

NASA Education Communication Strategy





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For the past 15 years, the number of American college students earning science, technology, engineering, and mathematics (STEM) degrees has continued to decrease. By 2010, it is projected the national demand for STEM employees will rise by 10 percent.

The Education Communication Strategy identifies the steps NASA will take to enhance and increase public understanding and awareness of NASA's education programs and opportunities.

We hope this information will motivate and inspire you to seek opportunities and use the resources available to pursue more knowledge.

**EMPLOY, EDUCATE,
ENGAGE, INSPIRE . . .**
the next generation of
explorers and innovators.

Message from the Assistant Administrator for Education



This year, NASA celebrates 50 years of exploring various frontiers that have led to new horizons of opportunity. As NASA implements the Vision for Space Exploration, carrying humans back to the Moon, on to Mars, and beyond, NASA Education is working to lay the groundwork that will make this ongoing journey possible.

The Vision calls for a program of exploration that will continue for decades, requiring the dedication and ingenuity not only of the scientists and engineers of today but of generations to come. To ensure those future explorers will be ready to continue the journey, NASA is working with one of its most vital partners—educators.

NASA recognizes the importance of educators' contributions in making our work possible, and we are dedicated to supporting them in the disciplines of science, technology, engineering, and mathematics (also referred to as STEM). NASA provides formal and informal educators unique resources and development opportunities to strengthen the overall teaching of STEM subjects. In the summer of 2007, Mission Specialist Barbara R. Morgan captured students' imaginations as an Educator Astronaut who flew in space aboard the Space Shuttle Endeavour on an assembly mission to the International Space Station. In the summer of 2008, Educator Astronauts Ricky Arnold and Joe Acaba will fly on board STS-119 and perform spacewalks to build the International Space Station. NASA is planning several exciting education activities around the mission.

NASA Education also aims to attract and retain students in STEM disciplines through a progression of educational opportunities for students, teachers, and faculty and to build strategic partnerships and

linkages between formal and informal education providers that promote STEM literacy and awareness of NASA's mission.

The Office of Education will promote education as an integral component of every major NASA research and development mission. NASA, with industry and university engineers and scientists, will share knowledge and experience with students and educators as they study Earth and the universe using the latest aerospace research methods.

These efforts are accomplished through collaboration among NASA's Office of Education, Mission Directorates, and Field Centers; other Federal agencies engaged in education activities; and various public and private partners. NASA Education is committed to providing opportunities for all students to explore and experience unique space and aeronautics content, interact with innovative engineers and scientists, and see state-of-the-art facilities. The Agency remains steadfast in our commitment to engage underrepresented and underserved communities of students, educators, and researchers in our education programs.

As NASA Administrator Michael Griffin explained, "The greatest contribution that NASA makes in educating the next generation of Americans is by providing worthy endeavors for which students will be inspired to study difficult subjects like math, science, and engineering, because they too share the dream of exploring the cosmos."

Cordially,

A handwritten signature in black ink that reads "Joyce L. Winterton". The signature is fluid and cursive, with a long horizontal line extending from the end.

Dr. Joyce L. Winterton
NASA Assistant Administrator for Education



I. NASA's Education Program

NASA's journeys into air and space have deepened humankind's understanding of the universe, advanced technology breakthroughs, enhanced air travel safety and security, and expanded the frontiers of scientific research. These accomplishments share a common genesis: education. As the United States begins the second century of flight, the Nation must maintain its commitment to excellence in STEM education to ensure that the next generation of Americans can accept the full measure of their roles and responsibilities in shaping the future. NASA will continue the Agency's tradition of investing in the Nation's education programs and supporting the country's educators who play a key role in preparing, inspiring, exciting, encouraging, and nurturing the young minds of today who will be the workforce of tomorrow.

In 2008 and beyond, NASA will continue to pursue three major education goals:

Strengthening NASA and the Nation's future workforce

NASA will identify and develop the critical skills and capabilities needed in aeronautics, Earth and space science, and space operations to ensure achievement of the Vision for Space Exploration. To help meet this demand, NASA will continue contributing to the development of the Nation's science, technology, engineering, and mathematics (STEM) workforce of the future through a diverse portfolio of education initiatives that target America's students at all levels, especially those in traditionally underserved and underrepresented communities.

