

Science: Sound Y4

Definition: Sounds are vibrations that travel through the air.

Physics definition: Physics is the study of nature and how matter and energy behave.

POS:

- Identify how sounds are made, associating some of them with something vibrating.
- Recognise that vibrations from sounds travel through a medium to the ear.
- Find patterns between the pitch of a sound and features of the object that produced it
- Find patterns between the volume of a sound and the strength of the vibrations that produced it. •
- Recognise that sounds get fainter as the distance from the sound source increases.

Prior learning:

Explore how things work (nursery-sound)
Describe what they can see, hear and feel whilst outside
(Reception-Sound)
Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. (Y1 animals including humans)

Links to other science topics:

Materials – how do they sound when used instrumentally?
Electricity – what makes sounds using electricity?
Animals/Living things – animals make sounds to call out.

Disciplinary concepts:

Similarity and differences – how are sounds different through different mediums?

Process – how do we hear a sound?

Function – what is the function of the ear?

Common misconceptions:

Children often think that light is only found in bright places. They know that dark is the opposite of light, so assume that if it's dark, there must not be any light around at all. When asked to explain how we see things they might draw arrows coming out of a person's eyes and hitting objects. Similarly, when asked to explain how sounds travel through the air to our ears, the children might draw a line of musical notes, copying a convention that is often used in comics or cartoons. Be aware of these misconceptions and aim to correct them during your lessons. An awareness of common misconceptions can help you notice gaps in the children's knowledge as and when they occur. You can actively assess their understanding in these areas, for instance by asking them to draw diagrams and pictures to demonstrate their knowledge of sight and hearing.

Core Knowledge:

A sound produces vibrations which travel through a medium from the source to our ears. Different mediums such as solids, liquids and gases can carry sound, but sound cannot travel through a vacuum (an area empty of matter). The vibrations cause parts of our body inside our ears to vibrate, allowing us to hear (sense) the sound. The loudness (volume) of the sound depends on the strength (size) of vibrations which decreases as they travel through the medium. Therefore, sounds decrease in volume as you move away from the source. A sound insulator is a material which blocks sound effectively. Pitch is the highness or lowness of a sound and is affected by features of objects producing the sounds. For example, smaller objects usually produce higher pitched sounds.

Wider Knowledge:

How do dolphins hunt using sounds? Echolocation is a sensory system that dolphins and other creatures use for understanding their environment. Sound travels 5 times quicker in water than in air. Marine species have adapted to take advantage of the distances sound can travel in water.

Working scientifically:

- Finding patterns in sounds using different objects
- Investigate sounds made by different materials
- Make and play own instruments by using what they have found out on pitch and volume

End Goals:

- Explain how sounds are produced by vibrations
- Demonstrate use of key vocabulary
- Explain how the features of an object affect the pitch of the sound and how the strength of the vibration affects the volume

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Science Association / STEM website