Lesson 3.1
Introduction to Maps
Lesson Overview

Students begin Chapter 3, which focuses on the crosscutting concept of Scale. The Chapter 3 Question is introduced: *How did the recreation center’s cliff erode without the director noticing?* Students learn that maps can serve as useful records of big changes to landforms. They use the reference book, *Handbook of Land and Water*, to explore landforms from different perspectives. Students discuss how to read and understand map keys that indicate where water, low land, and high land are found on a map. Then students practice shifting their perspective from a side view to a bird’s-eye view in order to match photos of landforms to the maps that represent them. Finally, students use the *Changing Landforms* Modeling Tool to create maps of a few landforms. The purpose of this lesson is to give students a foundation in reading maps, which will be useful as students use and create maps to show landform changes.

**Anchor Phenomenon:** The cliff where Oceanside Recreation Center is situated appears to be receding.

**Students learn:**

- Maps show where water and land are and where different landforms are.
- A map key identifies what the items on a map mean.
- Geologists can use maps to study landform changes over time.
Maps and Handbook of Land and Water

Students explore the maps in *Handbook of Land and Water*.

**Instructional Guide**

1. **Hold up a copy of *Handbook of Land and Water***. Remind students that a reference book is used to locate specific information.

   We are going to use *Handbook of Land and Water* to learn how to interpret maps, so we can use maps to help us think about big changes to landforms such as the cliff.

2. **Project *Handbook of Land and Water* page 5**. Read page 5 aloud and ask students to visualize the mountains as seen from above.

   Page 5 asks you to imagine you are a bird flying up over the mountains in the photo so that you can look down on them from above.
Remember that when we read, we can visualize what the text is saying by creating a picture in our minds. This helps us better understand what we are reading.

Describe to a partner what you might see if you were a bird flying over the mountains and looking down at them from above.

3. **Have pairs share what they visualized.** Ask students to share what they visualized with a partner, then invite some students to share their ideas with the class. Accept all responses.

4. **Project Handbook of Land and Water page 6.** Read page 6 aloud. Point out that the image on page 6 shows what it would look like if you were a bird flying high above these mountains. As needed, explain that some people call this vantage point a bird’s-eye view because it is the view a bird would see with its eyes as it flies far above. Ask students what is similar and what is different about what they visualized and the image on the projected page.

5. **Distribute one copy of Handbook of Land and Water to each pair of students.**

6. **Direct students to read page 7 with their partners.** Point out that the image on page 7 is a map of the same mountains they visualized. After pairs have read page 7, discuss the features of the map on that page.

   - Read the title of the map aloud.
   - Point out the map key.
   - Using the map key, model how to locate the following on the map: very high land, high land, low land, water, and cities and towns.
   - Discuss how the map shows differences in land elevation; high land is mountains or hills, and low land is land that is below this and is flatter.

7. **Read page 8 aloud and ask students to visualize.**
Have students share what they visualized with their partners. Then, point out how page 9 shows how it would look if you were standing where the mark is.


9. Collect all copies of *Handbook of Land and Water*.

Teacher Support

**Rationale**

*Literacy Note: Exploring Other Maps in the Reference Book*
Students explore the maps in *Handbook of Land and Water* in order to become familiar with map features. Most maps in the book contain certain features—namely, map keys and titles. Most contain only landforms and bodies of water, but the Map of Niagara Falls (on page 44) contains additional detail. Discussing similarities and differences between the maps in the book will help students become more familiar with map features before discussing and creating maps of their own in the next lesson.

**Background**

*Science Note: Elevation Maps*
Most of the maps students encounter in *Handbook of Land and Water*, and many of the other maps students will use in this unit, are elevation maps that use colors to represent different land heights above sea level. A contour map is another type of elevation map that shows more precise gradations of elevation, and is more difficult to interpret than the color-based elevation maps used in this unit. Elevation maps are useful to geologists because they help describe the shape of landforms. A sequence of elevation maps representing the same place over time can show differences in land elevation caused by erosion. There are many other types of maps geologists use—for example, maps that show rock types, tectonic plate boundaries, or detailed information about water in the landscape. This unit teaches students to interpret and create basic elevation maps as an introduction to the important Earth science practice of making and using maps.

**Instructional Suggestion**

*What One Teacher Did: Interpreting Local Maps*
To provide more experience with maps, you might bring some maps of familiar local areas into the classroom for students to interpret. You could give students a list of places to identify on the maps, or you could have them choose locations on the maps and visualize what they would see if they were standing in those locations.
Maps and Handbook of Land and Water

Students explore the maps in *Handbook of Land and Water*.

**Instructional Guide**

1. **Hold up a copy of *Handbook of Land and Water***. Remind students that a reference book is used to locate specific information.

   "Vamos a usar el *Manual de la tierra y el agua* para aprender a interpretar mapas, de modo que podamos usar mapas para ayudarnos a pensar en grandes cambios a los accidentes geográficos como el acantilado.

2. **Project *Handbook of Land and Water* page 5**. Read page 5 aloud and ask students to visualize the mountains as seen from above.

   "En la página 5 tienen que imaginarse que son un pájaro que vuela sobre las montañas en la foto, de modo que puedan mirarlas desde arriba."
3. **Have pairs share what they visualized.** Ask students to share what they visualized with a partner, then invite some students to share their ideas with the class. Accept all responses.

4. **Project Handbook of Land and Water page 6.** Read page 6 aloud. Point out that the image on page 6 shows what it would look like if you were a bird flying high above these mountains. As needed, explain that some people call this vantage point a bird’s-eye view because it is the view a bird would see with its eyes as it flies far above. Ask students what is similar and what is different about what they visualized and the image on the projected page.

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Worksheet 1.1

Lesson 3.1

Activity 2

Visualicen lo que verían si estuvieran parados donde está la marca roja en el mapa. ¿Qué verían a su izquierda, a su derecha y frente a ustedes?

Have students share what they visualized with their partners. Then, point out how page 9 shows how it would look if you were standing where the mark is.


El Manual de la tierra y el agua contiene mapas que se ven similares y diferentes al mapa de las Montañas Olimpicas. Tomen unos cuantos momentos para explorar los otros mapas en el libro y piensen en cómo son similares y diferentes al mapa que acabamos de discutir.


Teacher Support

Rationale

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