

# Problem-Based Learning Unit Template

## Topic

Geology (5.7 and 5.6a)

## Goals/Objectives

- The student will investigate and understand how the Earth's surface is constantly changing. Key concepts include:
- a) identification of rock types;
  - b) the rock cycle and how transformations between rocks occur;
  - c) Earth history and fossil evidence;
  - d) the basic structure of the Earth's interior;
  - e) changes in the Earth's crust due to plate tectonics;
  - f) Weathering, erosion, and deposition; and
  - g) human impact.
- The student will investigate and understand characteristics of the ocean environment. Key concepts include:
- a) geological characteristics;

## Theme

Earth's geological features

## Scenario

We interrupt your science class with BREAKING NEWS!! Who would like to visit the Red planet? Yes, that's right, NASA is looking for scientists willing to head to the Red planet on an experimental adventure. In August of last year, Curiosity (a robotic rover) landed on the Red planet (Mars) to research if it could be inhabited by humans. Mars is about half the diameter of Earth and has seasons, polar ice caps, volcanoes, canyons, and weather similar to the Earth. NASA scientists have been studying along with Curiosity, but they are perplexed by the geological features of Mars. The NASA NEOR (Near Earth Object Research) Team is in need of scientists. NASA has requested that as 21<sup>st</sup> century scientists, you join the NEOR team to study the geological features of Earth and how these features make it possible for Earth to be inhabitable. NASA is looking for top notch scientists willing to take risks to find the right features here on Earth to make Mars inhabitable. Seats for the trip are limited!

## Culminating Activity

Your NEOR team will create and present your potential planet qualifications to a NASA panel of scientists.

## Problem Question

What geological features of Earth make it inhabitable?

## Student Role

Students are members of the NEOR (Near Earth Object Research) team. Each team member will choose a role (geologist, petrologist/mineralogist, seismologist/volcanologist, "weatheringman," oceanographer) to focus their research.

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