



# College Awareness and Planning for Careers in STEM

Location:

Kaiser Permanente Center for Total Health

700 Second Street NE

Washington, DC 20002

8:00am - 4:00pm

Saturday, April 27th, 2019

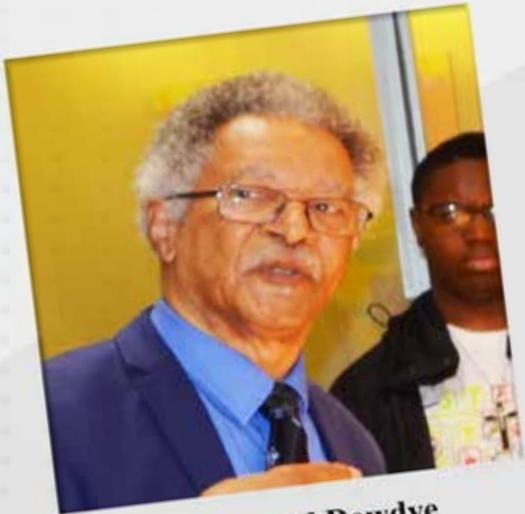


## STEM

Science, Technology,  
Engineering, Mathematics



# STEM PROFESSIONALS LEADING THE WAY



Dr. Edward Dowdye  
Physicist



Dr. Carol Clarke  
Veterinary Medical Officer



Ms. Ashleigh Owens  
Software Analyst

# Program Director

Dr. Ava Morrow received a Bachelor of Science degree in biology from Morgan State University in 1980 and in the same year, began her career at Gallaudet University, working in the biology department as a laboratory technician. She majored in microbiology at Howard University and earned a Master of Science degree (1988) and a Ph.D. (2004). After completing her master's degree, Dr. Morrow became an instructor in the biology department at Gallaudet. She retired from Gallaudet in January 2013, as a full professor of microbiology, after completing 32 years of service at Gallaudet. Dr. Morrow is a passionate advocate who promotes science, technology, engineering, and mathematics (STEM) by speaking to elementary, middle and high school students about careers in science and serving as a judge for science fairs. She also mentors students and faculty teaching science courses. In addition to being a microbiologist, Dr. Morrow is a certified sign language interpreter. She is a member of the Registry of Interpreters for the Deaf (RID). She earned the interpretation certification (IC) and the translation certification (TC) from the Registry of Interpreters for the Deaf (RID), in 1983. For over thirty-five years, she has interpreted in a myriad of settings as a free-lance interpreter. She is the CEO of SHARAVA, LLC, a sign language interpreting service.

Dr. Morrow is very active in the community. She is a life member and the former Vice President of Morgan State University's Alumni Association-DC Chapter, a member of the Medical Reserve Corp of the Prince Georges County Health Department, and a member of the American Society for Microbiology (ASM).



## College Awareness and Planning for Careers in STEM Workshop



Dear Community Partner:

It is with much anticipation that we request your organization's sponsorship support for high school students in our community. The Washington, DC Metro Historically Black Colleges and Universities Alumni Alliance, Inc. (DCHBCUAA) is non-profit community-based organization that consists of Historically Black Colleges & Universities' Alumni Chapters in the Washington, DC Metropolitan area. Our mission is to support underserved students interested in attending HBCUs, and to support programs that address health/wellness, hunger, and higher education in the African American community.

The members of the DCHBCUAA, are concerned about the inadequate representation of minorities in science, technology, engineering and mathematics (STEM) related professions. On April 27, 2019, as part of our community partnership with Kaiser Permanente, the DCHBCUAA will conduct our 3rd annual College Awareness and Planning for Careers in STEM Workshop, for students in grades 9-12. Our goals are to educate the students about the many professions available in the sciences and to inspire them to pursue a college education with a STEM major. This STEM workshop addresses our higher education initiative. Moreover, what makes our program different from other STEM programs is that HBCU graduates in the Washington, DC Metropolitan area will provide their services to underserved students in urban communities.

For this reason, we are requesting that your company become a sponsor of the STEM workshop. We anticipate having a maximum of fifty students in addition to volunteers and workshop participants. Your company's financial support or in-kind donation will be greatly appreciated. The details of the program and a sponsorship commitment form are included in this proposal. Your sponsorship and support would help us immensely in our efforts to bridge the racial gap in STEM education.

