Lesson 2.4
Modeling Shells and Armor
Lesson Overview

Students create a new model to explore how shells and armor function as a defense against being eaten. First, students observe a video of a turtle and an alligator to gather evidence about shells and armor as a type of defense against being eaten. The class gathers additional information about how shells and armor function to defend living things by revisiting sections of *Tortoise Parts* and the reference book. Then, partners work together to create physical models that show how living things use their shells or armor to defend themselves from being eaten. Students use Shared Listening to discuss what they have learned about shell and armor defenses, followed by the class adding their observations about the Shell and Armor Model to the Models of Animal and Plant Defenses chart. The purpose of this lesson is to expand students’ understanding of scientific modeling while they learn how shells and armor work as one type of defense to prevent living things from being eaten by other animals.

**Anchor phenomenon:** Spruce the Sea Turtle will survive in the ocean.
**Investigative phenomenon:** Animals can avoid being eaten.

**Students learn:**

- A model is similar to the thing or process it represents in some ways, but not in all ways.
- Some animals and plants have shells or hard parts that help them defend themselves from being eaten.
The class revisits *Tortoise Parts* and *Spikes, Spines, and Shells* to think about how shells help animals and plants defend themselves.

**Instructional Guide**

1. **Revisit the What Scientists Do chart.**

   - Remember that scientists do many things to answer their questions.

     Point to the *read* card on the chart.

   - One of the most important things that scientists do is read to figure out information that helps them answer their questions.

   - We can look back at some of the books we have read to gather more evidence to help answer our question about how animals and plants defend themselves.

2. **Display the *Tortoise Parts* big book.**

   - When we watched the Turtle and Alligator video, we gathered some evidence to help us answer our question about how a shell can help an animal defend itself. We can reread part of *Tortoise Parts* to gather more evidence about how shells help animals defend themselves.

3. **Turn to page 13 of *Tortoise Parts*.** Read pages 13 and 14 aloud.

   - How does the tortoise defend itself?
     - Its hard shell can defend it. The shell can block predators’ teeth or claws.

4. **Display the *Spikes, Spines, and Shells* big book.
We have been using this book to learn about how animals and plants use their structures to do what they need to do to survive.

Now we can use this book to gather evidence about how shells and armor help animals and plants defend themselves.

5. Turn to page 4 of *Spikes, Spines, and Shells*. Read the introduction section on this page aloud.


   This is the Contents page. The Contents page lets readers know the important sections of the book. It also tells them what pages contain the information they are looking for so that they can find it.

7. Point out the “Shells and Armor” heading on the Contents page.

   *Shells and Armor.*

   Shells and armor are hard coverings for animals and plants.

   The Contents page shows that I can find out more about shells and armor in the section that starts on page 16. I am going to turn there.

8. Turn to page 16 and read it aloud to students.

9. Have partners discuss familiar shells and armor. Ask students to talk to a partner about any animals or plants they know of that use shells or armor. Invite students to share their ideas with the class.

   What are some animals or plants you know of that use shells or armor?

   What are those shells like?
   
   [Hard. Strong. Thick.]

   What does a shell or armor need to be like so that an animal can defend itself from being eaten?
   
   [Hard so that teeth cannot poke through it. Strong so that teeth cannot break it. Big enough so that it covers most of the animal.]

10. Display photos from the “Shells and Armor” section. Flip through pages 17–25. Invite students to share their observations of these pages. Encourage students to visualize how the animals and plants on these pages are using shells or armor to defend themselves.
Teacher Support

Background

Literacy Note: About Using the Reference Book in This Lesson
Reference books provide in-depth information about specific topics and are typically read for particular purposes. In this lesson, students will be guided to return to one particular section of the reference book to gather evidence about how shells and armor help animals and plants defend themselves. Since this is the first time you are modeling using the Contents page to locate specific information, you may wish to provide additional instruction around text features of a reference book, such as the table of contents, glossary, and index, if students are not familiar with these features.
Revisiting Books and Discussing Shells

The class revisits *Tortoise Parts* and *Spikes, Spines, and Shells* to think about how shells help animals and plants defend themselves.

**Instructional Guide**

1. **Revisit the What Scientists Do chart.**
   
   Recuerden que los científicos hacen muchas cosas para responder sus preguntas.

   Point to the *read* card on the chart.

   Una de las cosas más importantes que hacen los científicos es leer para averiguar información que les ayuda a responder sus preguntas.

   Podemos volver a mirar algunos de los libros que hemos leído para reunir más evidencia para ayudar a responder nuestra pregunta acerca de cómo se defienden los animales y las plantas.

2. **Display the Tortoise Parts big book.**

   Cuando observamos el video de la tortuga y el caimán, reunimos cierta evidencia para ayudarnos a responder nuestra pregunta acerca de cómo un caparazón puede ayudar a un animal a defenderse. Podemos volver a leer parte de *Las partes de una tortuga* para reunir más evidencia acerca de cómo los caparazones ayudan a los animales a defenderse.

3. **Turn to page 13 of Tortoise Parts.** Read pages 13 and 14 aloud.

   ¿Cómo se defiende la tortuga terrestre?  
   [Su caparazón duro puede defenderla. El caparazón puede bloquear los dientes o las garras de los depredadores].

- Hemos estado usando este libro para aprender acerca de cómo los animales y las plantas usan sus estructuras para hacer lo que necesitan hacer para sobrevivir.
- Ahora podemos usar este libro para reunir evidencia acerca de cómo los caparazones y las armaduras ayudan a los animales y las plantas a defenderse.

5. Turn to page 4 of *Spikes, Spines, and Shells*. Read the introduction section on this page aloud.


- Esta es la página del Contenido. La página del Contenido les permite conocer a los lectores las secciones importantes del libro. También les dice qué páginas contienen la información que están buscando, para que puedan encontrarla.

7. Point out the “Shells and Armor” heading on the Contents page.

- *Corazas y armaduras.*
- Las corazas y las armaduras son cubiertas duras para los animales y las plantas.
- La página de Contenido muestra que puedo averiguar más sobre corazas y armaduras en la sección que comienza en la página 16. Voy a pasar a esa página.

8. Turn to page 16 and read it aloud to students.

9. Have partners discuss familiar shells and armor. Ask students to talk to a partner about any animals or plants they know of that use shells or armor. Invite students to share their ideas with the class.

- ¿Cuáles son algunos animales o plantas que ustedes saben que usan corazas o armaduras?
- ¿Cómo son esas corazas?
  - [Duras. Fuertes. Gruesas].
- ¿Cómo necesita ser una coraza o una armadura para que un animal pueda defenderse para no ser comido?
  - [Duro para que los dientes no se puedan clavar a través de él. Fuerte para que los dientes no lo puedan romper. Suficientemente grande para que cubra la mayor parte del animal].

10. Display photos from the “Shells and Armor” section. Flip through pages 17–25. Invite students to share their observations of these pages. Encourage students to visualize how the animals and plants on these pages are using shells or armor to defend themselves.