Lesson 4.1
Frog Models
Lesson Overview

In this chapter, students begin a new task in their role as aquarium scientists. They use what they have figured out about plant and animal defenses to showcase models of defenses in an aquarium exhibit. This lesson begins by setting the new context and defining the purpose of an aquarium exhibit; then, students are introduced to a new question about how models can be used to help explain ideas. The class reads the book *Frog Models*, a fictional story about children who make their own models of the phenomenon of frogs’ camouflage defense against being eaten by snakes. This book acts as an exemplar for the class about how models can be useful for scientists to show their ideas. The introduction of the Modeling Checklist allows students to evaluate models based on criteria that will be important as they plan and create their own models throughout Chapter 4. The purpose of this lesson is to establish a context for students to apply what they have learned about animal and plant defenses and to provide exemplars of models to guide students as they create models to explain how a particular animal uses its defenses to survive.

Investigative phenomenon: Frogs survive.

Students learn:

- A model does not need to include things that are not important for what is being explained.
- Making careful observations can help a scientist make a model that explains something well.
The teacher conducts a Shared Reading of *Frog Models*. Students practice visualizing and consider how the models help explain ideas.

**Instructional Guide**

1. **Transition to the Shared Reading.** Hold up the cover of the *Frog Models* big book.

   We are trying to figure out how scientists use models to explain their ideas. The children in this book work as scientists to explain their ideas about an animal’s defense.

2. **Set the purpose for reading.** Explain that reading about how the children in this book make and use models will help students plan their exhibit models.

   As we read, we will focus on the how the children plan and make their models, as well as how the models help them explain their ideas.

3. **Read through page 5 and have students visualize.** Pause and have students visualize what happened on the forest floor. Give students a moment to picture what happened before having them share what they visualized with a partner.

4. **Read through page 11 and discuss Luz’s model.** Keep the book open to pages 10–11 so students can see the illustrations.

   What was Luz’s idea about why the snake did not eat the frogs? [The frogs were brown like the leaves, so the snake did not see them.]

   Think aloud to model considering how Luz’s model explained her idea.

   We are reading to find out how the models help explain the children’s ideas. Luz’s idea was the frogs survived because they were brown like the leaves, so the snake did not see them.

   Luz used her model to explain her idea. She made circles that were brown like the frogs. She put them in the leaves and, just like the frogs, the circles were hard to see.
5. **Read through page 15 and discuss Juan’s model.** Keep the book open to pages 14–15 so students can see the illustrations.

- What was Juan’s idea?
  
  [The frogs are a similar shape to the leaves, so the snake did not see them.]

Have students talk with a partner to answer the following question.

- **How did Juan’s model show his idea?**

Call on a few volunteers to share. Students should mention that Juan made shapes that were like the shape of the frog. He put them in the leaves and, just like the frogs, they were hard to see. They will also likely mention Juan’s shapes were hard to see because they were brown like the leaves.

6. **Read through page 18 and have students visualize.**

- **Visualize Juan and Luz using their models to explain their ideas to their mom. What do they do with their models? What do they say?**

Give students a minute or two to silently visualize. Then, have partners share ideas. After pairs share, call on a couple of volunteers to share with the class.

7. **Read the final page and have students share ideas.** After reading the final page, call on a few students to share other ideas of what else could be explained using models. Accept all responses.

8. **Using the What Scientists Do chart, lead a reflection on how Luz and Juan worked as scientists.** Remind students that they were reading to find out more about how scientists use models to explain ideas.

- **This chart helps us think about how we have been working as scientists. It can also help us think about how Luz and Juan worked as scientists.**

Gesture to the chart and read each card aloud. Students may be ready to read along with you.

- **Talk with your partner about how Luz and Juan worked as scientists by doing some of the things on this chart.**

Provide pairs a moment to discuss, and then call on volunteers to share. Emphasize the following points:

- Luz and Juan observed the frogs and snakes to learn more about the frogs’ defense.
- Luz and Juan communicated with each other and their mom by discussing their ideas.
- Luz and Juan made models.
- Luz and Juan put the models they made in the leaves to explain their ideas.
Teacher Support

Background

About the Book: **Frog Models**

*Frog Models* is a story about a pair of siblings who use models to explain their ideas about frog camouflage. Luz and Juan are walking in a forest when they see a snake hunting. There are some frogs nearby, but the snake does not see them. Each child has an idea about why the snake did not see the frogs, and they make paper models to show their ideas. Using their models, the siblings are able to explain that the frogs’ color and shape make them hard to see against the leaves. *Frog Models* is a Shared Reading that uses simple language to support students’ firsthand investigations by demonstrating the process that scientists go through when constructing models for reasoning and explanation. The book shows the process that students will engage in as they create their own models in the unit.