Thank you in advance, for your support and your thoughtful consideration. If you have any questions, please feel free to contact me directly. I hope to hear from you soon.

Sincerely,

*Dr. Ava Morrow*

Dr. Ava Morrow, Program Director  
Washington, DC Metro HBCU Alumni Alliance, Inc.  
[STEMprogramdirector@dchbcu.org](mailto:STEMprogramdirector@dchbcu.org)

[Watch the 2018 STEM Program Video](#)

# About the Washington, DC Metro HBCU Alumni Alliance, Inc.

The Washington, DC Metro HBCU Alumni Alliance, Inc. (DCHBCUAA) is a non-profit community-based organization that consists of Historically Black Colleges & Universities' Alumni chapters in the Washington, DC Metropolitan area. We collaborate mainly to strengthen the community through our impactful programs and we exist to provide support to underserved students interested in attending HBCUs.

The DCHBCUAA is at the forefront of a growing movement to raise awareness, provide resources, and offer promising programs that target at-risk individuals and the communities where they live. We partner with several organizations working toward a common goal. We believe, there is strength in numbers, and that is why we leverage relationships and collaborate with organizations that support our vision. We know it is one of the most powerful and productive investments we can make.

## DCHBCUAA Higher Education Initiative

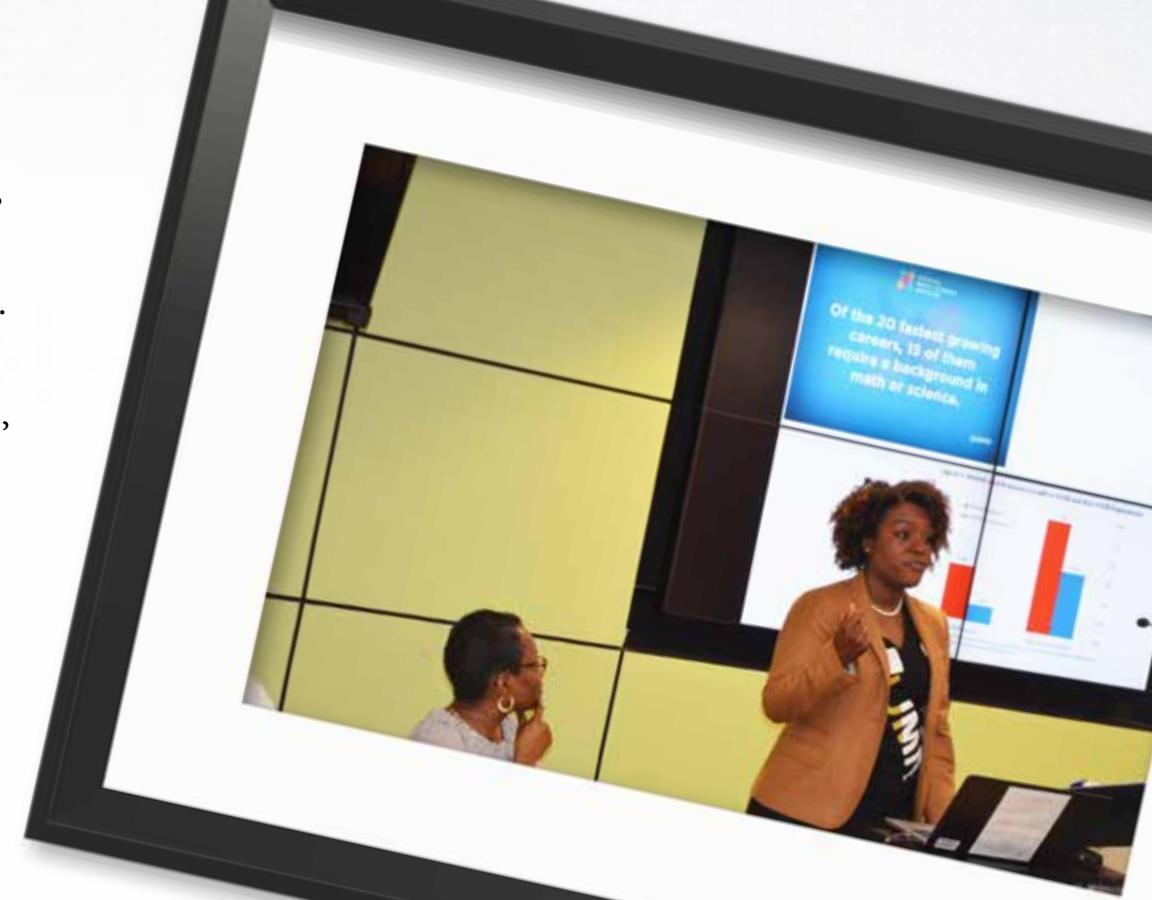
Alumni of Historically Black Colleges and Universities (HBCUs) are concerned about the inadequate representation of minorities in science, technology, engineering and mathematics (STEM) related professions. Consequently, DCHBCUAA STEM professionals have designed and organized an instructional hands-on workshop for students in grades 9-12, to enlighten them on the different facets of professions available in the sciences. By tapping into the wide range of knowledge and the resource base of our membership, our objectives are to provide students with the skills to be successful in their pursuit of a college degree and their pursuit of employment after graduation. As part of our community partnership with Kaiser Permanente, they join us in our commitment to inspire the next generation of scientists.



