



Launching Futures Toolkit

AEROSPACE INDUSTRY CAREER LEARNING
RESOURCES FOR AFTERSCHOOL EDUCATORS

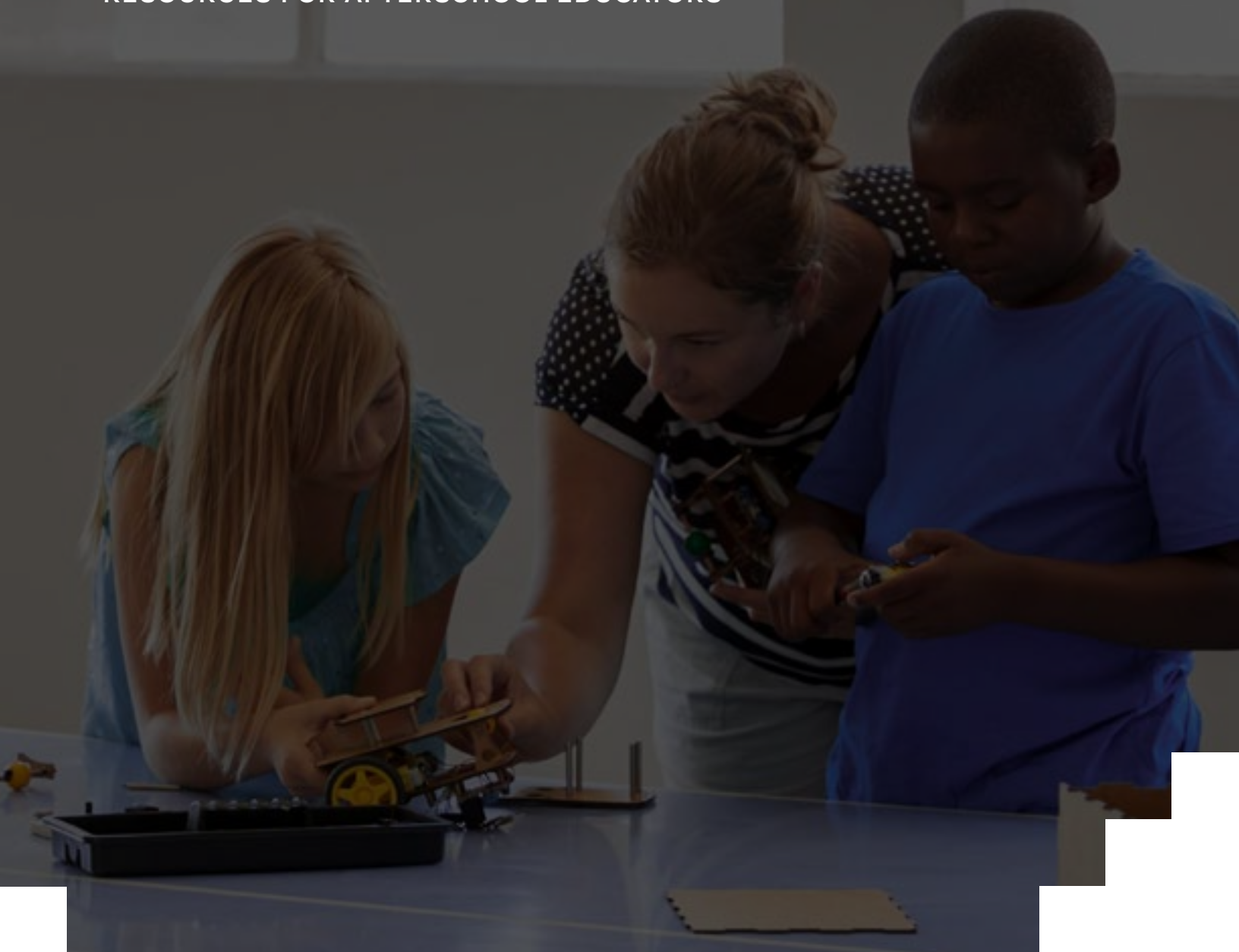


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These educational materials and resources are intended solely for educational purposes. All users—including educators, students, and administrators—are expected to interact with these resources safely, legally, and responsibly. Program and child safety guidelines should be followed at all times.



Foreword

Space Futures Powered by RTX

The Institute for a STEM Ready America at STEM Next Opportunity Fund drives innovation in afterschool and summer STEM learning to revolutionize how we prepare young people for the future of work. Central to this mission is building strong partnerships between STEM industry leaders and the field of afterschool and summer learning, ensuring that young people have access to experiences that connect what they learn with real-world career pathways.

