



Sound: Exploring Sound as Vibration

How would you answer the question, *what is sound*? You might begin by considering what kinds of things make sounds and how those sounds are made. Hold your fingers gently against your throat and make a low, deep sound or a hum. What do you feel? That buzzing you feel is your vocal cords vibrating. That vibration creates the sound you hear. Let's discover some other sounds and how those sounds are made.

Exploration: Sound Hunt

Find a quiet place to sit either indoors near a window or outside. Close your eyes and listen. For every new sound you hear, raise one finger. Count how many different sounds you hear in a minute or two of listening.

What do you hear?

Can you picture what or who is making the sound?

How do you think that sound is being made?

Exploration: Sound Production

Walk through your house, picking up different items or materials you come across that you think might make an interesting sound when they are gently shaken, tapped, or moved in some way. (Your items might be made of metal, wood or plastic.)

Try to make a noise with each of them.

What's going on?

What is happening to make the sound?

Sound is vibration. When you make an object vibrate by shaking or tapping it, you create a sound.

Do all sounds sound the same?

Try making sounds with two similar objects of the same shape and material, but of different sizes (like tapping two different spoons).

Does the size of the object affect the sound that it makes?

Why do you think size would affect how something vibrates?



Exploration: Make a Soundtrack

Reading stories out loud is fun and can be even more interesting if you add sound effects. In the olden days, we didn't have TVs or computers and smart phones with video capabilities. People listened to stories being told or acted out over the radio. The performance often included different actors reading lines and there was often a sound effects technician who created sounds that matched the storyline. That still happens today in movies, where background music and other sounds that go along with the storyline are added to make the story feel even more real.

Imagine that you are adding sound effects to the following story. Below is a list of materials you can use to create the sound effects listed.

Sound Effects and Supplies

- **Foghorn** – blow across a clean plastic or glass bottle filled with a small amount of water. You can vary the pitch by adjusting the amount of water used in the bottle.
- **Crackling fire** – crumple a piece of plastic cellophane, waxed paper, or aluminum foil
- **Rain falling** – put $\frac{1}{4}$ cup of dried peas or rice in a metal pie or cake pan. Gently move the peas/rice around the pan in a circular motion. For a gentler rain, use salt in place of the peas or rice.
- **Horse galloping or walking on a street** – hold a small wooden bowl or thick plastic container upside down in each hand and slap the open end of the bowl down on a table, one at a time. Repeat over and over, quickly or slowly depending on whether the horse is trotting or galloping.
- **Horse galloping or walking on grass** – hold a small wooden bowl or thick plastic container upside down in each hand and slap the open end of the bowl down on a towel covering the table, one at a time. Repeat over and over, quickly or slowly depending on whether the horse is trotting or galloping.
- **Train traveling along a track** – wrap two blocks with sheets of sandpaper and secure with tape. Rub the two blocks together, slowly to begin, and then pick up speed.
- **A voice on the telephone** – speak into a small plastic cup or container





- **Ocean waves** – put an assortment of dried peas or rice and some gravel or small rocks in a long box or tube. Tape the box closed or seal the ends of the tube with tape or plastic wrap and rubber bands. Rhythmically lift and lower each end so that the contents move slowly from one end to the other and crash into the ends of the box or the bottoms of the tube.
- **Wind** – support two strips of wood between two chairs that are spread apart and pull a silky scarf up and over the tops of the wood, scraping the scarves against the wood
- **Thunder** – hold a cookie sheet or other thin metal cake pan and hit with the palm of your hand or tennis ball. Experiment with how hard you hit the pan and with different rhythmic patterns.
- **Rustling** – crumple up some leaves, newspaper, or other kind of paper

What to do

Lay your sound effect supplies out in front of you for easy access, then practice reading through the story below, first without sound effects.

Then, read the story and add the sound effects when directed in the story. You can record yourself reading the story with the sound effects on a cell phone or other device and then play it back for yourself and an audience.



The Foggy Bottom Monster

One day, Molly called her friend Travis on the phone.	
“Travis, would you like to go camping together tomorrow?” she said. “I know a really great place to go!”	Create the sound of Molly’s voice on the phone
“That would be great!” said Travis.	Create the sound of Travis’ voice on the phone
So the next day, Travis and Molly went camping at Foggy Bottom Park.	Play foghorn
It was their favorite place to go because of the beautiful ocean on one side and the majestic woods on the other.	Create the sound of ocean waves
There were a lot of trails for hikers as well as horseback riders.	Make the sound of horses galloping on grass
After their day of hiking, they set up camp and lit a campfire.	Make the sound of crackling fire
By the light of the campfire, Molly told Travis the story of the Foggy Bottom Monster.	Play foghorn
<i>“The Foggy Bottom Monster was big, green, and slimy with red, piercing eyes and a crooked smile with fierce fangs.</i>	Play foghorn
<i>The monster made the noise of a crackling fire</i>	Create the sound of a crackling fire
<i>and lived in the ocean.</i>	Create the sound of ocean waves
<i>Only in rainstorms,</i>	Create the sound of falling rain