Attracting and retaining students in STEM disciplines

NASA will pursue the minds, imaginations, and career ambitions of America's young people. The Agency will focus on engaging and retaining students in STEM education programs to encourage their pursuit of educational disciplines critical to NASA's future in aeronautics, Earth and space science, and space operations and for participation in engineering, scientific, and technical missions.

Engaging Americans in NASA's mission

NASA will build strategic partnerships and linkages between STEM formal and informal education providers. Through hands-on interactive educational activities, NASA will engage students, educators, families, the general public, and all Agency stakeholders to increase Americans' science and technology literacy.

II. NASA Strategic Plan

Education Outcomes

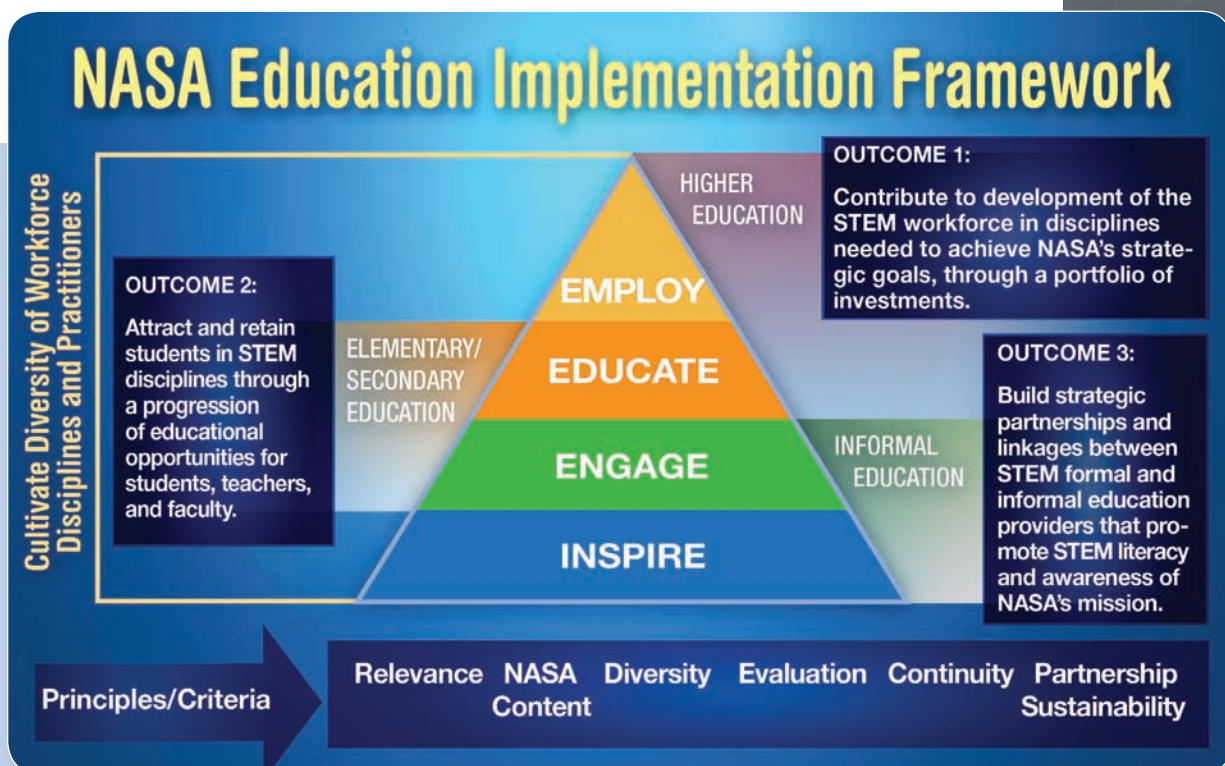
In 2004, the President charged NASA with planning and implementing an exploration program to achieve the Vision for Space Exploration. This Vision commits America to a journey of discovery and exploration with new and exciting plans to return astronauts to the Moon and voyage to Mars and beyond while continuing to engage in groundbreaking space science and pioneering advances in innovation, creativity, and technology. Through partnerships and international cooperation, NASA has the tremendous opportunity to lead the way toward the dawn of a new space age.

To achieve the Vision, the Agency requires a skilled and diverse workforce with sufficient depth and breadth. Our education investments are an important component to ensuring an appropriate workforce for the Nation's aeronautics, Earth and space science, and space operations activities.

