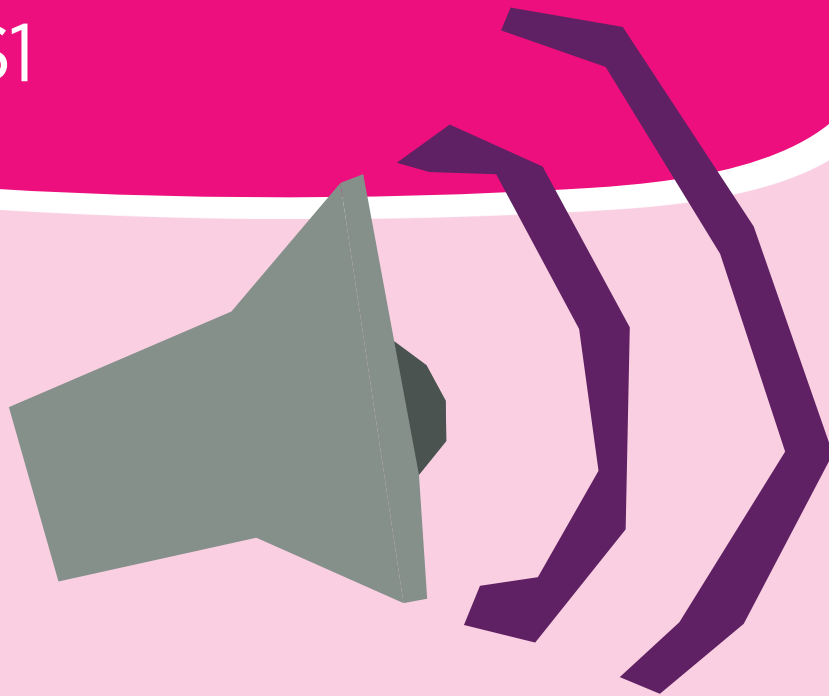
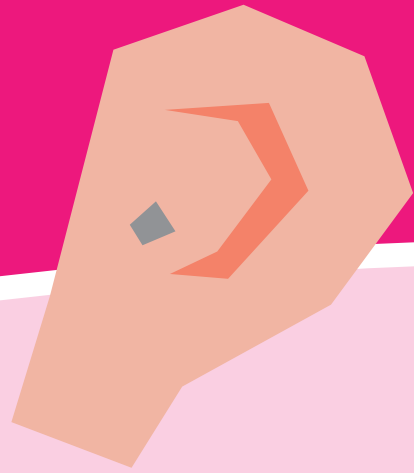


Soundscape Studio

Pre-visit resources
for KS1



Soundscape Studios KS1 Pre-visit Activities

These activities are designed to be completed before you visit for your Soundscape Studio workshop. We recommend working through the activities from 1 to 4 but you are welcome to pick and choose depending on your group's prior knowledge.

Through these activities we will be exploring how sound travels through the world in waves and how the volume of the sound relates to the energy of the sound. We will then explore how different species use sound to hunt and how we respond to different sounds.

Learning Objective

- To understand how sound travels in longitudinal waves.
- To explore how different species use sound waves.
- To explore how we experience sound and how it impacts humans.



Key Science

There are sources of sound all around us in the world and we experience lots of different sounds every day. Sound is a form of energy that travels through the world via vibrations. Sounds are created by an object vibrating which causes the air molecules around it to start vibrating. This vibration is then passed along in a sound wave. The amount of energy determines how loud the sound is going to be. The louder the sound is, the more energy it carries. Sound waves move through particles in our world, which means they can travel in solids, liquids and gases. Sound energy will travel out until the energy is lost as heat energy or absorbed into solids, liquid and gases. Sound waves can interact with each other causing interference. This is when two or more sound waves combine with each other. This can be constructive, where the waves match up and amplify each other or destructive, where the waves don't align and cancel each other out.

Many different species use sound waves. Dolphins and Bats use sound waves for echolocation. Echolocation is where the animal sends out a high-pitched sound wave into the air or water. This sound wave then bounces off different objects and other animals back towards the first animal. The animal receives the reflected wave and creates a sound picture in its head depending on the received wave. This tells the animal what their wave has reflected off and allows them to find food when it's otherwise difficult to find it.

