Mission Directorate: Education

Overview

NASA's Office of Education performs a leading role in inspiring the next generation of explorers through lessons, materials, research opportunities and hands-on activities that draw on NASA's unique missions. The National Research Council (NRC) in 2008, stated that "NASA has a unique and important role to play in motivating and inspiring students to consider STEM careers, and citizens to become more knowledgeable participants in the scientific arena." Accordingly, NASA's awe-inspiring science, technology, engineering, and mathematics (STEM) initiatives lead the Nation's exploration of our Earth and its climate, Moon, Mars, and beyond, as well as engage teachers and learners of all ages in various classrooms venues. The Office of Education works to align the NASA education strategy with national STEM priorities in collaboration with other Federal agencies, and state and local education leaders.

NASA is a leader among Federal Research and Development agencies in promoting STEM education opportunities. NASA partners with academic institutions, professional education associations, industry, and other Government agencies to provide teachers and faculty with the experiences that capitalize on the excitement of NASA's discoveries to spark their students' interest and involvement. NASA invests in teacher professional development, post-secondary STEM degrees, school-based resources, and multiple on-line learning options. NASA resources and opportunities are available to a diverse audience of educators and students, including women, minorities, and persons with disabilities.

In FY 2010, NASA will pursue the following education priorities:
- Stimulate competitive research, through grants to universities, targeted education and support to our Nation's Minority Serving Institutions. In order to prepare students for future employment at NASA, in aerospace industry, or academia, student activities will be directly tied to real-world experiences (i.e., Constellation, Mars Exploration; global climate change; aeronautics).
- Provide opportunities for student flight projects to gain access to space. Through partnerships (NASA Centers, universities and industry), students will gain research experiences and hands-on engineering experience on a variety of real-world flight platforms (high altitude balloons, sounding rockets, aircraft, and space satellites).
- Prepare pre-college students for studies in science and mathematics and increase number of science and engineering graduates. High school students will intern under mentorship of NASA scientists and engineers, and university students will participate in ongoing space and aeronautics research missions. Many will contribute to original research and support designing hardware to fly on future NASA missions. Scholarships will be offered to the Nation's most talented students to support their studies and to help make college affordable.
- Recruit NASA scholarship, internship and fellowship recipients into cooperative-education (co-op) and Federal Career Intern Program (FCIP) positions open at NASA.
- Invest in strengthening curricula at the Nation's two-year community colleges which are critical to ensuring students are prepared for work and to successfully transition to four-year institutions. Additionally, NASA will promote graduating students having skills, knowledge, and hands-on experience to make them competitive when applying for employment with NASA, academia, or aerospace industries.
- Immerse students and educators in current NASA science and technology, using social networks, Internet collaborations, a virtual magnet school, and an online science teacher's certificate. NASA will make extensive use of telepresence technology, from web disseminated information and remote control of science instruments, to learning in virtual worlds.
- Inspire learning through participating in authentic experiences via NASA's Digital Learning Network (DLN). Student design competitions will be tied to NASA's ongoing priorities, allowing teachers to engage students in real-time, cutting edge science and engineering problems. DLN will "beam" NASA scientists, engineers, and astronauts into any classroom in the nation for real-time videoconferences on topics related to NASA science and engineering. An electronic professional development system for pre-service, in-service, and informal educators will go live in 2010.
- Capitalize on the flight experiences of Educator Astronaut, Dorothy Metcalf-Lindenburger, aboard Shuttle Atlantis STS-131, to help Americans excel and embrace science and engineering.

FY 2010 Budget Request

Budget Authority ($ millions)	FY 2008 Actual	FY 2009 Enacted	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014
FY 2010 President's Budget Request	**146.8**	**169.2**	**126.1**	**123.8**	**123.8**	**123.8**	**125.5**
Education	146.8	169.2	126.1	123.8	123.8	123.8	125.5
FY 2009 President's Budget Request	**146.8**	**115.6**	**126.1**	**123.8**	**123.8**	**123.8**	**--**
Education	146.8	115.6	126.1	123.8	123.8	123.8	--
Total Change from FY 2009 President's Budget Request	**0.0**	**53.6**	**0.0**	**0.0**	**0.0**	**0.0**	**--**

Note: In all budget tables, the FY 2010 President's Budget Request depicts the September 2008 Operating Plan for the 2008 Actuals and the 2009 Omnibus Appropriations Act (P.L. 111-8) and the American Recovery and Reinvestment Act (P.L. 111-5) for the 2009 enacted.

Plans for FY 2010

Education

Education

New Initiatives:

None

Major Changes:

In FY 2010, NASA is reorganizing its Education Mission Directorate into three programs: Higher Education STEM Education, K-12 STEM Education, and Informal STEM Education.

Higher Ed STEM Education will include STEM Opportunities, Minority University Research and Education Program (MUREP), Space Grant, and Experimental Program to Stimulate Competitive Research (EPSCoR). NASA also tracks within this program the funding the Congress provided for the Global Climate Change Education in 2008 and 2009. These projects will build, sustain, and provide a skilled, knowledgeable, diverse, and high performing workforce to meet the current and emerging needs of NASA and the Nation.

