

BUILDING UNIQUE
INVENTIONS TO
LAUNCH DISCOVERIES,
ENGAGEMENT AND
REASONING IN STEM

TUSKEGEE BUILDERS ACADEMY

JUNE 16, 2019

THE 2019-2020 BUILDERS ACADEMY

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The Tuskegee BUILDERS Academy is back in session! This year, we are hosting a total of 45 students from Central (Phenix City), Booker T. Washington and Notasulga (Macon County) and Lee (Montgomery) high schools. Our students are receiving

support from 6 teachers, 9 peer mentors, and 3 near-peer mentors. Over the three-week summer Academy, they will be developing prototypes that solve a

community problem and which challenges their skills in STEM.



UPDATE ON OUR 2018-2019 BUILDERS

Students who participated in the 2018-2019 BUILDERS Academy presented their prototypes at the Tuskegee University Kellogg Conference Center in April. All teams did an exceptional job of describing their creative process, the challenges they encountered, and how much they learned through the year-long experience. Six of these students have returned this year as peer mentors for the new teams!



The BUILDERS Academy is supported by Awards from the National Science Foundation to Tuskegee University (AL) and Oakland University (MI). These two institutions have partnered with Macon County Schools, Phenix City Schools, and Montgomery City Schools to provide their students with rich experiences in STEM through a combined 3-week summer program and continued activities through the Academic year. Teachers and peer mentors from the participating schools provide support to their students.

The BUILDERS



Support and Mentoring

Program Leadership



Dr. Mohammed Qazi
Program Executive Director



Dr. Martha Escobar
Program Co-Director
Research Team Lead

Program Staff

Mohamed Abdalla
Alicia Curry
Michael Curry
Shaik Zainuddin
Program Faculty
Demetrius Finley, M.S.
Graduate Near-Peer Mentor
Jonathan Mitchell
Undergraduate Near-Peer Mentor
Janelle Greer
Program Manager

Mark Olson
Program Faculty

Zebulon K. Bell, M.S.
Graduate Research Assistant
Graduate Near-Peer Mentor

Participants



Carla Jones Stallworth
Teacher Mentor
Jeffrey Smith
Myaeshia Smith
Peer Mentors
10 BUILDERS Scholars



Cicely Abron
Clay Ninas
Patronya Sanks
Teacher Mentors
Lathen Oliver
Head Peer Mentor
Ebony Nixon
Veronica Sanders
Kendall Williams
Peer Mentors
12 BUILDERS Scholars



Maudelle Pou
Teacher Mentor
Destiny Brown
Peer Mentor
8 BUILDERS Scholars



JaToria W. Floyd
Teacher Mentor
JaMyia McNeil
Traverus Thomas
Peer Mentors
15 BUILDERS Scholars

Week 1 at the BUILDERS Academy...



Warm-up activity



The first activity our students encounter (and one of their favorites) is to create a sound attenuating box out of common materials (cardboard, foam, etc.). The box should completely attenuate the sound of a cell phone. Teachers, peer mentors, and near-peer mentors worked as a team and (friendly) competition with students ensued.



(Left to right) Mr. Ninas, Lathan Oliver, Traverus Thomas, Demetrius Finley, Mrs. Jones-Stallworth, and Ms. Pou were part of the teachers and mentors team, and here they are working to revise their sound-attenuating box after a team of students presented a box with better sound attenuation than the mentors team. At the end, students took the lead but teachers and mentors were a close second.

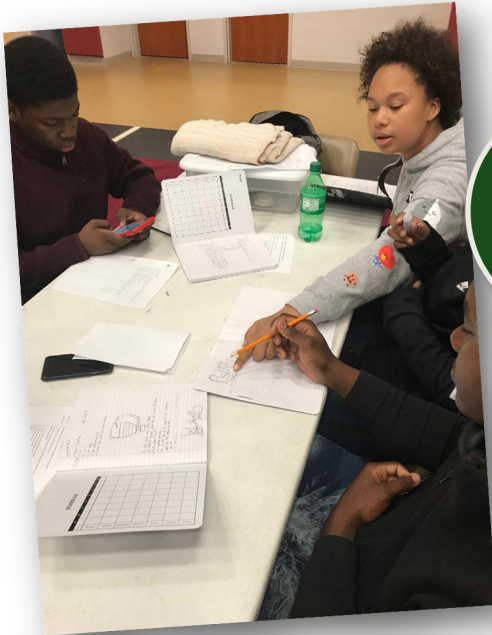
Problems we will be researching this year:

1. Create a device that can help people monitor a health variable
2. Use an alternative source of energy to power a device
3. Create a portable shelter for homeless individuals
4. Detect toxins or pollutants
5. Develop a pet-tracking system
6. Create a portable water purification system

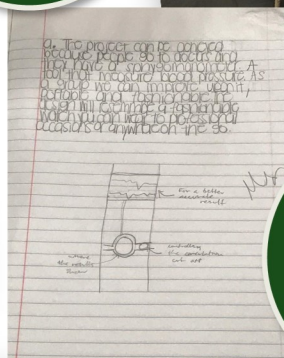
What will you build?

What to
BUILD?

The first task of our Academy is **problem selection**. Teachers decide which problems would be consistent with their students' learning needs. Students select the problems that most interest them, and teachers create teams that research their chosen problem



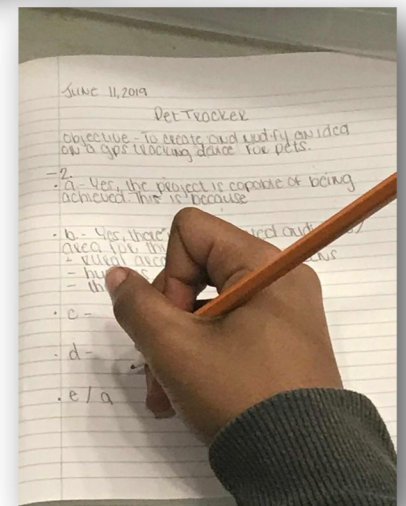
BUILDING
begins with
research



Technology is
used as a
tool to solve
problems



Teams have selected their problems and begun researching them. The first step in the process will be to create a small-scale model of their device to then do a feasibility analysis. All teams have created lists of materials they need, are keeping a budget, learning about **how to use technology** to solve their problem, and are **recording their successes and failures** as part of documenting their creative process.



Teacher Highlight



CLAY NINAS

Mr. Ninas is a native of Phenix City, AL. He has a B.S. in Chemistry from Auburn University, and a M.Ed. in Secondary Science Education from UAB. Mr. Ninas has served as Director of

the Jefferson County Engineering Academy in Birmingham, AL for the previous three years. For the past two years, he has helped launch an engineering program at **Central High School**. Mr. Ninas is a certified PLTW Engineering instructor, and has experience teaching AP Physics 1 and 2, and Honors Chemistry. Mr. Ninas has also mentored robotics teams in both VEX and BEST competitions for multiple years. **Mr. Ninas enjoys working with students in hands-on projects, and as well as seeing how excited they get about the subjects that are not part of the standard school curriculum.**



PATRONYA SANKS



Ms. Sanks is a native of Phenix City, AL. She graduated from Central High School, Chattahoochee Valley Community College, The University of Alabama, and The University of Phoenix. She has an A.S. in Pre-Nursing and a B.S. in Health Services Administration. She served as a Health Services Administrator for the Alabama Department of Public Health (Workforce Development). She currently serves as a Biology and Physical Science Special Educator at **Central High School**. Ms. Sanks enjoys reading and traveling with her son (Jordan) and daughter (Kennedy), learning new things and spending time with family. **She believes that the BUILDERS Academy will enhance the STEM Area at Central High School and broaden the minds of their future leaders.**



Each year, teachers from the participating schools are recruited to receive training on guiding students in a makerspace, assist students with developing the first version of their prototypes during the Summer Academy, and provide mentoring to their school's teams through the Academic year. Teachers receive continuous support from the Academy Team, including the Program Directors, affiliated faculty, a team of peer mentors, and a

team of near-peer mentors. The teachers' role is essential: They provide continuity to the mentoring experience and ensure that our teams meet their prototype goals. They also provide students with informal teaching opportunities and serve as role models through the school year. This week, we highlight three of our teachers, their diverse experience, and the incredible job they are doing as mentors to our students.