NASA delivers a comprehensive Agency education portfolio implemented by the Office of Education, the Mission Directorates, and the NASA Field Centers. Through the portfolio, NASA contributes to our Nation's efforts in achieving excellence in STEM education.

Education Implementation Framework

The NASA Education Implementation Framework is a management tool to monitor participant movement through education activities, with each level leading to the next. Also, the framework provides a single, coordinated, programmatic look at the NASA education portfolio to achieve the three education outcomes.





III. NASA Education Strategic Communication Objectives

NASA Education targets four strategic communication objectives:

- Seek and maximize educational opportunities to increase and maintain public awareness of exploration and discovery through activities, materials, and events;
- Build awareness with students, educators, and the public on the diverse range of career opportunities related to NASA's missions;
- Engage students and sustain their interest in science, technology, engineering, and mathematics education; and
- Collaborate with and engage educators to enhance their knowledge and skills in science, technology, engineering, and mathematics.

The overarching challenge by NASA Education in crafting a Communication Strategy in support of NASA's Vision is responding to the question,

“How do we use what we are doing in education to build support for exploration?”

The NASA education program's contribution to the Agency's Communication Strategy is to enable students, educators, families, communities, and the general public to “Experience NASA's Exploration Message.” NASA's Education Communication Strategy will place primary focus on development of an experiential campaign that will provide opportunities at successive levels of involvement: inspire, engage, educate, and employ.

Five attributes of an experiential campaign, along with customer focus and customizing strategy, will be used to guide the Communication Strategy.

- The experiential campaign will clearly deliver a meaningful benefit to the customer.
- The experiential campaign will be predicated on one-on-one personal interaction between NASA Education and the customer.
- The experiential campaign will be based on engaging people in memorable ways.
- The experiential campaign's goal is to succeed in using innovative approaches and tactics to reach out to customers in creative and compelling ways.
- Three types of customer interface instrumental to an experiential campaign include: (a) face-to-face, (b) personal-but-distant, and (c) electronic.

IV. Key Messages and Themes

NASA explores for answers that power our future.

NASA relies on a well-educated workforce to carry out missions of scientific discovery that improve life on Earth.

NASA's education program will provide the tools, resources, and excitement to attract and retain students in STEM disciplines. This contributes to a stronger, more innovative, and more competitive national workforce.

NASA is widely recognized and highly regarded worldwide for its programs and unprecedented accomplishments in the fields of science, aeronautics, aerospace, and technology. This recognition is attributed to effective communications by our employees and through state-of-the-art products. NASA will seek to expand teachers', students', and the general public's specific understanding and knowledge of NASA's programs and opportunities. NASA's education partnership strategy includes a targeted effort to develop new linkages with the education community, Federal agencies, industry, and the non-profit sector.

Space exploration goals inspire present and new generations to explore, learn, and build a better future. Space exploration engages and inspires the public and encourages students to pursue studies in challenging, high-tech fields. In addition, space exploration satisfies our curiosity; advances our knowledge; and answers fundamental questions about the history of Earth, the solar system, and the universe. Going to the Moon and to Mars will be a stunning achievement and an enduring legacy to future generations of our desire to explore, learn, and progress.

Coordinated strategic communications is an essential element in our ability to build a national consensus that supports the NASA mission. NASA Strategic Communications, Mission Directorates, and NASA Field Centers are all working together to facilitate effective communications with all constituencies by ensuring synergy and focus on NASA's communication initiatives. NASA will continue to develop educational tools and experiences that inspire, educate, and motivate.

**“Let us think of education as the means
of developing our greatest abilities, because
in each of us there is a private hope
and dream which, fulfilled, can be translated
into benefit for everyone and greater
strength for our nation.”**

—John F. Kennedy



V. Education Approach

During the calendar year, NASA Education will seek to develop one National Education Campaign and several Mini-Education Campaigns in direct collaboration with the Mission Directorates; Field Centers; and Mission Support Offices, including Public Affairs, Legislative, Communications Planning, and External Relations.

Building upon the past, the Agency proposes a series of planned education campaigns that engages the customer with NASA. The campaigns take NASA's Vision, mission, and products out of their traditional communication venues to engage customers or key stakeholders in a unique, out-of-the-box way that is credible and relevant. Other targets of opportunities, Vision toolkits, and the "Inside NASA Education Portal" will complement the campaigns.