K-12 STEM Education includes 3 main areas. STEM Student Opportunities engage and help retain students in STEM disciplines through flight opportunities, hands on research and engineering experiences, and increased knowledge of NASA science & technology content. STEM Teacher Development uses NASA's content and resources to provide pre-service and classroom teachers with learning experiences to build STEM skills and better motivate students to pursue STEM careers. NASA also tracks within this program the funding the Congress provided in 2008 and 2009 for the K-12 Competitive Educational Grant Program.

Informal STEM Education will support requests that come to NASA Centers from scouting groups, community based organizations, and other informal education providers who use NASA content to engage their audiences in STEM experiences. NASA will also support the Nation's museums, science centers and planetariums in developing innovative educational experiences that help the American public understand NASA's exploration mission. NASA also tracks within this program the funding the Congress provided in 2008 and 2009 for science center, museum, and planetarium grants and the NASA Visitor Centers' education activities.

NASA does not request FY 2010 funding for the Global Climate Change Education, the K-12 Competitive Educational Grant Program, Science Museums and Planetarium Grants, or NASA Visitors Centers. NASA will be able to address the intended outcomes of these initiatives as well as NASA's stated education goals through programs for which the Agency is requesting funding.

Major Highlights for FY 2010

In FY 2010, NASA will invest $126M in STEM education. From this investment, NASA's Office of Education proposes to:

- Support more than 3,000 of the Nation's talented undergraduate and graduate students studying in STEM fields with scholarships, internships, and fellowships.

- Recruit students who receive scholarships, internships, and fellowships from NASA into co-op and Federal Career Intern Program (FCIP) positions that are open at NASA Centers.

- Engage the capacity of over 550 of the Nation's colleges and universities through the National Space Grant College and Fellowship Program to engage students in student launch activities, scholarships, research, and courses based upon NASA science and engineering.

- Provide over $24M in grants to universities to support NASA-related research and to enhance their capacity to compete for new Federal research dollars.

- Provide 470,000 K-12 students with hands-on STEM experiences based on NASA's science and engineering disciplines.

- Link students in every state to NASA's missions, including the flight of Educator Astronaut Dorothy Metcalf-Lindenburger, via the Internet, Digital Learning Network, and other interactive technologies.

- Provide stipends, scholarships, internships, and fellowships for 350 underserved and underrepresented individuals beginning their careers as new faculty or entering the K-12 teaching profession.

- Ensure every Minority Serving Institution in the Nation has an awareness of NASA education and the tools necessary to support students applying for NASA support.

- Based upon science and shuttle missions launched in 2010, release three student design competitions, providing middle and high school students an opportunity to participate in activities based upon NASA's work.

- Publish interim results of the 2008 and 2009 NASA K-12 Competitive Grant Program, including: linkages between authentic research and field-based studies for students, new science courses for secondary school or dual credits (high school and college) based on NASA content, and new technology tools that extend the reach and impact of NASA activities to diverse audiences.

- Streamline applications for undergraduate and graduate students seeking internships and fellowships at NASA Centers, thus allowing students to apply to multiple centers and internship programs through one application.

- Connect prospective students to current interns via social networking technologies to allow peer-to-peer mentoring and coaching.

Mission Directorate:	Education
Theme:	Education

Theme Overview

FY 2010 Budget Request

Budget Authority ($ millions)	FY 2008 Actual	FY 2009 Enacted	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014
FY 2010 President's Budget Request	**146.8**	**169.2**	**126.1**	**123.8**	**123.8**	**123.8**	**125.5**
Higher Ed. STEM Education	92.0	107.7	80.6	80.6	80.6	80.7	80.7
K-12 STEM Education	41.3	47.5	43.3	41.0	41.0	41.0	42.7
Informal STEM Education	13.5	14.0	2.1	2.1	2.1	2.1	2.1
FY 2009 President's Budget Request	**146.8**	**115.6**	**126.1**	**123.8**	**123.8**	**123.8**	**--**
Education	146.8	115.6	126.1	123.8	123.8	123.8	--
Total Change from FY 2009 Request	**0.0**	**53.6**	**0.0**	**0.0**	**0.0**	**0.0**	**--**

Relevance

Relevance to national priorities, relevant fields, and customer needs:

Forty years after Apollo XI landed on the moon, the Nation faces new challenges and competition to our leadership in science, technology, and innovation. NASA's education investments increase the scientific literacy of students and the public, enabling a better understanding of technology advances and building a stronger STEM workforce.

NASA helps to ensure the Nation's future competitiveness by building and improving youth interest in STEM careers, quality of teacher preparation, student achievement in STEM disciplines, practices in enabling STEM learning at all levels, students interest in and out of the classroom, and public understanding and interest in STEM.

NASA is uniquely qualified to achieve these goals because of its inspiring missions, workforce, facilities, research, and innovations. NASA provides one-of-a-kind opportunities for students, teachers, and the public to gain access to authentic spaceflight projects and real-world experiences derived from our exploration and aerospace missions.

