AAAS | HBCU Making and Innovation

IMPACT EVALUATION REPORT

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"The program provided safe spaces for personal/team exploration, growth, sharing of resources, mentoring, coaching, and relationship building."

Advisory Board Member, 2022

ABOUT THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE (AAAS)

Founded in 1848, the American Association for the Advancement of Science is an international, nonprofit organization dedicated to advancing science, engineering and innovation for the benefit of all people. With more than 120,000 individual members in more than 91 countries, AAAS is the world's largest multidisciplinary scientific society and a leading publisher of cutting-edge research through the Science family of journals. As one of the top voices for science worldwide, we spearhead initiatives in policy, international cooperation and diplomacy, STEM education, public engagement, and more. We strive to promote and defend the integrity of science and its use, provide a voice for science on societal issues, and strengthen and diversify the science and technology workforce. More information is available at www.aaas.org.

MISSION & GOALS

The American Association for the Advancement of Science (AAAS), with funding from the National Science Foundation, supports students and faculty from Historically Black Colleges and Universities to participate in the Making & Innovation Showcase. The showcase is designed to provide an opportunity for students to showcase their talent and innovation at their institution.

Each year, participating teams design and implement prototypes using hardware and software to address one of the seventeen United Nations Sustainable Development Goals (SDGs) (below). For the annual Showcase students and faculty receive funds to travel to Washington, D.C. and engage in workshops focused on invention, intellectual property protection, and communication

- Convene two yearly AAAS HBCU Making and Innovation Showcases.
- E-mentoring and coaching.
- Development of a toolkit of making and innovation resources for HBCUs, and dissemination through website and social media platforms
- Create and nurture a HBCU-making and innovation Community of Practice

> **"The goal of these initiatives is to tap into the full potential of a diverse cadre of students to support and advance equitable STEM education, research, innovation, and career opportunities."**

Dr. Iris R. Wagstaff
ISEED Program Director at AAAS

https://www.aaas.org/news/2021-hbcu-making-innovation-showcase-offers-opportunity-students-shine

"Teamwork is very important. Networking is critical, and the fact that you need to believe in yourself."

Student Showcase Participant, 2021

HISTORY

Since the first AAAS HBCU Making and Innovation Showcase in 2018, 241 students and 83 faculty members from 32 HBCUs have taken part. The goal of advancing innovation capacity at HBCUs extends beyond the annual Innovation Showcase. Since the program's launch, students and faculty have taken part in more than 80 coaching, professional development, and mentoring sessions.

The showcase was inspired by the Obama White House's 2015 National Week of Making celebrating the maker movement, in which innovators harness technology and creativity to turn their ideas into reality.

In Fall 2020, the American Association of the Advancement of Science (AAAS) was awarded a 3-year project focused on building making and innovation-related capacity for students and faculty at historically black colleges and universities (HBCUs) by the National Science Foundation (Award no. 2037362). This project, Enhancing Making and Innovation Capacity for HBCU Students and Faculty Via an Inclusive Community of Practice ("Maker" project) expands upon three years of prior work aimed at providing resources, information, and training in the areas of making, innovation, entrepreneurship, and invention to HBCU students and faculty.

"HBCUs are uniquely positioned to develop critical innovation and entrepreneurial mindset to address issues in public health, social justice, education and the environment. This showcase builds a community of practice that identifies the next generation of STEM professionals who will lead solutions to these grand global challenges."

Neela White
ISEED Project Director at AAAS

INTRODUCTION

MAKING

The teams, made up of HBCU students in consultation with a faculty advisor, developed an innovation or prototype in response to one of the United Nations Sustainable Development Goals, which range from Affordable and Clean Energy to Zero Hunger to Quality Education.

Students presented their projects during the AAAS Showcase on the last day of the conference. Each HBCU had 10 minutes to present their projects to the audience and answer questions from the panel. Throughout the entire process, students emphasized the importance of teamwork, communication, and intentionality while balancing their ability to do their work.

These strategic activities are targeted and focused on providing necessary skills, knowledge and expertise in making and innovation related areas, and sustaining these efforts through a community of practice (CoP).

MAKING

The concept of "making" has existed since the stone age. Humans have always had the desire to create. In its most basic form, the act of making refers to anything that is produced by hand. The maker movement has grown significantly over the last decade or so due to advances in technology that have spurred such activities as 3-D printing, fabrication and the use of robotics and artificial intelligence. The concept of making is also seen as a way to democratize access to innovation and technology for communities that have been historically marginalized. Making and innovation in concert provide underexplored opportunities for underserved and underrepresented communities to participate in the technology revolution.

MAKING AT HBCUs

While we have seen Maker spaces proliferate all around the country and many people engage in innovation-related activities, we have not seen this same trend in communities of color, and especially on HBCU campuses. HBCUs are responsible for graduating the most African Americans with STEM degrees at the undergraduate level. While HBCUs only make up 3% of colleges and universities, they produce 27% of all STEM bachelor's degrees for African Americans (NCES, 2014). Given the role of HBCUs in producing diverse STEM talent, they are poised to also serve as engines of economic growth and technological advances. This project seeks to leverage the STEM talent at HBCUs to advance making and innovation-related capacity and expertise for students and faculty via an inclusive community of practice.