RTX exemplifies the power of these partnerships. This Launching Futures Toolkit is made possible through the generous support of RTX, whose investment reflects a shared commitment to inspiring the next generation of innovators, problem-solvers, and aerospace leaders. By bringing together the expertise of a global aerospace leader with the reach and impact of afterschool and summer programs, we are inspiring more young people to discover what's possible and build the skills and confidence to pursue the careers of tomorrow.

We are deeply grateful to RTX for its leadership and partnership in making this resource possible and for its ongoing commitment to expanding opportunities for young people to explore the future of aerospace and STEM.

A young boy with dark skin and short hair is shown in profile, looking intently at a small model airplane he is holding in his hands. The background is blurred, suggesting an indoor setting with other people present.

Introduction

From NASA's Artemis missions to the construction of humanity's first lunar outpost, today's chapter of space exploration is the beginning of what many view as the next Industrial Revolution. But even with unprecedented growth in the space and aerospace sectors, employers across the industry report persistent shortages of engineers, technicians, and other highly skilled workers. Career opportunities abound as demand for advanced technologies accelerates, yet too few young people are aware of the diverse career pathways available in space and aerospace fields.

By providing career-connected learning experiences that expose youth to real-world applications of Earth and space science, afterschool and summer programs equipped with high-quality resources can help build awareness, spark curiosity, and prepare young people to pursue the education, careers, and opportunities that shape the future of aerospace and beyond.

The Launching Futures Toolkit was developed to help out-of-school time (OST) educators connect young people to the exciting and rapidly growing opportunities within the space and aerospace sectors. As employers across these industries seek talent with durable skills like problem-solving, collaboration, adaptability, communication, and systems thinking, OST programs are uniquely positioned to spark curiosity, build foundational competencies, and help youth envision themselves in future STEM careers.

This toolkit equips educators with practical resources to make career-connected learning accessible, engaging, and relevant for youth of all backgrounds. It includes ready-to-use STEM activities aligned to Earth and space science concepts, durable skill-building experiences, and career exploration resources designed specifically for OST settings. Educators will find hands-on projects that mirror real-world challenges faced by aerospace and space professionals, along with career profiles that highlight the diverse pathways available within the industry—from aerospace engineering, satellite operations, and robotics to geospatial science, advanced manufacturing, cybersecurity, and mission planning. Each resource is designed to help youth understand how the skills they are developing today connect to future careers and opportunities.



Key Research & Framework

STEM Ready America: A Compendium

Developed by STEM Next with support from the Charles Stewart Mott Foundation, the STEM Ready America report is a compendium from 40 authors. The report presents bold and persuasive evidence—along with real-world examples of effective practices, programs, and partnerships—showing how STEM experiences outside of school prepare young people for success in school today and the workforce tomorrow. This compelling evidence laid the groundwork for the Institute for a STEM Ready America at STEM Next.

→ [Explore the compendium](#)

Career-Connected Learning Framework

Central to connecting young people to the exciting and rapidly growing opportunities within the space and aerospace sectors, is career-connected learning – STEM Next’s strategy to transform how the field prepares young people for STEM futures.

The Career-Connected Learning Framework – Designed specifically for out-of-school-time providers, this framework helps programs embed career awareness, exploration, and preparation into their activities in ways that are practical, age-appropriate, and grounded in both research and real-world relevance.

→ [Download the Career-Connected Learning Framework](#)

→ [Watch the Framework launch](#)

→ [Watch the Framework training for the field](#)



Career-Connected Learning Strategies and Resources

The four strategies outlined in STEM Next's Career-Connected Learning Framework provide a powerful foundation for helping young people discover and prepare for opportunities in the space and aerospace sectors.



Strategy 1:

Durable Skill Development Through Earth and Space Learning

Use hands-on Earth and space science experiences to help youth develop the durable skills that space and aerospace employers consistently identify as essential for workforce success. As youth design solutions, investigate real-world phenomena, analyze data, test prototypes, and work through engineering challenges, they strengthen critical thinking, problem-solving, collaboration, communication, adaptability, creativity, and persistence. These durable skills enable individuals to work effectively in team-based, technology-rich environments where innovation, continuous learning, and complex problem-solving are everyday expectations.

