

Mars Rover Celebration NGSS Alignment

WEEK 3: DESIGNING AND BUILDING

LESSON 6: FINAL DESIGN

GRADE LEVEL: 3-5

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 about scientific careers to gain a better understanding of a sampling of careers that have contributed to designing and developing Curiosity.Draw a detailed, final-design sketch/diagram of the rover that will be builtIdentify missions, requirements and features of the rover using labels and captions when necessary		
3-5 Engineering Design		
3-5-ETS1-2 Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.		
SCIENCE AND ENGINEERING PRACTICES (SEP)	DISCIPLINE CORE IDEAS (DCI)	CROSSCUTTING CONCEPTS (CCC)
Developing and Using Models Develop and use a model to describe phenomena.	ESS1: Earth's Place in the Universe: ESS1.B: Earth and the Solar System	System and System Models A system can be described in terms of its components and interactions.
Engaging in Argument from Evidence Support an argument with evidence, data, or a model.	ETS1: Engineering Design: ETS1.B: Developing Possible Solutions	Scale, Proportion, and Quantity Standard units are used to measure and describe physical quantities

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	Obtaining, Evaluating and Communicating Information	Earth and the Solar System	Systems and System Models
EXPLORE	Developing and Using Models	Earth and the Solar System	Systems and System Models
	Obtaining, Evaluating and Communicating Information	Developing Possible Solutions	
EXPLAIN	Developing and Using Models	Earth and the Solar System	Systems and System Models
	Obtaining, Evaluating and Communicating Information	Developing Possible Solutions	
ELABORATE	Developing and Using Models	Earth and the Solar System	Systems and System Models
	Obtaining, Evaluating and Communicating Information	Developing Possible Solutions	
EVALUATE	Performance Expectations	Performance Expectations	Performance Expectations