Science – Year 4

Sound

How important are vibrations when making sound?

NC objectives - **areas of study**	End point of area of study	Vocabulary		
		Basic	Adventurous	Technical
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	Children describe how sounds are made by something vibrating through a medium to the ear. They talk about pitch of sounds and the different instruments or objects that created the sound. They find patterns between volume and the sound and strength of vibrations- drawing them correctly. They are able to investigate sound around the school using datalogging equipment to record. They know that as you get further away from a sound source the sounds get fainter.	Sound, source, travel, pitch (high, low), volume, faint, loud, insulation volume, quiet, ear,		vibrate, vibration, particles, instruments, soundwave, decibel

Knowledge

Substantive Knowledge

- Retrieval- pupils have worked as physicists before when learning about light and forces and magnets in Y3
- Lesson 1
- LO To know that sound is generated when an object vibrates.
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- **Sound, source, vibrate, vibration, particles, instruments,**

Disciplinary Knowledge

Children work as audiologists to explore sound around them and discover how it is made and travels to our ears.

Explore

Children explore how sounds are made using a variety of instruments and can feel the vibrations made. They ask and answer questions about sound using prior knowledge and suggest ways that answers to questions can be

• Know that sound is generated when an object vibrates; some of the energy from the vibrating object is transferred to the air, making the air particles move • Know that sound is a form of energy that transfers in a longitudinal wave - like that seen in a slinky - not a transverse wave - like that seen in water ripples • Lesson 2 • LO To know vibrations from objects travel to the ear. • **Sound, source, travel, vibrate, vibration,** • • Know that sound travels through a medium (e.g. particles in the air) and thus sounds does not travel through a vacuum which has no particles in it at all • Know that longitudinal sound waves are detected in the ear by humans and that the brain interprets this as the sounds we hear • Know that sound travels at different speeds through different objects; it travels at around 340 metres per second in air, much slower than light travels; this is why we often hear thunder <u>after</u> we see lightning as the light reaches our eye before the sound reaches our ears How do deaf people understand vibrations? • Lesson 3 • LO To know how pitch is linked to the features of the object that made the sound. • **Sound, source , pitch (high, low),** • • Know that pitch is how high or low a sound is and that this is determined by how many vibrations per second are being made by the vibrating object; the number of vibrations per second is called frequency • Know that volume is how loud or quiet a sound is and that this is determined by the amount of energy in the wave (e.g. from how hard or soft a percussion instrument is hit) • Lesson 4 • LO To know the connection between volume and the strength of vibrations.	researched or investigated using fair methods. Using datalogging equipment they can measure the volume in different areas of the school formulating conclusions. They are able to ask further questions using this evidence to inform. They set up tests to explore what happens as you travel away from sounds. **Similarities and differences** Children apply their knowledge of musical terminology to find similarities and differences in the volume and pitch of sounds depending on how the sound is made. They describe sounds made and how they vary from place to place. They compare the noise made in different areas of the school and give explanations for this.

- **volume, faint, loud, insulation, volume, quiet,**
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- Know that the volume of a sound is quieter if the listener is further away from the object
- Lesson 5
- LO To know how Alexander Graham Bell used his knowledge of sound.
- **ear, vibrate, vibration, soundwave,**
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- Know that Alexander Graham Bell used what he knew about sounds and vibrations to create the first telephone similar to those used today.

Was the work of Alexander Graham Bell an example of him being a steward of God?

Concepts

Biology	Chemistry	Physics	

SKILLS

1. Compare	2. Explore	3. Identify	4. describe	5. classify
6. Question	7. observe	8. test	9. record	10. research

ASSESSMENT

KNOW MORE, REMEMBER MORE, DO MORE...

In this unit of learning, progress has been made when a learner knows more. This 'distance travelled' from the starting point is evidenced through them remembering more and doing more: in books, low stakes quizzes, retrieval, use of mind maps, answering the big question and being able to feel more confident about this unit.