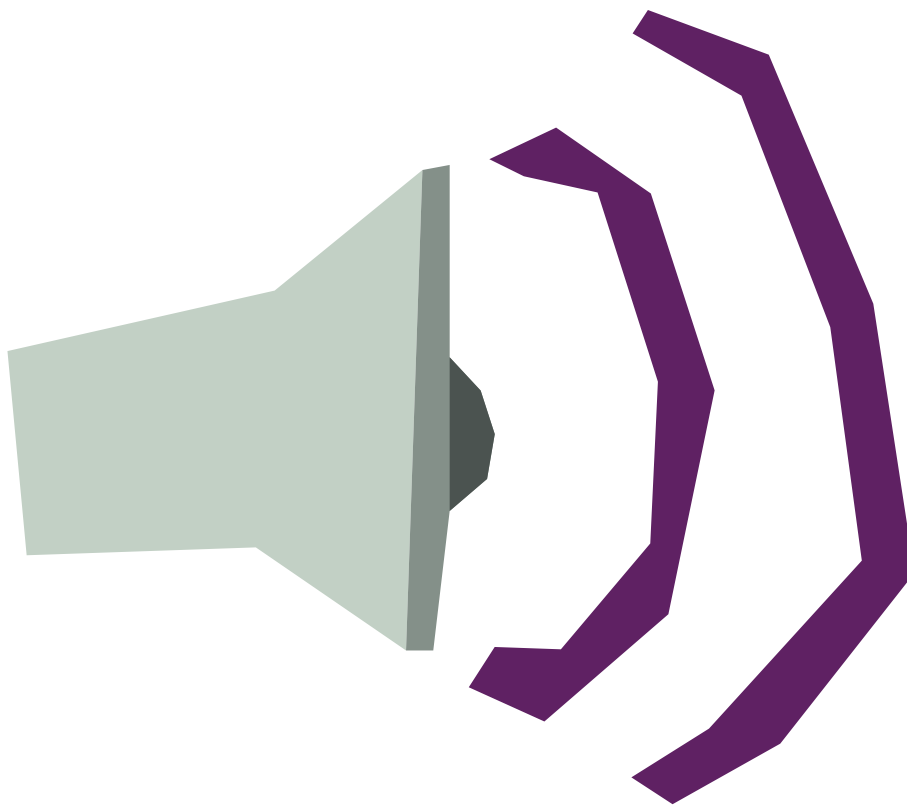
Humans decode sound using our ears. The sound wave travels through the air and into our ears which then communicate with our brain to decode the sound. Different sounds affect humans differently, we may find some sounds pleasant or unpleasant but they also impact our health. High-pitched sounds are linked to increases in stress and can increase our heart rate. We often find sudden loud noises anxiety-inducing also increasing stress. Sounds don't just affect us negatively as pleasant sounds can lower our heart rate and help us relax. Music has a whole range of positive impacts and can make us feel a wide range of emotions.

Curriculum Links

- Identify how sounds are made, associating some of them with something vibrating.
- Recognise that vibrations from sounds travel through a medium to the ear.
- Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets).

Key definitions

- **Vibrating** – Something that moves back and forth.
- **Sound Wave** – The way sound travels. A wave of squeezing and spreading out of particles.
- **Pitch** – The pitch of a sound is how high or low the sound is. This corresponds to how much or little the vibrations are. Lots of vibration = high pitch.
- **Volume** – How loud or quiet a sound is. The louder something is, the more energy the sound has.
- **Cacophony**– A lot of sounds together.
- **Particle** – A small building block that makes up everything in our world.
- **Frequency** – How many waves occur within one second.
- **Decibel** – A measurement of sound loudness (energy).



Activity 1 – How do sound waves move? (5 minutes)

