Science

Year 4 – Autumn 2-Sound

National Curriculum / End Point statement					
Sound • *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* • ***Working Scientifically*** • *asking relevant questions and using different types of scientific enquiries to answer them* • *setting up simple practical enquiries, comparative and fair tests* • *making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers* • *gathering, recording, classifying and presenting data in a variety of ways to help in answering questions* • *recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables* • *reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions* • *using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions* • *identifying differences, similarities or changes related to simple scientific ideas and processes* • *using straightforward scientific evidence to answer questions or to support their findings.*					
Lesson 1	**Lesson 2**	**Lesson 3 (TAPs)**	**Lesson 4**	**Lesson 5**	**Lesson 6**
Reactivate learning: properties of materials and music (pitch and volume). *WALT identify how sounds are made*	*WALT recognise that vibrations from sounds travel through a medium to the ear*	*WALT find patterns between the pitch of a sound and the features of the source*	*WALT find patterns between the volume of a sound and the strength of the vibrations that produced it.*	*WALT recognise how distance affects sound.*	
In Focus - *https://explorify.wellcome.ac.uk/en/activities/problem-solvers/what-s-that-sound*	*In Focus -* *https://explorify.wellcome.ac.uk/en/activities/zoom-in-zoom-out/pink-and-knobbly*	*In Focus -* *https://explorify.wellcome.ac.uk/en/activities/whats-going-on/bottle-orchestra*	*In Focus -* *https://explorify.wellcome.ac.uk/en/activities/odd-one-out/sounds-like-science*	*In Focus -* *https://explorify.wellcome.ac.uk/en/activities/problem-solvers/protect-your-ears*	

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Success Criteria					
I know how a sound is made I can describe how we hear sounds. I know that sound vibrations can travel through the air	I know how we hear sounds I can explain how sounds travel through the air/water and to the ear.	I can explain what the word 'pitch' means. I can explain the difference between pitch and volume. I know that the pitch of a sound depends on the length and width of the object making the sound. I know that the pitch of a sound can change due to tension of an object	I can explain what volume is. I can explain the difference between pitch and volume. I know that stronger vibrations produce louder sounds and weaker vibrations produce quieter sounds. I know that sounds can appear quieter if muffled.	I know that sounds get fainter as you move further from the sound source. I can make careful observations I know how to use my results to make simple conclusions	
Suggested Outcome					
Children learn the physiology of the ear and then record what they can see, feel and hear after performing a simple test. Rice/seed on a drum and tuning fork in shallow water https://www.schoolsofkingedwardvi.co.uk/ks2-science-year-4-4-sounds-making-sounds/	Children can use what they know about sounds to answer questions such as 'Why do people put a glass against a wall to listen to next door?' Vibration Stations on page 119 of 'A Creative Approach to Teaching Science' Design earmuffs using a range of materials	Children investigate the sounds made by an object (e.g. saucepan lids, elastic bands at differing tensions, Boomwhackers etc). What patterns can they find?	Children could revisit the rice on a drum and look carefully at the distribution of the rice depending on whether they produce a loud or quiet sound. Use the sound meters on the iPads to measure the volume of the sound.	Children use data to measure the volume of a constant sound as they move away from it. Use the sound meters. Children record data and write their conclusions.	

Vocabulary	NC links
Sound, vibration, pitch, volume, louder, quieter, fainter, source (new content), insulator	Music Science – properties of materials

Key Learning

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 a sound cannot carry through a vacuum (an area of empty matter). The vibrations cause parts of our body inside our ears to vibrate, allowing us to hear (sense) the sound.
The loudness (volume) of a sound depends on the strength (size) of vibrations which decreases as they travel through a medium. Therefore, sounds decrease in volume as you move away from the source. A sound insulator is a material that blocks sounds 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.

Possible Evidence	Common Misconceptions
• Children can name sound sources and state that the sounds are produced by the vibration of an object.	Some children may think: • Sound is only heard by the listener

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• Can state that sound can travel through different mediums such as air, water and metal. • Can give examples of how the pitch of a sound is linked to the features of the object that produced it. • Can give examples of how to change the volume of a sound • Can give examples to demonstrate that sounds get fainter as the distance from the sound source increases.	• Sound only travels in one direction from the source • Sound cannot travel through solids and liquids • High sounds are loud and low sounds are quiet

Notable Scientists
Guglielmo Marconi Alexander Graham Bell Aristotle Galileo
CPD opportunity
https://www.reachoutcpd.com/courses/upper-primary/sound/
Useful Links
• https://www.bbc.co.uk/bitesize/topics/zgffr82/resources/1

Sound

Early learning goal	• Children know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur and talk about changes.
Year 1	• 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)
Year 2	
Year 3	
Year 4	• 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.