# STEM Jobs Outlook

According to the U.S Bureau of Labor Statistics, jobs in science, technology, engineering, and mathematics (STEM) are growing faster than any other U.S. sector. Available jobs in STEM are predicted to increase to more than nine million by 2022. In addition, The U.S. Department of Commerce and the National Economic Council reported that computer and math occupations account for close to 50% of all STEM jobs today, engineering 32%, physical and life sciences 13%, and STEM management 9%. The demand for competent workers in STEM is necessary for the U.S. to remain globally competitive.

Unfortunately, there is a lack of gender and ethnic diversity among individuals pursuing STEM education, graduating with STEM degrees and obtaining employment in a STEM related occupation. A recent estimate indicated that 28 percent of science and engineering workers in the U.S. are women, even though they comprise almost half of the U.S. workforce. Similarly, while underrepresented racial and ethnic groups comprise 26 percent of the general population, only 10 percent of U.S. workers are in science and engineering related fields. These statistics have generated much concern and discussion among STEM professionals who are alumni of HBCUs. Therefore, as leaders who strive to make a difference in our community, we endeavor to engage, inspire, and encourage students to pursue careers in STEM. Our goal is to help to bridge the gap in STEM achievements for minority students.



# Participants

The Program Director will select fifty high school students to participate in this workshop.

The workshop will be held in the Washington, DC Metropolitan area in the spring of each year.

The students will be selected based on a recommendation from their mathematics teacher, their science teacher or a leader in the community.

## Program Format

The DCHBCUAA STEM program is a state-of-the-art, interactive workshop, with subject matter experts (SMEs) who are HBCU graduates, actively working in STEM-related occupations. The workshop will consist of a lecture format, demonstrations, experiments and activities that encourage the students to use critical thinking skills. As part of the program, a career counselor will also discuss financial aid opportunities with the students.

At the beginning of the workshop, students will be given a STEM pre-test to determine their knowledge of STEM careers and their knowledge of the concepts presented in the STEM lectures and experiments. Upon completing the workshop, the students will be given the same test (post-test) to determine if their knowledge of STEM careers and their knowledge of the concepts presented in the STEM lectures and experiments improved.