Overview

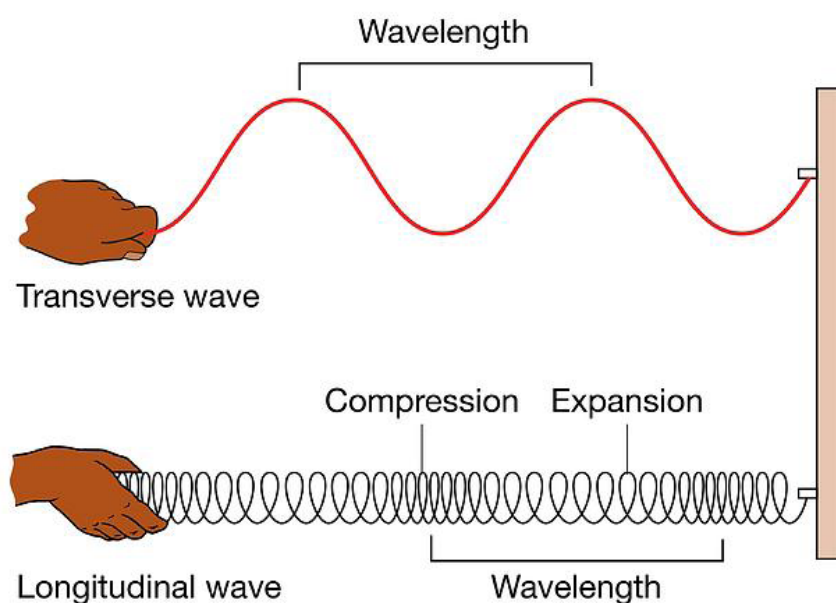
Use a slinky to introduce different kinds of waves! You can wiggle them up and down, side to side, for transverse, or back and forth for longitudinal waves. Sound waves are longitudinal but are often represented as transverse waves, which can be confusing. The teacher could draw a longitudinal wave and show how they can be drawn as a transverse wave.

You will need (per group)

- At least one slinky.

Instructions

1. Introduce the class to the idea that sound travels in waves. These waves won't travel like the waves on the sea, instead moving as vibrations through the air. These waves are called longitudinal waves, whereas waves that go up and down are called transverse waves.
2. This can be shown using a slinky. Using two volunteers, or breaking the class into groups. Have two students hold each end of the slinky and stretch it out across a table. Make sure the slinky still has some give to it; otherwise you won't be able to see the wave
3. Once they've stretched out the slinky, have the students push their end of the slinky one at a time. With each push sent across they should see the coils of the slinky bunch together as the push move along the slinky. This is how the vibration travels through particles.



Activity 2 -Echo-Locations and Bats

Overview

This activity will be exploring how bats use echolocation and sound waves to hunt. Through playing a game where one person acts as a bat and other students are moths, the students will see how sound can be used by a different species to hunt.

Game Rules

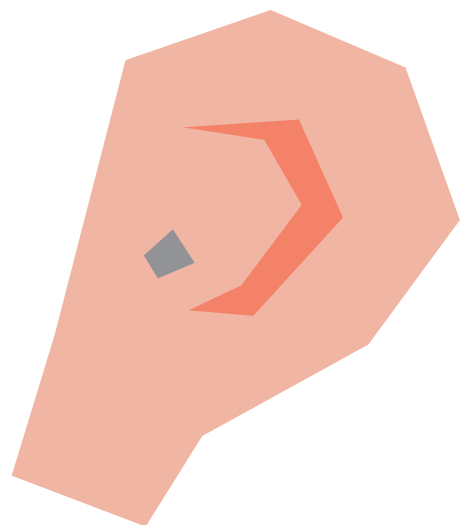
In this game, one student will be the bat, while the rest of the group will be moths. The bat player will put on the blindfold to simulate flying around at night. Every turn in the game, the bat player will shout "Bat" to simulate the sound wave being sent out, and the moth players will shout moth to simulate the sound wave bouncing back. Both bat and moth players can then take one step. The game goes on until the bat has caught one moth and then they swap roles.

You will need

- Blindfolds.
- Cones.

Instructions

1. Mark out areas for the students to play in using the cones.
2. Get the students in groups of five and give each group a blindfold.
3. Explain to the rules of the game to the class and give them a go.
4. If you want to make it more challenging you can increase the number of bats or have the some of the moths whispering back.



Activity 3 – Sound survey

Overview

In this activity the students will be exploring the school site to see what different sounds they can find. The sounds we are exposed to have a huge effect on our emotions, our cognition and how much stress we have. The students will be exploring how the sounds in their school affect them.

You will need

- Sound survey proforma.
- Pencils.
- Paper.
- Timer.

Instructions

1. Get the students into groups, and give every student a copy of the sound survey.
2. Have the students visit selected areas around the school site. This is up to the leader, but we would recommend the classroom, the library and the outdoor space.
3. As they fill out each site, they should fill in a survey card for it. Once they have visited each site bring the class back together in the classroom.
4. Ask the students to share what they like about the sounds and what they didn't. Do they like the level of noise in each space? Did they one they preferred over others?
5. See if you can come up with a ranking of the different spaces in the school.



Activity 3: Sound survey

Location:

How loud is it?

Very loud

☐

A little loud

☐

A little quiet

☐

Very quiet

☐

What noises can you hear?

Do you like the sounds here?

Yes

☐

No

☐