



Topic: Investigating sound

Investigating sources and production of sound

Lesson concepts

- A Sound is produced by a range of sources and can be sensed
- People use science in their daily lives
- A Questions can be responded to, and predictions made
- A Investigations can explore and answer questions
- A Observations can be collected and recorded
- A Information can be sorted
- Observations can be compared with predictions
- Observations can be compared with others
- A Observations and ideas can be represented and communicated

Today students will:

- ▶ understand how sound is helpful in everyday life
- ▶ understand that sound is produced through a range of actions including when playing musical instruments
- ▶ understand that different actions affect the properties of the sound that is made.

Resources

Digital

Video — Sound and solids:
Visualizing vibrations (0:59)

Slideshow — Sound is all around!

Sheets

Sheet 1 — Word cards (cut out,
keep for use throughout the lesson)

Sheet 5 — Musical instruments
(cut out)

Find and prepare

Musical instruments if any are
available, including toy ones
(alternatively, pictures are provided)

Metal spoon

Selection of objects — cushion,
saucepan or tin, plastic bowl/dish,
tissue box, ceramic cup, cardboard
tube

Exercise book

Key terms

sound, vibration

For definitions
and explanations
of terms, please
see the [Glossary](#).

Learning alerts

Be aware of students thinking that observations are only seen.

Suggested next steps for learning:

Explain that students can observe, using other senses, including hearing and touch.

Lesson

Share prior knowledge about sound

Say to students

“ In this lesson, we are going to focus on sound. ”

Focus questions

Q. What do you know about sound?

A. For example: I can hear sounds all around, people talking make sounds, my toy makes lots of sounds when you push the buttons.

Q. Name some things you know that make sound?

A. For example: People, toys, cars, birds, the dog, the tractor, machines, TV, piano

Q. How do we use sound in everyday life?

A. For example: To talk to one another, watching television, listening to music, alarms.

Say to students

“ Scientists have studied sound for hundreds of years. They have learned how sound is made and how it can be used in different ways. ”

Experience sound

Focus questions

Q. Which sense do you think scientists and you mostly use to make observations of sound?

A. Hearing

Q. How will we know when there is a change in a sound?

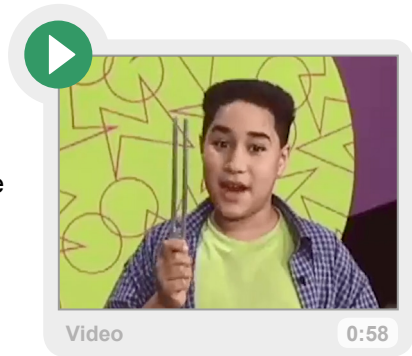
A. For example: We will listen carefully and hear the change.

Say to students

“ There are actually other ways we can sense sound. Some sounds cannot be heard by the human ear. Dogs and bats, for example, can hear sounds that we cannot hear. Also, when people have damaged ears and cannot hear they can often use other senses to detect sound. ”

1. Display and view the **Video — Sound and solids: Visualizing vibrations.**

This is how we write vibration. Sound is caused by vibration or objects moving backwards and forwards very quickly. We might not be able to see the vibrations, but in this video we can see the affect they have on the water and we can hear the sound caused by the vibrations.



Sound and solids: Visualizing vibrations downloaded from PBS LearningMedia, <http://www.pbslearningmedia.org>. Rights to use this asset do not expire. Asset Copyright ©2000 WGBH Educational Foundation. All rights reserved. ZOOM and the ZOOM words and related indicia are trademarks of the WGBH Educational Foundation. Used with permission. Credits Adapted from ZOOM. Source: ZOOM. Project funded by: National Science Foundation, <http://www.pbslearningmedia.org/resource/phy03.sci.phys.mfe.ztunefork/sound-and-solids-visualizing-vibrations/>

a. Display the word card *vibration* cut from **Sheet 1 — Word cards.**

Say to students

“ This is how we write *vibration*. Vibrations are very hard to see, but in this video we can see them because of the affect they have on the water and the rice. Sound is caused by vibrations moving backward and forward very quickly. We can use our sense of sight to see the effect of the vibrations and know that there must be a sound. ”

b. Display the word cards *hearing* and *sight*.