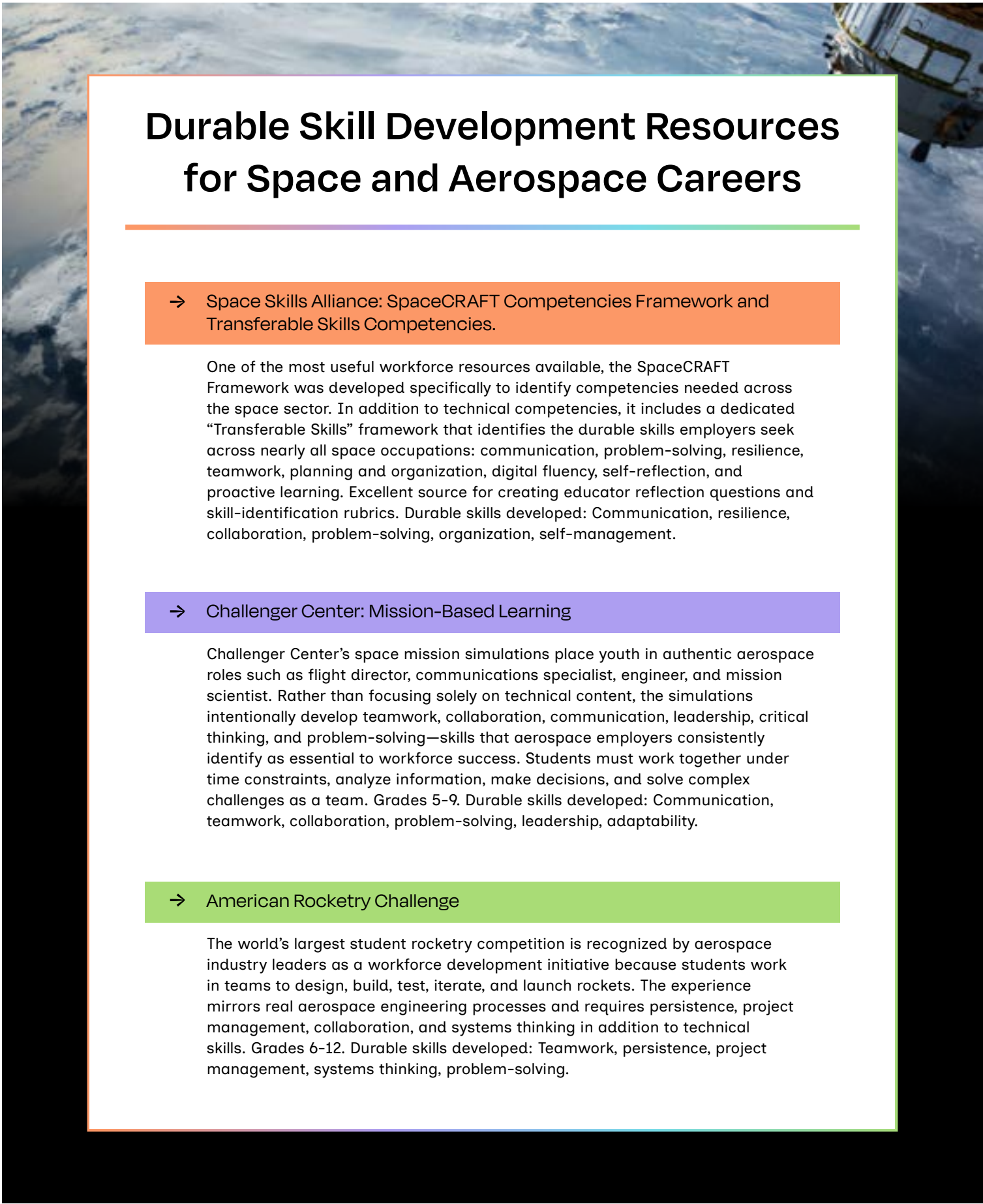
At the same time, youth build foundational STEM competencies such as measurement, data analysis, engineering design, systems thinking, and technology use. By intentionally developing both durable and technical skills through authentic Earth and space learning experiences, educators help prepare young people for a wide range of future opportunities across the space and aerospace sector—from engineering and satellite operations to advanced manufacturing, robotics, geospatial science, and emerging space technologies.

→ Watch the field training

→ What Are Durable Skills in Education and Out-of-School Time?

Durable skills – like communication, collaboration, adaptability, and leadership – lay the foundation for student success in schools, careers, and life. In the world of education, durable skills go by many names, like soft skills, 21st-century skills, and essential skills.

Pathsmith™ Durable Skills Framework – The Pathsmith™ Durable Skills Framework translates employer demand, sourced from over 80 million job postings, into a clear, structured, and equity-conscious guide for evaluating durable skills among early-career professionals.



