Lesson 1.5
Introducing Scientific Explanation
Lesson Overview

In this lesson, students return to *Patterns in Communication* to read about how mother dolphins communicate with their calves, and the class writes a scientific explanation. Via a message, the park superintendent asks students to explain how mother and calf dolphins communicate across distances. The teacher models using the reference book, and student pairs refer to the book to gather information about dolphin communication. Students then complete a Critical Juncture Assessment designed to reveal whether they have the foundational understanding of waves necessary in order to proceed successfully with the rest of the unit. At the end of the lesson, the teacher guides the class in constructing a scientific explanation that addresses the Chapter 1 Question: *How does a mother dolphin communicate with her calf across a distance?* The purpose of this lesson is for students to gain experience gathering and reflecting on evidence from investigations and from text in order to make a scientific explanation based on that evidence.

**Anchor Phenomenon:** Dolphins in Blue Bay National Park communicate with one another underwater.

**Students learn:**

- Reference books provide detailed information about a topic and are typically read for specific purposes.
- Making explanations is an important practice in science.
- Scientific explanations answer a question about how or why something happens, are based on ideas from investigations and text, and are written for an audience.
Model searching for information in the reference book. Students read one section to gather information about how mother dolphins communicate with their calves.

**Instructional Guide**

1. **Hold up a copy of Patterns in Communication.** Remind students that they read from this reference book in a previous lesson.

2. **Set a purpose for reading.**

   > In her message, the park superintendent suggested that we use this book, as it may contain additional information that can help us explain how mother dolphins communicate with their calves across distances.

3. **Distribute one copy of Patterns in Communication to each pair of students.**

4. **Have pairs explore the book.** Give students a few minutes to browse through the book with their partners and notice how it is organized.

5. **Discuss the features of a reference book.**

   > Remember, scientists use reference books like this to find information. Because reference books provide information about many topics, we don’t usually read them from beginning to end. We only look for the information that we need. How do you think we might find the information we want quickly? [The table of contents.]

6. **Use the table of contents to find information.** Ask students to turn to page 3, Contents, and have them take a moment to review the page. Let students know that the class should begin by reading about how marine mammals in general communicate. Ask students what section and page they should turn to. [Marine Mammal Communication, page 8.]
7. Read the Marine Mammal Communication Introduction. Ask students to turn to page 8 in the reference book. As a class, read page 9. Let students know that the purpose of this introduction is to introduce students to the kinds of marine mammals included in this section of the book.

8. Ask students to return to the Patterns in Communication table of contents on page 3.

9. Have students turn to page 17, Gathering Information from Patterns in Communication, in their notebooks. Remind students that they are reading the reference book with the question How does a mother dolphin communicate with her calf across a distance? in mind. Read the directions on the notebook page aloud.

10. Prompt pairs to read from the reference book and complete notebook page 17. Let students know that you’d like them to reread page 9 and then read pages 14 and 15. Circulate to remind them to complete the notebook page as they read.

11. Call on a few students to share the notes they recorded in their notebooks. Then, return to the Chapter 1 Question.

Teacher Support

Background

Literacy Note: Exploring the Reference Book
Giving students time to explore the reference book and notice how it is organized prepares them to search for the information they need. Understanding the organization and features of the reference book helps to prepare students to use the reference book in later lessons in this unit, and it encourages students to read complex text purposefully and carefully.

Instructional Suggestion

Providing More Experience: Onomatopoeia and Sounds
To give students an idea of the kinds of sounds described on page 14 of Patterns in Communication, provide a few examples of how some of the words represent sounds. Invite students to read some of the words, vocalizing sounds...
such as “buzz,” “pop,” and “yelp.” You can provide additional examples or have students think of sounds made by water or voices, such as “splash” or “screech.” Focusing on the variety and quality of sounds will be a helpful reference for students later in the unit when they discuss more complex ideas related to sound, such as pitch.

**Background**

**Literacy Note: Setting a Purpose for Reading**

When reading informational text, it can be helpful to have clear goals in mind at the outset of reading. Readers of informational text also evaluate the text as they read to determine whether it is meeting their goals. In this lesson, students’ goal for reading is to find evidence to answer the question *How does a mother dolphin communicate with her calf across a distance?* Reading to learn more about the sounds that dolphins use to communicate gives students information to further motivate their ongoing investigation of sound waves.

**Possible Responses**

Investigation Notebook

Gathering Information from *Patterns in Communication* (page 17)

Answers will vary.

**Example:**

- page 9: baby marine mammals and their mothers communicate in order to stay together
- page 9: dolphins make sounds underwater
- page 9: a sound wave moves through the water from one animal to another
- page 14: sounds are important for dolphin communication
- page 14: dolphins make squeaks and whistles
Gathering Information
from Patterns in Communication

How does a mother dolphin communicate with her calf across a distance?

1. Read the following sections of Patterns in Communication:
   - Marine Mammal Communication Introduction (pages 8–9)
   - Bottlenose Dolphin Communication (pages 14–15)

2. Make notes about information that might help you to answer the question. Be sure to record the page number on which you found the information.
Model searching for information in the reference book. Students read one section to gather information about how mother dolphins communicate with their calves.

Instructional Guide

1. **Hold up a copy of Patterns in Communication.** Remind students that they read from this reference book in a previous lesson.

2. **Set a purpose for reading.**

   - En su mensaje, la superintendente del parque sugería que usáramos este libro, ya que puede contener información adicional que puede ayudarnos a explicar cómo se comunican las madres delfines con sus crías a través de las distancias.

3. **Distribute one copy of Patterns in Communication to each pair of students.**

4. **Have pairs explore the book.** Give students a few minutes to browse through the book with their partners and notice how it is organized.

5. **Discuss the features of a reference book.**

   - Recuerden, los científicos usan libros de referencia como este para encontrar información. Como los libros de referencia proporcionan información sobre muchos temas, usualmente no los leemos de principio a fin. Solo buscamos la información que necesitamos. ¿Cómo piensan que podríamos encontrar la información que queremos rápidamente? [La tabla de contenidos].
6. **Use the table of contents to find information.** Ask students to turn to page 3, Contents, and have them take a moment to review the page. Let students know that the class should begin by reading about how marine mammals in general communicate. Ask students what section and page they should turn to, [Marine Mammal Communication, page 8.]

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10. **Prompt pairs to read from the reference book and complete notebook page 17.** Let students know that you’d like them to reread page 9 and then read pages 14 and 15. Circulate to remind them to complete the notebook page as they read.

11. **Call on a few students to share the notes they recorded in their notebooks.** Then, return to the Chapter 1 Question.

12. **Collect all copies of Patterns in Communication.**

**Teacher Support**

**Background**

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Recolectar información de *Patrones en la comunicación*

¿Cómo se comunica una madre delfín con su cría a través de una distancia?

1. Lee las secciones siguientes de *Patrones en la comunicación*:
   - Introducción a la comunicación de los mamíferos marinos (páginas 8 a 9)
   - La comunicación de los delfines mulares (páginas 14 a 15)

2. Toma notas sobre la información que podría ayudarte a responder la pregunta. Asegúrate de apuntar el número de página en el cual encontraste la información.