

NASA 21st Century Learning Studios Project Brief

The National Commission on Teaching and America's Future (NCTAF), in partnership with NASA Goddard Space Flight Center and two Maryland school districts, is developing **NASA 21st Century Learning Studios** to improve Earth Science teaching and learning, by engaging Goddard scientists with educators in **Learning Teams** that design and deliver compelling project-based inquiry modules.

This project prepares students for Science, Technology, Engineering, and Math (STEM) college and workplace success by deploying NASA professionals with deep content knowledge and experience in project-based Learning Studios. **STEM Learning Studios engage one of NASA Goddard's most valuable resources – its personnel – in Learning Teams that become professional development partnerships for teachers who will learn how to engage their students in learning activities that draw on NASA education content and the challenges and discoveries emerging from today's NASA missions.** NASA Goddard professionals will apply their scientific expertise and passion as content experts, mentors, and coaches in Learning Teams working shoulder-to-shoulder with high school teachers and students (virtually as well as face-to-face). Learning Teams will involve students in deep, extended science inquiry and provide high school teachers with continuous embedded professional development to improve STEM content knowledge and pedagogy.

The NASA 21st Century Learning Studios model changes traditional school staffing approaches and establishes significant new roles for NASA Goddard Space Flight Center scientists, engineers, technicians, and contractors, especially those who want to work with schools in emeritus positions or upon retirement. Learning Studios, staffed by Learning Teams of science, math, and technology teachers; teachers-in-training; Goddard scientists, mathematicians, and engineers; and students, have been established in four high schools in two Maryland school districts, and will expand to four additional schools in year two of the grant. NASA Goddard and school personnel receive training and practice in project-based learning and professional learning communities. They collaboratively develop well-structured projects around NASA content and tools that respond to student inquiries and learning needs. Teachers and students master real-world science content the way NASA scientists actually work – in project teams that explore questions and solve problems.

This innovative approach, grounded in strong evidence-based research, will improve STEM learning and instruction at the participating schools, and provide an effective and scalable model of STEM teaching and learning that can be replicated by other schools and districts with additional government and industry partners. The pathways and strategies for engaging professional scientists in STEM education that are being developed and tested in this project will have a far-reaching impact. This project directly aligns with the *Educate to Innovate* initiative to strengthen the country's future STEM workforce by deploying government and industry personnel to prepare and retain teachers and improve student achievement in STEM fields. NCTAF will work with NASA Goddard Space Flight Center and school district leaders to collect data and document the development of NASA 21st Learning Studios to lay the groundwork for large-scale replication.