Unit overview: Sound

<table>
<tr><td>Unit enquiry question: How do we hear?</td><td>Skills:</td><td>Knowledge:</td></tr>
<tr><td><table><tr><td>How?</td><td>Analysing</td></tr></table></td><td>➢ 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.</td><td>- Identify how sounds are made, associating some of them with 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 vibration that produced it.
- Recognise that sounds get fainter as the distance from the sound source increases.</td></tr>
<tr><td>Cross-curricular links:</td><td colspan="2">Key vocabulary:</td></tr>
<tr><td></td><td>➢ Ear protectors – ear muffs with sound insulation to protect loud sounds reaching the ears and damaging them.
➢ Frequency- The number of waves produced by a vibration in a second.</td><td>➢</td></tr>
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	➢ Pitch – the highness or lowness of a sounds. Related to the frequency of the sound waves. High frequency makes a high pitched sound. Low frequency = low pitch. ➢ Sound wave – the movement of particles in a gas, solid or liquid that transfers the vibrations through it. ➢ Vibration – an up and down or backwards and forwards movement that occurs many times a second.	

Pre-learning temperature check:	**Post-unit assessment:**
How is sound made?	Revisit – How is sound made

Lesson by lesson overview

Skill focus and enquiry question	Teaching strategies	Variation	Evidence	AfL
How is sound made? ***Retrieval*** - At the beginning of the topic, ask the children what they currently know about sound. Now explore what they would like to know. Children to write some questions on post it notes about what you would like to know and place them together on the flip chart.	Divide the class into small groups. Provide each group with a variety of objects, such as rubber bands, strings, rulers, and cups. Instruct pupils to experiment with the objects, making sounds by vibrating them in different ways. Encourage them to think about how changing the strength or speed of their vibrations affects the sound produced. After, ask each group to choose one object and explain how the sound is made using the concept of vibrations. Convene as a class and have each group share their findings.	**Support:** Provide extra guidance and support during the activity by giving specific instructions on how to manipulate objects to produce sound. Offer simplified explanations of the concepts and use concrete examples to illustrate how vibrations create sound. **Extend:** Encourage pupils to consider how sound vibrations can be beneficial in various industries (e.g., music, communication).	Annotated image in books.	Children can explain orally or in books that sounds are made by vibrations and these vibrations travel through the air (or other media) to the ear.

To investigate how sound travels through different materials ***Retrieval*** - ***What is a solid, liquid, gas?***	Divide the class into small groups of 3-4 students. Provide each group with a variety of materials, such as metal, plastic, wood, fabric, and paper. Instruct the groups to work together to investigate how sound travels through each material. Encourage the students to experiment by making different sounds (e.g., hitting a metal spoon against each material) and observing how the sound changes when traveling through different materials. In their groups, students should discuss and record their observations. They should focus on how loud or soft the sound is and how clear or distorted the sound becomes when it travels through each material. After the investigation, bring the class back together for a discussion. Ask each group to share their findings and explain why they think sound traveled differently through each material.	**Support:** **Mixed ability grouping.** **Extend:** encourage pupils to explore additional materials or conduct further investigations using different variables (e.g., thickness or shape of the material).	Table in books and photos.	Pupils understand that sound can travel through solids, liquids, and gases, but travels differently through each. Some materials are better at conducting sound.

What is pitch and how can it be changed?	Begin by explaining that pitch refers to how high or low a sound is. pitch is determined by the frequency of the sound waves and that higher frequency produces a higher pitch.	**Support:** **Sentence starters.** **Support for hands-on activity.** **Extend:**		Pupils understand that pitch is determined by the frequency of vibrations – faster vibrations create a higher pitch and slower vibrations create a lower pitch.

-	Pluck or strum the strings pf an instrument and discuss the changes in pitch based on the length and tightness of the strings. Demonstrate how plucking a short and tight string produces a high pitch, while plucking a long and loose string produces a low pitch. Pupils to create their own string instruments using different lengths of elastic bands and various containers (e.g. empty tissue boxes). Pupils will stretch the elastic bands across the container and pluck them to observe and record the pitch produced based on band length. Pupils measure the length of each elastic band using the ruler provided and record their findings in a table.	explain the concept of pitch using scientific vocabulary and provide examples from everyday life.		
How can I change the volume of sounds? ***Retrieval*** -	Explain that the volume of a sound refers to how loud or soft it is (whisper, shout, normal voice to demonstrate, Divide the class into pairs or small groups. Provide each group with objects to explore and investigate how the volume of sound can be changed. Instruct the groups to discuss and experiment with the objects, noting how they can change the volume of sound produced by each object. Encourage pupils to record their findings and observations. Circulate the room and support the groups as needed, reminding them to think about the	**Support: Mixed ability grouping** **Extend:** explain the scientific principles behind how vibrations affect sound volume.	Photos. Sentences in books.	Pupils understand that volume is determined by the strength of vibrations – stronger vibrations create louder sounds and weaker vibrations create quieter sounds.

	strength and speed of vibrations when considering how to change the volume of sound. Chn to complete worksheet [word bank: tight, loose, fast, slow, hit, pluck, blow] **Object: Rubber Band** **Drawing/Description:** **Object: Tuning Fork** **Drawing/Description:** **Object: Bell** **Drawing/Description:** **Object: Glass Jar** **Drawing/Description:**			
How are sounds heard? ***Retrieval*** -	Go on a sound walk around the school. Predict – what sounds will we hear? Where will be the loudest? Quietest? Conduct a hands-on activity where pupils create "telephones" using two cups and a string. Have them experiment by speaking into one cup while their partner listens through the other cup. This activity demonstrates how sound vibrations can be transmitted through a solid medium (string) and understood at a distance.	Support- mixed ability Word bank Extend: Encourage scientific voab.	Annotated image of 'telephones' explaining how sound travels.	Pupils understand that the ear captures vibrations which are then converted into electrical signals and interpreted by the brain as sound.
Post-task – To assess sound and its properties.		**Support-** **Drawings, scribing.**		Pupils to demonstrate in their books through

Retrieval		**Extend – Encourage to use scientific language.**		writing or annotated diagrams.