

Boys, fathers and mentors work together for STEM engagement

March 26 2018, by Jeannie Kever



Researchers and students from the University of Houston are working with fourth- and fifth-grade boys to promote interest in STEM. Credit: University of Houston

Both the medium and the message are STEM—encouraging fourth and fifth-grade African-American and Latino boys to embrace the cool factor of science, technology, engineering and mathematics through hands-on engineering activities with their fathers and other mentors from the University of Houston.

African-American and Latino students are less likely than their white and Asian counterparts to complete a four-year degree in a STEM field, at a time when demand for workers with those skills is growing. A group of researchers from the University of Houston will use a three-year, \$1 million grant from the National Science Foundation to expand a project intended to spur interest in the field among younger students.

Program co-founder Jerrod Henderson said he decided to target boys because other programs were available for girls. That was a few years ago, when he was at the University of Illinois at Urbana-Champaign.

Flash forward two years, and Henderson and project co-founder Ricky Greer were both at UH. Henderson, who serves as principal investigator for the NSF grant, is instructional assistant professor in the Cullen College of Engineering and director of PROMES, or Program for Mastery of Engineering Studies. Greer is a graduate student in the UH College of Education.

They launched the project, known as St. Elmo Brady Academy - St. Elmo Brady was the first African-American man to earn a Ph.D. in chemistry - at Hartsfield Elementary School and the UH Charter School.

Henderson said elementary school students are the perfect age to plant the STEM seed.

"By then students have an idea of whether or not they like math and science," he said. "We want to change that decision, to say math and

science are cool, and there are people who look like you who do math and science."

Undergraduate engineering students, along with those from teachHouston, a UH program to train students to teach math and science, meet with the younger students twice a week. Fathers or other male family members join the group for an engineering project on Saturday mornings. Engineering students serve as mentors for boys whose relatives can't attend.

"It is a platform for family development and family learning, as well as exposure to STEM," Greer said.

In addition to Henderson and Greer, faculty involved with the project include Mariam Manuel, co-principal investigator on the NSF grant and a science master teacher with teachHOUSTON, and Virginia Snodgrass Rangel, assistant professor in the College of Education.

Snodgrass Rangel will evaluate the [student](#)-mentor relationship, seeking to determine if having a mentor, especially one who is African-American or Latino, can change younger students' ideas about a future in science, engineering or another technical field.

She also will measure the impact on the mentors themselves. Engineering programs nationally struggle to retain students, and she is curious to see if the opportunity to work with younger students can change that.

Participating students' standardized test scores in science and math will be tracked and compared with those of students at schools that did not participate in the program.

UH students enrolled in teachHouston, a program based in the UH

College of Natural Sciences and Mathematics to train high school math and science teachers, will get hands on experience with engineering-focused projects, Manuel said.

"This helps us really emphasize the 'e' in STEM," she said. "Our students, even if they are teaching math or [science](#), will really benefit from experiencing teaching the engineering design cycle."

Data to determine how well the program works won't be known for several years, but Snodgrass Rangel is hopeful.

"We focus a lot on getting women into STEM, which is extremely valuable," she said. "We don't have the same focus on boys of color. Most programs offer academic support. I think the potential of this emphasis on mentors is really powerful."

Provided by University of Houston

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