Presented to:  VA General Assembly: Joint Commission on Technology and Science's
Presented by:  Dr. Robert M. Starr, DLN Project Manager
• A Very Brief History – BC

Before Connectivity
• Johnson Space Center
  • Distance Learning Outpost
  • ISS Virtual Tours
• Glenn Research Center
  • Virtual Visits
  • Learning Technologies
• Langley Research Center
  • Center for Distance Learning
  • NASA LIVE
• The Bright Idea (Duh?)
  • Spring 2003 – Shelley Canright/Phil West/ Bob Starr
  • University of Texas at El Paso
  • The Digital Learning Network was Born – Spring 2003

• A Very Brief History – AD

After Decision
• JSC/GRC/LaRC Designated Hubs
  • UTEP Digital Media Lab – Website Development
  • NES affiliation
• dPals
  • JSC – Jet Propulsion Lab, Dryden, Kennedy
  • GRC – Ames, Stennis
  • LaRC – Marshall, Goddard
• Training/Orientation
  • AESP staff trained at LaRC
  • NES staff trained at HQ
  • NES Teams trained at summer orientation workshops
• Completion of Infrastructure
  • 2004-2007
  • Stennis – last connection
National Aeronautics and Space Administration

• DLN / NES Relationship
  • 10 DLN Coordinators / 10 NES Coordinators
    - Other DLN staff: 4 at JSC, 4 at LaRC, 1 at GRC, 1 at GSFC

• Requests for Services
  - NASA Digital Learning Network™ Registration, Scheduling, Event Catalog Web Site:

http://nasadln.nmsu.edu/dln

http://nasadln.nmsu.edu/dln/admin
• Supply & Demand

Database Became Operational

2007 Projection

Students

Teachers
• Supply & Demand

**Others**

<table>
<thead>
<tr>
<th></th>
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<th></th>
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</thead>
<tbody>
<tr>
<td>Others</td>
<td>210</td>
<td>1274</td>
<td>4286</td>
<td>1978</td>
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**Participant Totals**

<table>
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<tr>
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<tbody>
<tr>
<td>Total</td>
<td>3352</td>
<td>45451</td>
<td>79907</td>
<td>121920</td>
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</table>

Excerpted from NASA 2005 Appropriations Bill

SEC. 612. PROGRAM TO EXPAND DISTANCE LEARNING IN RURAL UNDERSERVED AREAS.

(a) In General- The Administrator shall develop or expand programs to extend science and space educational outreach to rural communities and schools through video conferencing, interpretive exhibits, teacher education, classroom presentations, and student field trips.

(b) Priorities- In carrying out subsection (a), the Administrator shall give priority to existing programs--

(1) that utilize community-based partnerships in the field;
(2) that build and maintain video conference and exhibit capacity;
(3) that travel directly to rural communities and serve low-income populations; and
(4) with a special emphasis on increasing the number of women and minorities in the science and engineering professions.
Total Registered Users: 2,464

Registered Users by State:
- Guam-1: 10
- Virgin Islands-7
- Puerto Rico-8
- Mexico-3, Other Foreign-69
- Ontario-13
- RI-5
- CT-16
- NJ-122
- DE-7
- DC-14

Total Registered Users: 2,464
Total Registered Users: 2,464

<table>
<thead>
<tr>
<th>School Demographic Information Overview</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban Schools: 413</td>
</tr>
<tr>
<td>Suburban: 521</td>
</tr>
<tr>
<td>Rural: 385</td>
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<tr>
<td>Title 1: 208</td>
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<tr>
<td>Magnet: 74</td>
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<tr>
<td>Military: 20</td>
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<tr>
<td>Charters: 21</td>
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<tr>
<td>Homeschools: 47</td>
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<tr>
<td>Historically Black Institutions: 33</td>
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<tr>
<td>Hispanic Serving Institutions: 106</td>
</tr>
<tr>
<td>Native American Institutions: 24</td>
</tr>
<tr>
<td>Institution Serving Primarily Women: 11</td>
</tr>
<tr>
<td>Institution Designated as Primarily Serving Persons with Disabilities: 9</td>
</tr>
<tr>
<td>Other Minority Institutions: 15</td>
</tr>
<tr>
<td>Other: 166</td>
</tr>
</tbody>
</table>
DLN Components
- Content Modules

10 Most Requested in 2007

#1. Our Solar Neighborhood (72)
#2. Spacebots (52)
#3. America’s Spaceport (46)
#4. Can a Shoebox Fly Challenge (38)
#5. Our Planet Earth (36)
#6. Planet Hopping: Exploring the solar system with mathematics (34)
#7. DLN Overview (31)
#8. Earth According to WORF (28)
#9. Our Magnificent Sun (26)
#10. Reduced Gravity (25)
The NEEMO missions are a cooperative project of NASA, the National Oceanic and Atmospheric Administration (NOAA), the National Undersea Research Center (NURC) and the University of North Carolina at Wilmington (UNCW). They use Aquarius, the only undersea research laboratory in the world, which is owned by NOAA and managed by UNCW. The 14-meter-long (45 feet) by 4-meter-diameter (13 feet) underwater home and laboratory operates 4.5 kilometers (3 miles) off Key Largo in the Florida Keys National Marine Sanctuary.

