

Topic:	Year group	Term
Sound	4	Spring

Background knowledge

It is important that children are exposed to the different ways objects vibrate to produce sounds, including musical instruments, radios, mobile phones and animals. In the previous block, children explored the concept of solids, liquids and gases. It is important that children are aware that sounds can travel through air, but they can also travel through any material, including solids and liquids.

Children build on their understanding of vibrations to explore how the ear drum vibrates, which allows us to hear sounds. They can link this concept to their exploration of how sounds are made using musical instruments in the previous step. Within this step, children learn that as well as detecting sounds, the inner ear also helps humans with their balance.

There are opportunities to use data loggers or decibel meters to record an accurate measure of sound. If data loggers are not available, you can use sound apps as an alternative method for measuring sound levels throughout the day.

Instruments, such as drums and guitars, can be used to demonstrate how the volume of sound can be controlled by the way they are played. When a drum or guitar is played with greater force, the resulting sound is louder because the vibrations produced by the instrument are bigger. Children could also investigate the concept of sound insulation by experimenting with different materials to measure the reduction in sound volume using decibel meters.

Children also explore the simple shape of some sound waves and how they change with the pitch of the sound. They should understand that a sound with a higher pitch produces vibrations that are faster or more frequent. In contrast, sounds with a lower pitch have vibrations which are slower or less frequent.

Common misconceptions

- Children may think that sound only travels through air. They should be made aware that sound can travel through other mediums, such as solids, liquids and gases.
- Children may think that the pitch of an instrument can only be changed in one way.
- Sound is only heard by the listener.
- Sound only travels in one direction from the source.
- Sound can't travel through solids and liquids.
- High sounds are loud and low sounds are quiet.

What should I already know?

Identify, name and label the basic part of the human body and say which part of the body is associated with each sense.(Y1)

National Curriculum Objectives / Key Skills	The Journey
• Identify how sounds are made, associating some of them with something vibrating. • Recognise that vibrations from sounds travel through a medium to the ear. • Identify how sounds are made, associating some of them with something vibrating. • 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. <u>Working scientifically</u> Asking relevant questions and using different types of scientific enquiries to answer them. Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables. Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.	1. Vibrations 2. The ear 3. Investigate sounds 4. Explore volume 5. Explore pitch 6. Plan - volume experiment 7. Investigate - volume experiment 8. Plan - volume experiment

Setting up simple practical enquiries, comparative and fair tests.

Identifying differences, similarities or changes related to simple scientific ideas and processes.

Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.

Scientific enquiry

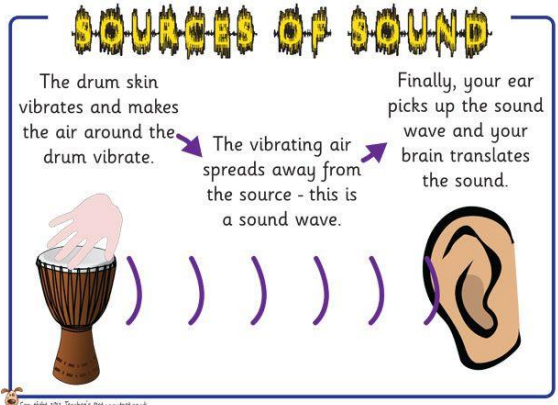


Outcomes

Working towards: I can pose questions about sound and start to identify the type of scientific enquiry needed to answer them. I can name some sound sources and know sounds are made by objects vibrating. I can investigate that vibrations from sounds travel through different materials to the ear. I can state the relationship between the pitch of a sound and the features of an object with support. I can state the relationship between volume and the strength of the vibrations producing it with support. I can record my results in tables and bar charts and use say what they show. I can observe that sound gets quieter as distance increases. I can use and spell scientific vocabulary related to sound. I can start to measure volume using a data logger.

Expected: I can pose questions about sound and identify the type of scientific enquiry needed to answer them. I can name a variety of sound sources and explain how sounds are made by objects vibrating. I can recognise that vibrations from sounds travel through different materials to the ear. I can state the relationship between the pitch of a sound and the features of an object. I can state the relationship between volume and the strength of the vibrations producing it. I can record my results clearly in tables and bar charts and use these to draw simple conclusions. I can recognise that sound gets quieter as distance increases. I can use and spell scientific vocabulary related to sound in my explanations. I can measure volume using a data logger.

Exceeding; I can pose questions about sound and identify the type of scientific enquiry needed to answer them confidently. I can name a variety of sound sources and can clearly explain how sounds are made by objects vibrating. I can recognise that vibrations from sounds travel through different materials to the ear and identify the materials sounds travel through more easily. I can confidently state the relationship between the pitch of a sound and the features of an object. I can state the relationship between volume and the strength of the vibrations producing it explaining why I think this may be the case. I can record my results accurately in tables and bar charts and use these to draw simple conclusions. I can recognise that sound gets quieter as distance increases explaining why. I can use and spell scientific vocabulary related to sound accurately in my explanations. I can measure volume accurately using a data logger.

Key Vocabulary	Timeline / Diagrams
Data logger- can be used to measure the volume of sound. Decibel- the unit the volume of sound is measured in. High pitched sound- a squeaky sound. Low pitched sound- a deep sound. Pitch- how low or high a sound is. Sound- a form of energy that can be heard. Sounds are made by vibrations. Vibration- a regular and repeated movement backwards and forwards. Volume- the loudness of a sound.	 SOURCES OF SOUND The drum skin vibrates and makes the air around the drum vibrate. The vibrating air spreads away from the source - this is a sound wave. Finally, your ear picks up the sound wave and your brain translates the sound.  LOW Frequency HIGH LOW Pitch HIGH LARGER LONGER THICKER SMALLER SHORTER THINNER STRETCHED OUT Woof! Yip!

Key people / places

STEM jobs; Music producer, sound engineer.
Alexander Grahame Bell- inventor of the telephone

Assessment questions / outcomes

1. Name different sound sources.
2. Explain how a musical instrument makes a sound.
3. Which materials can sound travel through?
4. Finish the comparative statements; The higher the pitch,
The lower the pitch.....
5. How can we make the noise of the drum louder?
6. What happens when you move away from a sound source?
7. Which question did we investigate? What type of enquiry did we use? What did we find out?