

# The Sounds Around Us

## Grade Levels: 1-3

### Introduction:

Many places have sounds that belong to that particular place and make a location familiar and recognizable to us. If you live by the ocean, you may often hear boats or a foghorn. If you live on a farm, you may hear tractors or cow bells. Without realizing it, you are classifying sounds and locations.

### Objectives:

- Students will recognize and distinguish a variety of sounds.
- Students will investigate and compare sounds within different spaces of their school.
- Students will describe a variety of sounds and match the sound to the source.

### Standards Addressed:

- Explain how one way to describe something is to say how it is like something else. (NH S:SPS2:2:3.2)
- Take part in sharing information with another classroom or school as a group. (NH S:SPS4:2:8.1)
- Keep a journal record of observations, recognizing patterns, summarizing findings, and reflecting on the observations. (NH S:SPS4:4:7.1)
- Use observation skills to describe the area around their homes and school. (NH S:SPS3:2:2.1)

### Materials:

Tape Recorder  
Blank cassette tape  
Pencils  
Paper

### Procedures:

Begin by having children sit in groups scattered around the classroom. Have everyone close their eyes and listen to the sounds around them. After a few minutes, have everyone write down or share in groups all the sounds that they heard during that time. You may find that students are describing the sounds by comparing them to everyday sounds, such as a rumbling sound, similar to a large truck or a constant clicking noise. Students may also use words to imitate the sounds they are describing, such as buzz or click. Have groups share their lists of sounds with everyone in the classroom. Did everyone hear all of the same sounds? Were some of the sounds that students heard on one side of the room also heard on the other side? Were some of the unknown sound sources recognized by groups in another part of the room, possibly closer to the source location? For example, a group across the room may have heard a clicking or tapping noise, however the group near the door heard someone walking down the hall in high heels.

The second part of this activity is to send the groups off to different parts of the school building or playground with a tape recorder or other device with the ability to record sound such as an mp3 player. Have students record a variety of sounds in their designed area. Groups will then replay the recorded sounds to the class for students to recognize and identify. After all recorded sounds have been played, have groups investigate and classify which parts of the school each set of recordings are from. They may need to explain with details why/how they determined where the sounds are from. Share with the class where the recordings were from and replay the recordings so they can then visualize and match the location to the sound.

Have students share their recorded sounds with classrooms in other parts of the building. It would be a great way to create friendships with other students and share the many sounds of the school.

### **Adaptations:**

If you can't send students off to record sounds, use a video camera and record video with sound at several locations throughout the school. Play your recording back for the class without letting them see the video. Have them guess aloud, or write down ideas of where each scene was filmed. Compare guesses, then play the footage back a second time, allowing them to see the images and hear the sounds together.

### **Extensions:**

1. Students can add sounds to their stories. Have students work in groups or partners to write a short story, keeping in mind that they will be adding sound effects when they record their stories. When each story is finished, give the group a tape recorder to record sounds that they will add to their story as they read it aloud. Using examples such as people walking, wind blowing or a door closing, give children ideas of what sounds they may want to add to their stories so when they are writing they will make notes of sounds to record later. Students will then record their necessary sound effects in the order that they will be needed for their story. Have students first practice then present their sound effect stories to the class, having one child read the story while the other plays back the sound effects. If a tape recorder isn't available, you can also have students add sound effects to their stories by playing them off a free sound effects website, or create them by reproducing sounds using their voice, body or simple props.

2. Teacher plays a variety of sounds from a free sound effects website [www.stonewashed.net/sfx.html](http://www.stonewashed.net/sfx.html). Have students guess what sounds they are hearing.

3. While children cover their ears but keep their eyes open, tape record all of the sounds in the classroom. After 5 minutes, stop the recording and ask children to describe noises that they would have heard if they had been listening, as their eyes were open to see all that was happening. Play back the recording and see if there are any additional sounds that were recorded or any sounds that children named that weren't on the recording.

