

Activity: Reading Maps

Instructor Background

Objective

Students will compare different maps to understand the range of features they show.

Materials

- ◆ computer with internet access
- ◆ landscape image

NGSS

DCI: Earth Materials and Systems

SEP: Analyzing and Interpreting Data, Developing and Using Models

CCC: Structure and Function, Systems and System Models

SDGs

9: Industry, innovation, and infrastructure

11: Sustainable cities and communities



Turtlehead Peak, Red Rock Canyon National Conservation Area, Nevada.

Credit: James Brooks via Flickr, CC BY 2.0.

Steps

- 1. Introductory Activity:** Have students view the image of exposed rock at **Turtlehead Peak, Nevada**. Allow time for students to make observations and discuss:
 - ▶ How many different rock types do you see? In what ways do they differ?
 - ▶ How would you describe the rocks in this landscape to convey how the rocks' appearance and location?
 - ▶ How might you draw this area to convey the appearance and location of the different types of rocks?
 - ▶ Based on this image, can you predict what rocks in the surrounding area might look like? (Show students the **surrounding area** so they can check their predictions.)

- 2. Introduction to Maps:** Have students view maps of the Red Rock Canyon National Conservation Area, which contains Turtlehead Peak. Make a comparison chart as you discuss what each map shows:
 - ▶ **Red Rocks Trail Map** (page 2)
 - ▶ **Topographic Map of Turtlehead Peak Trail**
 - ▶ **Geologic and Geophysical Map** (page 49, use coordinates to locate Turtlehead Peak at 36.1688N, 115.453W)
 - ▶ **Cross sections of the area to the east (page 54) and west (page 55) of the Spring Mountains**

- 3. Group Sharing and Discussion:** Have students share what they observed on each of the maps, then have them brainstorm a list of features that people might be interested in that were not shown on any of the maps.

4. Introduce Geologic Maps: Display the [U.S. Geologic Map using MapView by the National Geologic Map Database](#) (zoom in on southern Nevada then move the mouse around, paying attention to the coordinates displayed at the bottom of the map, then click near 36.1688N, 115.453W). Clicking on a specific location will result in one or more geologic maps that include where you clicked to appear in the box on the lefthand side of the screen and will be indicated by the tag "In View". Open a selection of these maps and compare what they show.

5. Considering Potential Applications of Geologic Maps: Discuss the features of geologic maps that are similar to other map types, then have students describe the unique features of geologic maps. What might these additional features be useful for? Who might use a geologic map and for what purpose?

6. Extension: Use Visible Geology to build a 3D geologic model of Turtlehead Peak, following [this guide](#) for accessing and using the program.