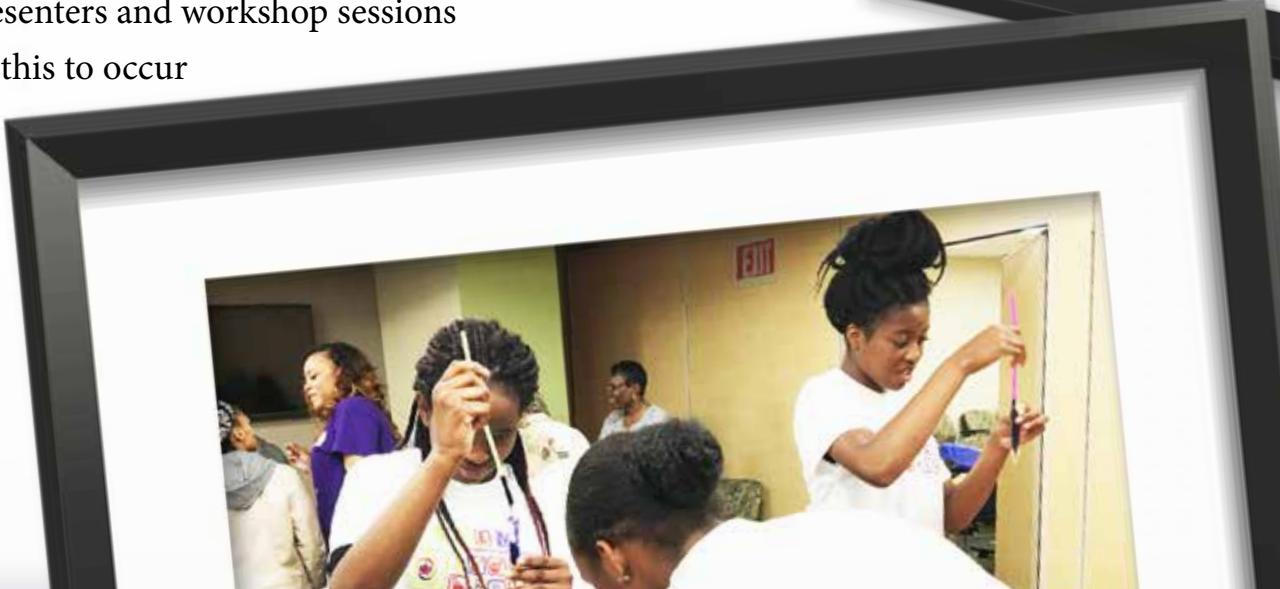
# Objectives

The purpose of this initiative is to increase the representation of minority individuals in STEM related fields. The specific objectives for the workshop are:

- To assist students in identifying their academic and personal career goals
- To increase student's awareness of opportunities in STEM related occupations
- To expose the students to engaging and interactive STEM experiments
- To provide opportunities for the students to interact with, professionals in various STEM fields to network and develop relationships for future coaching and mentorship opportunities

Long term program objectives include:

- To have this workshop in the spring of every year
- To increase the number of students participating in the workshop
- To increase the number of presenters and workshop sessions
- To inspire workshops such as this to occur annually across the country



# STEM Workshop Data

Twenty males and fifteen females (Figure 1) representing thirteen high schools in the DC metropolitan area attended the STEM workshop. Fourteen percent of the students were ninth graders, fourteen percent were tenth graders, fifty-two percent were eleventh graders, nine percent were twelfth graders and 11 percent did not indicate their grade level (Figure 2). The students were given a STEM pre-test to determine their knowledge of STEM careers and their knowledge of the concepts presented in the STEM lectures and experiments. Upon completing the workshop, the students were given the same test (post-test) to determine if their knowledge of STEM careers and their knowledge of the concepts presented in the STEM lectures and experiments improved. The average pre-test score was 60.8% and the average post-test score was 74.5%. Thus, the student's average post-test score increased by 22.5% because of their participation in the STEM workshop (Figure 3).

