



# Science and Engineering Conference

Middle School Grades

## **Lesson Summary**

Students display and explain their experimental designs from the previous lesson

## **Prior Knowledge & Skills**

Completed the lesson:

- *Measuring the Interplanetary Magnetic Field*

## **AAAS Science Benchmarks**

### **The Nature of Science**

*Scientific Inquiry*

### **The Nature of Technology**

*Technology and Science*

### **The Physical Setting**

*Forces of Nature*

## **NSES Science Standards**

### **Science as Inquiry**

*Abilities to do Scientific Inquiry*

*Understandings of Scientific Inquiry*

### **Physical Science**

*Motion and Forces*

### **Science and Technology**

*Understandings about Science and Technology*

### **History and Nature of Science**

*Science as a Human Endeavor*

*Nature of Science*

**Teaching Time:** One to two 45-minute periods

## **Materials per Team**

- Poster making supplies

## **Advanced Planning**

**Preparation Time:** 10 minutes

1. Review the lesson plan
2. Arrange the classroom for student presentations

## **Activity 3: Science and Engineering Conference**

In this activity, your students will act as scientists and engineers at a conference to explain and share their designs and discoveries with other students (scientists and engineers).

26. Have a representative from each group tell the class:
  - How they designed their experiment to measure Earth's magnetic field while having the compass attached to the box with the magnet.
  - Whether or not their design worked and how they could tell whether or not it worked.
  - How their experiment represents measuring the interplanetary magnetic field from a satellite
  
27. After each group has shared their design with the class, have a general discussion about which design seemed to be the best and which experiment did the best job of determining which design was the best.
  
28. Last, share with the class how scientists and engineers working with the NASA STEREO-IMPACT mission have solved this puzzle. If you have an internet connection, show them the STEREO-IMPACT web pages, <http://cse.ssl.berkeley.edu/impact>, to find out more about the STEREO mission.

### **Going Further: Writing a scientific report**

29. As an assessment to this session, have the students write a technical report on their design. They should include in their report:
  - An introduction section that says why they want to measure the interplanetary magnetic field and how their experiment is analogous to that of a spacecraft in the interplanetary magnetic field.
  - A design section that explains what the design was and what materials they used, and why they chose this design.
  - An experiment section that explains how they tested their design.
  - A discussion section that says whether or not their design worked and what they would do differently the next time they did this design.