

## **NSTA Symposium: Uncovering Student Ideas in Science Saturday, April 8, 2006**

**1:00 PM – 1:25 PM**

### **Welcome, Introductions, Goals for the Symposium**

Al Byers, Assistant Executive Director of Government Partnerships and e-Learning, NSTA

Claire Reinburg, Director NSTA Press, NSTA

LaTeicia Durham, NASA Explorer Schools Logistics and Communications Assistant, NSTA

Flavio Mendez, Symposia and Web Seminars Program Manager, NSTA

- About NSTA Symposia
- Agenda/Goals
- Forms/Credit Info/Logistics/Introductions

Page Keeley, Lead Author, Uncovering Student Ideas in Science, Senior Program Director, Maine Mathematics and Science Alliance

Francis Eberle, Co-Author, Uncovering Student Ideas in Science, Executive Director, Maine Mathematics and Science Alliance

Lynn Farrin, Co-Author, Uncovering Student Ideas in Science, Project Director, Maine Mathematics and Science Alliance

**1:25 PM – 1:50 PM**

### **Overview of the Symposium**

Page Keeley, Francis Eberle, and Lynn Farrin, MMSA

#### **Learning Outcomes:**

##### **After participating in the presentation,**

- Participants will be able to describe what a formative assessment probe is and demonstrate their uses.
- Participants will describe the link between assessment, standards, research on learning, and classroom practice.
- Participants will list commonly held ideas (including misconceptions) students hold in earth/space, physical, and life science.

**1:50 PM – 3:00 PM**

### **Deconstruction of a Probe**

Page Keeley, MMSA

#### **Learning Outcomes:**

##### **After participating in the presentation,**

- Participants will list the features of a probe.
- Participants will describe commonly held ideas students have related to conservation of matter.
- Participants will demonstrate how the teacher notes can be used to clarify content and improve pedagogical content knowledge.

**3:00 PM – 3:15 PM**

### **Break**

**3:15 PM – 4:40 PM**

**Looking at Student Work**

Page Keeley, Francis Eberle, and Lynn Farrin, MMSA

**Learning Outcomes:**

**After participating in the presentation,**

- Participants will list three concepts in science that are not well understood by students.
- Participants will describe commonly held ideas across the disciplines of science.
- Participants will explain how to use assessment for formative purposes.

**4:40 PM – 5:00 PM**

**Connections Back to Practice – Reflections and Lingering Questions**

Francis Eberle, MMSA

**Learning Outcomes:**

**After participating in the presentation,**

- Participants will describe at least one way they will use the probes in their own practice.
- Participants will state one new idea from other participants about using the probes.

**5:00 PM – 5:30 PM**

**Final Words**

- Post-assessment form
- Evaluation form/Survey
- NSTA Web Seminars
- Raffle of door prizes

**National Science Education Standards Addressed:  
Content Standards, 5-8**

**Content Standard D:  
Earth and Space Science**

**As a result of their activities in grades 5-8, all students should develop an understanding of**

- Earth in the Solar System
  - Most objects in the solar system are in regular and predictable motion. Those motions explain such phenomena as the day, the year, phases of the moon, and eclipses.

**Professional Development Standards**

**Professional Development Standard A:**

**Professional development for teachers of science requires learning essential science content through the perspectives and methods of inquiry. Science learning experiences for teachers must**

- Build on the teacher's current science understanding, ability, and attitudes.

**Professional Development Standard B:**

**Professional development for teachers of science requires integrating knowledge of science, learning, pedagogy, and students; it also requires applying that knowledge to science teaching.**

**Learning experiences for teachers must**

- Connect and integrate all pertinent aspects of science and science education.

**Professional Development Standard C:**

**Professional development for teachers of science requires building understanding and ability for lifelong learning. Professional development activities must**

- Provide opportunities to know and have access to existing research and experiential knowledge.
- Provide opportunities to learn and use the skills of research to generate new knowledge about science and the teaching and learning of science.

**Benchmarks for Science Literacy Addressed:**

**4. The Physical Setting:**

**B. The Earth, (K-2)**

- Water can be a liquid or a solid and can go back and forth from one form to the other. If water is turned into ice and then the ice is allowed to melt, the amount of water is the same as it was before freezing.

**4. The Physical Setting:**

**D. The Structure of Matter, (6-8)**

- No matter how substances within a closed system interact with one another, or how they combine or break apart, the total weight of the system remains the same. The idea of atoms explains the conservation of matter: If the number of atoms stays the same no matter how they are rearranged, then their total mass stays the same.