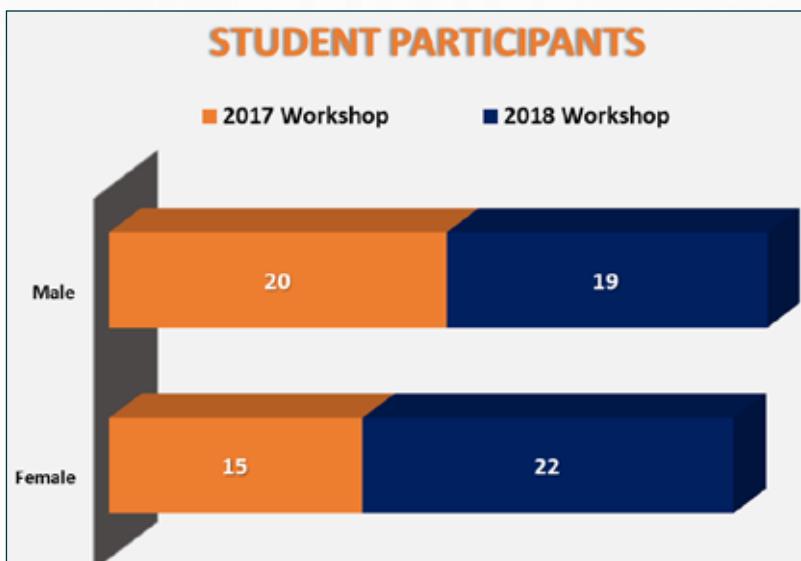


Figure 1

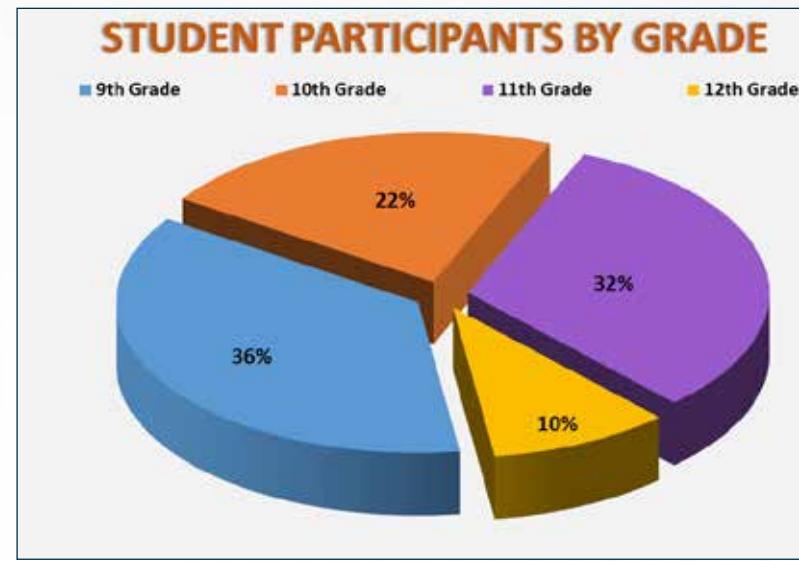


Figure 2

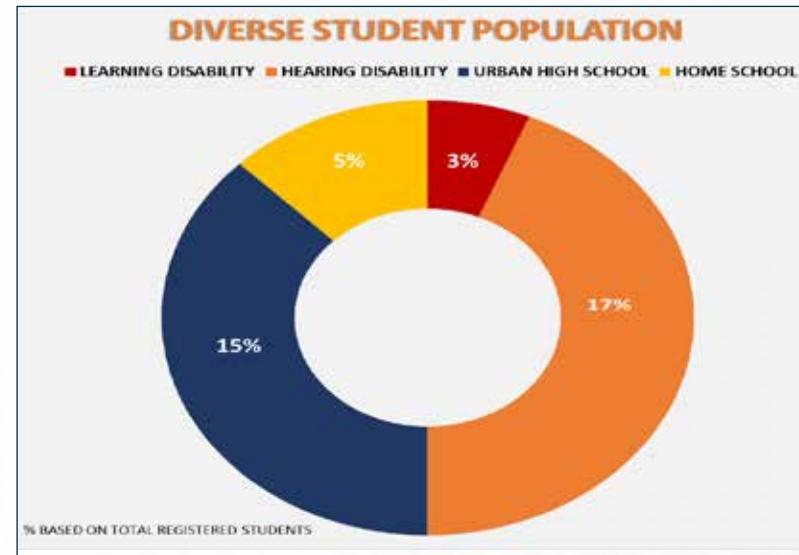


Figure 3

# STEM Workshop Impact

In the summer of 2018, we were able to extend 16 paid internship opportunities to those who participated in the STEM workshop.

## Testimony # 1

The Summer Academy of Mathematics and Science (SAMS) program at Morgan State University was a very knowledge enriching program that taught me life skills for in and outside of the home and classroom. The program also taught me about networking with many different types of people. The SAMS program also taught me about different STEM fields and how they contribute to everyday life. The SAMS program is a great opportunity for boys and girls attending high school who are interested in STEM and if I was asked to do it again I surely would.

## Testimony # 2

First, I would like to thank you for informing me and my mother about the wonderful opportunity offered at the Boston Leadership Institute. It was a great way for me to enhance my leadership and problem-solving skills. My three-week program choice was Forensic Pathology.