CARLA JONES-STALLWORTH



Mrs. Jones-Stallworth is a native of Thomasville, AL. She received a B.S. from the University of Alabama at Birmingham's Dental Hygiene program, and a Masters of Divinity from Samford University. After working as a dental hygienist, she became a didactic instructor at Fortis Institute (Birmingham, AL), and an adjunct at multiple UAB Dental Outreach initiatives. She decided to continue her career as a Science teacher at **Lee High School**. She enjoys traveling with her husband, Dan, and their son, Daniel. She hopes the BUILDERS program will spark the brain of future leaders from Lee High School. **Mrs. Jones-Stallworth was a teacher mentor in the 2018-2019 BUILDERS Academy and will serve not only as a mentor to our participating students, but also our incoming teachers.**



Meet our Peer Mentors

What is a peer mentor?

Peer mentors are alumni of the Academy who serve as guides and provide assistance to this year's BUILDERS. Our peer mentors not only assist with all aspects of research, design, and construction, but also provide support for group functioning, act as cheerleaders when ideas do not go well, and keep the upbeat nature of our camp going on a daily basis.

Who can become a peer mentor?

Peer mentor positions are competitive positions for which alumni of the Academy can apply each year. Peer mentors are selected based on academic excellence, continued participation in Academy activities through the academic year, a statement explaining the reasons why they would like to become peer mentors, and endorsement by a STEM teacher at their school. Academy alumni interested in becoming peer mentors can find more information in the program website,

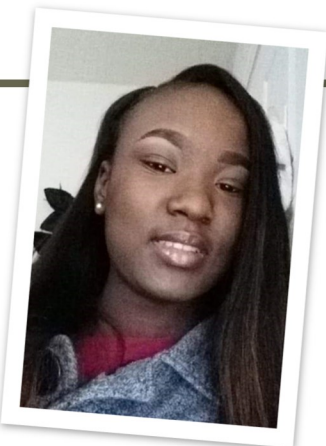
Lathen Oliver

Lathen is a rising Senior at Central High School. After graduation, he plans to become a fabrication welder. His hobbies include motorcycle racing and scuba diving, and he enjoys working with computers. Lathen is a **returning peer mentor**, and this year is serving as the **Head Peer Mentor**, helping coordinate the activities of all other peer mentors. Lathen is one of our "tech" mentors, and frequently assist students (and teachers) with their technology needs. Lathen is also keen to discuss how careers in STEM can be pursued even outside the traditional college route. When asked about what he learned as a participant in BUILDERS, Lathen said that the Academy "opened my eyes to some of the struggles engineers go through on a daily basis, such as the struggle for materials and having to rethink ideas. [It] has also allowed me to see the more social aspect of engineering and how engineers have to rely on others for not only inspiration but also critiquing." When asked why he wanted to continue as a peer mentor, Lathen said that, "the program has offered me countless opportunities that I would not have been able to obtain without it."



Myaeshia Smith

Myaeshia is a rising Junior at Lee High School. She is currently deciding on whether to pursue a career in criminal justice or business. In her own words, "my first experience with Builders Academy was absolutely amazing on brainstorming new ideas and talking with others on how to get the product to work and function on putting it together. I've come back this year to be a peer mentor because to tell students about the things I've experienced, help them understand that teamwork is the key, and that everyone has amazing ideas that can



encourage the whole team to work harder and believe in getting the process done."

"Emerging leaders need mentors to guide them, but they also need a network of peers to reassure them that they are not on the path alone."

