Lesson 2.1
Sound on the Move
Lesson Overview

In this lesson, students learn that sound can travel through various materials. Students begin by considering their prior experiences with hearing sounds underwater. Next, the teacher leads an investigation in which students hear sounds traveling through air and through solid materials. Students record their observations and discuss what they observed. Then, students prepare to read the book *Sound on the Move* by using the strategy of visualizing. Students read the first half of the book and visualize sound traveling through various materials. The purpose of this lesson is for students to explore the idea that sound can travel through water, air, and solid materials. They will continue learning about this in the following lesson.

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

**Investigative Phenomenon:** Sound travels through different materials.

**Students learn:**

- Everything is made of materials.
- It is possible to hear sounds underwater.
- Animals use sound to communicate in different ways.
- Visualizing is a useful strategy for making sense of things you cannot see firsthand.
Introduce *Sound on the Move* and model how to use visualizing as a reading strategy.

**Instructional Guide**

1. **Hold up a copy of *Sound on the Move* and introduce the book.** Explain that students will now read a book in order to learn more about how sound travels.

2. **Discuss visualizing as a reading strategy.**

   When you read the book *Warning: Tsunami!* you each made pictures in your mind of the tsunami wave to help you make sense of what you were reading. Remember that when readers make pictures in their minds using information from different sources, that is called visualizing. Visualizing will also be useful as you read *Sound on the Move*.

3. **Distribute books.** Distribute one copy of *Sound on the Move* to each pair of students. Let students know that they should follow along as the class reads the first few pages of the book together.

4. **Read page 4 aloud and then pause to discuss.**

   The book states, “...animal sounds all have one thing in common. All of these sounds have to travel to reach other animals.” In this case, what is the source? Who is the listener? [Animals are the sources and the listeners.]

5. **Have students take turns reading pages 6–7 aloud.** Pause at the bottom of page 7 to model visualizing.

   The book states, “The vibration of the vocal cords creates sound.” This means that when I am talking, the source of the sound is my vocal cords vibrating, and the listener is whoever hears me.

   The diagram on page 7 shows the voice box, which is where the boy’s vocal cords vibrate to create a sound. Of course, the diagram can’t move. So in order for me to “see” the vibration, I need to visualize it happening.
I can picture in my mind the air moving from his lungs, causing his vocal cords to vibrate, and that sound then traveling out of his mouth to the listener. Even though you can’t actually see sound, you can think about how it travels—just as we did when we were making sounds in class.

Teacher Support

Background

About the Book: Sound on the Move

*Sound on the Move* introduces the idea that sound waves travel as a series of collisions of particles that are too small to see. The engaging context of animal communication through air, water, and ground helps students solidify their understanding of tricky concepts. The book begins with an introduction to animal communication, human communication, and vocal structures. Clear diagrams overlaid on beautiful nature illustrations help students understand the differences in how particles are arranged in air, water, and ground. Diagrams similar to those in the Sound Waves Simulation show how sound waves travel at the particle level. Three organisms—mountain bluebirds, sperm whales, and kangaroo rats—serve as examples of animals using sound to communicate. This book delivers essential unit content about particles, sound waves, patterns, and vibration.

Instructional Suggestion

Providing More Experience: Previewing Vocabulary

It may be helpful to give students some background about the new vocabulary they will encounter in *Sound on the Move*. Having a general understanding of the words *particle*, *collision*, and *vibrate* will help students visualize during reading and better comprehend the text. These words can be found in the glossary at end of the book. Invite students to think about what they know about these words before reading the definitions with a partner or as a class. At this point, students just need a general understanding of these words to help them engage with the reading. You will discuss these new words in detail after students have had a chance to read the words in context.

Background

Literacy Note: Visual Representations in Science Texts

Science texts rely heavily on visual representations to convey information. Drawing explicit attention to the diagrams in *Sound on the Move* will help students see how much information is contained in each diagram. To demonstrate how visual representations convey information, you can incorporate the following steps to help students visualize as they read. Project page 7 of *Sound on the Move* by using a document camera. Draw curved lines on the diagram to indicate vibration of the vocal cords in the voice box, and label these “vibrations.” Seeing symbols used to represent movement will help students visualize how sound from a source travels to a listener through a material.
Partner Reading

Students read the first half of *Sound on the Move* and practice the strategy of visualizing.

### Instructional Guide

1. **Introduce the reading task.** Let students know that they will now read the first half of *Sound on the Move* with their partners.

2. **Prompt partners to read pages 4–13 of *Sound on the Move***. Circulate as pairs read and provide support as necessary. Remind students that as they read, they should visualize the source of each sound vibrating and the sound traveling from the source to the listener.

3. **Discuss visualizing.** When students have finished reading the first half of the book, ask volunteers to share one thing they visualized while reading. You may wish to ask questions such as the following:

   - *What did you visualize as you read? Describe what you pictured in your mind.*
   - *What did this help you understand?*
   - *What did you learn about what sound travels through?*

4. **Refer to the Investigation Question.**

   Based on what you discovered as you read and as you listened to the sounds in the classroom, what can you say so far about what kinds of things sound energy can travel through?