In this class, we learned about topics such as forensic anthropology, which is the study of human remains that are then used in the legal process. During Dr. Fox's class, I performed hands-on experiments on subjects such as DNA sampling and fingerprint analysis. In addition to learning and performing STEM research, we took field trips to the following places: Harvard University, Massachusetts Institute of Technology, Harvard Square, and Chinatown using the Massachusetts Bay Transportation Authority. Thank you, again, for sharing this great opportunity with my mom and me. I hope that you will continue to inform other students about this wonderful opportunity to learn more about the STEM field and to experience a little bit of real college life. Have a blessed week!

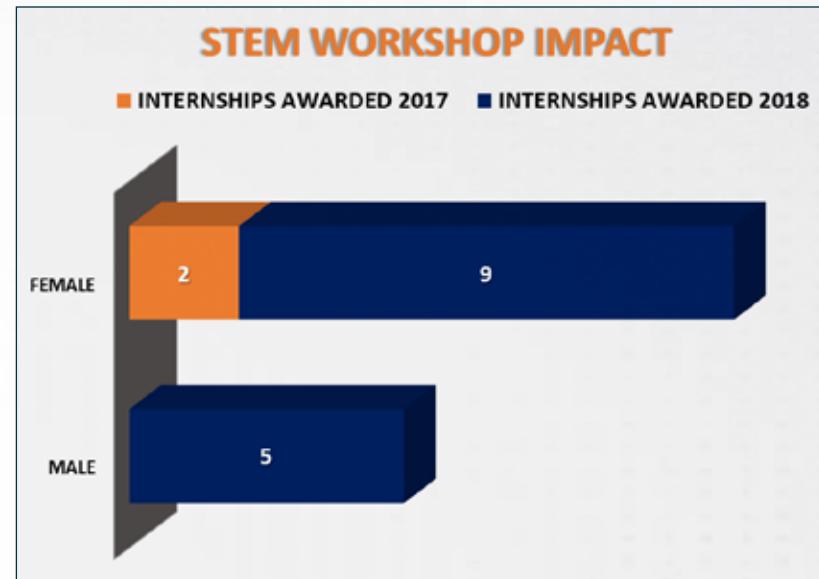


Figure 4

# **Student's Evaluation of the STEM Program**

The students were asked to evaluate the topics and experiments presented, the facility and the meal. In addition, they were asked to list the best and least favored aspects of the workshop and to make recommendations for improving the workshop. On a scale of 1-4 the student's ratings of the topics and experiments presented, the facility and the meal ranged from 3.56-3.75. A summary of their comments are listed below.

## **What was the best part of the STEM Workshop?**

1. Interaction with professionals who attended an HBCU.
2. The counselor that spoke to us about scholarships and financial aid and the chemistry experiment at the end.
3. The slime activity because it was a fun activity and it was interactive.

## **What areas of the STEM Workshop could use improvements?**

1. I think it was important to have more time to speak with each individual presenter and time to ask questions because that was too limited.
2. To improve the workshop, there should be a two-day workshop. Therefore, the students will have more time to understand the information.