Relevance to the NASA Mission and Strategic Goals:

NASA Education works to foster a science, technology, engineering, and math workforce in fields that support NASA's strategic goals; attract students to the disciplines through a progression of education opportunities; and build strategic partnerships between formal and informal education providers. Education investments are an important component to establishing NASA affinity with students and institutions to help ensure workforce availability in needed disciplines to support NASA's mission. To this end, education investments are a significant part of an integrated Agency-wide approach to human capital management, supporting Agency strategic goals.

NASA grounds all education in the NASA science and exploration missions and works cooperatively with the Mission Directorates in planning and implementation. Activities and experiences offered to students provide authentic opportunities to interact with scientists and engineers, perform hands-on operations, and conduct cutting-edge research in areas critical to NASA's exploration plans. Providing these experiences and pipelining participants into NASA, aerospace industry, and academic employment will result in a robust workforce that enables the Nation to compete globally in related science and technology fields.

See FY 2010 Performance Plan, under Management and Performance, for specific annual goals for Education.

Relevance to education and public benefits:

Mission Directorate:	Education
Theme:	Education

NASA Education implements a continuum of projects that increase the number of students proficient in STEM, who choose to major in STEM disciplines, and pursue careers in STEM fields, an imperative for NASA and the Nation.

NASA is committed to engaging all people in the results of our missions, research, and innovations. NASA sustains relationships with more than 500 colleges and universities, hundreds of K-12 schools/districts, and more than 350 museums and science centers. In conjunction with products and services provided through extended networks, professional partners, and education technologies, these relationships enable NASA to reach tens of thousands of collegians, more than a million K-12 students, and innumerable members of the general public each year. Student and public interest and engagement in NASA missions helps create a more scientifically literate and globally competitive populace.

NASA leverages and helps to grow the infrastructures and capabilities of formal and informal education communities by: providing access to NASA staff, research, technology, information, and facilities; supporting cutting-edge student research that contributes to NASA missions; creating necessary professional development opportunities for STEM educators; and by forming collaborative partnerships that improve STEM teaching and learning in formal and informal education. NASA targets recruitment and retention of underserved and underrepresented students, drawing on a largely untapped source of talent to create a diverse future workforce to better serve the Agency and the Nation.

Mission Directorate:	Education
Theme:	Education

Performance Achievement Highlights:

NASA's Office of Education Performance Achievement Highlights for FY 2008 are reflected below:

- NASA provided opportunities to help students and educators gain hands-on experiences in a range of science, technology, engineering, and mathematics (STEM) related areas through internships, fellowships, and research. These opportunities provided students with the motivation, inspiration, and experience needed to serve the Nation's current and future workforce needs. NASA provided for more than 3,000 summer internships at Centers; more than 800 study opportunities, including 538 Space Grants, to underserved students, teachers, and faculties; and 139 grants were awarded to 50 underrepresented and underserved institutions. Of the students who participated in undergraduate programs, 44 percent continued to pursue advanced degrees. Of those students who completed a NASA program and were eligible to enter the workforce, 51 percent entered NASA-related careers, including working for NASA, aerospace contractors, universities and other educational institutions.
- NASA attracted and retained students in STEM disciplines through the use of educational opportunities for students, teachers, and faculty. An example is the Lunar Plant Growth Chamber Engineering Design Challenge, which achieved participation of over one million students who designed greenhouse chambers to study plants grown from seeds that flew in space. Students also conducted classroom experiments that may help NASA find new ways to grow and sustain plants in space and on the Moon. Other examples of NASA attracting and retaining students in STEM disciplines were achieved with: (1) engaging over 200 high school interns in NASA STEM activities (underrepresented and underserved students targeted) in NASA's Interdisciplinary National Science Program Incorporating Research & Education (INSPIRE) program which has been implemented across NASA's 10 Centers; (2) using new Digital Learning Network (DLN) technology enabling NASA scientists and engineers to virtually "beam" into classrooms throughout the Nation; and (3) supporting NASA Explorer Schools activities that reached over 105,000 students through instructional and enrichment activities.
- NASA promoted a continuous awareness of its Mission and STEM literacy by partnering with the NASA Museum Alliance, the Space Place Network (in every state), the Smithsonian, NASA Visitor Centers, and the Office of Education on a number of special projects. For example, the NASA Museum Alliance provided programming at various museums. This, in turn, allowed the museums to share coverage of Shuttle flights STS-122, 124 and 126. Additionally, coverage and exhibits on a number of aeronautics and space activities, such as the Mars rovers, the Mars Reconnaissance Orbiter (MRO) spacecraft, and the study of heliophysics were made available to many visitors.
- NASA supported innovative efforts to improve global climate education for educators and students, through the Global Climate Change Education initiative that the Congress funded in both FY 2008 and FY 2009.
- NASA awarded grants to public schools and nonprofit organizations on a competitive basis, through the K-12 Competitive Educational Grant Program that the Congress funded in both FY 2008 and FY 2009 to seek out and support new, innovative, and replicable approaches to improving STEM learning and instruction.
-NASA selected institutions to develop and implement public engagement activities and enhance education programs related to space exploration, aeronautics, space science, Earth science, or microgravity through the Science Museums and Planetarium Grants initiative that the Congress funded in both FY 2008 and FY 2009.
- NASA provided resources at the ten NASA Centers to enhance education activities (e.g. Science on a Sphere) through the NASA Visitor Centers initiative that the Congress funded in both FY 2008 and FY 2009.