"I plan to use the knowledge gained in both my professional and personal life. I have been inspired to merge my two degrees/areas of expertise and develop something beneficial to my community."

Student Showcase Participant, 2022

PARTICIPATING INSITUTIONS BY NUMBERS

A total of 22 schools participated in the Maker Space Showcase since 2018. Below is a profile of the participating schools and their Carnegie Research Classification.

Institution	Type	R1 or R2 Designation	Setting	Size
Alabama A&M University	Public		Urban	Medium
Bowie State University	Public		Suburban	Medium
Central State University	Public		Rural	Small
Clark Atlanta University	Private	R2	Urban	Small
Coppin State University	Public		Urban	Small
Dillard University	Private		Urban	Small
Grambling State University	Public		Rural	Small
Hampton University	Private		Urban	Small
Jackson State University	Public	R2	Suburban	Medium
Johnson C. Smith University	Private		Urban	Small
Lincoln University of Missouri	Public		Suburban	Small
Morehouse College	Private		Urban	Small
Morehouse School of Medicine	Private		Urban	Small
Morgan State University	Public	R2	Urban	Medium
North Carolina A&T State University	Public	R2	Urban	Large
Philander Smith College	Private		Urban	Very small
Southern University	Public	R2	Urban	Medium
Spelman College	Private		Urban	Small
Tuskegee University	Private		Rural	Small
University of Arkansas Pine Bluff	Public		Urban	Small
University of the District of Columbia	Public		Urban	Small
Xavier University	Private		Urban	Small

PARTICIPATING INSITUTIONS BY NUMBERS

A total of 22 schools participated in the Maker Space Showcase since 2018. Below is a profile of the participating schools.

Institution Type	Type Frequency (2018 - 15 Schools in Attendance)	Type Frequency (2019 - 12 Schools in Attendance)	Type Frequency (2020 - 12 Schools in Attendance)	Type Frequency (2021 - 8 Schools in Attendance)	Type Frequency (2022 - 8 Schools in Attendance)
Public	9	10	7	5	7
Private	6	2	5	3	5
R1 or R2	2	2	5	3	3
Very Small	0	0	1	1	1
Small	11	7	8	4	2
Medium	3	4	2	2	4
Large	1	1	1	1	1
Rural	3	3	1	1	1
Suburban	4	4	3	2	3
Urban	8	5	8	6	5

PARTICIPATING INSITUTIONS BY NUMBERS

A total of 22 schools participated in the Maker Space Showcase since 2018. Below is a profile of the participating schools.

Institutions	Participation in Showcase 2018	Participation in Showcase 2019	Participation in Showcase 2020	Participation in Showcase 2021	Participation in Showcase 2022
Alabama A&M University	Yes	Yes	No	No	Yes
Bowie State University	Yes	Yes	Yes	No	Yes
Central State University	Yes	Yes	No	No	No
Clark Atlanta University	No	No	Yes	No	No
Coppin State University	Yes	Yes	Yes	No	No
Dillard University	No	No	Yes	No	No
Grambling State University	Yes	Yes	No	No	No
Hampton University	Yes	No	No	Yes	No
Jackson State University	No	Yes	Yes	Yes	Yes
Johnson C. Smith University	Yes	No	No	No	No
Lincoln University of Missouri	Yes	Yes	Yes	Yes	Yes
Morehouse College	Yes	Yes	Yes	No	No
Morehouse School of Medicine	No	No	Yes	No	No
Morgan State University	Yes	Yes	Yes	Yes	Yes
North Carolina A&T State University	Yes	No	Yes	Yes	Yes
Philander Smith College	No	No	Yes	Yes	Yes
Southern University	No	No	Yes	No	No
Spelman College	Yes	No	No	No	No
Tuskegee University	Yes	Yes	Yes	Yes	Yes
University of Arkansas Pine Bluff	Yes	No	No	No	No
University of the District of Columbia	No	Yes	No	Yes	No
Xavier University	Yes	No	No	No	No

STUDENT PARTICIPANTS PROFILE

A total of 22 schools participated in the Maker Space Showcase since 2018. Below is a profile of the students at the participating schools.

