NASA Education

Current Activities and Plans

Education and Public Outreach Committee

Leland D. Melvin
NASA Associate Administrator for Education
Over the next 10 years, nearly half of all new jobs will require education that goes beyond a high school education. And yet, as many as a quarter of our students aren’t even finishing high school. The quality of our math and science education lags behind many other nations. America has fallen to ninth in the proportion of young people with a college degree. And so the question is whether all of us—as citizens, and as parents—are willing to do what’s necessary to give every child a chance to succeed.

PRESIDENT BARACK OBAMA,
2011 STATE OF THE UNION ADDRESS
NASA Education Vision Statement

To advance high quality Science, Technology, Engineering, and Mathematics (STEM) education using NASA’s unique capabilities.
**Operating Principles**

- Relevance
- NASA Content
- Diversity
- Evaluation
- Continuity
- Partnership/Sustainability

---

**Audiences**

- Learners
- Educators
- Institutions

---

**Outcomes**

- **Employ**
  - Identify, cultivate, and sustain a diverse workforce and inclusive work environment that is needed to conduct NASA missions

- **Educate**
  - Attract and retain students in STEM disciplines along the full length of the education pipeline.

- **Engage**
  - Engage the public in NASA’s missions by providing new pathways for participation.

- **Inspire**
  - Inform, engage, and inspire the public by sharing NASA’s mission, challenges, and results.

  - Build strategic partnerships that promote STEM literacy through formal and informal means.
National Science and Technology Council (NSTC) Committee on STEM Education (CoSTEM) was established pursuant to the requirements of Sec. 101 of the America COMPETES Reauthorization Act of 2010.

- It requires NASA to actively engage in collaborations with other federal agencies to ensure the Agency’s programs are supportive of national STEM priorities.

- The CoSTEM will serve as part of the internal deliberative process of the NSTC and provides overall guidance and direction. The purpose of the CoSTEM is to coordinate Federal programs and activities in support of STEM education.

- In accordance with the Act, CoSTEM is currently reviewing STEM education activities and programs, and the respective assessments of each, throughout Federal agencies to ensure effectiveness; coordinating, with the Office of Management and Budget, STEM education activities and programs throughout Federal agencies; and will develop and implement through the participating agencies a 5-year STEM education strategic plan, to be updated every 5 years.
The Strategic Plan will provide common goals, outcomes, and strategies to create a coordinated portfolio of STEM education across the Federal government. It requires Federal agencies to design and revise their STEM education investments to accomplish the following objectives:

1. Do What We Know Works
2. Learn More About and Share What Works
3. Increase Efficiency and Cohesion
4. Identify and Focus on Priority Issues
   - Effective K-12 STEM Teacher Education
   - Engagement in STEM
   - Undergraduate STEM Education
   - Serving Groups Traditionally Underrepresented in STEM
FY 2014 Agency’s Design Strategies & Funding Sources

Portfolio Development Architecture

Portfolio Offerings / Business Lines

- STEM Engagement
  - Internships, Fellowships, and Scholarships
  - Educator Professional Development
  - Institutional Engagement

Design Strategies
- National Needs
- Innovative Pilots
- Competitive Opportunities
- Partnerships
- NASA-Unique

Supporting Elements
- Infrastructure
- Dissemination Networks
- Content Development
- Labor

OE MUREP
OE Space Grant
OE EPSCoR
OE STEM Education and Accountability Projects
Mission Directorates/ OCT
NASA Centers

Internal/External Partners
Education Functional Leadership

Office of the Associate Administrator

Leland Melvin
Associate Administrator for Education

Deputy Associate Administrator
(Johnson)

Secretary (Ball)
PAO Officer (Trotta)

Sr. Advisor for Education and
STEM Engagement (Stovall-
Alexander)
Program Support (Kennedy)

DAA Planning, Policy and Evaluation
(Pengra)

Deputy Associate Administrator
Roosevelt Johnson

Deputy AA for Integration
James Stofan

Senior Advisor (Guerra)

