

# Community Resources for Science Presentation Outline

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*Presentation Title/Subject* What Is Sound?

*Grade Level:* 2

**INTRODUCTION:** Who are you? How are you involved with science and why do you enjoy it?

Volunteer intro here.

**INSPIRATION AND INVOLVEMENT:** Why is this topic important? How is it connected with kids' everyday world?

Why are kids the best scientists? Science is asking questions about the world, observing, forming ideas or hypotheses about what you observe, and testing your ideas. Today we're going to ask questions about sound, observe it (yes, I said observe!), and make up some ideas to test.

## **BACKGROUND**

**Basic Concept(s) to be Explained:** sound, vibration, pitch, volume

**Key Vocabulary to be Defined:** vibration, pitch, vocal cords

**LEARNING EXPERIENCES:** What will the kids do? What observations or discussions might result from this activity?

### **1) Discussion and Demo:**

What can you tell me about these sounds? Describe them. (Loud, soft, high, low: make sounds if possible...)

- drum beat
- small xylophone
- whisper
- recorder
- smoke alarm
- mandolin

**Some of the words we use to describe sound are about volume and some are about pitch. Volume** is how loud or soft a sound is. **Pitch** is how high or low the sound is. Which words go in which columns?

Observation: sound can have different qualities, different pitch and volume.

**2) Discussion and Demo:** What is sound? (If class knows the word “vibration,” propose to test their idea.)

We’ve been observing sound with our ears. What other senses can we use to observe sound? (Wait for answers.)

What about our eyes? [Place rice grains onto drum and tap lightly in center, on sides, watch what happens.] Do you hear anything? What do you see? [Introduce the word **vibration**, a rapid back and forth movement.] Why is the rice moving? Can rice move by itself? What is making the rice move? What is vibrating? (Drum, rice.) Why? (Because it was moved/tapped.)

Let’s do some more observations and see if they support our idea. Look at mandolin strings. Can you hear a sound? What do you see?

Let’s feel sound. [Pass out blown up balloons to children. Have students make low, quiet sound on balloon while holding balloon with both hands.] What do you feel with your fingers? [Record descriptions] What is vibrating? (Air, balloon)

So what is our idea, our hypothesis, about sound? Sound is made by vibrating objects. Sound can make things move.

### **3) Activity:**

Build instruments, see attached

### **4) Discussion:**

Pick a partner and play your instrument for them. Partner Report: What volume did the instrument have? How would you describe the pitch of the sound?

### **What about our bodies? How do we hear? How do we speak?**

So how is all this vibration – this sound - getting to our ears? Any ideas? What’s around the vibrating drum? The vibrating string? Air! Air and water can both carry sound vibrations. Try singing underwater in your bath tub. Sound can make things move and if the vibrations reach our ear we can hear it.

[Show Model of the ear] Vibrations are carried by the air to the eardrum. Why do you think its called an eardrum? Because its thin and vibrates. You’re your eardrum vibrates it moves little bones that carry the vibration to another part of the ear, a tiny spiral filled with water and little tiny filaments or hairs. These wiggle differently depending on the sound, and our brain attaches a word – “oh that’s a soft sound. That’s a high, squeaky pitch.”

**How do you make noise?** Let’s hear it! Feel your throat while you make a soft humming sound. Make a low sound. Make a high sound. What do you feel? If we’re right, and sound is energy caused by a vibrating object, you should feel something in your throat vibrating. Do you? It turns out that there are little

cords of tissue in your throat called vocal cords. They vibrate when you push air over them with your lungs. Let's turn the volume up! Make a loud sound! Let's turn the volume down – make a quiet sound. Which sound required more air? Loud sounds carry lots of energy. In this case energy from a large amount of air moving fast through your throat.

Sounds that are too loud are carrying so much energy that they can even make things break. Some opera singers can produce sounds that will break glass. If you expose your ears to too much of this energy -you know listening to lots of loud music on earphones – you can damage tiny delicate parts of your ear and lose part of your hearing. You only have five senses –Take care of your ears and you'll be able to use sound to explore and enjoy!

Have fun with your instruments – you may take them home!

## **SUPPORT FOR FOLLOW THROUGH**

### **Changing Pitch**

Now let's build on our idea about sound. What changes the pitch of a sound? Demonstrate with glasses filled with different levels of water. Have a xylophone on science table. Here are some steel tubes. If you hit them, they make noise. What do you notice about the sounds? Which tube makes the highest sound? Which tube makes the lowest sound? Try and arrange the tubes from the lowest sound to the highest sound. Draw a picture of how the tubes are arranged. Activity: Teams of 3. with long string held by two students. Third student lifts center area of limp string and drops it. Progressively tighten string and notice rate of vibration and sound, if any.]

Which key on xylophone, which glass of water, which string length sounded the highest?

Pitch is a product of the rate of the vibrations. The faster the vibrations, the higher the pitch. Longer or larger things vibrate more slowly with same amount of energy, so they make lower pitch sounds. The smaller masses will vibrate faster and make sounds with higher pitch.

### **Animal Sounds**

Animals use sounds to communicate and attract mates. Listen to bird songs, whale songs, other animal noises.