	Overall	2018	2019	2020	2021	2022
Male	**132**	30	34	36	14	30
Female	**134**	31	21	39	23	31
Black or African American	**219**	47	47	59	34	47
Hispanic or Latino(a)	**2**	1	0	1	0	1
Asian	**17**	0	3	7	3	0
Native American or Native Alaskan	**0**	0	0	0	0	0
White	**17**	8	1	6	0	8
Other	**4**	0	2	2	0	0
Life Sciences	**47**	7	17	24	9	6
Mathematics & Statistics	**5**	1	3	1	0	0
Computer Sciences & Information Management	**17**	0	16	14	7	10
Technology & Engineering	**18**	11	11	20	7	5
Social, Behavioral, & Economic Sciences	**4**	0	4	10	4	0
Physical Sciences	**12**	12	4	4	0	1
Other: Agriculture, Architecture, Food/Nutrion Science, Ecology, Business, Physical Therapy	**17**	0	0	2	0	0
Science & Mathematics Education	**0**	8	0	0	12	12
Freshman	**11**	2	1	2	2	4
Sophomore	**39**	7	14	16	2	6
Junior	**53**	6	10	16	3	7
Senior	**51**	11	15	7	16	2
Graduate and PhD	**89**	4	15	20	16	15

"Overall, it was a very beneficial conference. I gained so much insight and made many new connections."

Student Showcase Participant, 2021

EVALUATION

The overall goal of the Maker project is to investigate best practices to enhance making and innovation-related capacity for HBCU students and faculty via an inclusive community of practice focused on innovation at HBCUs. The four research questions that guide this study are:

Faculty Level

1 How are faculty **professionally developing and implementing** their knowledge and skills related to making and innovation-related education and training?

2 To what extent do faculty's teaching strategies and research approach(es) **change or enhance** as a result of their engagement in project activities?

Student Level

3 How does student motivation in STEM (e.g., STEM identity, self-efficacy, belonging, aspirations for STEM jobs/careers) **change or enhance** as a result of engagement in project activities?

4 How do students see their role in an **inclusive innovation community of practice** (CoP) developed by the project? And what do they perceive as **needs or gaps** between their formal preparation and the innovation space?

LOGIC MODEL

Inputs	Activities	Outputs	Short-Term Outcomes	Long-Term Outcomes
NSF Funding AAAS Organization, staff, and resources Partners • Shark Tank talent scout • U.S. Patent & Trademark Office • Small Business Innovation Research • AAAS - Lemelson Invention Ambassadors	F2F Showcases 2-Year Making and Innovation Showcases Virtual Maker Community Engagements & Community of Practice • Podcasts • Online Chats • Webinars • Newsletter • Blogs Toolkit resources for faculty	# of HBCUs participating # of HBCU students participating in activities and events # of partners participating in events # of HBCU team projects addressing UN goals	Increase #/% of HBCUs, faculty, and students participating Increase #/% of faculty, students, partners, and AAAS project staff engaged and satisfied Increase #/% of STEM learning and skills in entrepreneurship, making and innovation Increase #/% of HBCU students' global awareness and application Increase #/% of HBCU faculty perceptions of learned and applied STEM skills and maker knowledge	Increase #/% of HBCU STEM student business development Increase #/% of HBCU and AAAS partner collaboration and engagement Increase # of solutions to meet 17 UN Sustainable Development Goals Increase of faculty that advance professionally to develop skills and teach students how to make and innovate Increase the sustainability of partnerships Increase impact on communities and the world

"It is so nice to be at an event where you see a lot of Black and People of Color coming together for STEM creating these innovations and letting them know we are here to stay, and we can support our communities and those needs, and we will make innovations that will help students with STEM. We want our children to know that there are opportunities waiting for them out there. Thank you for the opportunity!"

Student Showcase Participant, 2021

IMPACT ACROSS YEARS

Students and faculty members attended multiple sessions during the Showcase. After each session, students and faculty members completed a survey about their experience and participated in the focus groups.

At the end of the sessions, participants were asked to rate the session on a scale of 1 (Not useful) to 5 (Highly useful).

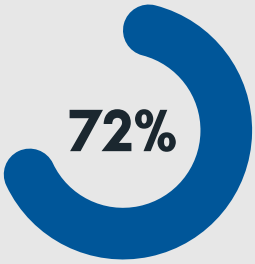
"This experience was really fun for us; it was really rich. It was nice to see different perspectives and understand that we share the same problems when it comes to mentorship and diversity and seeing people that look like you."

Student Showcase Participant, 2021

IMPACT ACROSS YEARS

Most students found the sessions **very or highly useful**.

2021 (N=18)



Design Thinking Framework for Innovation

Business Success for HBCU Students

Career Pathways in Invention, Innovation, Making and Entrepreneurship

2022 (N=33)