# Sounds are Caused by Vibrations

## Grade Levels: 1-3

### Introduction:

Sounds are forms of energy caused by vibrations. The original movement causes a chain reaction of vibrations that carries the sound across a space to your ears.

### Objectives:

- Students will recognize and be able to explain vibrations.
- Students will classify objects by weight and the size of the vibration.

### Standards Addressed:

- Describe how a model of something is different from the real thing but can be used to learn something about the real thing. (NH S:SPS2:2:3.1)
- Communicate ideas and observations through a variety of tools and formats. (NH S:SPS4:2:2.1)

### Materials:

Bucket or large tub of water

Quarter

Rock

Marble

Large bolt

Paper clip

Place bucket of water on the floor. Have children gather around the bucket, making sure that nobody is close enough to touch the bucket.

Begin by explaining what a vibration is and as a class, verbally brainstorm examples. A vibration moves back and forth. Have all children practice demonstrating a vibration by waving their hand back and forth quickly. Explain that they are going to see what a vibration looks like as it travels through a liquid.

First, make sure to show (or even pass around) each object before it is dropped into the water so that they can see and feel the size of the object.

Then hold an item about ten inches away from the top of the water and drop the item into the bucket of water. Have children observe the size of the ripples that travel from the spot the object was dropped. Do some objects create larger ripples? Does the size of the ripple relate to the size of the object that was dropped in the water?

Sounds travel in the same way as the ripples we see in the water after an object has been dropped in. As each object is dropped, it creates a wave of water that pushes against water that creates another wave and so forth until it eventually loses steam. Observe how the ripple reaches the bucket: does the wave end or bounce back? Many times, after hitting a solid force, a wave will bounce back, just like the waves in a slinky. Echoes are the result of sound waves that bounce back!

### Adaptations:

Use a Slinky to demonstrate chain reactions and the movement of waves. For children who cannot see the water demonstration, have them put their hand on a drum or speaker to feel the vibrations. Have students practice "the wave" which is often done around sports stadiums. This is a great way to get a little bit of stretching and exercise into the day!

### Extensions:

Can we feel vibrations? Use a drum and have children feel the vibration that is being created when someone taps on the drum surface. What about a speaker - can you feel the vibrations coming out of a speaker if the bass is turned up?

# Volume – Exploring Loud and Quiet Sounds

## Grade Level: K

(After studying vibrations)

### Introduction:

Sounds come in many different volumes. The volume of a sound describes how loud or quiet something is. If the radio sounds are too quiet, you would turn up the volume of the radio and turn the volume down if it was too loud. After learning about how sounds are carried through vibrations, take a closer look at why and how vibrations cause sounds to be loud and quiet.

### Objectives:

- Students will distinguish loud and quiet sounds.
- Students will make connections between large vibrations and loud sounds and smaller vibrations and quiet sounds.

### Standards Addressed:

- Look for evidence to support ideas. (NH S:SPS4:2:4.3)
- Take turns. (NH S:SPS3:2:1.1)
- Communicate ideas to others. (NH S:SPS3:4:1.2)

### Materials:

Metal pot lids

Wooden spoons

Cymbals – from the music teacher

Drum sticks

### Procedures:

Begin by writing the word “Loud” on one side of the whiteboard and “Quiet” on the other side. Ask students to give you examples of first quiet sounds and then loud sounds, writing their answers on the whiteboard under the appropriate title. If there aren’t any examples that are given for both categories, ask children if a noise under the quiet list could be also placed on the loud list. Could any of the loud sounds be added to the quiet sounds list? Ask a student to make a quiet-sounding clap, then ask the same student to create a loud-sounding clap. What did the loud-clapping person do differently to turn the quieter clap into a louder clap?

Using the metal pot lids, cymbals and wooden spoons, have children experiment creating loud and soft sounds. Have them investigate whether the loud sounds look or feel different from the soft sounds. Students should begin to see that the louder sounds show more vibrations on the pot lid or cymbal. Have students experiment beginning with the softest sound they can create using the cymbal up to the loudest, then have them observe and feel the vibrations in the cymbals.