The success to this approach is built on joint collaborations between the offices within Strategic Communications and by engaging other NASA key interfaces and education partners in the planning and operations (see sections VII and IX).

National Education Campaign

The purpose of the National Education Campaign is to build a comprehensive education initiative that engages diverse audiences with tailored and various modes of interaction. The campaign will improve integration and coordination of NASA at three distinct and interrelated levels: (a) Agency, (b) Center, and (c) Program/Project. The National Education Campaign will be organized around phases, with specific milestones of events, activities, and products to occur under each phase.

The intended outcomes for the campaign are to:

1. Lead the Agency in development, design, implementation, and evaluation of a major education campaign.
2. Support NASA Mission Directorates' efforts to provide the public and education communities with information, experiences in support of math and science literacy, and the tools to enhance the lifelong learning process.
3. Create a "user-friendly" and valuable experience for customers to do business with NASA.



**"Dreams are like stars . . .
you may never touch them, but if you
follow them they will lead you
to your destiny."**

—Anonymous

Mini-Education Campaigns

Mini-Education Campaigns run for shorter durations of time than the National Education Campaign. They are driven by Mission Directorate or Center events/milestones and draw upon a consistent set of approved messages and products. Mini-Education Campaigns involve a strategic series of events, activities, or encounters that seek customer involvement in a positive experience. The intended outcome of Mini-Education Campaigns is to enable the customer to become an advocate for NASA's mission and understand its value to increase Americans' science and technology literacy.

Two sample events that could be leveraged as Mini-Education Campaigns are the Marshall Space Flight Center Great Moonbuggy Race and the For Inspiration and Recognition of Science and Technology (FIRST) Robotic Competition.

Education Toolkit

An Education Toolkit has been developed and distributed for use at NASA events, workshops, NASA Visitor Centers, Digital Learning Network, etc. The Education Toolkit includes multimedia, print, and other communication resources to support National and Mini-Education Campaigns. Distribution will include, but not be limited to, Center Education Offices, Mission Directorate Education and Outreach Networks, Educator Resource Center Networks (ERCN), Central Operation of Resources for Educators (CORE), and Space Grant member institutions.

Inside NASA Education Tab

The maintenance of internal communications is crucial to the strategy. Under the Inside NASA architecture, a tab labeled "Education" has been created. Specific categories of information and tools, such as a Calendar of Events and discussion boards, were developed, and the site is updated on a regular basis. This site is intended to support the Communication Strategy by offering NASA education personnel and others interested in education with a primary source for reviewing, downloading, and sharing documents, best practices, presentations, information on partnerships, etc.

<http://insidenasa.nasa.gov/portal/site/insidenasa>





VI. Education Infrastructure and Resource Tools

The NASA Education Communication Strategy will target efforts in the following areas:

- Developing common procedures, capabilities, and tools to ensure that education programs and products capture the essence of NASA's mission and are exciting and relevant to our constituencies.
- Building technology infrastructure to support delivery of and increase access to NASA content, programs, and projects to students, educators, and the public.
- Utilizing technology tools and products to appropriately insert the Vision for Space Exploration and messages into NASA education programs; leveraging technology infrastructures to deliver exploration-related content to audiences; and partnering with Mission Directorates, cross-cutting organizations, and program offices to create rich, effective learning experiences and connections for a range of audiences.

The NASA infrastructure, resources, and tools that are available, evaluated, and updated as needed are identified below.

Electronic

- NASA Portal (sections for kids, students, and educators): Includes Education Home Page, Center and Mission Directorate education sites
- NASA TV: Public and education channels
- Inside NASA Education Tab: Improving communication and information sharing
- Digital Learning Network

National and Regional Resource Sites

- Central Operations of Resources for Educators (CORE): CORE is a worldwide distribution center for NASA's educational multimedia materials. <http://education.nasa.gov/edprograms/core/home/index.html>
- Educator Resource Center Network (ERCN): The ERCNs are regional sites that provide educators with NASA education materials and training. http://education.nasa.gov/about/contacts/Educator_Resource_Center_Network.html

Education Products

NASA produces printed educational materials that are also available electronically and meet 508 and Children's Online Privacy Protection Act (COPPA) requirements.