   Accept student responses. [Air, water, and ground (solids).]

5. **Discuss the word material.** Hold up the *material* vocabulary card.

   Material is the stuff that makes up everything. Air, water, and ground are examples of materials. Sound travels through different materials.
Post the material card on the classroom wall.

6. Direct students’ attention to the Science/Everyday Words chart. Remind students that they are taking on the role of marine scientists in this unit, and as marine scientists they should use scientific language to communicate the ideas they are learning. Remind them that this chart can help them do this.

7. Write “material” in the “Science words” column of the chart. Ask students to suggest an everyday word that means something similar to material. [Stuff.] Write the everyday word in the “Everyday words” column of the chart.

8. Collect all copies of Sound on the Move and conclude the lesson. Let students know that in the next lesson, they will continue to investigate what materials sound energy can travel through. Explain that students will read the rest of the book Sound on the Move after they have done more investigation.

Teacher Support

Background

Literacy Note: Visualizing
Visualizing, or creating mental pictures using information from different sources, can support learning and understanding. Students will have many opportunities to practice visualizing in this unit. In this activity, the goal of having students visualize is to encourage them to focus on the diagrams in the book and think deeply about what is happening as sound travels. Throughout the unit, students will think about ways to visualize sound traveling, even though sound traveling is not something that can be observed.

Instructional Suggestion

Providing More Experience: Home Investigation
This optional activity invites students to map sounds they hear in their homes. Home Investigations can encourage interaction and discussion between students and their families around science concepts, which has been found to be beneficial for student learning. See Optional: Chapter 2 Home Investigation: My Home Sound Map copymaster (in Digital Resources). Make one copy for each student and review the directions with them.
Introduce *Sound on the Move* and model how to use visualizing as a reading strategy.

**Instructional Guide**

1. **Hold up a copy of *Sound on the Move* and introduce the book.** Explain that students will now read a book in order to learn more about how sound travels.

2. **Discuss visualizing as a reading strategy.**

   Cuando leyeron el libro *Peligro: ¡tsunami!*, hicieron imágenes en su mente de la onda de tsunami para ayudarles a darle sentido a lo que estaban leyendo. Recuerden que cuando los lectores hacen imágenes en su mente usando información de diferentes fuentes, a eso se le llama visualizar. Visualizar también será útil mientras leen *Sonido en movimiento*.

3. **Distribute books.** Distribute one copy of *Sound on the Move* to each pair of students. Let students know that they should follow along as the class reads the first few pages of the book together.

4. **Read page 4 aloud and then pause to discuss.**

   El libro dice, “...todos los sonidos animales tienen una cosa en común: deben viajar para alcanzar a otros animales”. En este caso, ¿cuál es la fuente? ¿Quién es el oyente? [Los animales son las fuentes y los oyentes].

5. **Have students take turns reading pages 6–7 aloud.** Pause at the bottom of page 7 to model visualizing.

   El diagrama en la página 7 muestra la caja de voz, que es donde las cuerdas vocales vibran para crear un sonido. Por supuesto, el diagrama no se puede mover. Así que para que yo “vea” la vibración, necesito visualizarla sucediendo.
Puedo imaginar en mi mente el aire moviéndose desde sus pulmones, causando que sus cuerdas vocales vibren y que el sonido viaje entonces desde su boca hasta el oyente. Aunque realmente no pueden ver el sonido, pueden pensar en cómo viaja, tal como lo hicimos cuando estábamos haciendo sonidos en la clase.

Teacher Support

Background

About the Book: Sound on the Move

Sound on the Move introduces the idea that sound waves travel as a series of collisions of particles that are too small to see. The engaging context of animal communication through air, water, and ground helps students solidify their understanding of tricky concepts. The book begins with an introduction to animal communication, human communication, and vocal structures. Clear diagrams overlaid on beautiful nature illustrations help students understand the differences in how particles are arranged in air, water, and ground. Diagrams similar to those in the Sound Waves Simulation show how sound waves travel at the particle level. Three organisms—mountain bluebirds, sperm whales, and kangaroo rats—serve as examples of animals using sound to communicate. This book delivers essential unit content about particles, sound waves, patterns, and vibration.

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   - *What did this help you understand?*
   - *What did you learn about what sound travels through?*

4. **Refer to the Investigation Question.**

   Basándose en lo que descubrieron mientras leían y mientras escuchaban los sonidos en el salón de clases, ¿qué pueden decir hasta ahora sobre a través de qué tipos de cosas puede viajar la energía sonora?

   Accept student responses. [Air, water, and ground (solids).]

5. **Discuss the word *material***. Hold up the *material* vocabulary card.

   Material es lo que constituye todo. El aire, el agua y el suelo son ejemplos de materiales. El sonido viaja a través de diferentes materiales.

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Post the *material* card on the classroom wall.

6. Direct students’ attention to the Science/Everyday Words chart. Remind students that they are taking on the role of marine scientists in this unit, and as marine scientists they should use scientific language to communicate the ideas they are learning. Remind them that this chart can help them do this.

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