



Link to Key Scientific Themes: Identifying sounds understand key scientist –




- 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.

Scientific Enquiry –




- How can you change the volume of a sound?
- How does the size of an ear trumpet affect the volume of sound detected?
- How does the type/thickness of material affect how well it blocks a sound?
- Which materials vibrate better and produce louder sounds? Can we identify any patterns?
- Which materials make the best string telephone components? (tin cans, paper cups, plastic cups, wire, cable, string, plastic or elastic)

Key Vocabulary:

distance, ear, fainter, features, high, instruments, insulation, loud, low, pitch, quiet, sound, sound source, strength, travel, vibrating, volume

Knowledge acquisition 	Enhancement of knowledge (Deeper understanding of facts) 	Development/refinement of skills Lessons, activities + resources 	Independent application of knowledge and skills in a meaningful or purposeful context
<p>To understand how sounds are created and explore different ways to make sound.</p> <p>How vibrations cause sounds and how sounds travel, as well as how sounds can change pitch and loudness. The children will learn about how sounds are made, carrying out demonstrations of vibrations.</p> <p>Look at the scientist Alexandra Graham Bell how he used his knowledge and understanding of sound to invent the telephone.</p> <p>Create the opportunity to make a string telephone, and will use this to investigate</p>	<p>The children will work scientifically and collaboratively to investigate the best material for soundproofing, in the context of making a music studio quieter. Finally, they will demonstrate their learning from the whole unit by designing and creating their own noise cancelling ear defenders that block out high, low, loud and quiet sounds.</p> <p>Use a range of musical instruments to explore vibrations. Find out how the pitch and volume can be changed</p>	<p>They will work in groups to create a human model of the way particles pass sound vibrations on, and write and star in their own documentary explaining how sound travels. The children will work in a hands-on way to explore pitch, and will use their understanding of how high and low sounds are made.</p> <p>Make ear defenders from a variety of materials to discover which gives the best insulation.</p>	<p>Sound: Explore a variety of instruments</p> <p>Create fact file posters that they present to the class.</p> <p>Create a telephone that can work over a variety of distances.</p> <p>Complete worksheets to record observations on pitch.</p> <p>Conduct a scientific experiment to discover the most efficient noise cancelling materials.</p>

<p>how sounds change over distance and through different materials.</p>	<p>Find patterns in the sounds that are made e.g. saucepan lids of different sizes or elastic bands of different thicknesses.</p>		
<p>Cold Task:</p> <p>Mind map to find out what they already know about sound.</p> <p>How are sounds made?</p> <p>What makes sounds louder or quieter?</p> <p>How do musical instruments work?</p> <p>How do we hear sounds?</p> <p>How can we stop hearing sounds?</p> <p>Place musical instruments on the tables and have group discussions on how each one produces sound.</p>	<p>To know that sounds are produce by vibrations.</p> <p>To realise that scientists/ musicians understand how sounds work to create instruments.</p> <p>Look for children who have a good prior knowledge of sound, and use the children's questions to inform future planning.</p> <p>Describe sounds around them.</p> <ul style="list-style-type: none"> • Identify high and low sounds. • Identify loud and quiet sounds. <p>Observe how different sounds are made.</p>	<p>Mind map sheets</p> <p>A wide variety of musical instruments for the children to explore.</p> <p>Edit this sheet at the end of the topic to add learnt information</p>	<p>Application of learning:</p> <p>Think about the instruments they have seen. How do they produce sound?</p> <p>Discuss thoughts and ideas with others.</p>

Knowledge acquisition 	Enhancement of knowledge  (Deeper understanding of facts)	Development/refinement of skills  Lessons, activities + resources	Independent application of knowledge and skills in a meaningful or purposeful context
<p>Hearing Sounds</p> <p>To identify how sounds are made, associating some of them with something vibrating, by performing a dramatisation of how sounds travel.</p> <p>To find patterns between the volume of a sound and the strength of the vibrations that produced it, by performing a dramatisation of how sounds travel.</p> <p>To recognise that vibrations from sounds travel through a medium to the ear, by performing a dramatisation of how sounds travel.</p> <p>I can explain how different sounds travel.</p>	<p>Explain how we hear and interpret sounds.</p> <p>Explain that sounds travel differently through different materials.</p> <p>Identify and explain patterns between the pitch of a sound and the features of the object that made the sound.</p> <p>Children discuss the ideas about sound travelling on the Lesson Presentation. Children watch a video clip to hear how sound travels. Explain this further using the information on the Lesson Presentation, clarifying any misconceptions.</p>	<p>Mini investigations using:</p> <ul style="list-style-type: none"> • Drum per group • Tuning fork per group • Bowl of water per group • Rice • Access to this BBC clip <p>Children work in groups to create and perform a factual programme to explain how different sounds travel. Children use the differentiated Science of Sound Activity Sheet to plan their programmes, then practise acting them out.</p>	<p>Children conduct the mini investigation described on the Lesson Presentation to find a link between the size of the vibrations and the loudness of a sound.</p> <p>Write up findings and compare with others in the class.</p>
<p>Higher and Lower</p> <p>To recognise that vibrations from sounds travel through a medium to the ear, by exploring how high and low sounds are created.</p> <p>To find patterns between the pitch of a sound and features of the object that produced it, by exploring and creating musical instruments, and explaining how they change pitch.</p> <p>I can explore ways to change the pitch of a sound.</p>	<p>Describe the pitch of a sound.</p> <p>Describe patterns between the pitch of a sound and the features of the object that made the sound.</p> <p>Explain how sound travels through a string telephone.</p> <p>Explain how vibrations change when the loudness of a sound changes.</p>	<ul style="list-style-type: none"> • Drum - per pair. • Access to this BBC clip • Rice • Xylophones <p>Children watch this clip to hear an explanation of how pitch can be changed. Explain how to change the pitch on different instruments, and in general terms</p>	<p>Children try to play high and low sounds on different instruments, and observe how they can change the pitch. Children record their observations of the features of the instruments that create different pitches on the Exploring Pitch Activity Sheet. Look for children who can spot common features that cause high and low sounds. Look for children who can describe these features.</p>