Education Coordinating Council
Chair (Melvin)
Executive Secretary (Stofan)

Office of Education Programs

Program Director ARCD (VACANT)
Program Director SEA (Sladek)
Asst. Director SEA (Patrick)

Infrastructure Division

Division Director (Matthews)
Evaluation Manager (Shaffer)
IT Manager (VACANT)

Budget Team

Budget Manager (Hubbard)
Budget Analyst (Pettis)
Budget Analyst (VACANT)

Integration Division

NIFS Director (Knowles)
Educator Professional Development
Director (Wallace)
STEM Engagement Director (DeTroye)
Institutional Engagement Director
(Guerra)
Education Coordinating Council

Chair (Melvin)

- Diversity and Equal Opportunity (Torres)
- International and Intergov. (Carrodeguas)
- Legislative Affairs (Forhand)
- Chief Financial Officer (Jimenez)
- General Counsel (Greenstone)
- Ames (Collins)
- JPL (Kassaie)
- Human Capital (Burks)
- Communications (Brown)
- Aeronautics Mission Directorate (Springer)
- Office of the Chief Technologist (Brooks)
- Human Exploration and Operations Mission Dir. (Lind)
- Science Mission Directorate (Stockman)
- Office of Education Senior Leadership
- GRC (Lacy)
- GSFC (Gabrys)
- LaRC (Hathaway)
- MSFC (Rowan)
- SSC (Sovik)
- JSC (White)
- Dryden (Emery)
- KSC (Burt)
- LaRC (Hathaway)
- GSFC (Gabrys)
- MSFC (Rowan)
- SSC (Sovik)
- JSC (White)
- Dryden (Emery)
- KSC (Burt)
Strategic Goal 5: Enable program and institutional capabilities to conduct NASA’s aeronautics and space activities.

• Outcome 5.1: Identify, cultivate, and sustain a diverse workforce and inclusive work environment that is needed to conduct NASA missions.

Strategic Goal 6: Share NASA with the public, educators, and students to provide opportunities to participate in our Mission, foster innovation, and contribute to a strong national economy.

• Outcome 6.1: Improve retention of students in STEM disciplines by providing opportunities and activities along the full length of the education pipeline.
• Outcome 6.2 Promote STEM literacy through strategic partnerships with formal and informal organizations.
• Outcome 6.4: Inform, engage, and inspire the public by sharing NASA’s missions, challenges, and results.
FY 2013 Federal Investments in STEM Education

Federal STEM Education Investments by Agency ($2,951 M)

- NSF, $1,193, 41%
- HHS, $554, 19%
- Education, $628, 21%
- Defense, $153, 5%
- Commerce, $44, 2%
- Agriculture, $91, 3%
- Transportation, $101, 3%
- NRC, $5, 0%
- NASA, $117, 4%
- Interior, $1, 0%
- Energy, $37, 1%
- EPA, $20, 1%

209 investments
13 agencies

*Source: Executive Office of the President, Office of Science and Technology Policy, Preparing a 21st Century Workforce: Science, Technology, Engineering, and Mathematics Education in the 2013 Budget (Feb 2012)
FY 2014 NASA Office of Education Funding by Source

- MUREP, $30, 30%
- NASA Space Grant, $24, 24%
- ESPCoR, $9, 9%
- STEM Education & Accountability Projects, $37, 37%

Total Investments - $100M
FY 2014 NASA Education Funding by Source

- Education: $100M, 59%
- Science: $42M, 25%
- Space Technology: $15M, 9%
- Aeronautics Research: $3M, 2%
- Cross Agency Support: $4M, 2%
- HEO: $4M, 3%

Agency Total Investments - $169M
NASA’s STEM Partnerships are Reaching Learners, Educators and Institutions
ISS - A Focal Point for STEM Education

ISS Downlinks

Youtube Space Lab

LEGO

SPHERES
James Webb STEM Innovation Project

Students adding supports for secondary mirror
Real World Games: Sector33 App

- Free, downloadable app version of Smart Skies
- Players become air traffic controllers
- Available for iPods/iPads and Droid
Hubble Image Processors Group

Hubble Image Processors
RAIDERS OF THE HUBBLE ARCHIVE

Community
Amateur astronomical image processors meet here to exchange information, tips and techniques, and share their work. Ask a question, post a picture, and let everyone know how your projects are coming along.

