



21st CCLC NASA Projects



y4y.ed.gov/STEMChallenge/NASA

NASA and 21st Century Community Learning Centers (21st CCLC): Fact Sheet

Since 2013, the U.S. Department of Education's (ED's) Nita M. Lowey 21st CCLC Grant Program has collaborated with NASA to bring exciting science, technology, engineering and math (STEM) learning opportunities to student participants. Through this nationwide partnership, student teams at approximately 180 sites across the U.S. interact directly with NASA scientists and engineers to tackle real-world engineering design challenges.

The 21st Century Community Learning Centers Program

The 21st CCLC program provides funding for community learning centers around the country that connect young students with academic enrichment opportunities during non-school hours, particularly students who attend high-poverty and low-performing schools. The 21st CCLCs help students meet state and local standards in core academic subjects, such as reading and math, and offer enrichment activities designed to complement and reinforce the regular academic programs.

The 21st CCLC program was created under the 1994 reauthorization of the Elementary and Secondary Education Act as part of a national strategy to increase the impact of federal investments targeted at underserved student populations.

Why Out-of-School STEM Experiences Are Important

Evidence indicates out-of-school time can provide a critical pathway to encourage student interest in STEM learning and can be particularly effective in engaging students who might not otherwise have the opportunity to participate in STEM activities. STEM skill acquisition is important for several reasons:

- Data reveals that STEM jobs are projected to increase over time and the demand for occupations that require expert thinking and complex communication is higher than that for manual and routine jobs. A survey of educators, parents and students found near consensus that problem solving, and critical thinking are essential skills for students to learn.
- A 2017 report from the U.S. Bureau of Labor Statistics shows that over the past 10 years, STEM occupations grew by 10.5 percent compared to 5.2 percent in non-STEM occupations, and STEM jobs are expected to continue to grow at a faster rate than other jobs in the coming decade.
- There is a large interest and achievement gap among some groups in STEM, and African Americans, Hispanics, Native Americans, and women are seriously underrepresented in

many STEM fields. This limits their participation in many well-paid, high-growth professions and deprives the nation of the full benefit of their talents and perspectives.

- Disparities in access to high-quality STEM programs aren't limited to the school day – significant disparities also persist during out-of-school time. Typically, by sixth grade, students from middle- or upper-class households will have experienced over 6,000 more hours of enrichment programs (including, but not exclusively involving STEM) than their less financially fortunate peers. This lack of access amplifies the challenges experienced during the school day.
- The 21st CCLC program, serving approximately 1.7 million students nationwide, provides an unparalleled avenue for reaching students in high-need schools, who often have little or no opportunity to engage with STEM content and experiences or with STEM professionals. Participation in this program is free, giving students access to new experiences and opportunities to apply knowledge and practice in these disciplines.

Hands On with NASA

The collaboration with NASA provides students with an opportunity to tackle real-world challenges currently being addressed by NASA scientists and engineers.

- The 2020-2021 program will reach up to 180 sites across 18 states.
- Throughout the program, both 21st CCLC staff and students interact directly with NASA scientists and engineers, learning firsthand about engineering design and the scientific method.
- The STEM Challenge program provides 3rd-8th grade students with the opportunity to work on engineering design problems that are based on real mission data and experiences encountered by NASA scientists and engineers and highlight NASA's unique mission of space exploration. In 2020-2021, seven challenge options will be offered to students:
 - **Spacecraft Safety** — Help design NASA's next-generation spacecraft. *(options for grades 3-5 grade and grades 6-8)*
 - **Packing for the Moon** — Help design a plant growth system to help sustain astronauts on a lunar surface. *(for grades 6-8)*
 - **Parachuting onto Mars** — Help design a device that slows the descent of a spacecraft or probe while protecting its cargo for a successful landing. *(options for grades 3-5 and grades 6-8)*
 - **Why Pressure Suits?** — Help design a pressure suit that protects pilots and astronauts from the dangers of low-pressure environments. *(for grades 6-8)*
 - **Let it Glide** – Build a shoebox glider to produce the greatest glide slope. *(for grades 6-8)*
 - **Lunar Water STEM Challenge** – Develop a filter that will purify water which will be used in a future Lunar Habitat. *(for grades 6-8)*



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- **Astro Socks STEM Challenge** - Develop protective footwear for the ISS astronauts to wear as they live and work in microgravity. *(for grades 6-8)*

State-Level Impact

There are 10 after-school 21st CCLC sites in New York offering NASA STEM programs in 2020-2021, serving 24 student teams across the state.

21 st CCLC Lead Applicant Agency	Program Site	Partnering District
Syracuse CSD	JT Roberts School	
Schenectady CSD	Central Park Middle School	
Schenectady CSD	Oneida Middle School	
Schenectady CSD	William C. Keane Elementary School	
Central Queens/Samuel Field YM/YWHA	PS 220	NYCDOE CSD 28
NYCDOE CSD 4	Esparanza Preparatory Academy	
NYCDOE CSD 4	PS 83M Luis Munoz Rivera	
ASPIRA	PS 25 The Bilingual School	NYCDOE CSD 7
ASPIRA	PS 62 Incocensio Casanova	NYCDOE CSD 8
St. Nick's Alliance	PS 147	NYCDOE CSD 14

Resources for Teachers

NASA STEM Challenge activity examples are available through the 21st CCLC's Y4Y online community (<https://y4y.ed.gov/stemchallenge>), which provides free, research-based content to all 21st CCLC practitioners in over 10,000 communities across the nation. Please note that scientist and engineer connections and associated support are only available to participating programs. For more information on the 21st CCLC program and the interagency collaboration visit: <http://www2.ed.gov/programs/21stcclc/index.html>.