<p>String Telephone</p> <p>To recognise that sounds get fainter as the distance from the sound source increases, by exploring how sounds change over distance.</p> <p>To recognise that vibrations from sounds travel through a medium to the ear, by making string telephones.</p> <p>I can investigate ways to absorb sound.</p>	<p>Explain how sounds change over distance.</p> <p>Explain why sounds travel better through solids than gases.</p> <p>Explain why some materials absorb sound.</p>	<p>String Cups</p> <p>Children cut and stick the pictures on the differentiated Travelling Sounds Activity Sheet in order to show how sounds travel to recap knowledge from lesson 2. Show this clip explaining how distance affects the loudness of a sound as it travels. Explain how sounds get quieter as you move further away from them</p> <p>children will make and use a string telephone to make sound louder so it can travel further.</p> <p>Take the lesson outside or into a larger space so children can use their telephones over a larger distance.</p>	<p>Explore how the distance between telephones effects the sound.</p> <p>Look for children who can explain how sound travels through the string telephone.</p> <p>Look for children who can explain why sounds can be heard better through the string then over the same distance through air.</p>
<p>Alexander Bell</p> <p>To recognise that vibrations from sounds travel through a medium to the ear in the context of Alexander Graham Bell's invention of the telephone.</p> <p>Explore his early life and discuss some of his controversial work surrounding his work with individuals that are deaf.</p> <p>To describe Alexander Graham Bell and his inventions.</p> <p>Children research and write notes on one of two aspects of Alexander Bell's life: First Invention or The Telephone.</p>	<p>Research and explore facts about MR Bells life.</p> <p>Ask children to gather with their groups and to take it in turns to share one of the facts that they found out with the rest of the group. Look for children who can describe aspects of Alexander Bell's life.</p>	<p>To report on findings, including oral and written presentations and displays in the context of Alexander Graham Bell's invention of the telephone.</p> <p>To present my findings about Alexander Graham Bell.</p> <p>Make a poster combining some of the information each member of the group has researched. Ask groups to work together on large paper to create their poster.</p>	<p>Present poster with findings to the rest of the class.</p> <p>Facilitate discussions on why some of his work was controversial.</p>

<p>Soundproofing</p> <p>To recognise that vibrations from sounds travel through a medium to the ear, by investigating the best material for absorbing sound.</p> <p>Children discuss reasons people may have for needing to absorb sound. Take suggestions and explain the ideas.</p> <p>Sound is measured in decibels. The higher the number of decibels (dB), the higher the volume of the sound. Human ears can be damaged by sounds above 85dB.</p> <p>It is important for people who are exposed to loud noises to protect their ears. An example of this is airport staff. Jet engines can reach a level of 150dB, so staff should wear ear defenders to minimise the risk of damage to their hearing.</p>	<p>Set up reliable and accurate investigations. Make and explain predictions.</p> <p>Make and record accurate observations.</p> <p>Use scientific language to explain their findings.</p> <p>Be able to ask and answer questions based on their learning using scientific language.</p>	<p>Children decide if the statements on the Lesson Presentation are true or false. Share the answers and ask the children to discuss the correct versions of the false statements.</p> <p>Making our own ear defenders.</p> <p>Filling/ covering cups with various materials to see which is the most effective.</p> <p>Cotton wool Cardboard Paper Tissue.</p> <p>Then test whether the material is soundproof at different distances.</p>	<p>Children can present a report that can answer:</p> <p>How did we ensure a fair test?</p> <p>What were our controlled variables?</p> <p>What was our independent variable?</p> <p>What did the results show? Were there any anomalies in your results? What caused them?</p> <p>Children could write up instructions on how to carry out this experiment</p> <p>Children write a letter to the band with their conclusion, recommending the best material to use to soundproof the studio and explaining why it is the best choice. Look for children who can explain which features of the materials enable them to absorb sound.</p>
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