Instructional Suggestion

What One Teacher Did: Pantomiming What Scientists Do

While students have the opportunity to move around in the next activity, one teacher noticed her students beginning to wiggle by the end of this Shared Reading. In order to help her students continue to focus as they reflected on the What Scientists Do chart, she had them think of ways to show with their bodies the different scientific practices Luz and Juan used in *Frog Models*. Her students acted out looking very closely at something to observe, cutting and drawing to make models, and pointing and pantomiming speaking to another student to communicate and explain. As they shared their ideas, they also shared how they acted out each scientific principle. The teacher then had the whole class stand and act out their ideas.

- Luz and Juan did not read in this story, but they could have found more information about frogs’ defenses using a book.
The teacher conducts a Shared Reading of *Frog Models*. Students practice visualizing and consider how the models help explain ideas.

### Instructional Guide

1. **Transition to the Shared Reading.** Hold up the cover of the *Frog Models* big book.

   - Estamos intentando averiguar cómo usan modelos los científicos para explicar sus ideas. Los niños en este libro trabajan como científicos para explicar sus ideas acerca de la defensa de un animal.

2. **Set the purpose for reading.** Explain that reading about how the children in this book make and use models will help students plan their exhibit models.

   - Mientras leemos, nos enfocaremos en cómo planean y hacen sus modelos los niños, así como en la manera en que los modelos los ayudan a explicar sus ideas.

3. **Read through page 5 and have students visualize.** Pause and have students visualize what happened on the forest floor. Give students a moment to picture what happened before having them share what they visualized with a partner.

4. **Read through page 11 and discuss Luz’s model.** Keep the book open to pages 10–11 so students can see the illustrations.

   - ¿Cuál fue la idea de Luz acerca de por qué la serpiente no comió las ranas? [Las ranas eran de color café como las hojas, así que la serpiente no las vio].

   Think aloud to model considering how Luz’s model explained her idea.

   - Estamos leyendo para averiguar cómo ayudan los modelos a explicar las ideas de los niños. La idea de Luz es que las ranas sobrevivieron porque eran de color café como las hojas, así que la serpiente no las vio.

   - Luz usó su modelo para explicar su idea. Hizo círculos que eran de color café como las ranas. Los puso en las hojas y, tal como las ranas, los círculos eran difíciles de ver.
5. **Read through page 15 and discuss Juan’s model.** Keep the book open to pages 14–15 so students can see the illustrations.

¿Cuál fue la idea de Juan?
[Las ranas eran de una forma similar a la de las hojas, así que la serpiente no las vio].

Have students talk with a partner to answer the following question.

¿Cómo mostró su idea el modelo de Juan?

Call on a few volunteers to share. Students should mention that Juan made shapes that were like the shape of the frog. He put them in the leaves and, just like the frogs, they were hard to see. They will also likely mention Juan’s shapes were hard to see because they were brown like the leaves.

6. **Read through page 18 and have students visualize.**

Visualicen a Juan y a Luz usando sus modelos para explicar sus ideas a su mamá. ¿Qué hacen con sus modelos? ¿Qué dicen?

Give students a minute or two to silently visualize. Then, have partners share ideas. After pairs share, call on a couple of volunteers to share with the class.

7. **Read the final page and have students share ideas.** After reading the final page, call on a few students to share other ideas of what else could be explained using models. Accept all responses.

8. **Using the What Scientists Do chart, lead a reflection on how Luz and Juan worked as scientists.** Remind students that they were reading to find out more about how scientists use models to explain ideas.

Esta gráfica nos ayuda a pensar en cómo hemos estado trabajando como científicos y científicas. También puede ayudarnos a pensar en cómo trabajaron como científicos Luz y Juan.

Gesture to the chart and read each card aloud. Students may be ready to read along with you.

Hablen en parejas acerca de cómo trabajaron Luz y Juan como científicos haciendo algunas de las cosas en esta gráfica.

Provide pairs a moment to discuss, and then call on volunteers to share. Emphasize the following points:

- Luz and Juan observed the frogs and snakes to learn more about the frogs’ defense.
- Luz and Juan communicated with each other and their mom by discussing their ideas.
- Luz and Juan made models.
- Luz and Juan put the models they made in the leaves to explain their ideas.
Teacher Support

Background

About the Book: Frog Models

Frog Models is a story about a pair of siblings who use models to explain their ideas about frog camouflage. Luz and Juan are walking in a forest when they see a snake hunting. There are some frogs nearby, but the snake does not see them. Each child has an idea about why the snake did not see the frogs, and they make paper models to show their ideas. Using their models, the siblings are able to explain that the frogs’ color and shape make them hard to see against the leaves. Frog Models is a Shared Reading that uses simple language to support students’ firsthand investigations by demonstrating the process that scientists go through when constructing models for reasoning and explanation. The book shows the process that students will engage in as they create their own models in the unit.

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