Durable Skill Development Resources for Space and Aerospace Careers

→ Space Skills Alliance: SpaceCRAFT Competencies Framework and Transferable Skills Competencies.

One of the most useful workforce resources available, the SpaceCRAFT Framework was developed specifically to identify competencies needed across the space sector. In addition to technical competencies, it includes a dedicated “Transferable Skills” framework that identifies the durable skills employers seek across nearly all space occupations: communication, problem-solving, resilience, teamwork, planning and organization, digital fluency, self-reflection, and proactive learning. Excellent source for creating educator reflection questions and skill-identification rubrics. Durable skills developed: Communication, resilience, collaboration, problem-solving, organization, self-management.

→ Challenger Center: Mission-Based Learning

Challenger Center’s space mission simulations place youth in authentic aerospace roles such as flight director, communications specialist, engineer, and mission scientist. Rather than focusing solely on technical content, the simulations intentionally develop teamwork, collaboration, communication, leadership, critical thinking, and problem-solving—skills that aerospace employers consistently identify as essential to workforce success. Students must work together under time constraints, analyze information, make decisions, and solve complex challenges as a team. Grades 5-9. Durable skills developed: Communication, teamwork, collaboration, problem-solving, leadership, adaptability.

→ American Rocketry Challenge

The world’s largest student rocketry competition is recognized by aerospace industry leaders as a workforce development initiative because students work in teams to design, build, test, iterate, and launch rockets. The experience mirrors real aerospace engineering processes and requires persistence, project management, collaboration, and systems thinking in addition to technical skills. Grades 6-12. Durable skills developed: Teamwork, persistence, project management, systems thinking, problem-solving.

Strategy 2:

Career-Connected Earth and Space Learning

Make space and aerospace careers visible by intentionally connecting STEM activities to the people, jobs, and technologies that make exploration, discovery, and innovation possible. Help youth see the relevance of what they are learning by highlighting real-world applications and career pathways related to aerospace engineering, satellite operations, Earth observation, advanced manufacturing, robotics, aviation, cybersecurity, and space exploration. Invite industry professionals to share their experiences and provide authentic insight into the diverse opportunities available across the sector.

→ Watch the field training

Career-Connected Learning Resources for Space and Aerospace Careers

→ Career-Connected STEM Activity Checklist

This short planning tool provides specific strategies to help educators make explicit connections to space and aerospace careers in their activities.

BEST FOR: Educators to use while planning STEM and aerospace activities.

→ NASA Kids' Club (K-4)

Interactive games and activities introduce younger learners to space science while encouraging curiosity, perseverance, and creative problem-solving.

BEST FOR: Educators working with young learners to raise awareness of the aerospace industry.

→ Civil Air Patrol Aerospace Education Program

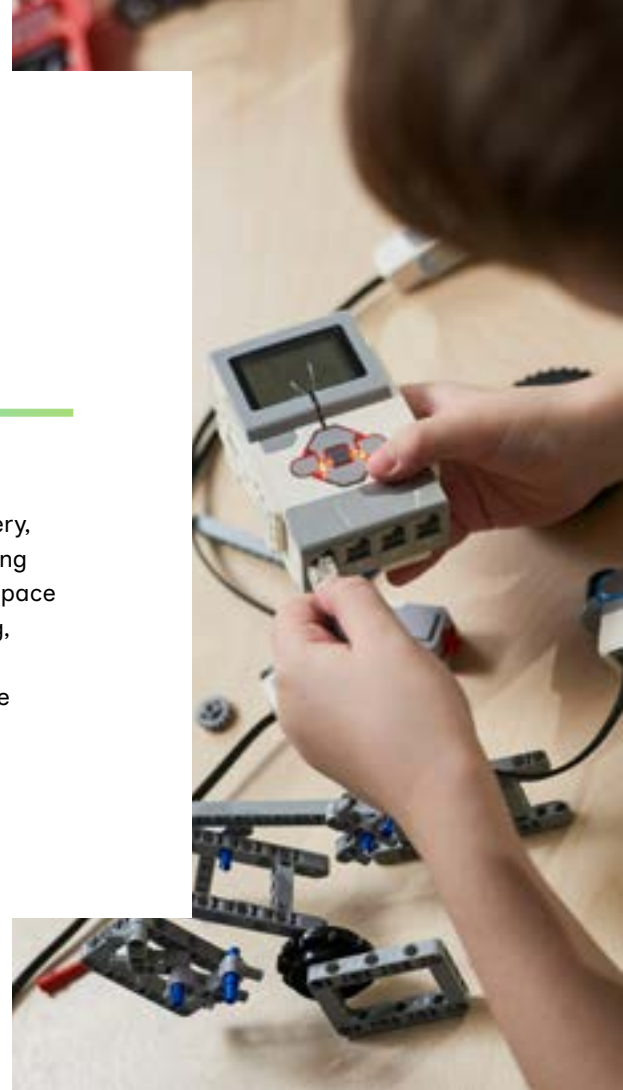
The Civil Air Patrol offers free aerospace education resources, STEM kits, engineering activities, aviation lessons, and career exploration materials that are highly adaptable for afterschool and summer learning environments. Many activities emphasize teamwork, leadership, communication, and problem-solving.