VII. NASA Key Interfaces

Mission Directorates (Aeronautics Research [ARMD], Exploration Systems [ESMD], Science [SMD], and Space Operations [SOMD]) are responsible for embedding education components into their research and development programs and flight missions, for administering the discipline/content-specific activities for which they provide funding, and for ensuring meaningful collaboration between the NASA science/engineering community and the education community. Each Mission Directorate supports the NASA education portfolio by providing discipline-specific content, funding, and human resources to plan and implement educational programs, products, and services.

Center Education Offices are responsible for implementing NASA education programs, projects, and activities for both the Mission Directorates and the Office of Education, as well as planning and implementing education programs that are unique to their Centers. The Center Education Offices provide expertise in state standards and requirements in their area of geographic responsibility for K–12 education and provide valuable field-based input into education program planning. Center Education Offices work closely with their regional customer base in support of systemic reform initiatives in formal education, assist with the generation and communication of knowledge for their unique research and technology development requirements by involving colleges and universities across the country, and establish linkages with informal education networks in support of Agency and national STEM education initiatives.

Working with the **Office of External Relations**, NASA Education has international relationships through an international committee and rules of engagement for international cooperation.

The Office of Strategic Communications includes three other entities, listed below, along with the NASA Education Office. Each entity has identified a niche and expertise to be tapped by NASA Education in enhancing and implementing its Communication Strategy. Conversely, NASA Education will collaborate with these offices to support their target areas where and when contributions and actions by NASA Education are relevant, meaningful, and beneficial.

- **Office of Communication Planning:** Focuses on developing long-term communication strategies and plans for increasing public awareness and understanding of NASA's missions and goals.
- **Public Affairs Office:** Focuses its Strategic Communication efforts on increasing outreach to the media and public through special events, conferences, and exhibitions surrounding NASA mission activities and expanding reach and programming capabilities of NASA TV to touch a wider and more diverse population.
- **Office of Legislative Affairs:** Focuses on outreach efforts, including expanding and maintaining NASA's congressional relationships, with renewed focus on congressional leadership and key caucuses and special outreach efforts to rank and file members not serving on NASA committees of jurisdiction.



VIII. Strategic Alliances

The opportunities for strategic alliances are immeasurable. All partners share common goals to inspire the Nation's youth to pursue careers in STEM and to improve scientific literacy. Previous experience shows that exciting and compelling space programs ignite a yearning in our children to explore the universe. Therefore, NASA encourages strategic partnerships and alliances that fully utilize NASA content, people, and facilities in order to improve STEM education and thereby increase the supply of well-trained STEM workers.

The Office of Strategic Communications, Mission Directorates, and NASA Centers, working with the Office of Chief Counsel, have successfully negotiated multiple strategic partnerships—Space Act Agreements and Memoranda of Understandings. The power of such internal collaborations has strengthened the relationship between offices and terms of agreements and, in the end, has provided greater return to NASA's investment into the negotiated partnership. There are ongoing efforts to improve communications; minimize duplication; and help link resources, programs, and infrastructure for maximum benefit and value to NASA.

Existing strategic alliances provide an immediate springboard as unfunded collaborators to produce, market, and distribute educational information through a focused National Education Campaign about NASA's projects and programs. Several examples of existing alliances include:

- **Science Rocks!**

NASA and Honeywell launched the 2006 tour of their award-winning FMA Live! science educational program. The innovative, traveling hip-hop science concert reached nearly 20,000 students in 45 schools during its 14-week, 27-city tour across the United States. The program content addresses critical curriculum objectives to help students understand Newtonian concepts and improve their performance in the sciences.

- **Exxon Mobil/Harris Foundation/NASA Partnership**

Former astronaut Bernard Harris, the first African-American astronaut to walk in space, in partnership with NASA and Exxon Mobil, sponsored a 2-week academic and residential camp for middle school students. The purpose of the camp was to enhance education in STEM fields by providing a variety of hands-on laboratory experiments, projects, field excursions, and classes taught by high school teachers, university professors, and professionals in STEM fields.

- **Northrop Grumman/NASA Partnership**

The NASA and Northrop Grumman Partnership sponsored the 14th annual Great Moonbuggy Race. The moonbuggy race is an applied, hands-on engineering challenge for high school and university/college students that relates to NASA's exploration mission while inspiring students to pursue careers in science, technology, engineering, and mathematics. Students work in classrooms, garages, and shops all across the country trying to figure out the best way to design, build, and race a human-powered buggy capable of traveling around a half-mile track on Earth.