About
Write something...

Coming Soon: AstroDrizzle
A new technique allows astronomers to make Hubble's images sharper than ever. This animation provides a look at turning raw data into a deep composite image.

Recent Posts by Others on Hubble Image Processors
- Nick Rose
  - 19 hours ago
  - I couldn't find this in the FAQ's area. What is the difference?
- Joshua Barrington
  - 1 week ago
  - I was advised to post technical questions here, Hop...
- André Van Der Hoeven
  - This image was created from Hubble data in the leg...

Help us find Hubble's next iconic picture.

Enter HUBBLE'S HIDDEN TREASURES
www.spacetelescope.org/hidden treasures
Record Number of Students Control the Space Station Camera- EarthKAM
The first four Airborne Astronomy Ambassador (AAA) educators: (from left) Constance Gartner, Vince Washington, Ira Hardin and Chelen Johnson at the educators’ work station aboard the SOFIA observatory during a flight on the night of Feb. 12-13, 2013.
2013 International Space Apps Challenge

Citizen explorers address global challenges...

T-45 Days and Counting

The International Space Apps Challenge is a two-day technology development event during which citizens from around the world will work together to address current challenges relevant to both space exploration and social need.

NASA believes that mass collaboration is key to creating and discovering state-of-the-art technology. The International Space Apps Challenge aims to engage YOU in developing innovative solutions to our toughest challenges.

Join us on April 20-21, 2013, as we join together cities around the world to be part of pioneering the future. Sign up to be notified when registration opens in early 2013!
## Line of Business Responsibilities

<table>
<thead>
<tr>
<th>Line of Business</th>
<th>ARC</th>
<th>DFRC</th>
<th>GRC</th>
<th>GSFC</th>
<th>JSC</th>
<th>KSC</th>
<th>LARC</th>
<th>MSFC</th>
<th>SSC</th>
<th>JPL</th>
<th>Accountable to:</th>
</tr>
</thead>
<tbody>
<tr>
<td>NIFS Coordination</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>NIFS Director</td>
</tr>
<tr>
<td>EPD Coordination</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>EPD Director</td>
</tr>
<tr>
<td>STEM Engagement Coordination</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>OEID Director</td>
</tr>
<tr>
<td>Institutional Engagement Coordination</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Office of Education Funding Mgrs</td>
</tr>
<tr>
<td>OEID/Web Infrastructure</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>STEM Engagement Director</td>
</tr>
<tr>
<td>OEID/Dissemination Networks</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Institutional Engagement Director</td>
</tr>
<tr>
<td>OEID/Data Collection</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NIFS Coordinators</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EPD Coordinators</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STEM Engagement</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SE/IE/VC Implementers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flight Projects Liaison</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ISS National Lab Liaison</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Summer of Innovation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MUREP/Institutional Engagement</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Space Grant/Institutional Engagement</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Partnerships</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EPSCoR</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Budgeted</td>
<td>6</td>
<td>5</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>8</td>
<td>7</td>
<td>5</td>
<td>7</td>
<td></td>
</tr>
</tbody>
</table>
### NASA STEM Education Inventory Funding, by Account