BEST FOR: Hands-on OST programming, aerospace exploration, leadership development.

→ Smithsonian National Air and Space Museum Learning Resources

The museum provides educator guides, engineering challenges, aviation activities, design thinking experiences, and career exploration resources that introduce youth to lesser-known careers throughout the aerospace industry.

BEST FOR: Career-connected learning, engineering design, inquiry-based learning.



→ NASA Next Gen STEM and Next Gen STEM Learning Resources

NASA's Next Gen STEM initiative was designed specifically to connect students to NASA missions, careers, and authentic problem-solving experiences in schools, afterschool programs, museums, and community organizations. Many of the activities emphasize collaboration, engineering design, critical thinking, communication, and persistence while introducing youth to real-world aerospace challenges. NASA explicitly identifies workforce preparation and helping students see themselves in STEM careers as key goals of the program.

BEST FOR: Career-connected STEM, engineering design challenges, career awareness, workforce readiness.

→ PLANETS
(Project for Learning About NASA and Engineering Through Science)

PLANETS was specifically developed for out-of-school time settings and includes engineering and science units designed to inspire interest in NASA-related careers. The project emphasizes culturally responsive practices and provides educator supports that make implementation accessible for OST professionals who may not have formal STEM teaching backgrounds.

BEST FOR: Afterschool and summer learning programs seeking structured Earth and space STEM experiences.

→ BlueCube Aerospace

BLUECUBE Aerospace empowers middle and high school students through hands-on learning with CubeSat technology, engaging them in real-world science, engineering, and problem-solving. Through emulator kits, camps, and workshops, we support educators in delivering authentic STEM experiences. Our national network fosters cross-disciplinary skills that prepare students for success in the 21st-century workforce.

BEST FOR: Career-connected aerospace exploration and challenges for middle and high school youth.

→ NASA Career Videos and "Surprisingly STEM" Series

These short videos showcase the diverse careers that support NASA missions, including engineers, technicians, data scientists, communicators, software developers, welders, and project managers. They help youth understand that successful space missions require a wide range of talents and durable skills.

BEST FOR: Connecting specific activities to real life, relatable people working in the aerospace industry.



Strategy 3:

Family and Community Connections to Future Pathways

Engage families and communities as partners in career exploration by helping them understand the growing opportunities within the space and aerospace workforce. Celebrate local role models, industry professionals, veterans, technicians, engineers, researchers, and entrepreneurs whose work contributes to aviation, aerospace, Earth science, and space exploration. By increasing awareness among families and caregivers, educators can help youth recognize that space and aerospace careers are attainable, diverse, and connected to many educational and career pathways.