Mission Directorate:	Education
Theme:	Education

Independent Reviews:

Review Type	Performer	Last Review	Purpose/Outcome	Next Review
All	Abt Associates, Cambridge, MA	FY 2008	An external independent evaluation of the SEMAA project, (including RCT), is assessing the effectiveness and determining how intended goals are being implemented. Evaluation will consider the overall effort, provide data on how differences in effectiveness are associated with site-site variations, and offer explanations for observed outcomes. Abt is to provide results in FY 2009.	FY 2013
All	Abt Associates, Cambridge, MA	FY 2009	The external evaluation contractor is initiating the planning phase for reviewing selected projects in the Higher Education program.	FY 2010
All	NRC - National Academies	FY 2008	An external independent review and critique of Elementary & Secondary Ed Program, conducted by the NRC, included: 1) effectiveness of program; 2) adequacy of metrics and data collection, effectiveness of individual projects 3) funding priorities in the program; 4) extent and effectiveness of coordination and collaboration between NASA and other federal agencies. Outcome: NRC reinforced the important role of NASA STEM education; several recommendations were provided and are being implemented.	2010-12

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Mission Directorate:	Education
Theme:	Education
Program:	Higher Ed. STEM Education

FY 2010 Budget Request

Budget Authority ($ millions)	FY 2008 Actual	FY 2009 Enacted	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014
FY 2010 President's Budget Request	92.0	107.7	80.6	80.6	80.6	80.7	80.7
STEM Opportunities (Higher Education)	9.0	9.5	11.6	11.6	11.6	11.6	11.6
NASA Space Grant	35.7	40.0	28.4	28.4	28.4	28.4	28.4
Experimental Program to Stimulate Competetive Research	12.8	20.0	10.0	10.0	10.0	10.0	10.0
Minority University Research & Education Program	27.5	28.2	30.7	30.7	30.7	30.7	30.7
Global Climate Change Education	7.0	10.0	0.0	0.0	0.0	0.0	0.0
FY 2009 President's Budget Request	92.0	74.7	79.1	79.1	79.2	79.2	--
STEM Opportunities (Higher Education)	9.0	9.5	10.1	10.1	10.1	10.1	--
NASA Space Grant	35.7	28.7	28.4	28.4	28.4	28.4	--
Experimental Program to Stimulate Competitive Research	12.8	8.3	10.0	10.0	10.0	10.0	--
Minority University Research & Education Program	27.5	28.1	30.7	30.7	30.7	30.7	--
Global Climate Change Education	7.0	0.0	0.0	0.0	0.0	0.0	--
Changes from FY 2009 Request	0.0	33.0	1.5	1.5	1.5	1.5	--

Mission Directorate:	Education
Theme:	Education
Program:	Higher Ed. STEM Education

Project Descriptions and Explanation of Changes

STEM Opportunities (Higher Education)

STEM Opportunities focuses on strengthening the research capabilities of the Nation's colleges and universities, and providing opportunities that attract and prepare increasing numbers of students for NASA-related careers. The research conducted by these institutions contributes to the research needs of NASA's Mission Directorates and furthers the Nation's scientific and technology innovation agendas. The student projects serve as a major link in the pipeline for addressing NASA's Human Capital Strategies. The projects build, sustain, and effectively deploy the skilled, knowledgeable, diverse, and high-performing workforce needed to meet the current and emerging needs of NASA and the Nation's workforce.

STEM Opportunities will consist of the following projects:

- Undergraduate Student Researchers Project (USRP) attracts undergraduate students from the widest array of backgrounds, who are fully representative of America's racial, economic, ethnic, and cultural diversity. It provides them with hands-on, challenging research experiences that stimulate continued student interest in the fields/disciplines aligned with NASA's research and development mission.

- Graduate Student Researchers Project (GSRP) cultivates research ties to the academic community to help meet the continuing needs of the Nation's aeronautics and space effort. GSRP increases the number of highly trained scientists and engineers in aeronautics and space-related disciplines, and broadens the base of students pursuing advanced degrees in science, mathematics, and engineering. The program awards research fellowships for graduate study leading to masters or doctoral degrees in the fields of science, mathematics, and engineering related to NASA research and development.

- Innovation in STEM Education is a new competitive solicitation, that enables NASA to seek out and support innovative and replicable approaches to improve STEM learning and instruction, and opportunities for student and faculty to participate in NASA related research.

National Space Grant

National Space Grant College and Fellowship Program (Space Grant) is a national network of colleges and universities that works to expand opportunities for students and faculty to understand and participate in NASA's aeronautics and space programs by supporting and enhancing science, and engineering education, research, and public information programs.

