
NASA MUREP Educator Institutes Provide a Strong “Multiplier Effect” in STEM Education

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The President's Council of Advisors on Science and Technology estimates that the U.S. will need approximately one million more STEM professionals within the next decade than are currently being produced by our nation's colleges and universities.

The MUREP Educator Institutes (MEIs) for preservice teachers and faculty sponsors from minority-serving institutions (MSIs) contribute to improving K-12 STEM education by directly influencing the number of students who are interested in and have the sufficient academic skills to major in a STEM field, thereby strengthening the STEM pipeline from which NASA draws its' scientists and engineers.

If NASA is to have the future scientists and engineers needed to operationalize its' space missions, all educators in the K-20 pipeline, from elementary schools through graduate schools, must do their part to ignite students' interest in science and help students develop the strong academic skills needed to pursue a future in STEM. Further, it will be necessary for educators to be successful with student populations who have traditionally been under-represented in STEM fields. A first step toward achieving this ambitious goal is for K-12 preservice teachers, and the educators who prepare them, to receive high-quality STEM professional development and resources to better equip these prospective teachers with the background skills and materials needed to propel students toward a future in STEM.

Recognizing that the future STEM workforce is only as strong as the education pipeline, NASA has devoted substantial resources to the delivery of professional development for educators and the development of NASA classroom activities and resources. NASA utilizes the MUREP Educator Institutes (MEIs) to make NASA educational resources fully available to educators prepared by the nation's Minority Serving Institutions (MSIs). The MEI experience contributes to improving K-12 STEM education which directly influences the number of students who are prepared to pursue a major in a STEM field and subsequently enter the STEM workforce. Recognizing this reality, NASA in 2015 entered a cooperative agreement the LBJ Institute for STEM Education and Research at Texas State University to facilitate MUREP Educator Institutes at the ten NASA centers each year for three years beginning in 2016.

Twenty-three MUREP Educator institutes were conducted in summer 2016 and 2017 at the ten NASA centers, and served 836 participants from a total of 124 MSIs including 690 preservice teachers and 146 faculty sponsors who teach in their university's teacher preparation programs. All participants spent five days on-

“The astronauts who will be chosen for the Mars mission are just about 6 years old right now. My responsibility as a future educator will be to incorporate all of the wonders of NASA into my future classrooms to get my students excited about space. The people who are going to be sent on a Mars mission may very well be sitting right in front of me one day. For that reason, NASA wants us to be prepared.” Ciaj Strode, Xavier University of Louisiana, Marshall MEI

“One of the most amazing things during the MEI was the people that worked for NASA telling us that we were the educators teaching the future scientists and engineers who will be able to take over their research.” Matthew May, Preservice Teacher, North Carolina Wesleyan College, Langley MEI

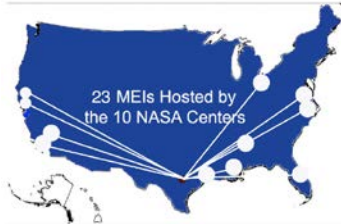
site at a NASA center where they participated in NASA classroom activities and were provided with instructional resources, interacted with NASA subject matter experts, and received behind-the-scenes tours of NASA facilities and laboratories. Also, participants completed an additional 16 hours of online professional development prior to and following the week spent on-site. Collectively, this face-to-face and online professional development enables educators to better prepare students to pursue STEM careers. MEI evaluations were overwhelmingly positive and indicated that participants are fully committed to integrating NASA resources into their teaching.

The MEIs for preservice teachers and faculty sponsors from MSIs contribute to improving K-12 STEM education by directly influencing the number of students who are interested in and have the sufficient academic skills to major in a STEM field, thereby strengthening the STEM pipeline from which NASA draws its scientists and engineers. MEIs generate both a short-term and a long term “multiplier effect.” MEIs have an immediate effect on MSIs when participating faculty members infuse NASA resources into their teacher preparation programs. MEIs generate a long-term “multiplier effect” when participants integrate NASA activities into their K-12 classrooms for years to come. In addition, both preservice and faculty participants indicate that, because of the rich MEI experience, they are eager to participate in additional NASA-sponsored professional development which will further fortify the STEM pipeline providing future NASA scientists and engineers.

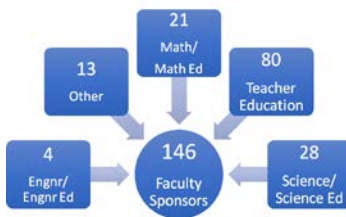
2016 & 2017 MEI Participants



**Texas State University Facilitated
23 MEIs in 2016 & 2017**



2016 & 2017 MEI Participants



For more information about NASA EPDC visit txstate-epdc.net

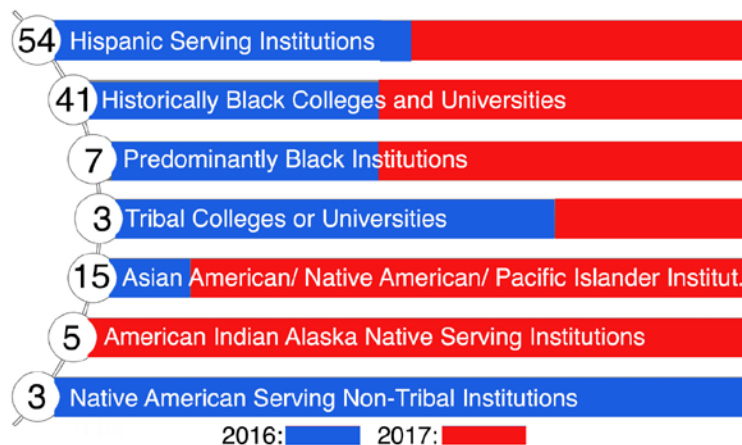
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Following her participation in the Stennis MEI, Grambling Faculty Sponsor, **Dr. Loretta Jaggars**, immediately utilized a NASA rocketry lesson on Newton's Law in the summer graduate course she was teaching to demonstrate differentiation strategies that could be used with different types of learners. One of her students, senior **Ginger Abney**, reports that her MEI experience has inspired her to implement NASA activities in her work with elementary students. "I loved the NASA Pocket Solar System lesson and came back and implemented the planet 'foldables' activity with my students. Next semester in my student teaching, I plan to have my class video chat with an astronaut."



124 MSIs Sent Teams to the 2016 & 2017 MEIs



Thirteen MEIs are planned for summer 2018. The dividends from MEI will continue to pay off for many years to come, as pre-service teachers enter their careers and begin sharing NASA activities with their students and faculty sponsors integrate NASA resources into their teacher preparation programs.

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