Lesson 1.5
Modeling Sedimentary Rock Formation
Lesson Overview

In this lesson, students revisit images showing sedimentary rock formation, and continue to construct ideas about the process by modeling it in steps, and deciding how to show details in the Class Sedimentary Rock Formation Model. First, they revisit *Clues from the Past* to read about the process of how sedimentary rock forms. They use the text and the illustrations in the book to identify the steps in this process, then consider ways to make a model of each step. The teacher provides students with materials for making models, and students create their own models of sedimentary rock formation. Next, students evaluate the models they created for what aspects of sedimentary rock formation they are able to represent and what aspects they cannot show well with their models. Students then determine how they could add to the Class Sedimentary Rock Formation Model to represent a rock layer getting thicker over time and observe as the teacher implements their suggestions. Finally, they revisit the Rocks and Fossils anticipatory chart to reflect what they have learned over the last few lessons. The purpose of this lesson is for students to understand the process of sedimentary rock formation.

**Anchor Phenomenon:** A rocky outcrop in Desert Rocks National Park has a fossil in it.

**Investigative Phenomenon:** Sedimentary rock formed.

**Students learn:**

- A sedimentary rock layer forms when sediment sinks and builds up in water, compacts under more sediment, and cements over time.
- Over time, a rock layer becomes thicker as sediment continues to builds up.
- Models show some parts of the real world well, and others less well.
- As scientists learn more and investigate more, they answer some questions and generate even more questions.
Students return to Clues from the Past and record the process for how rock forms.

Instructional Guide

1. Remind students of the Investigation Question.

Remember that we are investigating the question How does sedimentary rock form? You saw in the Sim how sedimentary rock forms, and you also read about this in Clues from the Past. Let’s look back at part of the book now.

2. Distribute copies of Clues from the Past and turn to page 6. Read page 6 aloud with the class.

3. Connect to students’ role as geologists. Remind students that they are working as geologists to try to figure out how the fossil came to be in Desert Rocks Canyon. As part of figuring this out, they are investigating how sedimentary rock, where fossils are most often found, forms.

4. Set purpose for looking closely at the illustrations and text. Explain that today, as part of figuring out how sedimentary rock forms, students will make their own models of this process. They will use the illustrations and the text in Clues from the Past to figure out how this process happens.

5. Project and introduce notebook page 16. Read aloud the instructions.

- Step 1: Reread page 7 of Clues from the Past. In the first column of the table below, record the steps from the book for how sedimentary rock forms.

You will make a list of the steps in the process of sedimentary rock formation so that you can show those same steps in your model. Next to each illustration of how sedimentary rock forms is a description of two steps in the process. You will record these steps in your own words in your notebook.

- Step 2: In the second column, record ideas for how you could show this step in a model using the materials provided. Explain that students will complete this column after they record the steps from the book.
6. **Discuss the first illustration on page 7 with the class.** Have a student read aloud the two sentences next to the first illustration on page 7 of the book, and ask students to look closely at the illustration. Solicit ideas from students about the first step in the process of sedimentary rock formation.

7. **Model recording the first two steps.**

   - Have students suggest what you should write for the first two steps in the process (one for each sentence next to the illustration).
   - Write “Sediment sinks through water and builds up in environments with water” in the first row on your projected notebook page. Have students record this in their notebooks as well.
   - Write “More sediment builds up and pushes down on sediment below” in the second row of the table and have students record this in their notebooks.

8. **Have students discuss and record the rest of the steps.** Give students time to work in pairs to discuss the illustrations and the text, and to paraphrase the steps.

9. **Debrief students’ responses.** Have a few students share what they recorded. You may wish to record these responses on your projected notebook page as well, and allow time for students to revise the information they recorded if they need to. When you get to the relevant steps, solicit ideas about the words *compact* and *cement*.

10. **Define compact and post vocabulary card.**

    As you read, sediment can be compacted, or pushed down, over time. *Compact* means the sediment presses together, and it’s a word geologists use when they describe how sedimentary rock forms.

11. **Define cement and post vocabulary card.**

    *Cement* means to stick together in the process of forming rock. Sediment cements, or is glued together, to form sedimentary rock.

**Teacher Support**

**Instructional Suggestion**

**Providing More Experience: Today’s Daily Written Reflection**

*Where do you think sedimentary rock forms? Why do you think so?* This prompt (on page 15 in the Investigation Notebook) asks students to think about what they already know about how sedimentary rock forms and explain their thinking about this concept. The purpose of this prompt is to initiate students’ prior knowledge about where rock forms. Students will learn through various experiences in the unit that rock is most likely to form underwater.
Possible Responses

**Steps for how sedimentary rock forms**

Step 1
Sediment sinks through water and builds up in environments with water.

