Education at NASA

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Associate Administrator for Education

Management of NASA Education

- Continuous Improvement
- Outcomes Objectives Metrics
- ECC
- Design Team
- Missions - Portfolios
- Data Driven Decisions
**NASA Education Overview**

**Strategic Framework**

- **Higher Education**
  - **Outcome 1**: Contribute to the development of the STEM workforce in disciplines needed to achieve NASA’s strategic goals, through a portfolio of investments.

- **Informal Education**
  - **Outcome 3**: Build strategic partnerships and linkages between STEM formal and informal education providers that promote STEM literacy and awareness of NASA’s mission.

**Outcomes and Objectives**

**Outcome 1: Higher Education**
- Faculty and Research Support
- Student Support
- Student Involvement, Higher Education
- Course Development
- Targeted Institution Research and Academic Infrastructure

**Outcome 2: Elementary and Secondary Education**
- Educator Professional Development, Short Duration
- Educator Professional Development, Long Duration
- Curricular Support Resources
- Student Involvement, K-12

**Outcome 3: Informal Education**
- Educational Support Resources
- Professional Development for Informal Education Providers
- Informal Education Provider Involvement Opportunities
AA for Education
Chair
Budget, Reporting, New Initiatives

ECC
OE (Deputy AAs)
Mission Directorates (4)
ARMD, ESMD, SOMD, SMD
Field Center Ed Directors (10)
ARC, DFRC, GRC, GSFC, JPL,
JSC, KSC, LaRC, MSFC, SSC
Functional Offices
EO, Human Cap,
PAO, OLIA, OER,
Astro Office

Project Implementation
Field Centers, Grantees,
Contractors

FY09 NASA Education Funding by Source
Total: $200,185,816
CHALLENGES

Proficient in STEM at the End of High School

Based on ACT’s “College Ready” Definition

- 17% Proficient Interested
- 25% Proficient Not Interested
- 15% Not Proficient Interested
- 42% Not Proficient Not Interested
More Women Need to Enroll in STEM Fields

Proportion of Women in Selected College Majors
1999-2000 Bachelor’s Degree Recipients

<table>
<thead>
<tr>
<th>Major</th>
<th>Female (%)</th>
<th>Male (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education</td>
<td>77.6</td>
<td>22.4</td>
</tr>
<tr>
<td>Psychology</td>
<td>67.0</td>
<td>33.0</td>
</tr>
<tr>
<td>Health</td>
<td>70.3</td>
<td>29.7</td>
</tr>
<tr>
<td>Social Sciences</td>
<td>64.1</td>
<td>35.9</td>
</tr>
<tr>
<td>Humanities</td>
<td>68.7</td>
<td>31.3</td>
</tr>
<tr>
<td>Other</td>
<td>94.4</td>
<td>5.6</td>
</tr>
<tr>
<td>Biological Science</td>
<td>50.3</td>
<td>49.7</td>
</tr>
<tr>
<td>Social Science</td>
<td>52.1</td>
<td>47.9</td>
</tr>
<tr>
<td>Business/Management</td>
<td>45.3</td>
<td>54.7</td>
</tr>
<tr>
<td>History</td>
<td>57.1</td>
<td>42.9</td>
</tr>
<tr>
<td>Math/Physical Sciences</td>
<td>82.3</td>
<td>17.7</td>
</tr>
<tr>
<td>Engineering</td>
<td>60.8</td>
<td>39.2</td>
</tr>
</tbody>
</table>

NOTE: Excludes graduates older than 35 at completion of degree.

So That They Can Get STEM Jobs

Women as a Proportion of Selected STEM Occupations, 2005

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Female (%)</th>
<th>Male (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanical Engineers</td>
<td>5.8%</td>
<td></td>
</tr>
<tr>
<td>Engineering Managers</td>
<td>9.5%</td>
<td></td>
</tr>
<tr>
<td>Civil Engineers</td>
<td></td>
<td>13.2%</td>
</tr>
<tr>
<td>Aerospace Engineers</td>
<td></td>
<td>13.3%</td>
</tr>
<tr>
<td>Chemical Engineers</td>
<td></td>
<td>14.3%</td>
</tr>
<tr>
<td>Industrial Engineers</td>
<td></td>
<td>14.9%</td>
</tr>
<tr>
<td>Computer Software Engineers</td>
<td></td>
<td>21.9%</td>
</tr>
<tr>
<td>Computer Programmers</td>
<td></td>
<td>26.0%</td>
</tr>
<tr>
<td>Database Administrators</td>
<td></td>
<td>32.3%</td>
</tr>
<tr>
<td>Chemists &amp; Materials Scientists</td>
<td></td>
<td>35.3%</td>
</tr>
<tr>
<td>Biological Scientists</td>
<td></td>
<td>48.7%</td>
</tr>
<tr>
<td>Psychologists</td>
<td></td>
<td>67.3%</td>
</tr>
</tbody>
</table>

Source: CPST/Professional Women and Minorities Data derived from U.S. Census Bureau, Current Population Survey
### Women Employed at NASA

<table>
<thead>
<tr>
<th>Year</th>
<th>1964</th>
<th>Today</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&lt;1% women</td>
<td>GS12 or higher</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>1970's</th>
<th>Today</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>17% Total workforce</td>
<td>35%</td>
</tr>
<tr>
<td></td>
<td>3% S&amp;T NASA workforce</td>
<td>22%</td>
</tr>
<tr>
<td></td>
<td>&lt;1% Senior Exec Service</td>
<td>25%</td>
</tr>
</tbody>
</table>

### NASA's Higher Education Programs

<table>
<thead>
<tr>
<th>Year</th>
<th>2004 Nat. Avg.</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>20.5% Engineering</td>
<td>41%</td>
</tr>
<tr>
<td></td>
<td>42% Physical Sciences</td>
<td></td>
</tr>
<tr>
<td></td>
<td>29.1% Math and Computer Science</td>
<td></td>
</tr>
</tbody>
</table>
Resident population of the United States, by race/ethnicity: 2007

Note: Other includes American Indians/Alaska Natives, Native Hawaiians/other Pacific Islanders and multiple race/ethnicity.
Employed scientists and engineers, by race/ethnicity: 2006

Note: Other includes American Indians/Alaska Natives, Native Hawaiians/other Pacific Islanders and multiple race/ethnicity.
Source: National Science Foundation, Scientists and Engineers Statistical Data System, 2006.

Percentage of 25- to 29-year-olds who completed high school, by race/ethnicity: March 1971-2008

Percentage of 25- to 29-year-olds who completed a bachelor’s, by race/ethnicity: March 1971-2008


STRATEGIES

Employ
Educate
Engage
Inspire
54,046,681 Page Views - Education website
51% of Higher Education students are employed by NASA, aerospace contractors and education institutions (+27% other STEM)
83% of educators in NASA training use resources in the classroom
44% of undergraduate students move on to advanced education
1,483,362 K-12 students engaged
400+ Museums and Science Centers are actively using NASA content
Utilizing Technology to Expand the Reach

Interactive Resources Include Collaboration Tools with NASA Experts, Virtual Worlds to Simulate Space Travel, and Online Remote Controls to Scientific Instruments

Webcasts  
DLN  
Virtual Ambassadors  
Second Life  
Virtual Gaming

What Are the Key Messages for NASA Education?

Goal: Reach the targeted audience with the message that works...........

Where and When?

Examples:

NASA’s educational opportunities and what they lead to.

Hard work brings personal rewards and achievement.

NASA’s significance to the Nation and the World.
First Steps to a STEM Career