- **NASA Explorer Schools (NES)**

Thirty-three schools joined the NES program in 2006, adding to the existing 185 schools. The programs represent 50 of the most creative, forward-thinking, results-driven Government programs at the state, local, tribal, and Federal levels. Community participation continues to increase as citizens have taken pride in NASA's visible presence and area businesses team up with NASA Explorer Schools and local governments.

- **Delta Researcher Schools (DRS): Rockets and Robots**

The Delta Researcher Schools project participants are Dutch educators in Netherlands' Delta Researcher Schools project. The DRS was named after the mission of Dutch astronaut Andre Kuipers and focuses on children between the ages of 9 and 12. Like NES, the DRS project uses the excitement of space flight, the International Space Station, and other international cooperative projects to inspire students' interest in STEM.

Strategic alliances multiply the impact of NASA's education programs by leveraging knowledge, identifying additional target audiences and organizations, and sharing program resources. NASA looks forward to establishing strategic alliances with new partners.

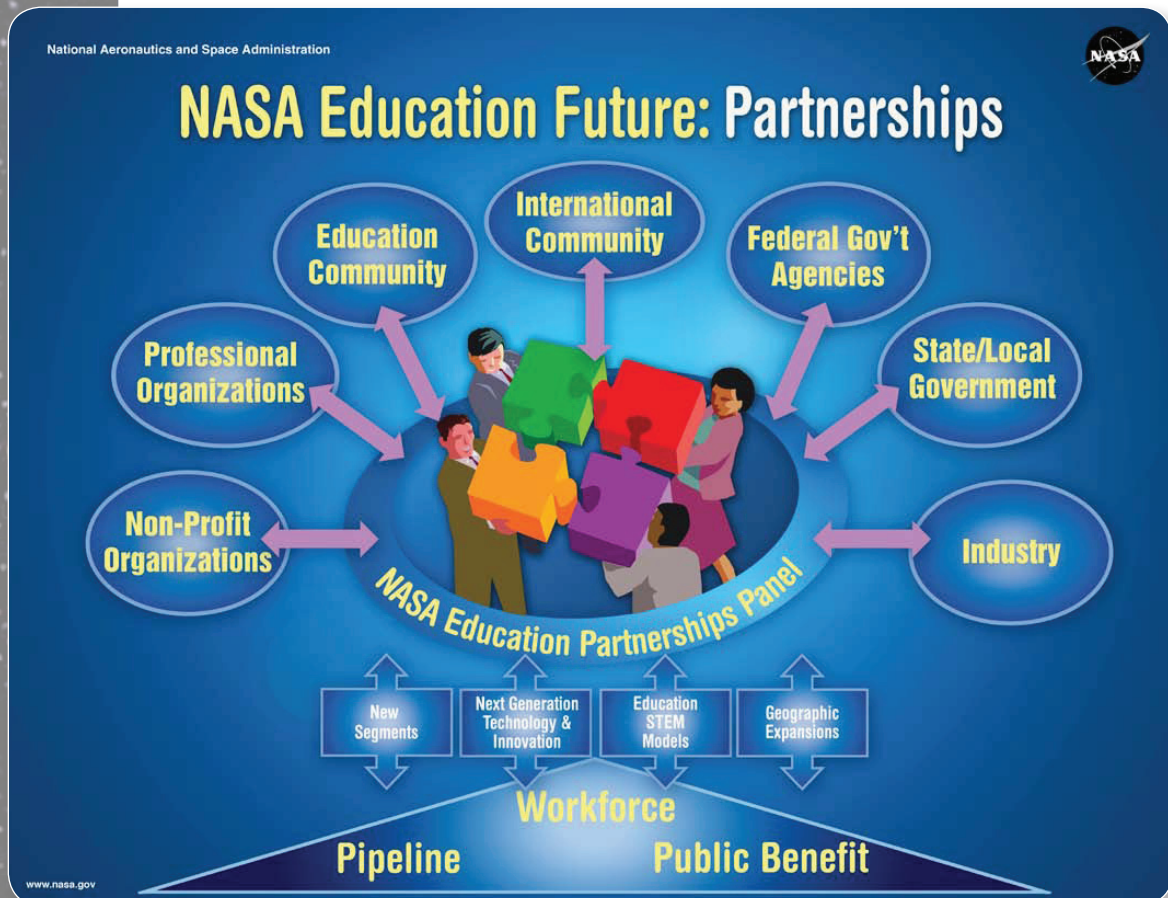



IX. Key Administration and Education Partners

Since NASA's creation, the Agency has taken on challenging missions because diverse external partners from industry, academia, other Federal agencies, not-for-profit organizations, and international stakeholders have supported the Agency and shared in NASA's work. The Space Act inspired these partnerships, and the Vision for Space Exploration is no less explicit in requiring innovative partnerships and collaborative expansions.