# STEM 2019 Program Agenda



8:00-9:00am	<b>Registration, Breakfast, Pre-Test and Welcome</b> STEM Program Director Dr. Nardos King, President, Washington, DC Metro HBCU Alumni Alliance Inc.
9:00-9:30am	<b>Greetings from Kaiser Permanente Representatives</b>
9:30-12:00pm	<b>Track A: Follow the Bouncing Ball: Creating Web Animations</b> In this exercise students, will write a simple JavaScript program to perform tests and make measurements to create animations games, music and art. <b>Track B: Grasping with Straws: Make a Robot Hand using Drinking Straws</b> In this activity, students will design and build a working hand out of craft materials. The hand is a simulation of how a real robot hand will work. <b>Track C: Modeling the Transmission of a Communicable Disease</b> In this experiment, students will explore the dynamics of how diseases are transmitted and controlled by taking part in a “hands-on” simulation.
12:00-1:00pm	<b>Lunch</b> Students will be seated at tables having lunch while a presenter delivers a message.
12:00-1:00pm	<b>Types of Financial Aid: Preparing to Meet College Costs</b> In this session, the students will learn about the cost of a college education and why it should be viewed as an investment in their future. In addition they will learn about the various types of financial aid available, and how to get started in the application process.
1:00-2:50pm	<b>Track A: Creating an LED Greeting Card</b> Students will design a greeting card that illuminates using two LED lights by converting chemical energy in batteries to radiant energy when the card is opened. <b>Track B: Text Me Later: How Dangerous is Texting and Driving?</b> In this exercise, students will use unit rates to discover how far a car travels while someone sends a text message. In addition, they will estimate how many seconds it takes to compose a text message, compare the dangers of texting and driving in a residential area versus the highway, calculate percents to compare death rates from traffic-related accidents for teens and non-teens, calculate the percent of a number to determine how many non-drivers are killed by distracted drivers and discuss what should be done to try and discourage people from texting while driving. <b>Track C: Testing the Effectiveness of Antacid Tablets</b> In this exercise, students will develop an experiment (using the scientific method) to determine how antacid work and which one is the most effective.
2:50-3:00pm	<b>Break</b>
3:00-4:00pm	<b>Panel: Professionals Working in STEM Related Occupations</b> In this session, students will have an opportunity to dialogue with STEM professionals to learn about the various professions, the requirements to enter the profession and the duties and salary for the profession.
4:00-4:15pm	<b>Post-Test and Wrap up</b>