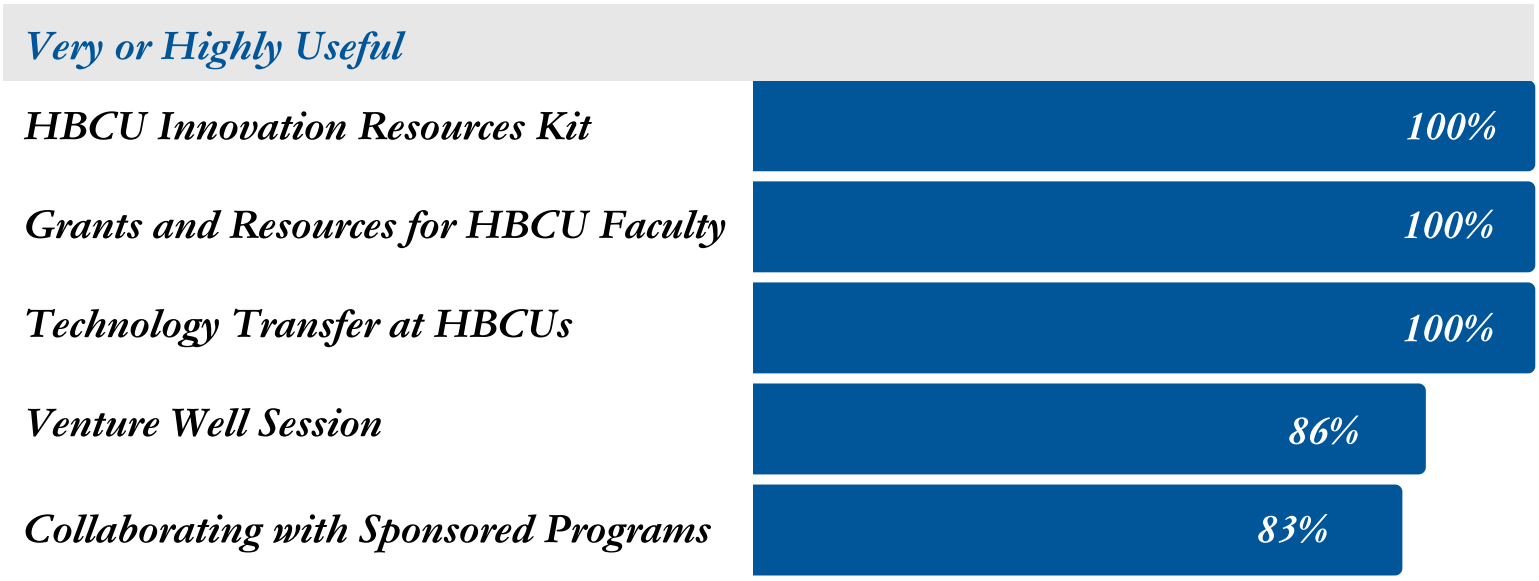
Prepare for Life After College

How to Leverage Social Media

Career Pathways in Invention, Innovation, Making and Entrepreneurship

IMPACT ACROSS YEARS

Eleven faculty members **enjoyed** the sessions offered during the Showcase and **found them useful**.



IMPACT ACROSS YEARS

Students were **inspired and interested in passing the knowledge** that they learned during the sessions to other students.

By passing on the knowledge that I have learned at this workshop and encouraging others to be more innovative.

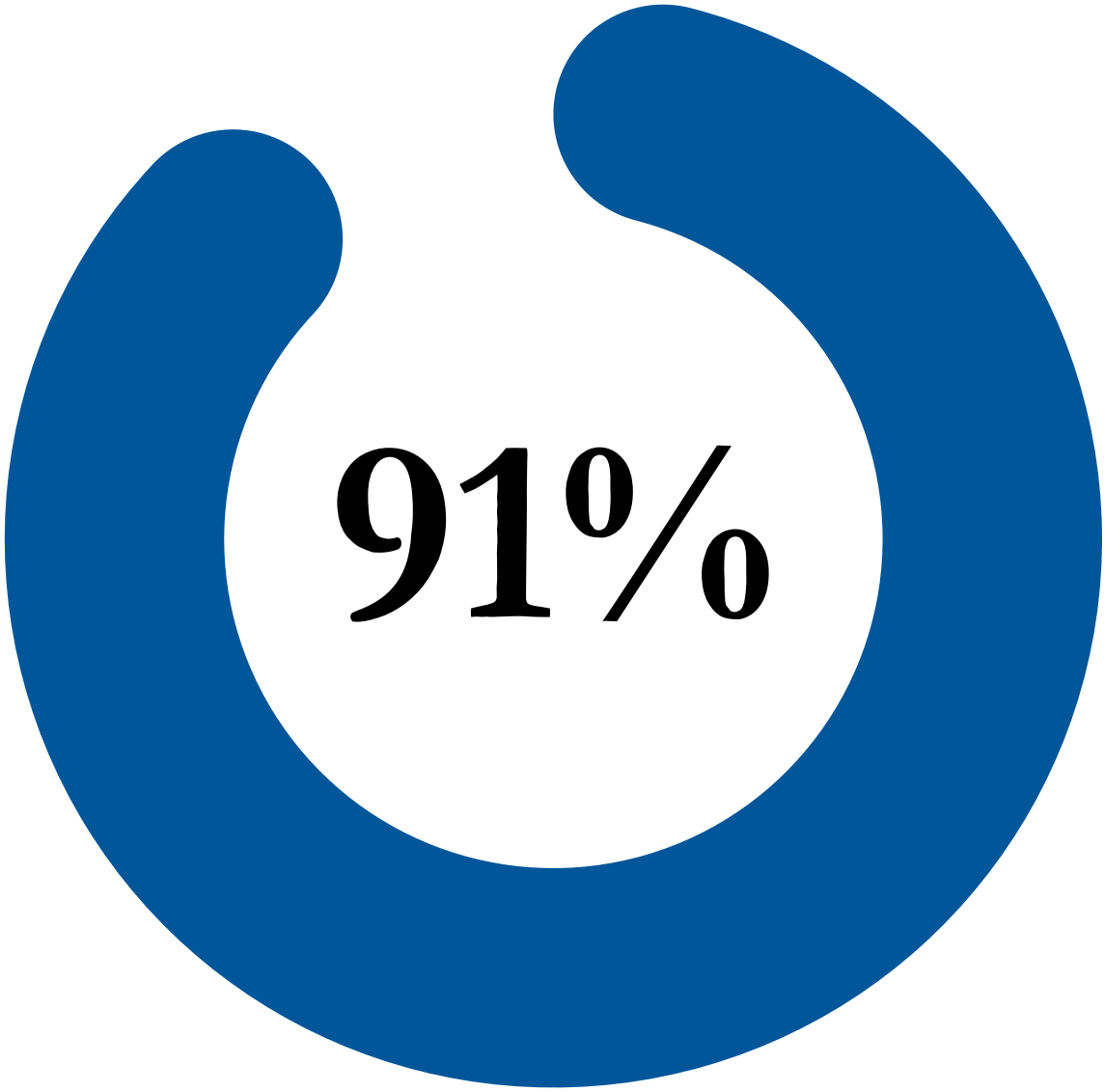
I would take the networking opportunities and nonprofit black organizations back to my campus to support minorities find positions within the STEM field.