Mission Directorate:	Education
Theme:	Education
Program:	Higher Ed. STEM Education

Experimental Program to Stimulate Competitive Research

Experimental Program to Stimulate Competitive Research (EPSCoR) develops academic research enterprises that are long term, self-sustaining, and nationally competitive by supporting states with modest research infrastructure to become more competitive in attracting research funding. Funding is awarded to lead academic institutions in twenty-eight eligible states to foster a science, technology, engineering and mathematics (STEM) relationship with industries for research and development opportunities.

Section 704 (b) of the NASA Authorization Act of 2008 (P.L. 110-422) directs that NASA, as part of its annual budget submission, detail additional steps that can be taken to further integrate the participating EPSCoR States in both existing and new or emerging NASA research programs and Center activities. The following information is provided pursuant to this direction:

NASA actively seeks to integrate the research conducted by EPSCoR jurisdictions and the aerospace and exploration agenda being pursued by the Agency. Mission Directorate representatives work closely with EPSCoR program management so that current and future research and engineering needs are reflected in EPSCoR solicitations. The Mission Directorates serve as the proposal selection committee, further ensuring that the selected work contributes to NASA priorities.

Technical Monitors (TM) at the NASA Field Centers and Headquarters monitor and assess the progress of each award. They provide scientific guidance and technical advice throughout the year, as required, on the overall progress of the proposed effort, and review the annual progress report. Additional involvement may occur, depending upon the nature of the collaboration already established or desired. This includes, but is not limited to: integrating the EPSCoR research into ongoing activities or research efforts and increasing the Principal Investigator and his/her team's awareness of other related or relevant research in NASA.

In FY10, NASA Education is planning a technical assistance workshop with EPSCoR jurisdictions.

Minority University Research and Education Program

Minority University Research and Education Program (MUREP) engages underserved and underrepresented populations in many ways: 1) multiyear grants awarded to assist minority institutions, faculty, and students in research pertinent to NASA missions; and 2) recruitment and retention efforts to students underrepresented in STEM disciplines, through completion of under/graduate degrees through entry into the scientific and technical workforce. The program is composed of Research Clusters, University Research Centers and Minority Institution Collaborations.

Research Clusters is composed of 5 research activities:
- Motivating Undergraduates in Science and Technology (MUST) provides partial scholarships to underserved undergraduate students to support up to 50% of tuition and fees. Students also participate in a NASA Center internship.
- Curriculum Improvement Partnership Award for the Integration of Research (CIPAIR) is a 3-year undergraduate STEM curriculum improvement effort, using NASA related content, for minority institutions (MI), including Historically Black Colleges and Universities, Hispanic Serving Institutions, Tribal Colleges and Universities, and others.
- NASA Science and Technology Institute for Minority Institutions (NSTI-MI) provides research opportunities for faculty and students from MIs that contribute to NASA's astrobiology, biotechnology, IT, and nanotechnology research agenda. Faculty and students collaborate with scientists at NASA, industry, academia and nonprofit organizations to research technologies enabling future exploration.
- Jenkins Pre-doctoral Fellowship Project (JPFP) provides support for underrepresented students (women, minorities, and persons with disabilities) in STEM disciplines who seek advanced degrees and opportunities in NASA-related disciplines, thereby increasing the number of skilled workers. The JPFP provides its participants with access to NASA mentors, NASA research opportunities, and the ability to network and collaborate with the aerospace professionals.
- NASA Administrator's Fellowship Project (NAFP) provides an opportunity for NASA employees to spend a year at MI institutions to help them build research competitiveness. Faculty and administrators spend a year at a NASA Center doing research and gaining experience in the federal system.

University Research Centers provide a broad-based, competitive NASA-related research capability among the Nation's MIs to foster new aerospace science and technology concepts; expand the Nation's base for aerospace R&D; develop mechanisms for increased participation by faculty and students of MI in mainstream research; and increase the number of underserved students obtaining advanced degrees in STEM disciplines.

Minority Institutions Collaborations is a project made up of two activities:
- Tribal College & University (TCU) Project responds to Executive Order 13270, TCU, directing Federal agencies to provide support to Tribal College faculty and students. NASA partners with TCUs to: increase student and faculty involvement in space exploration and cutting-edge technology, improve competitiveness for Federal grants and resources, and provide high-quality educational opportunities to Native American students and faculty.
- MUREP Small Projects support a variety of opportunities for students, teachers, faculty and researchers from underrepresented and underserved communities in NASA-related STEM fields.

Mission Directorate:	Education
Theme:	Education
Program:	Higher Ed. STEM Education

Program Commitments

Commitment/Output FY 2010	Program/Project	Changes from FY 2009 PB Request
Provide undergraduates and graduate students opportunities to engage in research and engineering supporting NASA missions.	Higher Education STEM Education Program/ STEM Opportunities	None
Promote a nationwide network of state-based consortia to engage students and faculty in NASA research and other opportunities; enhance capabilities of eligible states and institutions to compete for NASA-sponsored research and technology opportunities	Higher Education STEM Education Program/ Space Grant, EPSCoR	None
Target underserved and under-represented students with opportunities to engage in research and engineering supporting NASA missions. Enhance capabilities of minority serving institutions to compete for NASA-sponsored work.	Higher Education STEM Education Program/ MUREP (Research Clusters, URC, MI Collaborations)	None

Program Management

The Assistant Administrator for Education is responsible to the NASA Administrator for NASA's education portfolio, reports to the Chief of Strategic Communication, serves as NASA Education Officer, and manages all education responsibilities.

