Lesson 4.2

What Vibrates?
Lesson Overview

The teacher leads the class in examining and discussing the sound and movement of a large rubber band. The class discussion is used to introduce the word *vibrate*. Students revisit the four Sound Sources Stations to investigate what happens when each sound source makes a sound. They discuss their observations of these sound sources to determine if the sound sources also vibrated when making sounds. The teacher introduces the book *What Vibrates*? to help reinforce the concepts that vibration causes sound and that every sound comes from a source. Partners ask and answer questions throughout the reading of *What Vibrates*? The purpose of this lesson is for students to make connections between their investigation of sound sources in the previous lesson and the cause-and-effect relationship between sound and vibration.

**Design Problem:** Design a sound source for a puppet-show scene.

**Investigative Phenomenon:** A plucked rubber band, a drum, a guitar, a person, a clock, and a radio make sounds.

**Students learn:**

- The senses of sight and touch, as well as hearing, can be used to observe sound.
Reading: What Vibrates?

The teacher reads aloud *What Vibrates?* Students practice asking and answering questions during the Shared Reading.

Instructional Guide

1. **Ask questions about things that vibrate.** Ask the following questions and accept all responses.

   - We observed that the sound sources at the stations vibrated when they made sounds. Do you think all sound sources vibrate when they make sounds?

   - Sometimes when I hear sounds, I do not see something vibrating. When I was listening to the radio this morning, I did not see it vibrate. Do things like the radio vibrate when they make sound, too?

2. **Hold up the front cover of the *What Vibrates?* big book.** Invite students to describe what they see on the front cover. Let students know that they will read this book to try to help answer their questions about the parts of sound sources that vibrate.

   - We saw a few examples of what vibrates at our Sound Sources Stations. Books give us more examples than what we can observe here in our classroom.

3. **Revisit asking questions.** Remind students that they have been asking questions while they read to think about why certain things in a book are happening.

   - We can also ask questions to help us understand more about sound. As we read, let us think about this question: *Is something always vibrating whenever there is a sound?*

Give students a moment to think quietly about what they wonder about sound. Call on students to ask questions about what they’re wondering.

- Let us read to see if we can find answers to our questions.

4. **Turn to page 3.** Read aloud the text. Pause at the end of this page to model asking a question based on your experience.
The question in the book is *What vibrates?* Today, we observed a large rubber band vibrating. At one of our Sound Sources Stations, we observed a rubber-band guitar vibrating. I wonder, does the guitar in the book work the same way? Does the string part vibrate?

Before turning the page, have students turn to a partner and answer the question about what part of the guitar vibrates. Point out that sometimes we use what we know from before to ask good questions about what we read in science.

5. **Continue reading and pause at the end of page 7.** Explain that students should turn to their partners to ask questions about what they see in the pictures on pages 6 and 7.

You might wonder about what vibrates—or how an object makes a sound. You might even wonder if it is like something you already know or like what you observed at the Sound Sources Stations.

Give partners a minute to ask questions of one another. Listen to the questions that students ask and then share the questions you heard partners pose to each other. [*What do you think that feels like? I wonder what part makes it vibrate?*]

6. **Continue reading and pause at the end of page 14.**

This is interesting. I know that when I hear a sound, something is vibrating. I wonder what could be vibrating when I sing or speak or yell?

7. **Continue reading and pause at the end of page 17.** Have students hum quietly and feel their vocal cords. Emphasize that we can’t always see what is vibrating, but sometimes we can observe it with our sense of touch instead.

8. **Continue reading and pause at the end of page 23.** Have partners ask each other questions about what they wondered while observing pictures in the book. Invite students to share their questions about vibrations.

9. **Conclude the lesson.** Let students know that in the next lesson, they will continue to read about sound and have a chance to write their own books about sound. Remind students to continue to bring in materials from home for the sound sources.

**Teacher Support**

**Background**

**About the Book: *What Vibrates?***

*What Vibrates?* conveys the essential concept that every sound comes from something that vibrates. The book looks at several familiar sources of sound, including a guitar, a radio, and an alarm clock, and shows students what part of the object vibrates to make sound. *What Vibrates?* supports the content of the unit’s fourth chapter, using recognizable examples to help students understand the concepts that vibration causes sound, and every sound comes from a source. The book is used first as a Shared Reading, and then students are encouraged to read the book with partners once they have been exposed to the concepts and vocabulary. Clear, labeled photographs help provide support through both readings.
Instructional Suggestion

Literacy Note: Text Features
A Shared Reading is a great opportunity to draw students’ attention to particular text features and how students can use those features to help them understand the text. There are several text features on which to focus in this book. Depending on the needs of your class, you may want to choose to focus on one or two of the following text features: onomatopoeia, captions, diagram of vocal chords. Once you have selected your focus, make a note of two to four places in the book where you can stop and highlight this feature for students.