This knowledge can be use to inspire and share information with other students to reach opportunities.

Collaborate with local HBCUs with innovative funding for student programs.

IMPACT ACROSS YEARS

In 2022, **91%** of participants **would attend** a similar Showcase in the future.



IMPACT ACROSS YEARS

Members of the Advisory Group indicated that the activities during the showcase allowed them to **better engage, mentor, and apply the grant's purpose** to their role as an advisor during the 2022 year.

of team members indicated that they had the opportunity to learn about their federal grants and research opportunities to 'some' or 'a large' extent

of team members rated 'high' or 'very high' for the format of the advisory meetings

Team members emphasized that the events were well organized and that the sessions aligned with the Showcase's objectives.

All team members rated 'high' or 'very high' on the duration of the meetings, participation at the meetings, feedback received by the teams, topics covered in the advisory meetings, and the opportunity to provide feedback on the teams' pitches.

In 2021,

74%

of Showcase participants indicated that they found the webinars met their expectations very well, or "exceeded" them.

In 2022,

100%

of Showcase participants indicated that they found the webinars met their expectations very well, or "exceeded" them.

"The biggest thing that I've learned is that my role in terms of encouragement really doesn't take that much. It's just, important that I do it."

Faculty Member, 2021

SHOWCASE WINNERS

2022 1st Place: North Carolina A&T University

Team Members:
Rycal Blount
Abdulhakim Sharaf Eddin
Phillip Yeboah Alaina
Brock

Faculty Advisor:
Salam Ibrahim

Project Title: A Novel and Edible Probiotic Delivery Technology

Abstract**:**
The shelf life of probiotics incorporated into food is low, since the probiotics strains die within a short time. However, probiotic strains need to be alive when consumed in order to be beneficial. This prototype is a low-cost material consisting of a mixture of edible food-grade substances that can be used to store live probiotic strains at room temperature over a long period of time. With such a high shelf-life, this probiotic storing prototype could potentially be used to deliver probiotics using many types of food as the vehicle. Importantly this prototype does not change the taste or sensory characteristics of the foods. By incorporating probiotic strains into food products that are already known and accepted by consumers in a way that is affordable, beneficial and health-enhancing probiotics can become more accessible to all.

The audience for this project would food manufacturers seeking to incorporate health enhancing probiotics into their products, and the probiotics industry itself that is searching for new technologies to increase the shelf-life of their products.

SHOWCASE WINNERS

2022 2nd Place: Philander Smith College

Team Members:
Sam Davis Omekara
Jason Muka
Toluwani Oyeleke

Faculty Advisor:
Chuan Lei Zhang

Project Title: EcoHome

Abstract:

An important component of cities and communities is households. Therefore, if we aim to achieve sustainable communities, we must strive to make households sustainable. Our solution is a hybrid between hardware and software. It is a combination of IoT sensors and a software application that aims to improve household management. EcoHome is a platform where a user can manage three facets of their household: Waste, Water and Energy. The IoT sensors collect and analyze data pertaining to these facets and send it to the application. Smarter household management will ultimately lead to more sustainable households, communities and cities. Simply put, EcoHome will bring household management to the fingertips of household owners. The environmental pressure from households is significant. With an increase in the number of households in Little Rock, our project aims to address environmental issues that accompanies such trend.

