



# MA Space Grant Consortium

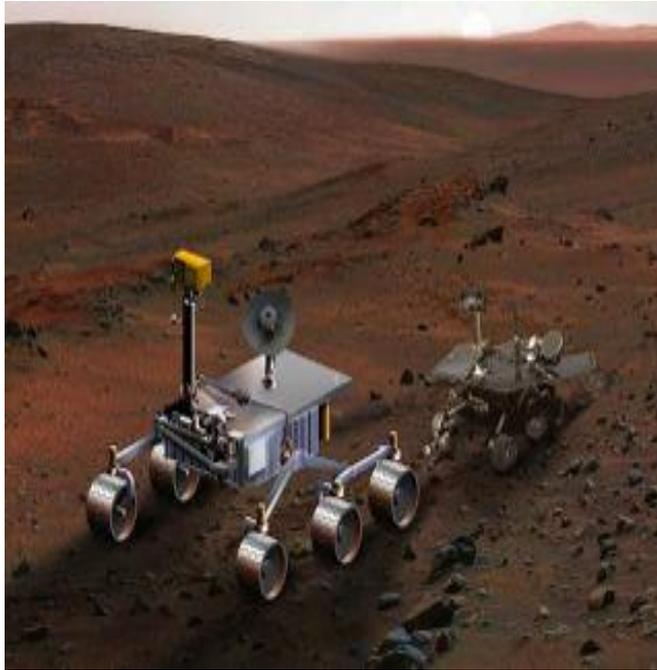
Northeast Regional Collaborative  
Robotics Workshop for Educators

1. Evaluation of Regional Collaboration.
2. How should Space Grant operate in the pre-college space?

# NASA Workshop for Educators

July 22-26, 2013

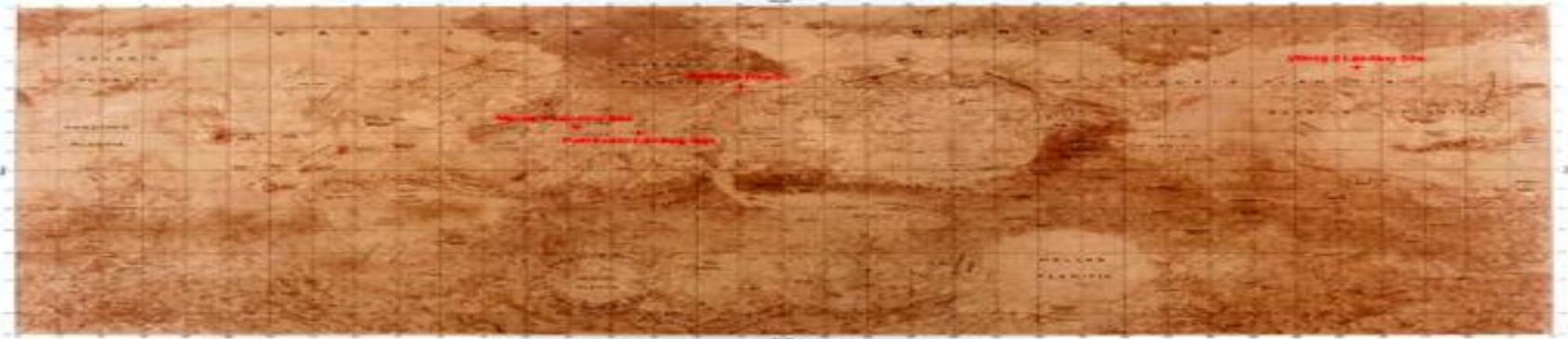
- Robotics workshop
- Conducted by  
The Center for Engineering Education,  
Tufts University



## Objectives:

1. Build a NXT rover
2. Learn to program  
Mindstorms/Labview
  - To use various sensors.
  - To test and modify design.

# Challenge example: Mapping Mars



NASA wants to examine four sites on Mars.  
Program your rover to reach all four in  
order.

# 100 % Regional Participation

#. of teachers

Connecticut	2
Massachusetts:	
Cambridge School System	6
Maine	2
New Hampshire	2
New York	3
Rhode Island	2
Vermont	1



Shereen at  
Demonstration School  
Kampala, Uganda



Cyrus at  
Aga Khan School  
Arusha, Tanzania

# Feedback from teachers

## Connecticut

- All of the activities were very **useful to learn programming** and many had a science theme in which **math and science concepts could be explored.**
- This was an excellent workshop, It also gave me **the opportunity to collaborate with other colleagues from different states.**

# General gender differences noticed by teachers in LEGO design teams

- Girls do not like direct competition.

*They do better competing against a standard.*

- Girls tend to plan ahead of boys.

*They formulate the design and then collect pieces from the bin as opposed to boys who will take interesting pieces and then attempt to design.*

# Maine

- I have **learned** a lot about the NXT lego kits and **programming**- all very cool and applicable and fabulous for our kids to use.
- I **will use this with my students in Pre-Algebra** ... ratios, balancing equations, programming logic , ...

# New Hampshire

- Before this workshop, I had **never seen the Lego robots or used the NXT Mindstorms.** Now I feel much more **confident .....**
- Thanks to this program I feel ready to **implement engineering** with my students. My school has had an NXT for a few years and it has been sitting on a shelf, unused.. Thanks to this workshop I will be using NXT Engineering with my 8<sup>th</sup> graders.

# • New York

- I thought it was very informative and I learned a great deal about both **building and programming** the NXT Robots.
- For me the workshop was extremely useful. I knew next to nothing and have been learning with the kids, but **my knowledge was very limited**. This workshop REALLY helped me. I've been **hesitant to use it further due to my lack of knowledge**. I feel much more capable of expanding my program. Thank you NASA!
- What I learned will definitely add to my current teaching because I am much more **comfortable in programming**. **My curriculum will be enhanced**. This is a hands-on program, which students love and which, I believe, they gain a much better understanding of the entire scientific process. **It also integrates the NYS Common Core Standards**.

# Rhode Island

- **If I could get these units for my classroom, I would absolutely add/integrate robotics into my curriculum.** The workshop has given me some ideas for alternate assessments for labs as well as lab groupings.
- I was a self-taught robotics teacher and this workshop gave me the skills to **improve upon what I already knew.**

# Vermont

- I will be **able to use** what I learned during the school year in our Robotics Club and **in my physics classes.**

# Cambridge STEM Roundtable, March 2013

City of Cambridge

The White House

Black Innovation and Competitiveness  
Initiative.

*“To address the disparity between excellence in higher education in Cambridge and the city’s public schools.”*

Thank you again for supporting us to attend the robotics workshop. It was a very **helpful start**. I promised you an email update about where we are, and where we are going.

This is **all new to us**, so we may not end up where I describe, but this is our current thinking.

This year, teachers who attended the workshop will **pilot** the use of Lego Mindstorms as an **engineering design challenge** and as a context for an embedded **assessment** of what students have learned **in physics**, at two of our schools.

Our hope is to **grow this pilot into a district-wide curriculum** that all students will participate in 2014-15.

It would be great to think about how we might work together!

- Dan Monahan, Cambridge Public School District

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Collaboration.

**2. How should Space Grant  
operate in the pre-college space?**

# International Assessment in Math and Science

United States ranking:

25<sup>th</sup> in Math

17<sup>th</sup> in Science

# Build a Rover for Rough Terrain

