

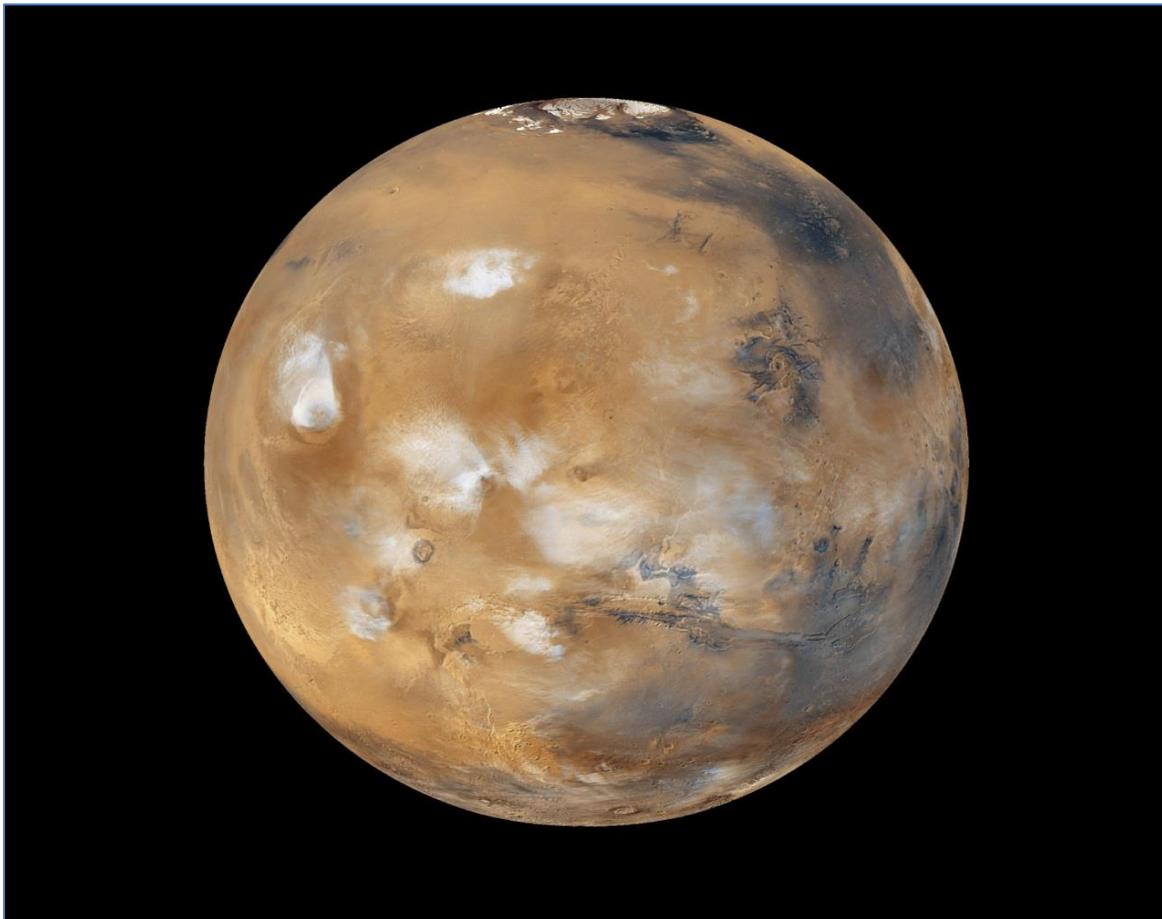


Mars Rover Celebration

Curriculum Module

Week 1: Learning Research Skills

Lesson 2: Introduction to Mars and the Mars Rover Celebration Project



Educational Product	
Educators & Students	Grades 3-5

Week 1: Learning Research Skills

LESSON 2: INTRODUCTION TO MARS AND THE MARS ROVER CELEBRATION PROJECT

GRADE LEVEL: 3-5

LENGTH: 2 DAYS

VOCABULARY: astrology
astronomy
surface

MATERIALS:

- Computer with Internet access
- Wet wipes (optional for hand clean-up)
- Plastic knife (optional for the teacher)

Per Student:

- Highlighter
- Paper plate
- Ruler
- Different kinds of “fun-sized” candy bars*
- Science Notebooks

***Note:** Teachers from states with strong nutrition policies (e.g. Texas): When conducting this experiment, ensure that your food choice complies with your state’s Public School Nutrition Policy. [The Texas Public School Nutrition Policy](#) permits this activity under Section VI.B.5 of this policy, provided you use approved a la carte snack items.