Project	Management Responsibility	NASA Center Performers	Cost-Sharing Partners
Undergraduate Student Research Program (USRP); [Higher Education STEM Education Program]	Johnson Space Center (JSC)	All NASA Centers	None
Graduate Student Research Program (GSRP); [Higher Education STEM Education Program]	Jet Propulsion Lab (JPL)	All NASA Centers	None
Innovation in STEM Education [Higher Education STEM Education Program]	NASA Headquarters Office of Education	All NASA Centers	None
National Space Grant College and Fellowship Project (Space Grant); [Higher Education STEM Education]	NASA Headquarters Office of Education	All NASA Centers	Fifty-two (52) state (including Puerto Rico and District of Columbia) consortia provide required cost sharing. In FY 2008 it is anticipated that the average ratio of cost sharing to award will be $0.82 to $1.00; as reported in FY 2007.
Experimental Project to Stimulate Competitive Research (EPSCoR); [Higher Education STEM Education]	Kennedy Space Center (KSC)	All NASA Centers	Twenty-seven EPSCoR eligible states provided required cost sharing funds. In FY 2008 it is anticipated that the average ratio of cost sharing to award for EPSCoR research awards will be $0.65 to $1.00 and EPSCoR RID awards will average to $1.05 to $1.00 cost sharing, as reported in FY 2007.
Minority University Research and Education Program (MUREP) Research Clusters; [Higher Ed STEM Ed]	Ames Res Center (ARC), Glenn Res Center (GRC), Jet Prop Lab (JPL), Marshal Space Flight Center(MSFC)	All NASA Centers	None
MUREP: University Research Centers (URC); [Higher Education STEM Education Program]	Dryden Research Flight Center (DRFC)	AL NASA Centers	None
MUREP: Minority Institutions Collaborations; [Higher Education STEM Education]	NASA Headquarters Office of Education	All NASA Centers	None

Mission Directorate:	Education
Theme:	Education
Program:	Higher Ed. STEM Education

Acquisition Strategy

NASA solicits new and innovative education products, tools, and services from qualified external organizations. This occurs in response to changes in STEM education trends, identified gaps or opportunities in the education portfolio of investments, a response to demonstrated customer need or demand, or when the Administration or Congress identifies new priorities.

NASA encourages participation of new or less experienced organizations and awards education grants and contracts through full and open competition. NASA includes feedback from staff, subject matter experts, and public in developing solicitations, including the requirements, expected outcomes, schedules, proposal instructions, and evaluation approaches. NASA solicits comments on perceived programmatic risk issues associated with performance of the work. Procurement offices at NASA review all solicitations.

NASA awards all major grants and cooperative agreements based on reviews by external panels of peers for educational merit; NASA and external scientists and engineers for content, merit, feasibility, and alignment to education goals; and Mission Directorates for alignment with NASA's research and development interests. Indications of a clear competitive process are an integral part of reviews. NASA makes awards only after qualified assessments of merit. While competition may sometimes be restricted by legislation to designated participants, such as defined EPSCoR states, grant awards and selection of participating institutions are still determined competitively. When designated participants are identified, all proposals are reviewed for merit, and each award must be justified and deemed worthy of funding.

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Mission Directorate:	Education
Theme:	Education
Program:	K-12 STEM Education

FY 2010 Budget Request

Budget Authority ($ millions)	FY 2008 Actual	FY 2009 Enacted	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014
FY 2010 President's Budget Request	41.3	47.5	43.3	41.0	41.0	41.0	42.7
STEM Student Opportunities (K-12)	9.6	10.5	14.5	14.5	14.5	14.5	14.5
STEM Teacher Development (K-12)	20.1	21.0	28.9	26.5	26.5	26.5	28.2
K-12 Competitive Educational Grant Program	11.6	16.0	0.0	0.0	0.0	0.0	0.0
FY 2009 President's Budget Request	41.3	38.9	44.8	42.5	42.5	42.5	--
STEM Student Opportunities (K-12)	6.6	8.6	10.9	10.9	10.9	10.9	--
STEM Teacher Development (K-12)	23.1	30.4	33.9	31.6	31.6	31.6	--
K-12 Competitive Educational Grant Program	11.6	0.0	0.0	0.0	0.0	0.0	--
Changes from FY 2009 Request	0.0	8.6	-1.5	-1.5	-1.5	-1.5	--

Mission Directorate:	Education
Theme:	Education
Program:	K-12 STEM Education

Project Descriptions and Explanation of Changes

STEM Student Opportunities (K-12)

STEM Student Opportunities focus on engaging and retaining students in STEM education programs to encourage pursuit of NASA's future engineering, scientific, and technical missions through flight opportunities, hands on research and engineering experiences, and increased knowledge of NASA science & technology content.

The following are projects included in the STEM Student Opportunities portfolio.