NASA's education program and its pathfinder initiatives have attracted continuous and growing interest by legislative, industry, academic, community, and professional education organizations. Individually and collectively, these groups provide NASA with the opportunity to raise the visibility, scope, and depth of reach with NASA's educational opportunities.

NASA will maintain and expand partnership arrangements to meet the Agency's increasingly complex and diverse needs. NASA Education will continue to engage in, as well as expand, partnership arrangements with key administration and education partners. Partners are drawn from public schools, community colleges, and public and private universities.





NASA Education: Revolutionizing learning, one mind at a time.

<http://www.nasa.gov/education.html>

Special thanks . . .

to the following NASA employees who contributed to the development of the Education Communication Strategy:

- Alotta Taylor, *Space Operations Mission Directorate, NASA Headquarters;*
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- Janelle Turner, *Innovative Partnerships, NASA Headquarters;*
- Barbara Zelon, *Space Flight Awareness, Johnson Space Center;* and
- The NASA Education Coordinating Committee.

NASA values the comments and recommendations of our stakeholders, customers, partners, employees, and the contractor community. For further information regarding NASA education programs, please contact the Center and education official closest to your community:

Joyce Winterton, Ph.D.
NASA Headquarters
Assistant Administrator
for Education
joyce.l.winterton@nasa.gov

Bernice Alston, Ed.D.
NASA Headquarters
Deputy Assistant Administrator
for Education
bernice.alston-1@nasa.gov
202-358-0103

James L. Stofan
NASA Headquarters
Deputy Assistant Administrator
for Education Programs Integration
james.l.stofan@nasa.gov
202-358-1885

NASA Headquarters Mission Directorates

Anthony Springer
Aeronautics Mission Directorate
tony.springer@nasa.gov

Jerry Hartman
Exploration Systems Mission Directorate
jerry.g.hartman@nasa.gov

Yvonne J. Pendleton, Ph.D.
Science Mission Directorate
yvonne.j.pendleton@nasa.gov

Alotta Taylor
Space Operations Mission Directorate
alotta.e.taylor@nasa.gov

NASA Field Center Contacts

Christine M. Ivie
Ames Research Center
Moffett Field, CA
christine.m.ivie@nasa.gov

Miriam Rodon, Ph.D. (acting)
Dryden Flight Research Center
Edwards, CA
miriam.m.rodon@nasa.gov

Jo Ann Charleston
Glenn Research Center
Cleveland, OH
jo.a.charleston@nasa.gov

Robert Gabrys, Ph.D.
Goddard Space Flight Center
Greenbelt, MD
robert.e.gabrys@nasa.gov

Parvin Kassaie, Ph.D.
Jet Propulsion Laboratory
Pasadena, CA
parvin.kassaie-1@nasa.gov

Susan M. White
Johnson Space Center
Houston, TX
susan.m.white@nasa.gov

Greg Buckingham, Ed.D.
Kennedy Space Center
Kennedy Space Center, FL
greg.a.buckingham@nasa.gov

Roger Hathaway
Langley Research Center
Hampton, VA
roger.a.hathaway@nasa.gov

Tammy Rowan
Marshall Space Flight Center
Huntsville, AL
tammy.rowan@nasa.gov

Katie V. Wallace (acting)
Stennis Space Center
Stennis Space Center, MS
katie.v.wallace@nasa.gov



For More Information

For more information, please visit www.nasa.gov.

The NASA Portal is the single point of entry to NASA public content and the most popular government site on the Web. It serves as the gateway for information regarding content, programs, and services offered by NASA for the general public and, specifically, for the education community.

Visit www.nasa.gov to find out more information about NASA's mission, research, and activities; NASA Education strategy and programs; and NASA Mission Directorates and Field Centers.