*—Alice Nelson, President and CEO,
Vital Voices*

Peer Mentors Highlight

Some of our peer mentors have just finished their senior year and decided to return to the BUILDERS Academy to “give back” before moving on to college. They personify the goals of the BUILDERS program, as they continue their education in a STEM field, have achieved great honors due to their academic excellence, developed community service awareness, and serve as an example to our current BUILDERS Academy participants. Each issue of our summer newsletter will highlight one or two of our peer mentors as they move on to the next stage of their professional development.

Ebony Nixon

Ebony graduated from Central High School (Phenix City) in the spring of 2019. She was a participant in the first year of the BUILDERS Academy (2017-2018), and was one of our first applicants for the position of peer mentor this year. One of the most powerful statements in Ebony's application was that “Through this program, I learned to love S.T.E.M and discovered my ability to make things. I would love to open the eyes of others the same way you've opened mine.” We asked Ebony to discuss what is happening in her immediate future, and tell us her story in her own

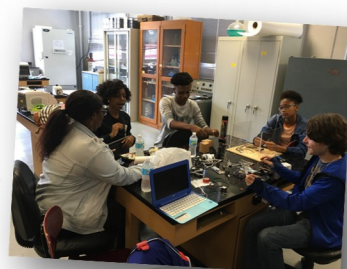
“When I was first told about Tuskegee's Builders Academy, I wasn't intrigued whatsoever, but the moment I heard that a stipend would be involved, I was all in. I decided to attend the program not really knowing what I'd be getting myself into. Although

I always seemed to be confused about what I wanted to be in life, I always knew my career path would involve hands-on tasks. Due to my personality, I could never take on a job where I would only be sitting at a desk taking phone calls all day; that would bore me to death. When I arrived at the Academy, it was still fresh and new and the professors were still trying to work out the kinks, however, I was able to learn how to work under pressure and with people who are completely different from me. I realized how much I actually loved creating things, and I started to think to myself maybe science and engineering aren't as bad as I made them out to be. As soon as the program was finished, I started researching tons of science and engineering majors that I believed would suit me. Long story short, participating in the Academy led me into a direction I would've never put myself into. I always knew I wanted to help people, but never knew exactly how. Now, I am an enrolled freshman at the University of Alabama, Birmingham. I will be attending next

year with an academic scholarship, and majoring in Biomedical Science. The Tuskegee BUILDERS Academy helped me answer one of the most important questions of my life.”

“When I arrived at the Academy, it was still fresh and new and the professors were still trying to work out the kinks”

Reality check: Implementing a program such as BUILDERS involves a lot of planning and a certain dose of trial and error. Our participants (teachers and students) have been instrumental in resolving the implementation issues that have arisen.



Kendall Williams

Kendall graduated from Central High School (Phenix City) in the spring of 2019. He was a participant in the first year of the BUILDERS Academy (2017–2018). He was selected as a peer mentor because of his extraordinary history of leadership and service, which is only paralleled by his academic success. After considering scholarship offers from The Georgia Institute of Technology, Howard University, and Tuskegee University (among others), Kendall will be attending Bates College (ME) on a **full-ride scholarship** to pursue a BS in Digital and Computational Studies, with a minor in Sociology, and a possible double-major in engineering. Kendall's application statement focused on his service orientation and his view that young people are agents of change. We are extremely fortunate that Kendall decided to return to BUILDERS rather than accept one of several internships he was offered this summer. Here are some of his views on STEM, what BUILDERS has meant for him, and what he expects to accomplish in the future.

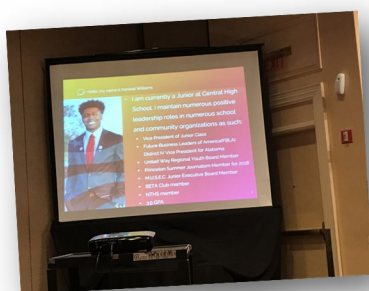


"While embarking upon the strenuous adventure of High School, I found solace and communion in my studies, notably STEM-related courses. There was always the "next step" in a lab, the "next calculation" for a math problem, or the "next frontier" for man to entrust upon in the future of math and science. Unlike most traditional classes, science and math classes can be compared to an open book. This book is already filled with the knowledge, research, and discoveries of those before us like Isaac Newton, Benjamin Banneker, and Hedy Lamarr; but it is up to the next generation to fill the empty pages.