→ Watch the training for the field Part I

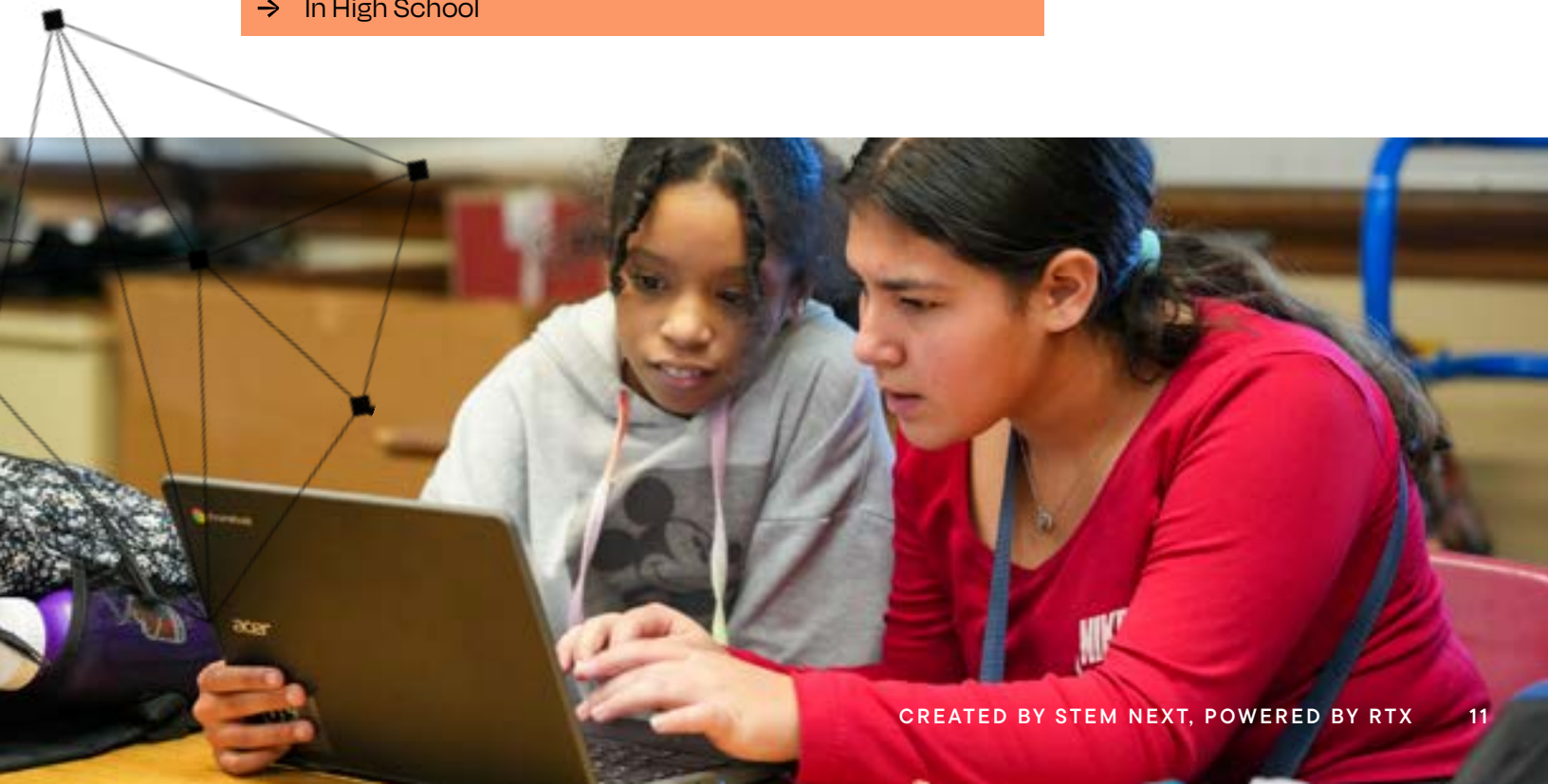
→ Watch the training for the field Part II

Five ways for Families to Connect Youth to Careers:

→ In Elementary School

→ In Middle School

→ In High School





→ NASA JPL Family STEM Activities

These family-friendly engineering challenges encourage communication, teamwork, creativity, and persistence while exploring space and engineering concepts together. Activities include rocket design, robotic challenges, and engineering design projects appropriate for a wide range of ages.

BEST FOR: Expanding awareness of career opportunities and community engagement.

→ Space Foundation Discovery Center

Provides family-friendly events, career spotlights, and learning opportunities that showcase the many ways people contribute to the space industry beyond becoming astronauts.

BEST FOR: Expanding family awareness of career opportunities.

→ NASA Family Science Night

Family Science Night provides structured activities designed to strengthen collaboration, communication, curiosity, and confidence in STEM learning. The model is especially valuable for helping families understand how STEM experiences connect to future career opportunities.

BEST FOR: Expanding awareness of career opportunities and community engagement.

→ Smithsonian Air and Space Family Resources

Offers activities and stories that help families explore aviation and space careers together while highlighting diverse professionals and pathways.

BEST FOR: Family engagement and career conversations.



Strategy 4:

STEM Pathways and Industry Partnerships

Create meaningful pathways into space and aerospace careers through partnerships with industry, higher education institutions, museums, science centers, workforce organizations, and community partners. These connections provide youth with access to mentors, workplace experiences, internships, career speakers, college and credential information, and real-world learning opportunities. Strong partnerships help bridge the gap between early interest and future career success, ensuring that young people can see, explore, and pursue opportunities within the rapidly growing Earth and space economy.