<table>
<thead>
<tr>
<th></th>
<th>Actual</th>
<th>Estimate</th>
<th>Notional</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total</strong></td>
<td>189.1</td>
<td>202.5</td>
<td>167.9</td>
</tr>
<tr>
<td><strong>Science</strong></td>
<td>29.9</td>
<td>41.9</td>
<td>40.8</td>
</tr>
<tr>
<td><strong>Aeronautics Research</strong></td>
<td>4.4</td>
<td>3.3</td>
<td>3.2</td>
</tr>
<tr>
<td><strong>Space Technology</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>10.4</td>
<td>15.2</td>
<td>15.2</td>
</tr>
<tr>
<td><strong>Exploration</strong></td>
<td>4.2</td>
<td>4.4</td>
<td>4.4</td>
</tr>
<tr>
<td><strong>Space Operations</strong></td>
<td>2.5</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td>143.1</td>
<td>138.4</td>
<td>100.0</td>
</tr>
<tr>
<td><strong>Aerospace Research and Career Development</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>68.3</td>
<td>58.4</td>
<td>33.0</td>
</tr>
<tr>
<td><strong>NASA Space Grant</strong></td>
<td>44.5</td>
<td>40.0</td>
<td>24.0</td>
</tr>
<tr>
<td><strong>ESPCoR</strong></td>
<td>23.9</td>
<td>18.4</td>
<td>9.0</td>
</tr>
<tr>
<td><strong>STEM Education and Accountability</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>74.8</td>
<td>80.0</td>
<td>67.0</td>
</tr>
<tr>
<td><strong>MUREP</strong></td>
<td>28.5</td>
<td>30.0</td>
<td>30.0</td>
</tr>
<tr>
<td><strong>STEM Education and Accountability Projects</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>46.3</td>
<td>50.0</td>
<td>37.0</td>
</tr>
<tr>
<td><strong>Formal and Informal Education</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Innovation in Education</strong></td>
<td>31.6</td>
<td>21.0</td>
<td></td>
</tr>
<tr>
<td><strong>Evaluation, Performance, Monitoring, &amp; Accountability</strong></td>
<td>10.0</td>
<td>10.0</td>
<td></td>
</tr>
<tr>
<td><strong>Informal STEM Education</strong></td>
<td>4.7</td>
<td>9.0</td>
<td></td>
</tr>
<tr>
<td><strong>Cross Agency Support</strong></td>
<td>5.0</td>
<td>4.1</td>
<td>4.2</td>
</tr>
</tbody>
</table>
Education Functional Leadership

Office of the Associate Administrator
Leland Melvin
Associate Administrator for Education
Deputy Associate Administrator (Johnson)
Secretary (Ball)
PAO Officer (Trotta)
Sr. Advisor for Education and STEM Engagement (Stovall-Alexander)
Program Support (Kennedy)
DAA Planning, Policy and Evaluation (Pengra)

Deputy Associate Administrator
Roosevelt Johnson

Deputy AA for Integration
James Stofan
Senior Advisor (Guerra)

Education Coordinating Council
Chair (Melvin)
Executive Secretary (Stofan)

Office of Education Programs
Program Director ARCD (VACANT)
Program Director SEA (Sladek)
Asst. Director SEA (Patrick)

Infrastructure Division
Division Director (Matthews)
Evaluation Manager (Shaffer)
IT Manager (VACANT)

Budget Team
Budget Manager (Hubbard)
Budget Analyst (Pettis)
Budget Analyst (VACANT)

Integration Division
NIFS Director (Knowles)
Educator Professional Development Director (Wallace)
STEM Engagement Director (DeTroye)
Institutional Engagement Director (Guerra)
Education Coordinating Council

Chair (Melvin)

- Office of Education
- Senior Leadership (Stockman)
- Chief Financial Officer (Jimenez)
- General Counsel (Greenstone)
- Ames (Collins)
- JPL (Kassaie)
- Communications (Brown)
- Human Exploration and Operations Mission Director (Lind)
- Science Mission Directorate (Gabrys)
- GRC (Lacy)
- GSFC (Gabrys)
- LaRC (Hathaway)
- MSFC (Rowan)
- SSC (Sovik)
- KSC (Burt)
- Aeronautics Mission Directorate (Springer)
- Office of the Chief Technologist (Brooks)
- Human Capital (Burks)
- International and Intergov. Affairs (Forhand)
- Diversity and Equal Opportunity (Torres)
- Legislative Affairs (Forhand)
- Dryden (Emery)
- Legislative Affairs (Forhand)
FY2011 vs. FY 2012 Year End Comparison

