site liaisons' awareness about the abundance of data generated within and across varying components of their funded S-STEM programs.

The main outcome of webinar two was to increase site liaisons' capacity to conduct research (or lead the research) within their S-STEM projects and as a part of the QEM S-STEM research coordination team. Table 7 shows the demographic profile of participants at the second webinar.

Table 7: QEM S-STEM Webinar 2 Participants

College Role	Faculty Title	S-STEM Role	Gender
Executive Director	Full Professor	Principal Investigator	Female
Project Manager	Full Professor	Principal Investigator	Female
Director	Associate Professor	Principal Investigator	Female
	Full Professor	Principal Investigator	Female
	Associate Professor		Female
Project Manager	Instructor	Principal Investigator	Female
Project Coordinator	Assistant Professor	Principal Investigator	Male
Project Manager	Assistant Professor	Principal Investigator	Male
Director	Full Professor	Principal Investigator	Male

Table 7 shows that most participants were females. All participants were Principal Investigators and held faculty titles of Full Professors. Two were Assistant Professors, two were Associate Professors, and one was an instructor. The participants had administrative roles such as Executive Director, Project Manager, or Coordinator. Following in Table 8 are participants' perceptions on whether the second webinar helped clarify their knowledge about the functional difference between researchers and evaluators. Table 8 also indicates perceptions of site liaisons' motivation to define the roles of researchers and evaluators within their projects and perceptions on whether they gained deeper insights into differences and similarities between researchers and evaluators.

Table 8: Webinar 2: Role Clarification and Motivation

Faculty Title	Gender	Clarification on role difference researchers and evaluators?	Motivation for further clarity on the roles of your researcher and evaluator?	Gained deeper insights into the differences and similarities between researchers and evaluators
Full Professor	Female	Strongly agree	Strongly agree	Strongly agree
Full Professor	Female	Agree	Agree	Agree
Full Professor	Female	Agree	Agree	Agree
Associate Professor	Female	Strongly agree	Agree	Agree
Associate Professor	Female	Agree	Agree	Agree
Instructor	Female	Strongly agree	Agree	Strongly agree
Assistant Professor	Female	Strongly agree	Strongly agree	Strongly agree
Assistant Professor	Male	Strongly agree	Strongly agree	Strongly agree
Assistant Professor	Male	Agree	Neither agree nor disagree	Neither agree nor disagree
Full Professor	Male	Agree	Agree	Agree

Regarding whether the webinar provided clarity related to the role differences between researchers and evaluators, 50% of participants said they strongly agreed, while 50% said they agreed. Regarding motivation to clarify or define roles, 60% of participants said they agreed, while 30% said they strongly agreed. One person neither agreed nor disagreed. Whether participants gained deeper insights, the responses were like those on the motivation question. Fifty percent of participants indicated they agreed, 40% said they strongly agreed, and one neither agreed nor disagreed. Table 9 shows responses to questions about the frequency of discussions on the roles and functions of researchers and evaluators, the application of knowledge gained, and the application of knowledge in the immediate future.

Table 9: Webinar 2: Frequency of Discussions and Application of Knowledge

Faculty Title	Gender	Frequency discussions	Application of new knowledge	Application of knowledge to future
Full Professor	Female	A moderate amount	Strongly agree	Strongly agree
Full Professor	Female	None at all	Neither agree nor disagree	Agree
Full Professor	Female	A little	Strongly agree	Strongly agree
Associate Professor	Female	A moderate amount	Agree	Agree
Associate Professor	Female	A little	Agree	Agree
Instructor	Female	A little	Strongly agree	Agree
Assistant Professor	Female	A little	Strongly agree	Strongly agree
Assistant Professor	Male	A great deal	Strongly agree	Strongly agree
Assistant Professor	Male	None at all	Agree	Neither agree nor disagree
Full Professor	Male	A lot	Agree	Agree

Table 9 shows that most participants rarely discuss the functions of researchers and evaluators. One participant indicated discussing roles and functions frequently. Two participants said they do not discuss roles and tasks at all. Most participants either strongly agreed or agreed when asked whether they would apply the new knowledge now and in the future. A few participants indicated that they neither agreed nor disagreed when asked whether they would use the new information immediately or in the future.

In Table 10 are responses to questions on whether the participants' S-STEM programs had an External Evaluator or shared data systems. All participants reported that they had an external evaluator. Six of 10 participants indicated that they do not have a shared data system. This means the project teams do not have a shared system of data for researchers and evaluators to access.

Table 10: Webinar 2: Access to External Evaluator and Shared Data Systems

External Evaluator	Shared Data Systems
Yes	No
Yes	Yes

In addition to asking about external evaluators and shared data systems, participants were asked to characterize their communication frequency and type. One participant said, *“Communication occurred through regular phone calls and emails.”* Another participant said they communicate using email and through monthly meetings. Another participant reported using a shared drive, MS Teams, periodic emails, and video calls. Another participant stated that *“A data hub would be nice.”* When asked to share the most important core elements of the program, one participant reported defining the roles and more communication as core concerns. Another participant stated, *“I hope we will be able to share information and collaborate.”* Another participant expressed wanting *“Support in carrying out the research on the project.”* And lastly, another participant said, *“I would like to get HBCUs with whom I work into this program.”* This participant was explicitly interested in creating additional partnerships.