SHOWCASE WINNERS

2022 23rd Place: Jackson State University

Team Members:
Alexis Brown
Shelia Malone
Jewel Robertson
Brianna McField
Krystina Hart

Faculty Advisor:
Amal Mitra

Project Title: A Step to Combat Food Security in the State of Mississippi

Abstract:
Our project is addressing the food insecurity disparities affecting minority populations in Mississippi. For the past eight years, Mississippi has been the hungriest state in the country. 20% of the population in MS are considered to be food insecure, including 1 in 4 children. Though MS is a vast rural and agricultural area, 90% of the food consumed is imported. Areas in MS that are without access to healthy foods are more likely minority groups - African Americans, Hispanics, and other ethnic groups. The project seeks to (1) engage men and women from the three Public Health Regions (Northern, Central and Southern) of MS in hosting quarterly food markets/food drives with fresh produce. (2) Create an app, website, and social media pages that pinpoints supermarkets and stores with fresh produce closest to the residents throughout the state. (3) Demonstrate community gardens, as pilot projects, in 3 high-risk rural counties, such as Holmes, Issaquena, and Jefferson where one third of the citizens suffer from food insecurity in MS. (4) The app will be used to show the high-risk areas, availability of community gardens, and local grocery stores and supermarkets and stores with fresh produce closest to the residents. (5) Through the project website and social media, people will be educated on health consequences of food insecurity and eating unhealthy food. (6) The project is expected to make a lasting impact on the use of healthy diet among the low-income, high-risk rural populations in Mississippi.

2022 SHOWCASE PARTICIPANTS

Morgan State University

Team Members:
Danalia Irizarry
Ramina Javid
Eazaz Sadeghvaziri

Faculty Advisor
Mansoureh Jeihani

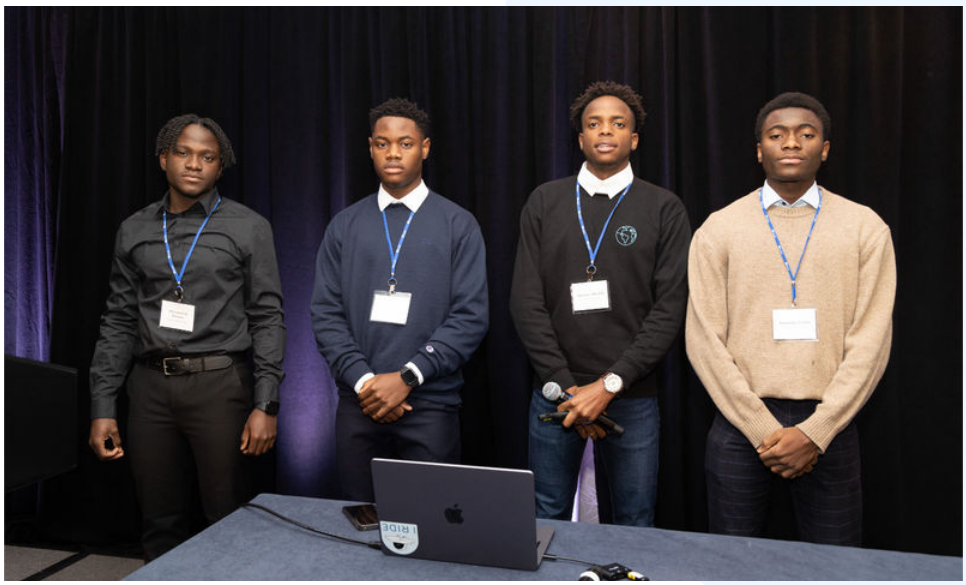
Project Title: A Novel Tool to Increase the Safety of Micromobility Riders

Project Description:
The National Highway Traffic Safety Administration (NHTSA) reports bicycling is increasing in popularity throughout the country. This is not surprising, as bikes offer a convenient and economical means of transportation. Although this mode of transportation is often safe as well as enjoyable, the rate of fatalities due to motor vehicles striking bicyclists has increased in recent years in Maryland. Fundamentally, people will only travel in a way that: gets them where they need to go, feels safe to them, connecting the new streets to the broader street network, follows engineering and design standards that ensure that the streets both are safe and feel safe to drivers. Therefore, the main goal of this project is to create a safe network for micromobility riders using a mobile application.

To reach this goal, the following objectives have been undertaken: (1) Developing a smartphone app for riders to increase their safety, (2) Enabling the app to warn the riders when they approach to an area with a high crash rate, (3) Pilot testing and case study the entire prototype in real-world, and (4) Finding the target market in the U.S. and commercializing it.

2022 SHOWCASE PARTICIPANTS

Philander South College



Team Members:
Francis Oledibe
Augustine Ezirim
Oluwaseyitan Balogun
Adeoluwa Owolabi

Faculty Advisor:
Suzan Anwar

Project Title: Cycle-It

Project Description:

Environmental protection is important because most of our actions directly affect the environment. In our project, we are focused on making the process of recycling e-waste more efficient through software. We plan on developing an application that serves as a dedicated marketplace for e-waste. Users can easily post details of potential e-waste materials (e.g. old mobile phones) and third-party companies like Verizon, T Mobile, or AT&T can purchase these materials with cash or other incentives. The potential impact of this solution would be protecting the ecosystem and humanity as the need for landfills is reduced and environmental pollution caused by the toxins is reduced. In addition, minimizing e-waste helps to conserve resources and reduces the amount of energy we take from the earth.