- Education Flight Projects provide hands-on experiences to inspire and motivate students to pursue studies and careers in STEM through participation in NASA research applications. Activities include ISS Earth Knowledge Acquired by Middle School Students (EarthKAM), Amateur Radio on the International Space Station (ARISS), ISS In-flight Education Downlinks, and On-orbit Education Activities.

- Interdisciplinary National Science Project Incorporating Research and Education Experience (INSPIRE) is designed to maximize student participation and involvement in NASA and STEM, and enhance the STEM pipeline from high school (grades 9-12) into the undergraduate level.

- Science Engineering Mathematics and Aerospace Academy (SEMAA) reaches K-12 minority and underserved students that are traditionally underrepresented in careers involving STEM. Students meet during school, after school or on Saturday mornings and during the summer to engage in NASA-based hands-on, interactive learning sessions that are specifically designed for each grade level.

- Learning Technologies Project (LTP) develops and refines leading-edge or cutting-edge technologies that are in use within NASA missions and/or projects to enhance the teaching and learning of scientific concepts. Technologies funded under LTP are developed, evaluated, and leveraged with strategic partners to extend reach into educational and commercial applications.

STEM Teacher Development (K-12)

STEM Teacher Development uses NASA's unique content and resources to provide pre-service and classroom teachers with learning experiences that build critical instructional STEM skills and enable teachers to better motivate students to achieve academic excellence and pursue STEM careers.

The following are projects included in the STEM Teacher Development portfolio.

- Aerospace Education Services Project (AESP) serves the K-12 education community by providing classroom demonstrations, faculty workshops, parent training, in-service and pre-service training for teachers, and appropriate classroom resources.

- NASA Explorer Schools (NES) will take a new direction in FY10. The 2007 National Academies review of the project, input from 2008 external focus groups, and findings and recommendations of the 2009 Benchmarking Study provide the basis for the new secondary education model that will be implemented. The NES project will be open to all interested secondary schools and will heavily utilize current technologies in the delivery of opportunities and experiences to meet the needs of today's learning and learners.

- Endeavor Science Teacher Certificate Program (ESTCP), a new competitive project in 2009 with goal of awarding over 200 Fellowships to in-service and alternative-route teachers over the next 5 years. The project provides workshops to educators of future science teachers at colleges of education. They receive assistance in delivering NASA content in methods and practicum courses for the pre-service teachers. The majority of the Endeavor fellows serve underrepresented student populations. ESTCP assists teachers' professional growth by helping them to earn and maintain state certification.

- NASA Educational Technologies Services (NETS) is responsible for maintaining educational content on NASA Portal, managing operations of Office of Education web site and other e-based dissemination/publishing networks. Additional web support is provided to the education video file (education programming) on the NASA TV Public Services channel and NASA TV Education Services channel.

- Learning Environments and Research Network (LEARN) encompasses 3 major activities: NASA-sponsored Classroom of the Future, Digital Learning Network (DLN), and electronic professional development infrastructure. The intent of LEARN is to conduct empirical educational research that is the basis for development and testing of off-the-shelf and new educational technologies, enabling NASA to better meet the needs of its educational audiences. LEARN will incorporate research findings on cognition, effective application of technology to educational settings, integration of NASA content, and delivery through videoconferencing, Internet multimedia, handheld devices, and dissemination infrastructures available to the Agency.

- e-Education Small Projects develop infrastructure and deploy research-based technology applications, products, and services to enhance the educational process for formal and informal education. The project emphasis is implementation of educational product development, review, and meta-tagging processes and final distribution through approved media, electronic, and/or site-based channels. Another aspect of e-Education Small Projects is the Central Operations for Resources for Educators (CORE). CORE is a national distribution center for NASA's audiovisual educational materials.

Mission Directorate:	Education
Theme:	Education
Program:	K-12 STEM Education

Program Commitments

Commitment/Output FY 2010	Program/Project	Changes from FY 2009 PB Request
Provide experiences, tools, & opportunities to educators & students, to engage in missions & learning experiences, & ability to teach/learn in STEM disciplines, & increased use of leveraged multimedia-rich products & technology infrastructures.	K-12 STEM Education/STEM Student Opportunities, STEM Teacher Development	None

Program Management

The Assistant Administrator for Education is responsible to the NASA Administrator for NASA's education portfolio, reports to the Chief of Strategic Communication, serves as NASA Education Officer, and manages all education responsibilities.