Instructional Suggestion

Supporting English Learners: Choral Reading
Reading parts of repetitive text chorally can help English learners practice new vocabulary and sentence structures. Before reading What Vibrates?, you may wish to invite students to repeat the title together and then repeat it as a class each time it appears in the book. As students pause to ask questions, they will have practiced asking this particular question—What vibrates?—and can later pose the question What part vibrates? with prompting.

Instructional Suggestion

Providing More Experience: Home Investigation
This optional activity invites students to explore materials in their homes that vibrate and make sound. 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 4 Home Investigation: What Vibrates? copymaster (in Digital Resources). Make one copy for each student and review the instructions with students.
Reading: What Vibrates?

The teacher reads aloud What Vibrates? Students practice asking and answering questions during the Shared Reading.

Instructional Guide

1. Ask questions about things that vibrate. Ask the following questions and accept all responses.

   - ¿Observamos que las fuentes de sonido en las estaciones vibraban cuando hacían sonidos. ¿Ustedes piensan que todas las fuentes de sonido vibran cuando hacen sonidos?

   - A veces, cuando oigo sonidos, no veo que nada vibre. Cuando estaba escuchando música esta mañana, no vi que el radio vibrara. ¿Las cosas como el radio también vibran cuando hacen un sonido?

2. Hold up the front cover of the What Vibrates? big book. Invite students to describe what they see on the front cover. Let students know that they will read this book to try to help answer their questions about the parts of sound sources that vibrate.

   - Vamos unos cuantos ejemplos de qué vibra en nuestras Estaciones de fuentes de sonido. Los libros nos dan más ejemplos que lo que podemos observar aquí en nuestro salón de clases.

3. Revisit asking questions. Remind students that they have been asking questions while they read to think about why certain things in a book are happening.

   - También podemos hacer preguntas para ayudarnos a entender más sobre el sonido. Mientras leemos, pensemos en esta pregunta: ¿Siempre hay algo vibrando cada vez que hay un sonido?

   Give students a moment to think quietly about what they wonder about sound. Call on students to ask questions about what they’re wondering.

   - Leamos para ver si podemos encontrar respuestas a nuestras preguntas.

4. Turn to page 3. Read aloud the text. Pause at the end of this page to model asking a question based on your experience.

© The Regents of the University of California
La pregunta en el libro es ¿Qué vibra? Hoy observamos una liga grande vibrando. En una de nuestras Estaciones de fuentes de sonido, observamos una guitarra de liga vibrando. Me pregunto si la guitarra en el libro funciona de la misma manera. ¿La parte de cuerdas vibra?

Before turning the page, have students turn to a partner and answer the question about what part of the guitar vibrates. Point out that sometimes we use what we know from before to ask good questions about what we read in science.

5. **Continue reading and pause at the end of page 7.** Explain that students should turn to their partners to ask questions about what they see in the pictures on pages 6 and 7.

Podrían hacerse preguntas sobre qué vibra, o cómo un objeto hace un sonido. Incluso podrían preguntarse si es como algo que ya saben o como lo que observaron en las Estaciones de fuentes de sonido.

Give partners a minute to ask questions of one another. Listen to the questions that students ask and then share the questions you heard partners pose to each other. 

**What do you think feels like? I wonder what part makes it vibrate?**

6. **Continue reading and pause at the end of page 14.**

Esto es interesante. Sé que cuando oigo un sonido, algo está vibrando. Me pregunto: ¿qué podría estar vibrando cuando canto o hablo o grito?

7. **Continue reading and pause at the end of page 17.** Have students hum quietly and feel their vocal cords. Emphasize that we can’t always see what is vibrating, but sometimes we can observe it with our sense of touch instead.

8. **Continue reading and pause at the end of page 23.** Have partners ask each other questions about what they wondered while observing pictures in the book. Invite students to share their questions about vibrations.

9. **Conclude the lesson.** Let students know that in the next lesson, they will continue to read about sound and have a chance to write their own books about sound. Remind students to continue to bring in materials from home for the sound sources.

**Teacher Support**

**Background**

**About the Book: What Vibrates?**

*What Vibrates?* conveys the essential concept that every sound comes from something that vibrates. The book looks at several familiar sources of sound, including a guitar, a radio, and an alarm clock, and shows students what part of the object vibrates to make sound. *What Vibrates?* supports the content of the unit’s fourth chapter, using recognizable examples to help students understand the concepts that vibration causes sound, and every sound comes from a source. The book is used first as a Shared Reading, and then students are encouraged to read the book with partners once they have been exposed to the concepts and vocabulary. Clear, labeled photographs help provide support through both readings.