# Perspectives on having a shared data system

“

*A data hub would be nice.”*

— Webinar Participant

“

*“I hope we will be able to share information and collaborate and receive support in carrying out the research on the project.”*

*“I would like to get HBCUs with whom I work into this program.”*

— Webinar Participants



## Support Towards IRB Approval

Central to conducting any research activities is IRB approval. Knowing how to prepare the IRB application is a primary skill for social science and educational research. The research team used three strategies to support capacity-building to help PIs obtain IRB approval. The project team submitted applications to AIR for IRB approval, maintained status updates on the institution's IRB approval process, or provided PIs support in completing the IRB application for campus approval.

Table 11: IRB Status

Institution	Status	The grantor of IRB Approval
Institution 1	Complete	AIR/QEM IRB
Institution 2	Complete	AIR/QEM IRB
Institution 3	Complete	AIR/QEM IRB
Institution 4	Complete	AIR/QEM IRB
Institution 5	Complete	AIR/QEM IRB
Institution 6	Complete	AIR/QEM IRB
Institution 7	Complete	AIR/QEM IRB
Institution 8	Complete	AIR/QEM IRB
Institution 9	Complete	Received IRB November 3, 2022
Institution 10	Complete	Received IRB November 17, 2022
Institution 11	Complete	Received IRB November. 17, 2022
Institution 12	Complete	Received IRB October 18, 2022
Institution 13	Complete	Shared AIR/QEM IRB information
Institution 14	Complete	Shared AIR/QEM IRB information

Table 11 shows that eight participating HBCUs opted to use the IRB approval granted from AIR. Four campuses received their IRB approval in late Fall 2022 and two are sharing IRB approval between their institutions and AIR/QEM.

## External Advisory Committee

External Advisory Board members work in varying capacities at institutions of higher education or organizations throughout the U.S. They work at universities or organizations in Alabama, California, Georgia, Kentucky, Maryland, North Carolina, Tennessee, and Texas. Figure 1 is a map showing the national geographical location of QEM S-STEM advisors.

Table 12: QEM S-STEM Advisory Board

First Name	Last Name	Role on Project	Title
Ivory	Toldson	Principal Investigator	Director of Education Innovation and Research
Mercy	Mugo	Co-Principal Investigator	Executive Director
Brittany	Boyd	Co-Principal Investigator	Researcher
Kofi	Bota	Advisory Committee	Vice President and Consultant
Shaun	Harper	Advisory Committee	Provost Professor
Nicholas	Daniel Hartlep	Advisory Committee	Associate Professor
Kofi	Lomotey	Advisory Committee	Professor
Iris	Wagstaff	Advisory Committee	STEM Program Director
Angelicque	Tucker Blackmon	External Evaluator	CEO and Chief Inspiration Officer



Figure 1: Geographical Location of QEM S-STEM Advisors



# Discussion



## Discussion and Recommendations

The Quality Education for Minorities (QEM) Network, in partnership with the American Institutes for Research (AIR), proposed a research study to change policies and investigate the type of institutional support low-income students receive to develop and graduate from Historically Black Colleges and Universities (HBCUs). In addition to exploring institutional support for low-income students, the QEM S-STEM research proposal was funded to develop a research infrastructure and network within and amongst the HBCU S-STEM Principal Investigators cohort. This formative external evaluation report presents HBCU S-STEM Principal Investigators' perspectives about what they learned and how they plan to use new knowledge to advance policies on their campuses. Driving policy changes to provide even more support to low-income students is one of the key outcomes of the QEM S-STEM study.

The QEM S-STEM proposal describes the research team's desire to conduct research on and with site liaisons. They emphasize conducting research with site liaisons. The research team, in essence, proposed an inclusive research approach where PIs from HBCUs can advance as scholars in the STEM education research space in the same way as those on the core QEM S-STEM research team. As co-inquirers (or collaborators), PIs have access to structured data and findings emerging from this project. One key recommendation is to remind PIs of this access and embed the messaging throughout the correspondence, including in future webinars. Another suggestion is to invite PIs, if they have not been asked already, to co-author research publications that move forward from the core research team.

Given the feedback on desiring access to structured data systems to advance research, another recommendation is that one of the future webinars centers on strategies that PIs could embed within their S-STEM programs to build data systems. Also, based on one of the site liaison's perspectives that they are not able to conduct rigorous research because their student population size is "too small" reveals an opportunity to expose site liaisons to qualitative, quantitative, and mixed methods research designs. This comment revealed an

opportunity to present research methods related to statistical analysis that can be done to compensate for small sample sizes or study designs inclusive of power analysis to determine appropriate sample sizes for hypothesis testing.

In terms of moving the research agenda forward, the QEM S-STEM team has remained consistent in advancing their efforts. They spent deliberate time, as a team, developing the survey questions and interview guide questions that will be used to gather data from students and staff at 13 HBCUs. Pilot testing of the interview guide has been completed with staff from six HBCUs so far. The preliminary thematic analysis reveals that HBCUs provide financial and academic support, STEM career development, and faculty, peer, and community engagement, to meet the needs of STEM students from low-income backgrounds (n.d. QEM S-STEM research).

The development and use of the interview guide to collect data includes the careful integration of research team member's voice and perspectives on the construction of questions to present to HBCU staff. The same occurred for the development of the questionnaire. Each team members' perspectives were acknowledged in the construction of the questionnaire that will eventually comprise the student survey.

Also, the research team collaboratively constructed a proposal to AEA which was accepted. The AERA opportunity provides a significant platform in which the QEM S-STEM can share their research findings. Dissemination of these research findings in collaboration with invited HBCU S-STEM site liaisons as co-collaborators again solidifies the research team's commitment to inclusive STEM education research. In closing, the research team is advancing the research agenda in collaboration with HBCU-S-STEM PIs. Continued advancement of the research with the site liaisons advances both the research infrastructure of QEM, AIR and the 13 HBCUs participating in this research study.



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