→ Space Workforce for Tomorrow (SWFT)

WFT is an industry-led coalition focused on preparing the future space workforce. While not a curriculum provider, it offers valuable insight into the workforce competencies employers believe are essential for success in the growing space economy, including collaboration, innovation, communication, leadership, and continuous learning. Excellent for workforce awareness and rationale for why durable skills matter.

→ Aviation Technician Education Council (ATEC)

Introduces youth to careers in aircraft maintenance, avionics, drone technology, and aerospace technical fields that often require certifications or technical training rather than four-year degrees. Excellent for skilled trades and technical career exploration.

→ Making Connections Framework

This research-based framework, created with UC Irvine's Connected Learning Lab, helps out-of-school time programs connect learning across schools, families, and communities. It offers practical strategies for supporting youth as they move between settings, sustain STEM interest over time, and access experiences that build toward future opportunities.

→ Aerospace Industries Association Workforce (AIA) Resources

AIA's workforce research consistently identifies skill gaps and highlights the importance of preparing students with both technical expertise and workforce-ready competencies. Industry reports emphasize communication, collaboration, leadership development, continuous learning, and adaptability alongside STEM knowledge. Excellent for understanding employer needs and connecting activities to workforce competencies and durable skill development.

→ Strengthening Career-Connected Learning: The Building Bridges with Industry Playbook

This playbook, developed in partnership with Jobs for the Future, provides out-of-school-time education leaders with practical guidance for initiating, strengthening, and sustaining employer partnerships. It includes strategies for planning, outreach, and relationship development, as well as examples of emerging approaches from afterschool networks across the country.

→ Watch the Playbook launch

Aeronautics & Aerospace Activity Bundles by Grade Level

Bring the science of flight and space exploration to life with hands-on activities designed for different grade levels and step-by-step guides to facilitate them with youth. Each bundle includes four ready-to-use lessons that build STEM skills while introducing youth to related careers.

→ Activity Bundle for Grades K-2

Young learners explore clouds, the forces of flight and aerospace engineering through playful experiments and design challenges. Activities encourage observation, prediction and early problem-solving skills.

→ Activity Bundle for Grades 3-5

Youth investigate weather, design and test rockets, complete an aerospace rescue challenge and discover aviation careers. Each activity combines hands-on experimentation with opportunities to build and improve ideas.

→ Activity Bundle for Grades 6-8

Middle school learners explore tornadoes, engineer a model Moon lander, develop a flight plan and learn about aviation careers. The activities strengthen collaboration, data analysis and engineering design skills.



Aeronautics & Aerospace Career Profiles

Explore five STEM careers that help make modern aviation and aerospace possible. Each profile introduces a different profession, explains how it contributes to the industry, and highlights the skills, education, and day-to-day responsibilities involved.

→ Aerospace Engineer

Learn how aerospace engineers design aircraft, spacecraft, satellites, and other technologies that make flight and space exploration possible.

→ Aerospace or Aviation Meteorologist

Discover how meteorologists study weather conditions that affect aviation and aerospace operations, helping pilots and mission teams make safe, informed decisions.

→ Air Traffic Controller

Explore how air traffic controllers coordinate aircraft on the ground and in the air to keep flights safe, organized, and moving efficiently.