	followed by sound of thunder
<i>when he heard the sound of a train from the distant track,</i>	Create the sound of a moving train
<i>would he leave his ocean home.</i>	Create the sound of ocean waves
<i>Then, once in the woods, it was rumored that he would search for hikers—to eat!”</i>	
After Molly finished telling the story, both she and Travis were very nervous and jumped at every sound from the fire	Create the sound of a crackling fire
any ocean waves they heard	Create the sound of ocean waves
and the sound of the train traveling along the distant track.	Create the sound of a moving train
After a long night of not sleeping, they decided to head back along the trail to home.	
As they hiked, they saw several horseback riders galloping on the soft, grassy trails.	Make the sound of horses galloping on grass
Soon, the wind began to blow,	Create the sound of wind
and the sky grew dark, and it began to rain.	Create the sound of falling rain
Thunder could be heard from far away, and the leaves beneath their feet swirled around them.	Create the sound of thunder
A thick fog rolled in.	Play foghorn
Travis and Molly started to feel a little scared, and so they picked up their pace.	



In the distance, they heard a train	Create the sound of a moving train
and then a rustling in a bush!	Create a rustling sound
"It is just a chipmunk or squirrel. Don't worry," said Molly.	
But with each step they took, they heard the sound of a crackling fire...	Create the sound of a crackling fire
...just like the sound that the Foggy Bottom Monster makes!	Play foghorn
"It is NOT the Foggy Bottom Monster," said Travis.	Play foghorn
"It is just our feet against the dry leaves that is making a sound like a crackling fire," said Travis.	Create the sound of a crackling fire
As they walked, the wind got windier,	Create the sound of wind blowing loudly
the fog got foggier,	Play foghorn
and the rain got rainier.	Create the sound of falling rain
In the distance, the thunder boomed.	Create the sound of thunder
Travis and Molly moved even faster now. As they hiked, they could hear the ocean waves	Create the sound of ocean waves
and another train passing by in the distance.	Create the sound of a moving train
They both could not help but think that someone or something was watching them. Then, in a cluster of thorn bushes—they both spotted two red, piercing eyes staring at them!	





Travis and Molly both jumped, grabbed each other and screamed "AHHHHHHHHHHHHH!"	
Out of the bushes came a big, green, slimy monster with red, piercing eyes and a crooked smile with fierce fangs.	
The monster made the noise of a crackling fire	Create the sound of a crackling fire
and then said in a tiny little voice,	
"It's just me, the Foggy Bottom Monster."	Play foghorn
"Don't be frightened of me. The thunder scares me,"	Create the sound of thunder
"and I just like being with people when a rainstorm happens."	Create the sound of falling rain
Travis and Molly looked at each other, and then at the frightened Foggy Bottom Monster.	Play foghorn
The big, green, slimy monster with red, piercing eyes and a crooked smile with fierce fangs looked SO scared.	
So, Travis and Molly did the only thing they could do...they took the Foggy Bottom Monster's hand,	Play foghorn
found a cozy place to sit, and built a campfire.	Create the sound of a crackling fire
As they toasted some marshmallows with their new friend, they all listened to the crackle from the fire,	Create the sound of a crackling fire
the ocean waves crashing on the beach,	Create the sound of ocean waves





the horseback riders passing by along a nearby track,	Make the sound of horses galloping on a track
the faraway thunder,	Create the sound of thunder
and the train traveling along the distant track.	Create the sound of a moving train
And Molly and Travis knew there was a new chapter to add to the story of the Foggy Bottom Monster.	

Share your discoveries with us

We want to know about your sound explorations. Share your experience with us in any of the following ways:

- Draw a picture
- Take photos of your sound effect materials
- Write down what happened, what surprised you, what didn't surprise you, or anything else that was fun or interesting about your experiences.

Then email us at myhomediscoveries@discoveryacton.org, we can't wait to hear from you!

Resources

What is Sound, from SciShow Kids

<https://www.youtube.com/watch?v=3-xKZKxXuu0>

Sound Waves: High Pitch and Low Pitch, from Fun Science Demos

https://www.youtube.com/watch?v=yMLTF_0PAQw

Foley Artists – The art of adding sound to a film story

https://www.youtube.com/watch?v=UO3N_PRIgX0

How To Make Water Chimes, from DK Find Out

<https://www.dkfindout.com/us/video/science/how-to-make-water-chimes/>