- **Budget**: $145.4M in FY2011 vs. $138.4M in FY2012
- **Committed**: $119.6M in FY2011 vs. $121.2M in FY2012
- **Obligated**: $118.2M in FY2011 vs. $120.6M in FY2012
- **Costed**: $33.6M in FY2011 vs. $35.8M in FY2012
- **Unobligated**: $27.2M FY11 Carryover vs. $17.8M FY12 Carryover
## FY 2013 CR Budget Control Level

<table>
<thead>
<tr>
<th>$ in Thousands</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Education</strong></td>
<td>$48,770,000</td>
</tr>
<tr>
<td><strong>Aerospace Research &amp; Career Development Program</strong></td>
<td>$16,094,100</td>
</tr>
<tr>
<td>Space Grant College and Fellowship Project</td>
<td>$11,704,800</td>
</tr>
<tr>
<td>Experimental Program to Stimulate Competitive Research (EPSCoR)</td>
<td>$4,389,300</td>
</tr>
<tr>
<td><strong>STEM Education and Accountability Program</strong></td>
<td>$32,675,900</td>
</tr>
<tr>
<td><strong>STEM Education and Accountability Project</strong></td>
<td>$18,044,899</td>
</tr>
<tr>
<td>Formal &amp; Informal Education</td>
<td>$7,006,789</td>
</tr>
<tr>
<td>Innovation in Education</td>
<td>$3,133,958</td>
</tr>
<tr>
<td>Evaluation, Performance Monitoring and Accountability</td>
<td>$5,465,653</td>
</tr>
<tr>
<td>Informal STEM Education</td>
<td>$2,438,499</td>
</tr>
<tr>
<td><strong>Minority University Research &amp; Education Project (MUREP)</strong></td>
<td>$14,631,001</td>
</tr>
</tbody>
</table>
FY 2013 CR Funding Status

Percentages based on total CR Funding

CR = 48.8

- CR Funding: $21.5 million (44%)
- Distributed: $15.8 million (32%)
- Obligated: $12.2 million (25%)

$ in Millions
Funding Status Comparison FY2012 vs. FY2013 Oct-Jan

$ in Millions

- Committed: 20.8 (2012), 15.7 (2013)
- Costed: 5.5 (2012), 3.9 (2013)

2012 Funds = $138.4, 2013 CR Funds = $48.8
FY13 Office of Education Travel Budget

### YTD Obligation Burn Rate

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>HQ</th>
<th>ARC</th>
<th>GRC</th>
<th>LaRC</th>
<th>DFRC</th>
<th>GSFC</th>
<th>MSFC</th>
<th>SSC</th>
<th>JSC</th>
<th>KSC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>$699,000</td>
<td>$519,000</td>
<td>$18,000</td>
<td>$36,000</td>
<td>$18,000</td>
<td>$18,000</td>
<td>$18,000</td>
<td>$18,000</td>
<td>$18,000</td>
<td>$18,000</td>
<td>$18,000</td>
</tr>
<tr>
<td>YTD Obligation</td>
<td>$83,300</td>
<td>$49,010</td>
<td>$ -</td>
<td>$4,640</td>
<td>$2,780</td>
<td>$4,800</td>
<td>$ -</td>
<td>$5,300</td>
<td>$3,480</td>
<td>$6,370</td>
<td>$6,920</td>
</tr>
<tr>
<td>% Obligated</td>
<td>11.9%</td>
<td>9.4%</td>
<td>0.0%</td>
<td>12.3%</td>
<td>15.4%</td>
<td>26.7%</td>
<td>0.6%</td>
<td>29.4%</td>
<td>19.3%</td>
<td>35.4%</td>
<td>38.4%</td>
</tr>
<tr>
<td>Remaining Budget</td>
<td>$615,700</td>
<td>$469,990</td>
<td>$18,000</td>
<td>$31,360</td>
<td>$15,120</td>
<td>$13,200</td>
<td>$18,000</td>
<td>$12,700</td>
<td>$14,520</td>
<td>$11,630</td>
<td>$11,080</td>
</tr>
</tbody>
</table>