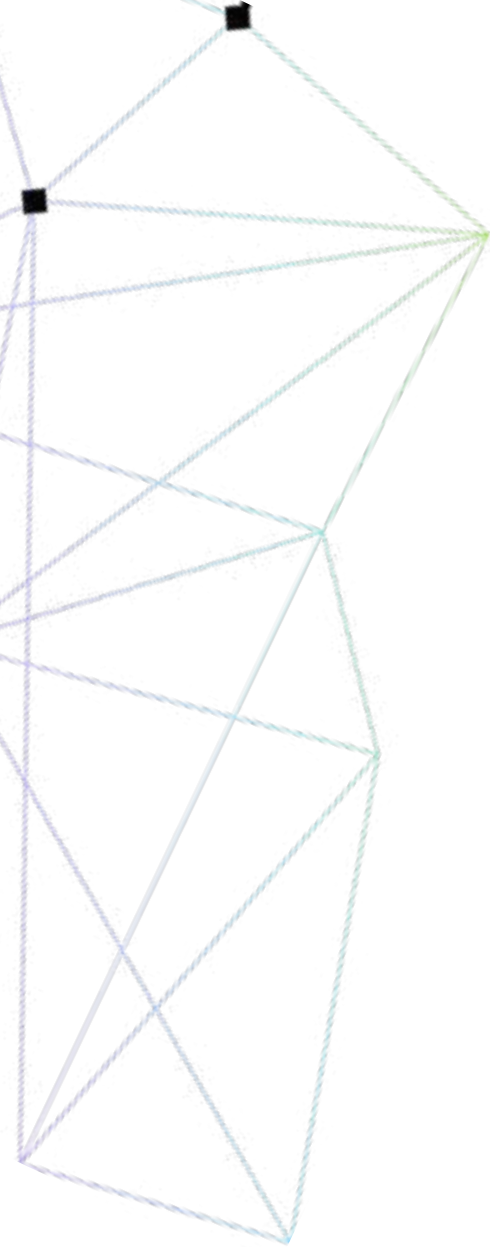
→ Drone Pilot

See how drone pilots use unmanned aircraft to support industries such as agriculture, emergency response, filmmaking, mapping, and infrastructure inspection.

→ Satellite Operations Specialist

Learn how satellite operations specialists monitor and control satellites that support communications, navigation, weather forecasting, and scientific research around the world.





Earth & Space Career Maps

Developed by Florida Afterschool Inc. and made possible by STEM Next Opportunity Fund with generous support of the Florida Lottery, these career maps profile careers within three distinct sectors of the aerospace industry: Technicians and Mechanics, Engineering and Scientists, and Data & IT.

These career maps highlight the education and experience needed, important durable skills and competencies employees must possess, and the pathway to enter into that job role. These career maps give out-of-school professionals tools to help youth explore surprising career paths within space-related industries. The maps outline different areas within space careers to showcase the wide variety of careers. The career maps can be used to introduce youth to exciting career opportunities in the space industry that they may not know exist, from designing spacecraft to educating the public.

→ Careers in the Space Industry: Technicians and Mechanics

→ Careers in the Space Industry: Engineering and Science

→ Careers in the Space Industry: Data & IT



STEM Next

Capacity Building Opportunities

Quarterly Asset Packages

Distributed quarterly and updated monthly, asset packages are virtual newsletters that contain special opportunities, professional development, activities, and career-connected learning resources specifically for out-of-school time providers and staff.

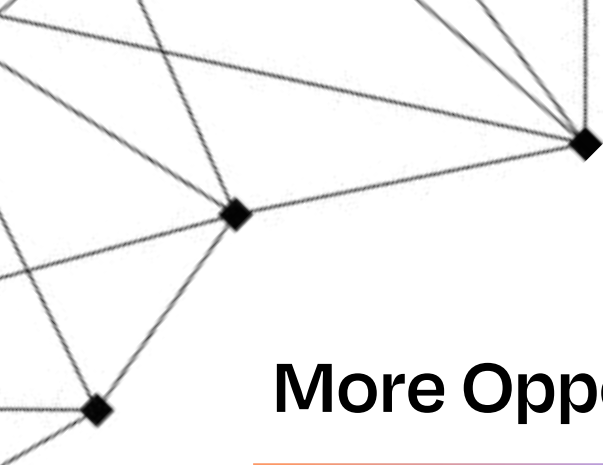
→ [Sign up to receive the Asset Package and other educator resources here!](#)

Virtual Trainings

To support program providers, STEM Next is hosting no cost, virtual training sessions on career-connected learning, math narrative change, and sector specific resources throughout 2026. Keep an eye on our events page for upcoming trainings. Each event listing is updated after the event concludes with a form to access the recording, so you can revisit the content anytime.

→ [Our Events Page](#)





More Opportunities & Resources

The STEM Next Flight Crew

The Flight Crew is a youth ambassador program of STEM Next featuring remarkable young leaders who represent their states, show what's possible, and spark their peers' curiosity in STEM. Through their voices and visibility, these teens help build a movement by showing how STEM learning beyond the classroom can change lives.

Flight Crew members share their experiences on regional, state, and national stages, connect with mentors and peers, and develop the skills needed to lead and advocate with confidence. Through public speaking, storytelling, and leadership training, Flight Crew members build connections that open doors, spark curiosity, and amplify youth voices in STEM.

Interested in learning more about the Flight Crew?
Contact Jill Curry, the STEM Next program manager

→ [Contact Jill](#)

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Collaboration Opportunities

In addition to the resources distributed through the asset packages, there are opportunities for more tailored support either in person or virtual with national collaboration partners.

If you are interested in this support, contact Sabrina Gomez
sgomez@stemnext.org

→ [Learn more about our collaboration partners](#)