2022 SHOWCASE PARTICIPANTS

Lincoln University of Missouri

Team Members:
LaVaughn Newman
Allison Bridges
Alexis Hawkes
Dawshaia Herndon
Kamryn Johnson

Faculty Advisor:
Kimberly Cash

Project Title: The Agricultural Literacy Mission

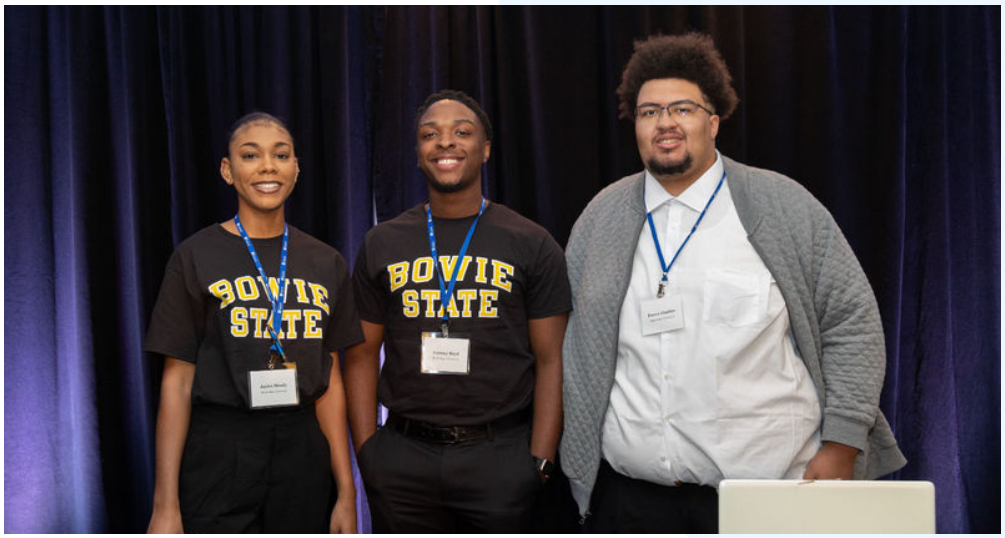
Project Description:
Our prototype has both a virtual and hands-on component to educate youth and their families.

Part 1: a series of 6 virtual learning videos about agriculture. For use in the classroom or at home/homeschooling. Free through Lincoln University Outreach and Extension. This virtual learning series will include: plants, from seed to table; grow vegetables anywhere; animal production, farm to fork and how does food get to the grocery store; the chicken lifecycle, from hatch to dinner; meat and egg production; cereal crops and technology to reduce environmental impacts; the science of nutrition; healthy food = healthy mind and body; agriculture and the environment; water and waste stewardship.

Part 2: Hands-on workshops with youth and their families at four schools near Lincoln University campus, in Jefferson City - East Elementary, Moreau Heights Elementary, Thorpe Gordon Elementary, and South Elementary schools, additionally, Boys and Girls Club of Jefferson City. The workshop will consist of the knowledge and materials for youth to learn planting and growing their own vegetables in container gardening. Container gardening is adaptable to all socio-economic populations because of their ability to grow and provide vegetables in small spaces. There is no need for a garden space or yard. Workshops will be held in school gymnasiums and churches near the school to increase access for all.

2022 SHOWCASE PARTICIPANTS

Bowie State University



Team Members:
Jaylen Moody
Geremy Boyd
Peerce Gladden

Faculty Advisor:
Velma Latson

Project Title: B^2C – Bowie Bringing Change

Project Description:

The purpose of this project is to examine the impact of Persistent Organic Pollutants (POPs) on marine life. Marine life, also known as "Sea life" and/or "Ocean life", means all living things that are found in the sea. Persistent Organic Pollutants (POPs) "Forever Chemicals" are highly toxic synthetic chemicals known to be carcinogenic, which accumulate in the fatty tissue of mammals, birds, and fish. The prototype solution design is a device that will house three different water sensors, capable of being placed in both fresh and salt water, collecting water quality data and will send the data from each sensor via a cloud-based network infrastructure to appropriate stakeholders.The different sensors include Chlorine Sensor, Water Acid Sensor and Turbidity Sensor.

2022 SHOWCASE PARTICIPANTS

Tuskegee University

Team Members:
Brianna Smith
Alice Levert
Courtney Thomas
Tia Daniels

Faculty Advisor:
Richard Whittington

Project Title: Health Disparities Media Production Associates

Project Description:

The purpose of the Health Disparities Associates for Media Production is to provide a creative, easily, and accessible way to deliver information to the community in order to enhance their knowledge of COVID-19, social distancing, and health disparities. In addition, provide educational media (3-D Models, Videos, Informational Apps, Education Modules, and Activity Book) for use on educational platform, academic institutions, and forums to enhance knowledge of health disparities related topics.

