

“NASA Robotics...”Using Robots to Explore the Universe” Thursday, March 31 , 2005

8:30 AM – 9:00 AM

Welcome, Introductions, Goals for the Symposium

Peg Steffen, NASA Explorer Schools Program Manager

Al Byers, Director Professional Programs, NSTA

Dr. Jennifer Rochlis, Human Factors and Robotics Engineer, NASA Johnson Space Flight Center

Dr. Brad Blue, Coordinator GEMS (Girls in Engineering, Mathematics, and Science)

Julie Ferriss, Curriculum Integration Coordinator, Edgewood Elementary-A

Science, Math, and Technology School, Osseo School District

Sheri Klug: Mars Education Program, Arizona State University

Mark Bosveld and Veronica Yale, Program Managers, NSTA

- College Credit forms
- Pre-evaluation forms
- Goals for the Day

9:00-9:45 AM

Opening Activity: Exploration Mars!: The Value of a Common Language

Brad Blue and Julie Ferriss Exploration Mars!

Learning Outcomes:

- The learner will discover the importance of a common language when working with others to find solutions to challenges and/or problems.

9:45 AM – 10:00 AM

Mid-morning Break

10:00 AM – 10:45 AM

Core Content Presentation 1: “NASA’s Robotics Technology: ”

Dr. Jennifer Rochlis, Human Factors and Robotics Engineer, NASA Johnson Space Flight Center

Learning Outcomes:

- The learner will gain knowledge of the past, present and future of robotics technologies at NASA.

10:45 AM – 12:00 PM

Pedagogical Follow-up: “Exploration Mars!: Why Did It Do That? Beginning Lego Programming”

Brad Blue and Julie Ferriss, Mindstorms Exploration Mars!

Learning Outcomes:

- The learner will observe and record the behavior of a robot and correlate that behavior with the iconic language of the ROBOLAB software.
- The learner will use the language of programming to communicate desired behaviors of the robot to others.

12:00 PM – 12:45 PM

Lunch Break

12:45 PM – 1:30 PM

Core Content Presentation 2: “Human and Robotics Operations for Surface Missions”

Dr. Jennifer Rochlis, Human Factors and Robotics Engineer, NASA Johnson Space Flight Center

Learning Outcomes:

- The learner will gain knowledge of the challenges of working on the surface of the moon and Mars
- The learner will gain knowledge about how humans and robots will work together during future surface missions.

1:30 PM – 3:00 PM

Pedagogical Follow-up: “Exploration Mars: Robotic Programming! Continued”

Brad Blue and Julie Ferriss, *Mindstorms Exploration Mars!*

Learning Outcomes:

- Using previously acquired iconic language, learners will program a robot to perform specific tasks and functions in a simulated Mars mission setting.

3:00 PM – 3:15 PM

Mid-afternoon Break

Mark Bosveld and Veronica Yale, NSTA

- Feedback Survey identified in packet
- Collect College Credit Forms collected

3:15 PM – 4:30 PM

Pedagogical Follow-up Mars Education Overview and Marsbound

Sheri Klug, *Mars Education Program*

Learning Outcomes:

- The learner will gain knowledge of the resources available from the NASA Mars Program.
- The learner will gain knowledge about methods of teaching science, mathematics, and technology using real-world space-science applications.

4:30 PM – 5:00 PM

Post-evaluation form

Perception Feedback Survey

Raffle for Telescope and prizes

Mark Bosveld, Veronica Yale, NSTA

Peg Steffen, NASA

Standards Addressed:

Professional Development Standard B

- Knowledge of Science Teaching
 - Address teachers' needs as learners and build on their current knowledge of science content, teaching, and learning.
 - Use inquiry, reflection, interpretation of research, modeling and guided practice to build understanding and skill in science teaching.

Content Standard A

- Abilities Necessary to do Scientific Inquiry
 - Use appropriate tools and techniques to gather, analyze, and interpret data.

Content Standard E

- Abilities of Technological Design
 - Communicate the process of technological design.

Content Standard F

- Science and Technology In Society
 - Science and technology have contributed enormously to economic growth and productivity among societies and groups within societies.