Regardless of state nutrition policies, all teachers will want to be aware of any food allergies that exist in their classrooms (e.g. allergy to peanuts) and avoid foods that contain those substances.

ESSENTIAL QUESTION:

How will what you learned today about the planet Mars and about making observations help you design a successful mission for your Mars Rover?

LESSON OBJECTIVE(S):

Students will be able to:

- Determine the difference between astronomy and astrology
- Record detailed observations of a simulated surface and simulated interior of Mars
- Compare and contrast an unknown sample with the surface and interior of Mars
- Learn preliminary facts about Mars, its surface, and its place in the solar system

ENGAGEMENT

1. At the beginning of this lesson, and using the attached documents, present the Essential Question and Key Vocabulary for students to consider during the lesson.

2. Now that students are familiar with two of the terms (astronomy and astrology), write them on the board. Ask students to share what they know about each one. As students share, discuss the differences and list them on the board.
3. Direct students to their Science Notebooks and have them complete the KWL chart. Explain to students that they will complete only the first two columns (What I Know about Mars; What I Wonder about Mars). When finished, view the [Mars](#) video: (Runtime 02:46)
4. Upon the completion of the video, students should complete the last column of their KWL charts (What I Learned about Mars) and share their results.

EXPLORATION

1. Introduce the “Internal Dialogue” mini-lesson to model good reading practices and encourage students to engage in the reading selection.
2. Then, in partners, students will read “What is Mars”. While reading, students will highlight other key facts about Mars.
3. After comprehending the reading selection, students will be presented with an “unknown sample” which students will easily identify as a “fun-sized” candy bar*, but should be encouraged to pretend that the sample is unknown so as to encourage students to engage more deeply in the activity.
4. Students should also be reminded that since this is an “unknown sample” they should follow the lab safety rules for their classroom.
5. Once students have their supplies (“unknown sample” and a paper plate), students will observe the surface of their samples. Students should make observations in their Science Notebooks about the color, texture, etc. Encourage students to use their rulers to take measurements of different features that appear on their samples.
6. When students are ready, cut or break their samples in half so that students can continue to record observations in their Science Notebooks. Encourage students to use rulers and additional tools such as scales, calipers, thermometers, etc.

EXPLANATION

1. Once students have had an opportunity to examine their samples and record observations in their Science Notebooks, bring students together to have a discussion of their findings and conclusions.
2. Put students into teams of 4-5 to discuss if the samples they analyzed could have come from Mars. Have students informally answer:
 - How is your sample similar or different than the samples of your classmates?
 - Do you think this sample could have come from Mars? What characteristics does it contain that might make you think that? Use what you have learned to support your theory.
 - What conclusion did you reach based on your data and findings?

Note: Teams should be chosen carefully by the teacher as students will remain in these teams for the duration of the project.

3. At the conclusion of the lesson, students should return to their Science Notebooks to answer the Essential Question.

ELABORATION

1. If time allows, students may work with their teams to compare/contrast their different samples.
2. If computers are available, students may further research Mars using one of the provided links below. Students should focus on identifying evidence from patterns in rock formations and to explain or support changes in a landscape over time.

EVALUATION

1. During this two day lesson, the teacher is encouraged to use formative assessments to determine and deepen student understanding. Teachers may wish to review and/or grade students' science notebooks to establish student understanding.
2. Teachers are encouraged to create their own grade-level and ability-level assessments so as to best meet the needs of their students.

Supplemental Resources

For Students:

Mars for Kids

<http://mars.jpl.nasa.gov/participate/funzone/>

Mars for Students

<http://mars.jpl.nasa.gov/participate/students/>

Mars Exploration Program

<http://mars.jpl.nasa.gov>

Mars Planet Profile

<http://pds.nasa.gov/planets/special/mars.htm>

Read More about Mars

<http://solarsystem.nasa.gov/planets/profile.cfm?Object=Mars&Display=OverviewLong>

Mars in a Minute Video: Is Mars Really Red?

<http://www.jpl.nasa.gov/education/videos/playVideo.cfm?videoID=25>

For Teachers:

MSIP Mars Activities

<http://mars.jpl.nasa.gov/classroom/pdfs/MSIP-MarsActivities.pdf>

Earth Mars Poster (Front and Back)

http://mars.jpl.nasa.gov/classroom/pdfs/EarthMars_poster_front.pdf

http://mars.jpl.nasa.gov/classroom/pdfs/EarthMars_Poster.back.pdf

Imagine Mars Project

<http://imaginemars.jpl.nasa.gov/>

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