2022 SHOWCASE PARTICIPANTS

Alabama A&M University

Team Members:
Da'Quandalon Daniel
Kamisoycuku Arinze
Detavein Walker
Olasubomi Owepo

Faculty Advisor:
Ed Pearson III

Project Title: Technological Advancements for Minorities and Alabama A&M University

Project Description:
Our prototype is a web application to increase the diversity in technical jobs in the Southeastern United States. We will focus on helping minorities obtain jobs in technology, but the application can be accessed by all groups. The target audience is minorities between the ages 14 and 25. The application will incorporate learning strategies for Coding, Cybersecurity, and Data Science. The user will then be able to choose their own category for their desired career path. The prototype will also provide the user with a gamified experience as they make progress. Our solution will help address UN Sustainable Development Goal 4 (Quality Education by providing substantial increase in the number of youth and adults with relevant technical and vocational skills for employment, decent jobs, and entrepreneurship. The prototype will bring awareness to the lack of diversity in technical careers. The minority community only counts for 35% of jobs in the technology field. In addition, African Americans only account for 7% of those jobs. The target audience is minorities between the ages of 14 and 25 in the Southeastern United States.

2022 SHOWCASE PARTICIPANTS

Morgan State University (Graduate Students)

Team Members:
Nashid Khadem Martin
Ndegwa
Md. Muhib Kabir

Faculty Advisor:
Mansoureh Jeihani

Project Title: Voluntary Fresh Food Delivery Service for Vulnerable Populations: A Mobile App-based Community Service

Project Description:

People vulnerable to severe food insecurity are mainly low-income distribution, people with life-limiting disabilities, older populations, and people in food desert areas. Food insecurity, unavailability of nutritious foods, and lack of public transportation are now costing more for health systems. Our Mobile app will serve the Vulnerable population (older population, physically disabled population, people with no vehicles) for food delivery purposes. It will be primarily a mobile phone-based application; however, it will consider the population with no device with volunteer community center involvements.

ACKNOWLEDGEMENT

We are grateful for this support by the NSF to expand and extend this critically important work that we started in 2018 to advance innovation capacity at HBCUs. The National Science Foundation (NSF) Division of Human Resource Development (HRD), within the Directorate for Education and Human Resources (EHR), serves as a focal point for NSF's agency-wide commitment to enhancing the quality and excellence of science, technology, engineering, and mathematics (STEM) education and research through broadening participation by underrepresented groups and institutions.

The mission of EHR is to achieve excellence in U.S. science, technology, engineering and mathematics (STEM) education at all levels and in all settings (both formal and informal) in order to support the development of a diverse and well-prepared workforce of scientists, technicians, engineers, mathematicians and educators and a well-informed citizenry that have access to the ideas and tools of science and engineering. The purpose of these activities is to enhance the quality of life of all citizens and the health, prosperity, welfare and security of the nation.

The Division's programs aim to increase the participation and advancement of underrepresented minorities and minority-serving institutions, women and girls, and persons with disabilities at every level of the science and engineering enterprise.

The HBCU Making and Innovation initiative is supported by the HBCU-UP program. HBCU-UP provides awards to develop, implement, and study innovative models and approaches for making dramatic improvements in the preparation and success of underrepresented minority students so that they may participate in STEM graduate programs and the workforce. Support is available for Implementation Projects (including Achieving Competitive Excellence), Broadening Participation Research Projects, Targeted Infusion Projects, Planning Grants, Research Initiation Awards, and other funding opportunities.

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The project was externally evaluated by MN Associates, Inc. (MNA), to formatively assess the extent to which the program was planned and implemented and summatively to measure to what extent the program achieved its outputs and outcomes through its activities as well as its broader impact on the communities it serves and beyond.

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MNA is a minority, small, woman-owned K-20 research and evaluation firm founded in 2004. Headed by Kavita Mittapalli, Ph.D. who has over two decades of experience conducting STEM and social science research and evaluation in the US and abroad, she was supported by her staff of three—Nina de las Alas (M.A.) (Senior Research Associate), Debbie Igunbor, M.S. (Associate), and Megan J Hill Sundy (M.S.) (Associate). Kavita has a B.S. in Agricultural Sciences (India), an M.A. in Applied Sociology, and a Ph.D. in Research Design and Methodology (Education) (US).

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Since its formation, MNA has completed 500 technical reports and has clients comprising school districts, colleges, universities, state education agencies, and not-for-profit organizations in 32 states, the District of Columbia, and the US Virgin Islands. Since 2009, MNA has completed evaluations of several NSF-funded grants in the following tracks (66 to date in 22 programs): AISL, ATE, CAREER, CREST, ECR-CORE, ERC, IUSE, INCLUDES-ALLIANCE, HSI-STEM, PREM, NRT, S-STEM, INCLUDES/ DDLP, Conference grants (Engineering -ASSIST), ITEST, HBCU-UP (Planning, TIP, and Implementation), Noyce, and MSP/STEM C.

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