Step 2
More sediment builds up and pushes down on sediment below.

Step 3
The sediment at the bottom compacts.

Step 4
The sediment cements together.

Step 5
The sediment forms a layer of sedimentary rock.

Step 6
The layer gets thicker as more and more sediment compacts and cements.
**How Does Sedimentary Rock Form?**

1. Reread page 7 of *Clues from the Past*. In the first column of the table below, record how sedimentary rock forms.
2. In the second column, record ideas for how you could show this step in a model using the materials provided.

<table>
<thead>
<tr>
<th>Steps for how sedimentary rock forms</th>
<th>How to use materials to make a model of each step</th>
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Reading About Rock Formation

Students return to *Clues from the Past* and record the process for how rock forms.

**Instructional Guide**

1. Remind students of the Investigation Question.

   Recuerden que estamos investigando la pregunta ¿Cómo se forma la roca sedimentaria? Vieron en la Simulación cómo se forma la roca sedimentaria, y también leyeron sobre esto en *Pistas del pasado*. Volvamos a mirar parte de ese libro ahora.

2. Distribute copies of *Clues from the Past* and turn to page 6. Read page 6 aloud with the class.

3. Connect to students’ role as geologists. Remind students that they are working as geologists to try to figure out how the fossil came to be in Desert Rocks Canyon. As part of figuring this out, they are investigating how sedimentary rock, where fossils are most often found, forms.

4. Set purpose for looking closely at the illustrations and text. Explain that today, as part of figuring out how sedimentary rock forms, students will make their own models of this process. They will use the illustrations and the text in *Clues from the Past* to figure out how this process happens.

5. Project and introduce notebook page 16. Read aloud the instructions.

   - **Step 1:** Reread page 7 of *Clues from the Past*. In the first column of the table below, record the steps from the book for how sedimentary rock forms.

   Harán una lista de los pasos en el proceso de formación de roca sedimentaria, para que puedan mostrar esos mismos pasos en su modelo. Junto a cada ilustración de cómo se forma la roca sedimentaria hay una descripción de dos pasos en el proceso. Ustedes apuntarán estos pasos con sus propias palabras en su cuaderno.

   - **Step 2:** In the second column, record ideas for how you could show this step in a model using the materials provided. Explain that students will complete this column after they record the steps from the book.
6. **Discuss the first illustration on page 7 with the class.** Have a student read aloud the two sentences next to the first illustration on page 7 of the book, and ask students to look closely at the illustration. Solicit ideas from students about the first step in the process of sedimentary rock formation.

7. **Model recording the first two steps.**

   - Have students suggest what you should write for the first two steps in the process (one for each sentence next to the illustration).
   - Write “Sediment sinks through water and builds up in environments with water” in the first row on your projected notebook page. Have students record this in their notebooks as well.
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8. **Have students discuss and record the rest of the steps.** Give students time to work in pairs to discuss the illustrations and the text, and to paraphrase the steps.

9. **Debrief students’ responses.** Have a few students share what they recorded. You may wish to record these responses on your projected notebook page as well, and allow time for students to revise the information they recorded if they need to. When you get to the relevant steps, solicit ideas about the words **compact** and **cement**.

10. **Define compact and post vocabulary card.**

    Como leyeron, el sedimento puede ser compactado, o presionado, con el tiempo. Compactar significa que el sedimento se prensa, y es una palabra que usan los geólogos cuando describen cómo se forma la roca sedimentaria.

11. **Define cement and post vocabulary card.**

    Cementar significa pegarse en el proceso de formar roca. El sedimento se cementa, o se pega, para formar roca sedimentaria.

### Teacher Support

#### Instructional Suggestion

**Providing More Experience: Today’s Daily Written Reflection**

Where do you think sedimentary rock forms? Why do you think so? This prompt (on page 15 in the Investigation Notebook) asks students to think about what they already know about how sedimentary rock forms and explain their thinking about this concept. The purpose of this prompt is to initiate students’ prior knowledge about where rock forms. Students will learn through various experiences in the unit that rock is most likely to form underwater.
Possible Responses

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Step 6
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¿Cómo se forma la roca sedimentaria?

1. Vuelve a leer la página 7 de *Pistas del pasado*. En la primera columna de la tabla debajo, apunta cómo se forma la roca sedimentaria.
2. En la segunda columna, apunta ideas de cómo podrías mostrar este paso en un modelo usando los materiales proporcionados.

<table>
<thead>
<tr>
<th>Pasos para cómo se forma la roca sedimentaria</th>
<th>Cómo usar materiales para hacer un modelo de cada paso</th>
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