In conclusion, using the cymbals, students will discover that strong more visual vibrations result in a louder sound. When creating soft sounds, they may not be able to see any vibrations at all with their bare eyes.

# Explore Pitch - Create a Bottle Xylophone

## Grade Levels: 1-4

(After studying vibrations and loud vs. quiet sounds)

### Introduction:

Can you whistle a tune? How is it that your mouth can produce a melody or a variety of sounds? After studying vibrations and loud vs. quiet sounds, students can begin to take a closer look at how vibrations determine whether a sound is a high-pitched sound (whistle) or a low-pitched sound (foghorn).

### Objectives:

- Students will be able to distinguish between high and low pitched sounds.
- Students will be able to predict which parts of their instrument will produce a low-pitched sound and which parts will produce a high-pitched sound.

### Standards Addressed:

- Plan and carry out simple activities with a group. (NH S:SPS4:4:6.1)
- Describe the design process as a logical progression for transforming ideas into reality. (NH S:SPS3:4:3.1)
- Describe how most things are made up of multiple parts and explain that things may not work if some parts are missing. (NH S:SPS3:2:3.4)

### Materials:

7 empty clear glass bottles (all bottles need to be the exact same size and shape such as the SOBE juice bottles)

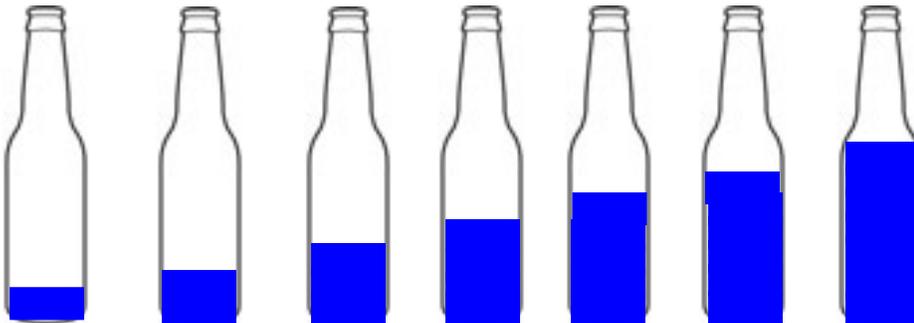
wooden stick or pencil

colored water

### Procedures:

#### Part I Bottle Xylophone

Place the 7 empty bottles on a table in a row, leaving an inch space between each bottle. Beginning with a bottle at the end of the row, fill the bottle up with an inch of colored water. Staying in order and going down the row of bottles, fill in the next bottle with 1.5 inch of water, 2 inches in the third bottle, adding a half inch of water as you continue to fill bottles until all of the bottles have water in them.



Using a wooden dowel, lightly tap above the water line on bottle number 1 and then tap on bottle 7.

Ask students to listen closely to describe what is different about the two sounds.

Take this opportunity to introduce the word pitch to students. Which bottles produce a higher-pitched sound vs. a lower-pitched sound?

When tapped, the glass vibrates and produces the sound. What is happening to create different pitched sounds depends on how much water is in each bottle. Students will find that Bottle number 1 produces the highest pitch. When struck, the bottle vibrates and produces the sound. There is less water in Bottle 1 to slow down the vibration. The pitch depends on what is vibrating in the bottles, if there is a lot of water in the glass, the water will slow down the speed of the vibration creating a lower pitched sound.

Have students experiment with the bottles; some may be able to tap out a tune!

### **Extensions:**

1. Begin with two identical sets of bottle xylophones. Have students sit back to back with a partner; each student should have a bottle xylophone in front of them. Have one student begin by playing a few notes on their bottle xylophone, then their partner tries to repeat what they just heard by playing back the same notes.
2. Have the music teacher teach the class a simple song they could learn to play all together as a class using their own bottle xylophones.