Project	Management Responsibility	NASA Center Performers	Cost-Sharing Partners
Flight Projects (STEM Student Opportunities); [K-12 STEM Education]	Johnson Space Center (JSC)	All NASA Centers	None
Interdisciplinary Nat Sci Prog Inc Res & Ed Exper (INSPIRE) (STEM Student Opportunity); [K12 STEM Ed]	Kennedy Space Center (KSC)	All NASA Centers	None
Science, Engin. Math & Aerospace Acad.(SEMAA) (STEM Student Opportunity); [K-12 STEM Education Prog]	Glenn Research Center (GRC)	All NASA Centers	Fourteen implementation sites are required to develop local partnerships for cost and resource sharing
NASA Learning Technologies Project (LTP) (STEM Student Opportunity); [K-12 STEM Education Program]	Goddard Space Flight Center (GSFC)	All NASA Centers	Project Whitecard, Information in Place and Virtual Heroes (competitively selected) will provide in-kind labor and product development costs for an educational game.
Aerospace Education Services Program (AESP) (STEM Teacher Development); [K-12 STEM Education Prog]	Langley Research Center (LaRC)	All NASA Centers	None
NASA Explorer Schools (NES) (STEM Teacher Development); [K-12 STEM Education Program]	Glenn Research Center (GRC)	All NASA Centers	None
Endeavour Teacher Science Certificate Project (STEM Teacher Development); [K-12 STEM Education Prog]	Goddard Space Flight Center (GSFC)	All NASA Centers	None
NASA Education Technology Services (NETS) (STEM Teacher Development); [K-12 STEM Education Program]	Marshall Space Flight Center (MSFC)	All NASA Centers	None
Learning Environment and Research Network (LEARN) (STEM Teacher Development); [K-12 STEM Education]	Langley Research Center (LaRC)	All NASA Centers	None
eEducation Small Projects (STEM Teacher Development); [K-12 STEM Education Program]	Marshall Space Flight Center (MSFC)	All NASA Centers	None

Acquisition Strategy

NASA solicits new and innovative education products, tools, and services from qualified external organizations. This occurs in response to changes in STEM education trends, identified gaps or opportunities in the education portfolio of investments, a response to demonstrated customer need or demand, or when the Administration or Congress identifies new priorities.

NASA encourages participation of new or less experienced organizations and awards education grants and contracts through full and open competition. NASA includes feedback from staff, subject matter experts, and public in developing solicitations, including the requirements, expected outcomes, schedules, proposal instructions, and evaluation approaches. NASA solicits comments on perceived programmatic risk issues associated with performance of the work. Procurement offices at NASA review all solicitations.

NASA awards all major grants and cooperative agreements based on reviews by external panels of peers for educational merit; NASA and external scientists and engineers for content, merit, feasibility, and alignment to education goals; and Mission Directorates for alignment with NASA's research and development interests. Indications of a clear competitive process are an integral part of reviews. NASA makes awards only after qualified assessments of merit. While competition may sometimes be restricted by legislation to designated participants, such as defined EPSCoR states, grant awards and selection of participating institutions are still determined competitively. When designated participants are identified, all proposals are reviewed for merit, and each award must be justified and deemed worthy of funding.

Mission Directorate:	Education
Theme:	Education
Program:	Informal STEM Education

FY 2010 Budget Request

Budget Authority ($ millions)	FY 2008 Actual	FY 2009 Enacted	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014
FY 2010 President's Budget Request	13.5	14.0	2.1	2.1	2.1	2.1	2.1
Science Museums and Planetarium Grants	7.8	7.0	0.0	0.0	0.0	0.0	0.0
NASA Visitor Centers	5.8	7.0	0.0	0.0	0.0	0.0	0.0
NASA Informal Education Opportunities	0.0	0.0	2.1	2.1	2.1	2.1	2.1
FY 2009 President's Budget Request	13.5	2.0	2.1	2.1	2.1	2.1	--
Science Museums and Planetarium Grants	7.8	0.0	0.0	0.0	0.0	0.0	--
NASA Visitor Centers	5.8	2.0	2.1	2.1	2.1	2.1	--
Changes from FY 2009 Request	0.0	12.0	0.0	0.0	0.0	0.0	--

Project Descriptions and Explanation of Changes

NASA Informal Education Opportunities (NIEO)

NASA Informal Education Opportunities (NIEO) includes a competitive grants component for the Nation's museums, science centers and planetariums to enhance NASA STEM education activities, including exhibits, events and materials. NIEO also supports each NASA Center, allowing the Agency to retain NASA-unique informal education experts and activities that occur at the NASA Centers and their visitor centers. Funded activities address one or more of the NASA Education outcomes and align with NASA Education principles, and state or national standards. Starting in 2010, the NASA Explorer Institutes (NEI) pilot will end and be replaced by the NIEO.

Program Commitments

Commitment/Output FY 2010	Program/Project	Changes from FY 2009 PB Request
Provide educators and students with tools, experiences and opportunities to engage in NASA missions and learning experiences, improving their knowledge of, and ability to teach/learn in STEM disciplines.	Informal STEM Education Program/ NASA Informal Education Opportunities (NIEO)	None

Program Management

The Assistant Administrator for Education is responsible to the NASA Administrator for NASA's education portfolio, reports to the Chief of Strategic Communication, serves as NASA Education Officer, and manages all education responsibilities.

Project	Management Responsibility	NASA Center Performers	Cost-Sharing Partners
NASA Informal Education Opportunities (NIEO); [Informal STEM Education Program]	NASA Headquarters Office of Education	All NASA Centers	None

Acquisition Strategy

NASA solicits new and innovative education products, tools, and services from qualified external organizations. This occurs in response to changes in STEM education trends, identified gaps or opportunities in the education portfolio of investments, a response to demonstrated customer need or demand, or when the Administration or Congress identifies new priorities.

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