



Feature

NASA Provides Golden Opportunity to Greene Scholars Students

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"Do you think you're going to crash? Let's see how it plays out," said Christina Thompson, a volunteer parent for the Greene Scholars Program. Thompson was helping students create Air Traffic Control flight simulations recently at the Exploration Encounter Center at NASA's Ames Research Center, Moffett Field, Calif.

NASA has an education goal to inspire and engage students in science, technology, engineering and math (STEM) content. As part of a never-ending pursuit of this goal, NASA offers education programs throughout the summer to sustain elementary students' interest in STEM. The Greene Scholars Program (GSP) has a similar goal. Focused on developing the academic gifts of African American students, its primary goal is to increase the success rates of their students in STEM course work and the number of students choosing STEM careers. For the first time, the organizations collaborated and NASA hosted GSP at its newly renovated learning facility this summer.

"We are very pleased to be here at Ames. Our program looks for hands-on math, science and technology experiences for our students," said Gloria Whitaker-Daniels, director of Greene Scholars Program and a retired program engineering manager. "Our program is very successful. All of our students who complete this program go to college and 28 percent pursue STEM studies."

The GSP is closing the achievement gap: Its academic achievement results show that all students who have completed the program pass the California High School Exit Exam (CAHSEE). They also meet the University of California's 'A-G' requirements for college admission, and graduate from high school. These achievements are due in part to the families' participation in the program.

According to Whitaker-Daniels, after students submit an application to attend GSP, their parents are interviewed to assess their technical expertise, including their organizational or hospitality skills. Once a skill is identified, the parent serves on one of 13 committees, and also receives guidance in best practices and strategies for engaging and motivating their children. On average, parents volunteer 50 hours per year, or about four hours per month. Parents are expected to perform specific roles in the organization until their scholar graduates from high school.

"We know our children are capable given the right resources," said Whitaker-Daniels. "I have three children who have gone through the program; one daughter graduated with a degree in neuroscience, my second daughter is studying biomedical engineering, and my son is a senior in high school."

In addition to the academic requirements, the program seeks opportunities that provide hands-on experiences, strengthens problem-solving skills, builds self-esteem and stimulates intellectual curiosity. NASA's commitment to education, with its dedicated STEM education resource facilities, provides a golden opportunity for the program to fulfill its charter.

Throughout the week, students explored the various activities at NASA Ames Exploration Encounter Center, a supersonic wind tunnel that was converted into an education facility. Its many hand-on activities make math and science



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NASA hosted the Greene Scholar Program for the first time this summer at the Exploration Encounter Center, a supersonic wind tunnel converted into a learning facility.

Image credit: NASA Ames Research Center / Eric James



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Students were taught the role of mission control during space flight.

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Students were taught that astronauts exercise in space to keep fit mentally and physically.

Image credit: NASA Ames Research Center / Eric James

curriculum come alive for students who experience science in action and see how it relates to their lives.

Within the education facility, STEM subjects are divided into four hands-on stations: physics, flight, space and Earth. Each station has three physical activities. For example, the physics station demonstrates physics concepts, one of which is the gyro chair, where students learn how a gyroscope works.

"I liked the gyro chair the best. It's cool how you hold a wheel, and it makes the chair spin in the same direction. The force of the wheel makes the chair move," said Yazmeen Norwood, a student at John Sinnott Elementary School, Milpitas, Calif.

The flight station also teaches various science and math fundamentals. The principles of flight are illustrated using a small, mock-up wind tunnel, and the computer program, Air Traffic Control Smart Skies, allows students to become air traffic controllers by creating their own scenarios, based on mathematic principles, and watching the simulation play out. Students are taught the four forces of an airplane: weight, lift, thrust and drag.

"I heard people talk about air traffic control, but I had no idea what that meant. I thought a pilot just got into a plane and flew off. Playing the air traffic control simulation, put things in perspective. They tell pilots when they can take off and land and how high to fly," said Norwood. She was one of many students who used math to solving problems.

"Now, try to remember what an air traffic controller does," said Thompson. "I can guarantee you would lose your job (as an air traffic controller) using that nautical speed. Look at how many planes are in the air. What is going to happen?"

The Greene Scholars Program will celebrate its 10th anniversary in January. It was founded in 2002 by Debra Watkins, former president of the Santa Clara County Alliance of Black Educators, to help youth of African ancestry successfully complete higher STEM education and serve as positive role models and contributors to their communities. The program is named after Frank S. Greene Jr., a pioneering scientist who was one of the Bay Area's first African American venture capitalists. As a long-term K-12 initiative, the Greene Scholars Program is designed to provide 21st century leaders with strong science/mathematics backgrounds coupled with innovation, entrepreneurial/leadership and problem solving skills.

"NASA Ames continues to support the nation's education programs and educators by providing high quality programs, resources and facilities that are helping build the workforce of tomorrow," said James Busby, acting education director at Ames.

For more information about the Greene Scholars Program, see:

<http://www.greenescholars.org/>

For more information about Ames Exploration Encounter, see:

<http://encounter.arc.nasa.gov/aero.html>

For more information about NASA's Ames, see:

<http://www.nasa.gov/centers/ames/>

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