

**WEEK 2 Lesson 1**

**Science and Engineering: Changing Volume**  
Exploring Sound

<b>S &amp; E Big Ideas</b>	Vibrating materials make sound. Sound makes materials vibrate. Light and sound travel. Humans and other animals communicate with light and sound.
<b>S &amp; E Guiding Question</b>	What is volume? How can we make sounds that are loud and soft?
<b>Content Objective</b>	I can conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate. (1-PS4-1)
<b>Language Objective</b>	I can use a sentence starter and related vocabulary to describe how to make a sound louder. (L.1.6)
<b>Vocabulary</b>	<p><b>gentle:</b> not hard; a gentle tap produces a soft sound</p> <p><b>guitar:</b> a stringed instrument that uses strings to produce sound</p> <p><b>volume:</b> how loud or soft a sound is</p> <p><b>xylophone:</b> a musical instrument made from a set of bars or tubes of different lengths</p>
<b>Materials and Preparation</b>	<ul style="list-style-type: none"> <li>● ball of aluminum foil</li> <li>● metal spoon</li> <li>● xylophone, one for each small group</li> <li>● triangle instrument, one for each small group</li> </ul> <p>Children will work in small groups. If necessary, prepare these groupings ahead of time.</p>
<b>Opening</b> 5 minutes	<p><i>We have learned that sound comes from things that are vibrating. Let's see if we can find out more about sound and how to change sounds. What questions do you have about sound?</i></p> <p>After the children share, have them close their eyes or turn their backs so they can't see the items that will be dropped. Ask the children to listen for</p>

	<p>the two sounds.</p> <p>Drop the aluminum foil ball and then the spoon. Ask the children how the sounds differ. Tell them one sound was loud and one was soft. Have them listen again and see which is loud.</p> <p>Explain to the children that the word volume means how loud or soft a sound is.</p> <p><i>Where have you heard the term volume before?</i></p> <p>Children might mention changing the volume control on the remote for a TV or other device with sound. They may know that larger numbers mean a louder volume and smaller numbers indicate a softer volume. Mute means no sound.</p> <p><i>Today we will experiment with sound. We will learn how to increase volume and decrease the volume. You will be using a xylophone. A xylophone is a musical instrument made from a set of metal bars. Each bar is a different length and plays a different note when it is hit with a mallet.</i></p> <p>Model for the children how to make sounds on the xylophone. Then introduce the next instrument, the triangle.</p> <p><i>We will also be using a musical instrument called a triangle. A triangle is part of the percussion instrument family because it has to be tapped to make a sound.</i></p> <p>Demonstrate how sound is made with the triangle.</p>
<p><b>Investigation</b> 15 minutes</p>	<p>Explain to the children that they will try to do three things with each instrument:</p> <ul style="list-style-type: none"> <li>● Make a soft sound</li> <li>● Make a louder sound</li> <li>● Make a sound on the instrument and make it stop.</li> </ul> <p>In small groups, release children to experiment with the instruments.</p> <p>As children work, ask them to describe their observations.</p>
<p><b>Discussion</b> 5 minutes</p>	<p>Ask questions about the xylophone:</p> <ul style="list-style-type: none"> <li>● How did you get the xylophone tube to make a sound? [Hit it with the mallet.]</li> <li>● What was the bar doing while it was making a sound? [Vibrating.]</li> <li>● How could you get it to stop making a sound? [Touch the bar.]</li> <li>● How could you get a bar to make a loud sound? [Hit it hard, put more energy into it.]</li> <li>● How could you get a bar to make a soft sound? [Tap it lightly or</li> </ul>


