

IAF SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)
On Track - Undergraduate Space Education (3)

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PREPARING THE NEXT GENERATION STEM WORKFORCE THROUGH AUTHENTIC NASA
EXPERIENCES

Abstract

In a recent report by the Committee on STEM Education of the National Science and Technology Council, three goals were put forth for American STEM Education. One of the goals, Prepare the STEM Workforce for the Future calls for “creating authentic learning experiences that encourage and prepare learners to pursue STEM careers.” Micro-g NExT, or Microgravity Neutral Buoyancy Experiment Design Teams does just that.

The NASA STEM Pathways Activities – Consortium for Education, under the Johnson Space Center (JSC) Office of STEM Engagement, collaborates with NASA’s Human Exploration and Operations Mission Directorate, the JSC Exploration Extra-Vehicular Activity (EVA) Tools Development Team, and the Jet Propulsion Laboratory (JPL) Small Robotics Team to create an experience that develops the STEM workforce through authentic STEM experiences – developing innovative solutions for NASA missions. Micro-g NExT challenges undergraduate students to design, build, and test unique solutions to authentic space exploration challenges. Micro-g NExT uses NASA unique facilities such as the Neutral Buoyancy Laboratory to engage students in research and engineering, while also elevating the design, build, and test process that most engineering students are exposed to during the undergraduate academic experience.

Micro-g NExT pairs teams of students with a mentor, an experienced NASA engineer or scientist, to help guide them through the process. The NASA mentor provides guidance in creating technical documentation, making design changes, and evaluating the safety hazards associated with the student-designed prototype. By working with a NASA mentor, students are able to experience what it takes to work in this STEM arena and are more likely to continue in the same field.

Former Micro-g NExT participants have consistently reported that being a part of the activity was a good investment of time and reinforced their interest in STEM fields and careers. Participation in Micro-g NExT sets the students apart from other applicants for internships and employment. The Micro-g NExT experience arms students with confidence in techniques, skills, and tools associated with the STEM fields.