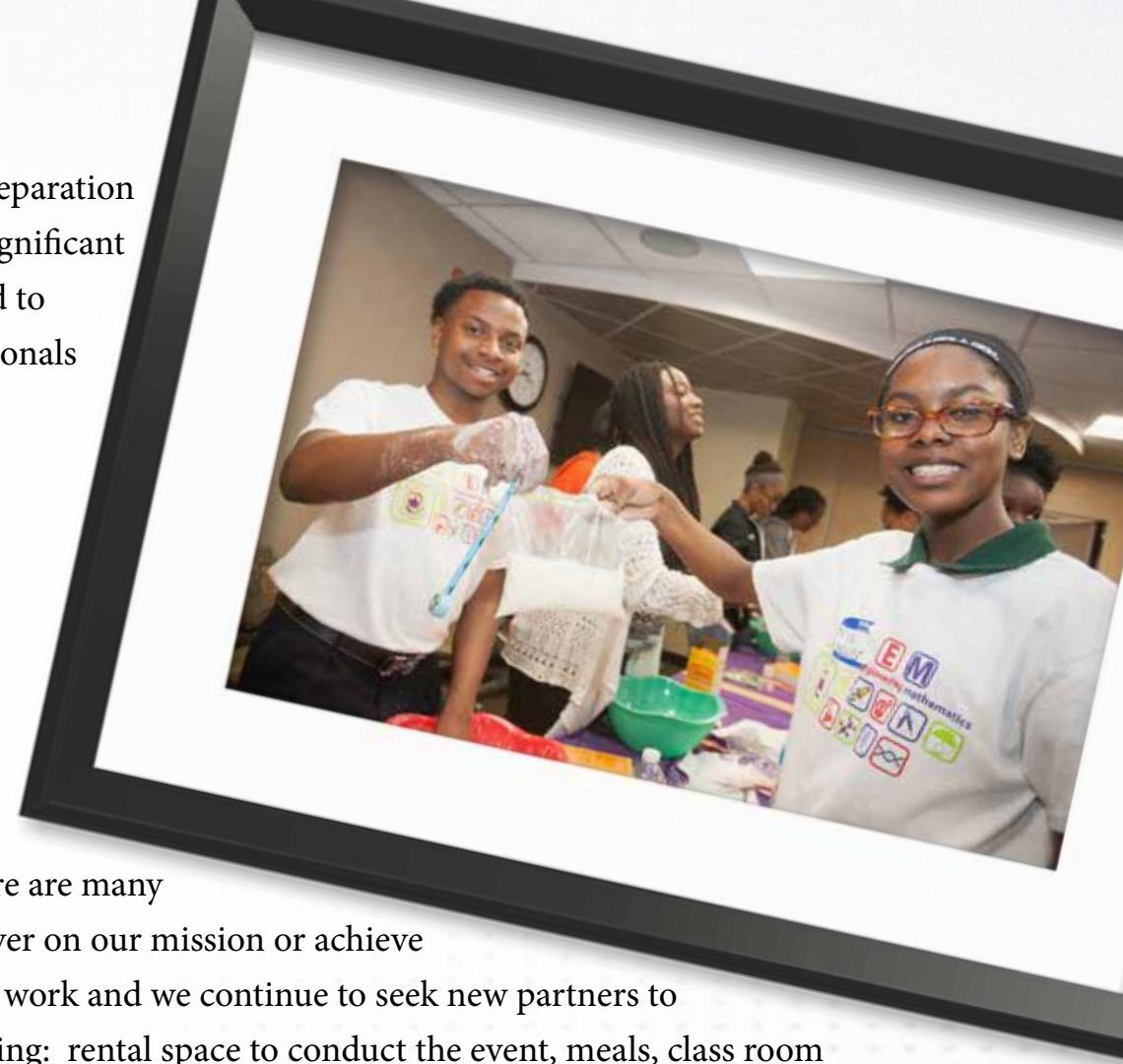
# Conclusion

In summary, we believe that if this novel approach to educating students about college preparation and STEM-related occupations were conducted throughout the nation, it would have a significant impact on inspiring and encouraging minority students to pursue a college education and to choose a STEM-related major. Thus, these students will be the next generation of professionals to diversify the STEM pipeline.

The DCHBCUAA is firmly committed to providing equal opportunity for all students attending the STEM workshop regardless of race, color, religion, sex, sexual orientation, gender identity and/or expression, genetic information, national origin, age, physical or mental disability, parental status, marital status, political affiliation, or any other characteristic.

# Call to Action

There are many elements to our work. In addition to time, passion and commitment, there are many tangible resources required to bring our programs and events to fruition. We cannot deliver on our mission or achieve our goals without the support of our corporate sponsors. Partnership is at the core of our work and we continue to seek new partners to make our work possible. Your financial contribution will assist us in providing the following: rental space to conduct the event, meals, class room materials, transportation, and student gifts/educational bags.







We wish to thank the following individuals and organizations for their support of the 2018 STEM workshop.



AMERICAN CHEMICAL SOCIETY



YES! I want to make a contribution to help support your College Awareness STEM Program.

**1. Print or enter your company/organization's information** (as it should be listed on STEM materials)

First Name \_\_\_\_\_

Last Name \_\_\_\_\_

Mailing Address Line 1 \_\_\_\_\_

Mailing Address Line 2 \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_

Zip \_\_\_\_\_

Telephone \_\_\_\_\_

Fax number \_\_\_\_\_

E-Mail Address \_\_\_\_\_

**2. Your suggested financial contribution of \$2,500-\$5,000 will support the following:**

- Rental fee
- Student transportation
- Meals (Morning break, Lunch and Afternoon Break)
- Student gift bags
- Workshop Materials
- In-Kind Donation (Please Specify) \_\_\_\_\_

**3. Choose your method of payment**

- Our check is enclosed – Make checks payable to the “DC Metro HBCU Alumni Alliance”
- Please invoice us for \$ \_\_\_\_\_
- We are unable to commit to a specific level, but please accept our donation of \$ \_\_\_\_\_

Credit Card Information:

Visa     Master Card     Amex     Discover

Card# \_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_ Exp. Date \_\_\_\_\_ / \_\_\_\_\_ CSC# \_\_\_\_\_

Authorization Signature \_\_\_\_\_ Date \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_

**4. Please email a photo ready copy of your logo for inclusion in marketing materials to: [STEM@dchbcu.org](mailto:STEM@dchbcu.org).**

Your contribution to the Washington, DC Metro HBCU Alumni Alliance, Inc. is tax deductible to the full extent of the law (501(c)(3) letter available upon request). You will receive a letter and receipt documenting your contribution. For more information, please contact the Washington, DC Metro HBCU Alumni Alliance, Inc. at [treasurer@dchbcu.org](mailto:treasurer@dchbcu.org).

Please send your sponsorship gift or pledge to:  
**Washington, DC Metro HBCU Alumni Alliance**  
P.O. Box 9833 | Washington, DC 20016



Thank You