Students interact with NASA's Desert Research and Technology Studies (RATS) teams while they are field testing a variety of spacesuits, field assistant vehicles, and other scientific and engineering equipment designed to support future space and planetary exploration.
DLN Components  
- Special Events

These distance learning events provided an opportunity for language arts and science teachers to work together to challenge their students to combine science and imagination as they created stories of their own. Through three 60-minute webcasts, two for students and one for teachers, participants saw Author/Artist Chris Van Allsburg and NASA Scientist Jennifer Keyes sharing their thoughts about imagination in art and exploration. Selected NASA Explorer Schools participated via videoconference.

NASA Digital Learning Network - Educator Astronaut
RELAY RALLY WEBCAST

April 19th and 20th  
11:00-12:30 Eastern Time  
LIVE FROM NASA FIELD CENTERS
STS-118
DLN Relay Rally
In June 2006, 7 NES teachers worked with NASA scientists in the Atacama Desert, Chile to study how organisms can exist in extreme climates. While in the desert, the teachers participated in a videoconference back to their classrooms to share their experiences with their students. This broadcast was live from the middle of the desert and set via a portable videoconference unit and satellite dish back to the DLN studio at NASA Ames Research Center.
NASA Education Outcomes

• The DLN is an INFRASTRUCTURE Using Delivery Technologies (Videoconferencing, Web Casting, etc.)

• Reaching students and educators wherever they may reside on the NASA Education Strategic Framework Pyramid

• Outcomes are determined by whomever uses the structure and its capabilities to reach particular audiences.

• Like other NASA Education INFRASTRUCTURES (NETS/Portal, CORE, ERC, AESP) it is a service organization providing cost efficiencies, cross-cutting collaborations, and intra-center communications.
NASA Education Outcomes

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

**Outcome 2**: Attract and retain students in STEM disciplines through a progression of educational opportunities for students, teachers and faculty.

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

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**Principles/Criteria**

- Relevance
- NASA Content
- Diversity
- Evaluation
- Continuity
- Partnerships/Sustainability
# Outcomes

## Impact Measurement


<table>
<thead>
<tr>
<th>Statement</th>
<th>Average Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PROGRAM VALUE:</strong></td>
<td></td>
</tr>
<tr>
<td>1. This visit with NASA was a valuable experience.</td>
<td>4.75</td>
</tr>
<tr>
<td>2. This program helped the students better understand careers in science, mathematics, engineering, geography, and/or technology.</td>
<td>4.52</td>
</tr>
<tr>
<td><strong>PROGRAM RESOURCES AND TOOLS:</strong></td>
<td></td>
</tr>
<tr>
<td>1. The PRE-conference activity helped prepare students for the videoconference.</td>
<td>4.15</td>
</tr>
<tr>
<td>2. The PRE-conference activity was appropriate for the students' grade level.</td>
<td>4.16</td>
</tr>
<tr>
<td>3. The POST-conference activity was interesting and challenging.</td>
<td>4.12</td>
</tr>
<tr>
<td>4. The POST-conference activity was appropriate for the students' grade level.</td>
<td>4.15</td>
</tr>
<tr>
<td><strong>PRESENTATION:</strong></td>
<td></td>
</tr>
<tr>
<td>1. The program was well organized.</td>
<td>4.78</td>
</tr>
<tr>
<td>2. The presenter maintained a high level of interaction with the students.</td>
<td>4.76</td>
</tr>
<tr>
<td>3. Overall, I was satisfied with the quality of the job done by the presenter.</td>
<td>4.79</td>
</tr>
<tr>
<td>4. I was satisfied with the content of the program.</td>
<td>4.74</td>
</tr>
<tr>
<td>5. Media and instructional aids enhanced the learning experience.</td>
<td>4.73</td>
</tr>
</tbody>
</table>
More to come…

The NASA TV / DLN Connection

Cell Phone Videoconferencing

Web-cam

3-D Immersive Chat Rooms

HD Videoconferencing

Holographic Videoconferencing (Telepresence)
Delivering Interactive Instruction in support of Long-term retention of knowledge as only NASA can...