

# Lesson: Sound and Vibrations

**Florida Benchmark:** SC.5.P.10.1: Investigate and describe that sound is produced by vibrations and travels through a medium.

**NGSS Standard:** 4-PS3-2: Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.

**A. GRADE LEVEL:** 5th Grade

**B. SUBJECT:** STEM/ Science

**C. DATE:** [Insert Date]

**D. DURATION:** 60 minutes

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## E. LESSON FOCUS:

Understanding how sound is produced by vibrations and how it travels through various mediums.

## F. MATERIALS:

- PowerPoint presentation
- Plastic cup
- Balloon
- Rubber band
- Small mirror
- Flashlight
- Worksheet for recording observations

## G. LESSON OBJECTIVES:

1. Identify that sound is produced by vibrations.
2. Demonstrate how sound travels through different mediums (solid, liquid, gas).
3. Record observations on how sound changes depending on the medium.
4. Explain how vibrations produce sound.

## H. PROCEDURES:

### 1. INTRODUCTION:

- Begin with a brief discussion on how sounds are heard in everyday life.
- Present a PowerPoint presentation to explain the basic concept of sound production through vibrations and how sound travels through different mediums.
- Discuss that sound requires a medium (solid, liquid, gas) to travel.

### 2. EXPERIMENT:

- Divide students into small groups and distribute materials.

- **Experiment:** Create a simple paper cup speaker by stretching the balloon over the open end of the cup, securing it with a rubber band, and placing a small mirror on the balloon surface. Shine a flashlight on the mirror and speak into the cup, observing how the light pattern changes.
- Students will follow along with the experiment steps as guided by the PowerPoint.
- 3. **OBSERVATION:**
  - Students will record their observations on how the sound waves cause the balloon and mirror to vibrate, changing the reflected light pattern.
  - Class discussion: How do vibrations affect the way sound travels and changes?
- 4. **GENERALIZATION:**
  - Summarize key points from the PowerPoint.
  - Discuss how vibrations cause sound and how sound behaves differently through various mediums.
  - Use real-world examples, like how speakers produce sound.
- 5. **ASSESSMENT:**
  - Group presentations sharing their experiment results.
  - Individual worksheets assessing their understanding of how sound is produced and transmitted.
  - Exit ticket question: Why does sound change when it moves through different mediums?

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**Note 1: Safety Considerations:**

Ensure that students handle the flashlight and small mirror carefully to prevent breakage. Remind them not to point the flashlight directly into anyone's eyes.

**Note 2: Accommodations:**

For ELL and ESE students, use visual aids and the PowerPoint presentation to reinforce key concepts. Provide clear, simple language and pair ELL students with bilingual peers when possible. Offer extra guidance and step-by-step instructions.