Today's issues are inherently interdisciplinary and whether we solve them in ten years or 100 the solution begins with us. Computer Science and Engineering essentially "build" when there is no foundation, "destroy" when the foundation becomes corruptible, and "reestablish" when there is a need to restore. My chosen major, Digital and Computational Studies, will focus not only on STEM and Computation but also on how the humanities connect to the data around us. I chose this major because I want to help write the next chapter in the future of technology and human connections in the world now and to come. I aspire to create a platform that reinvents interdisciplinary focused learning in Data Science, Public Policy, and Tech. I aspire to create a platform that substitutes the needs of poverty-stricken people in healthcare and law synced with financial technology with my own FinTech. With this FinTech, I will create interdisciplinary focused learning in Data Science, Public Policy, and Tech. While in college, I hope my experience will be more than a mere milestone accomplished for my future but a chance for me to grow and develop myself, community, and world.



*As a participant in the BUILDERS program I gained knowledge in the foundations of my major but also explored practical application in my future work. Without the BUILDERS program, I'm sure, the journey towards a STEM-related major and potential career would have taken longer to embark upon. Benjamin Franklin once said, "The great aim and end of all Learning is service to society." For what is life if you cannot give back to others what others gave to you? The true purpose of schooling and vocational pursuits is to apply what you have learned through experience and scholarship and use it to propel mankind to the next frontier. **Educating yourself means purposely achieving your goals in hope to give back to society.** Franklin understood that education and research did not exist in a vacuum. If we want to attain individual success, we must first extend open arms to our community through civil service. I chose to become a Peer Mentor because of my commitment to giving back and because I understand that the BUILDERS program (and programs like it) are vital in the progress of promoting greater equity and inclusion in STEM."*



JaMyia McNeil



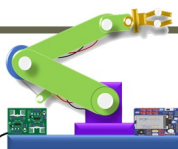
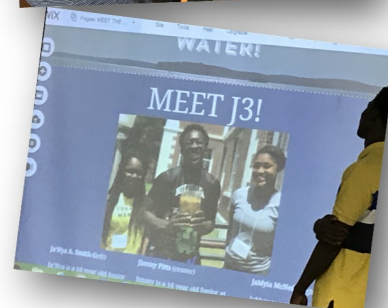
JaMyia graduated from Booker T. Washington High School (Tuskegee) in the Spring of 2019. She was a participant in the first year of the BUILDERS Academy (2017-2018), and was selected as a peer mentor this year because of her extraordinary leadership capacity. In her application statement, JaMyia described how her participation in the Academy had fostered her interest in learning new things through the process of research. She viewed returning to the BUILDERS Academy as a peer mentor as an opportunity to learn alongside others and help others discover in the way she did. Here is how she described her journey.

"I am a native of Tuskegee, Alabama, the daughter of Johnetta and Nathaniel McNeil. I am a proud product of the Macon County School System, and will be graduating from Booker T. Washington High School on May 2019.

Throughout high school, I became involved in several programs and activities. I am the captain of the JROTC Academic Team, Battalion Commander, Miss JROTC for 2018-2019 school year, Vice-president of the Student Government Association, Varsity cheerleader, and member of National Honor Society. As a senior, I was a dual-enrollment student at Tuskegee University and earned over 20 college credits. I did all this while also employed part time at Pizza Hut.

The BUILDERS Program helped me in many ways. It helped me think outside of my normal mindset and experience new things. I am very grateful for all the connections and friends I made in the program, I am sure I will continue to use the skills I learned in the future.

I enjoy reading, writing, exercising, and spending time with my family. My hard work has paid off; I will attend Tuskegee University with the merit scholarship, alongside the Army ROTC scholarship. I plan to major in Occupational Therapy."



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TUSKEGEE BUILDERS ACADEMY



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How can I learn more about the BUILDERS program?



www.TuskegeeBuildersAcademy@gmail.com



www.TuskegeeBuildersAcademy.org



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