Say to students

“ We can observe sound through our senses of *hearing* and *sight*, but there is one more sense we can also use. ”

Hold your hand gently on your throat and talk to me. ”

Focus questions

Q. *What do you notice?*

A. For example: I can feel my throat moving when I speak.

Q. *What sense are you using?*

A. Touch

Q. *Have you seen what a mobile phone does when it is switched to silent?*

A. It vibrates to tell you someone is ringing.

c. Display word card *touch* and add all the words to your word wall display.

Say to students

“ We are now going to view a slideshow to explore some of the many ways in which sound is part of our everyday lives. As you listen to the sounds, try to guess what is making the sound and why that sound is being made. If you can, try to find words to describe the sound. ”

2. Display and discuss the **Slideshow — Sound is all around!** Pause before revealing each picture to predict the sound and why it might be made.



Consider the uses and usefulness of sound

Say to students

People make sounds for many different reasons. For example, we make music and movies for our enjoyment. Sound is a very important way that we communicate our messages. A baby makes a crying sound to tell its parents that it is hungry. We talk to each other to communicate many different types of messages. We also use particular sounds to alert us to things, for example, a driver toots the horn to warn another driver of danger; a fire alarm starts if it senses smoke or if fire is detected so that people can get to safety.

Focus question

Q. *Can you think of other situations in which sound is used to alert us?*

A. For example: Fire engines and ambulances, microwave beeps when food is cooked, trucks beep as they reverse, crossings at traffic lights often beep in a certain way to keep people safe

Explore actions that produce sound

Say to students

Although all sound is vibration, vibration can be made using many different actions. For example, you might tap or shake something to make a sound. Stand up and move around the room to find some different objects. Try using different actions to make different types of sounds. Move to another object and try different actions again. I'll give you two minutes to explore as many different actions as you can that produce a sound.

3. Allow students two minutes to explore, then regroup.

Focus question

Q. *Tell me some of the actions you have explored*

A. For example: Hitting/striking, blowing, scraping, shaking, plucking, pressing, squeezing

Say to students

Some of the actions you have just used to make sounds are also used by musicians to play their instruments. We are going to examine some instruments and sort them according to the action or actions that are used to play them.

4. Display real instruments and/or pictures from **Sheet 5** — [Musical instruments](#).
 - a. Sort instruments according to the action used to produce the sound.
 - b. Use the word cards *shake*, *blow*, *scrape*, *strike*, *pluck* and *press* to help with sorting.
 - c. Discuss how some instruments use more than one action.

Say to students

We have realised that we can often use different actions with the same instrument. We can shake a tambourine but we can also strike it. The actions we use affect the sounds we produce. Pick an instrument or object so we can explore differences in sounds.

Now that you have your instrument or object we are going to learn about differences in sounds. I will say a word and I want you to make an action to produce the type of sound I say.

Loud	Soft
Fast	Slow

LOUD soft

Focus question

Q. *What did you do to change the sound from loud to soft?*

A. For example: I hit it harder and then softer. I blew harder or more gently.

Say to students

Loud, *soft*, *fast* and *slow* are four words we can use to describe sound. Another two words are *high* sounds and *low* sounds. Some instruments like pianos have high and low sounds built into them. With other instruments we can change how we are making the sound to make it high or low. Our voice is an easy instrument to use to show high and low sounds. You can try it too.

5. Point up to the ceiling and make a repeated high sound by saying 'la-la-la-la' in a high voice.
 - a. Point down to the floor and change to a low voice.
 - b. Invite student to make high and low sounds with you as well as middle sounds, using your hands to demonstrate what sort of sound it is.

Compare sounds produced by different objects

Say to students

Another thing we need to understand about sound is that the material an object is made of can affect its sound.

I am going to put several objects in front of you and give you a spoon. You are going to try to predict what the sound might be like before you strike the objects gently with the spoon. Remember, you can use words like loud, soft, high and low.

6. Place the selection of objects in front of the students. Give them the metal spoon.
 - a. Point to the first object.

Focus questions

Q. *What do you predict the sound will be like when you hit this object?*

A. Student will use words like 'loud', 'soft', 'high' and 'low' to describe what they think the sound will be like.

Q. *Why do you think this?*

A. Student should make reference to the material the object is made from and how the metal spoon tapping it will be affected by this material.

Say to students

Now strike the object gently and observe the sound carefully. You may need to do this a few times. Tell me whether the sound you heard matched your prediction or how it was different from what you expected.

- b. Repeat for other objects.

Say to students

In this lesson, we have learned that actions we use can change sound. We know that the properties of an object are also likely to affect the sound made. And we have learned words that help us describe sound.