

Mars Rover Celebration NGSS Alignment

WEEK 3: DESIGNING THE MISSION
LESSON 7: HOW DO I MEASURE THIS?
GRADE LEVEL: 6-8

PERFORMANCE EXPECTATIONS

In the NGSS framework, one of the important things that teachers need to do is explicitly identify when Science and Engineering Practices (SEP) and Cross Cutting Concepts (CCC) are being covered. The SEP's and CCC's are pervasive throughout the Mars Rover Celebration curriculum. The tables here are intended to assist the teacher in deciding when to mention that an SEP or CCC is part of the material being presented.

| Lesson Objectives | | |
|---|---|---|
| Students who demonstrate understanding can: <ul style="list-style-type: none"> • Learn the importance or standardized units of measure • Learn and be able to explain the importance of taking accurate measurements • Work collaboratively to conduct a scientific experiment • Collect and record data to draw logical and scientific conclusions • Learn and review using a ruler to make metric measurements • Learn or review how to make inferences and draw reasonable conclusions | | |
| MS Engineering Design | | |
| MS-ETS1-3 Analyze data from tests to determine similarities and difference among several design solutions to identify the best characteristic of each that can be combined into a new solution to better meet the criteria for success. | | |
| SCIENCE AND ENGINEERING PRACTICES (SEP) | DISCIPLINE CORE IDEAS (DCI) | CROSSCUTTING CONCEPTS (CCC) |
| Planning and Carrying Out Investigations Collect data to produce data to serve as the basis for evidence to answer scientific questions or test design solutions under a range of conditions Analyzing and Interpreting Data | ESS1: Earth's Place in the Universe: ESS1.B: Earth and the Solar System ETS1: Engineering Design: ETS1.A: Defining and Delimiting Engineering Problems | System and System Models Models can be used to represent systems and their interactions |

Analyze and interpret data to
provide evidence for
phenomena

SUMMARY OF THE THREE DIMENSIONS

The 5E lesson model provides the 5 phases of learning that helps to facilitate the process of science understanding. Teachers are encouraged to use the table below to help align their teaching methods with the embedded Science and Engineering Practices (SEP), Disciplinary Core Ideas (DCI) and Cross Cutting Concepts (CCC) present in the lesson.

| 5E MODEL PHASE | SCIENCE AND ENGINEERING PRACTICES (SEP) | DISCIPLINE CORE IDEAS (DCI) | CROSSCUTTING CONCEPTS (CCC) |
|----------------|--|--|-----------------------------|
| ENGAGE | Planning and Carrying Out Investigations | Earth and the Solar System | Systems and System Models |
| EXPLORE | Planning and Carrying Out Investigations | Earth and the Solar System Defining and Delimiting Engineering Problems | Systems and System Models |
| EXPLAIN | Analyzing and Interpreting Data | Earth and the Solar System Defining and Delimiting Engineering Problems | Systems and System Models |
| ELABORATE | Analyzing and Interpreting Data | Earth and the Solar System | Systems and System Models |
| EVALUATE | Performance Expectations | Performance Expectations | Performance Expectations |