	<p>gently.]</p> <p>Ask questions about the triangle:</p> <ul style="list-style-type: none"> <li>● How did you get the triangle to make a sound?</li> <li>● What was the triangle doing while it was making a sound? [Vibrating.]</li> <li>● How could you get it to stop making a sound? [Touch the triangle.]</li> <li>● Why does a triangle need a string to hold it by? [To allow it to vibrate]</li> </ul>
<b>Closing</b>	<p>Gather children in a circle on the rug. Ask children about new evidence they have that supports the ideas below. Encourage children to refer to their observations of the xylophone and the triangle.</p> <p>Key Ideas:</p> <ul style="list-style-type: none"> <li>● Vibration is a kind of motion. It is a fast back-and-forth motion.</li> <li>● Objects that vibrate make sounds. Sound always comes from a sound source (object) that is vibrating.</li> <li>● Sound stops when vibration stops.</li> <li>● Objects can be made to vibrate in many different ways, including hitting, plucking, and dropping.</li> </ul>
<b>Standards</b>	<b>1-PS4-1</b> Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.
<b>Ongoing assessment</b>	Check for understanding in the children’s responses.

**Notes**

WEEK 2 Lesson 2

**Science and Engineering: Changing Pitch**  
Exploring Sound

<b>S &amp; E Big Ideas</b>	Vibrating materials make sound. Sound makes materials vibrate. Light and sound travel. Humans and other animals communicate with light and sound.
<b>S &amp; E Guiding Question</b>	How can we make low-pitched and high-pitched sounds?
<b>Content Objective</b>	I can conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate. 1-PS4-1
<b>Language Objective</b>	I can describe how to change the pitch of a sound created by an instrument (SL.1.4).
<b>Vocabulary</b>	<b>high-pitched:</b> having a high sound <b>pitch:</b> how high or low a sound is
<b>Materials and Preparation</b>	<ul style="list-style-type: none"> <li>● <a href="https://www.youtube.com/watch?v=kvwUBKpgU5A">Pitch</a> Video (<a href="https://www.youtube.com/watch?v=kvwUBKpgU5A">https://www.youtube.com/watch?v=kvwUBKpgU5A</a>)</li> <li>● water</li> <li>● food coloring (optional), 5 different colors</li> <li>● 5 glass jars</li> </ul> <p>Fill the 5 jars with different amounts of water, decrease the amount in each jar. Add a few drops of each food coloring to the jars, so each jar is a different color.</p> <ul style="list-style-type: none"> <li>● metal spoon</li> </ul>
<b>Opening</b> 15 minutes	<p><i>Yesterday we learned that volume is how loud or soft a sound is. Today we will learn about <b>pitch</b>. Sound travel in waves. <b>High pitch</b> sounds travel in short wave lengths and vibrate really fast, low pitch sounds travel in long wave lengths and vibrate slower.</i></p> <p>Draw the different wavelengths on the board.</p>

	 <p>Show the video on pitch.</p> <p>Turn children’s attention to the jars of water.  <i>Today we will experiment with the pitch of sound. Here are 5 jars. What do you notice about the jars? Which jar do you think will have the lowest pitch sound? Which jar do you think will have the highest?”</i></p> <p>Record the children's thinking.</p>
<b>Investigation</b> 15 minutes	<p><i>I am going to tap each glass jar with a metal spoon. Listen carefully to the pitch each time to see if your predictions were correct.</i></p> <p>Demonstrate how different pitches can be made with each jar.</p>
<b>Discussion</b> 10 minutes	<p>Ask questions about the experiment:</p> <ul style="list-style-type: none"> <li>● Which jar made the lowest pitch sound?</li> <li>● Which jar made the highest pitch sound?</li> <li>● Why do you think those jars produced those sounds?</li> <li>● How did the amount of water affect the pitch that was created?</li> </ul>
<b>Closing</b>	<p>Gather children in a circle on the rug. Explain that the more water there is in the jar, the less the glass will vibrate. The water absorbs the vibration of the glass. The less water there is in the jar, the more it can vibrate.</p>
<b>Standards</b>	<p><b>1-PS4-1</b> Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.</p>
<b>Ongoing assessment</b>	<p>Check for understanding in the children’s responses.</p>

**Notes**