

KS2: MEDIUM TERM PLANNER

Sound Y4

Pupils should be taught to:

- 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.

The principal focus of science teaching in lower key stage 2 is to enable pupils to broaden their scientific view of the world around them. They should do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments, and by beginning to develop their ideas about functions, relationships and interactions. They should ask their own questions about what they observe and make some decisions about which types of scientific enquiry are likely to be the best ways of answering them, including observing changes over time, noticing patterns, grouping, and classifying things, carrying out simple comparative and fair tests and finding things out using secondary sources of information. They should draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out.

'Working scientifically' is described separately at the beginning of the programme of study but must always be taught through and clearly related to substantive science content in the programme of study. Throughout the notes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content. Pupils should read and spell scientific vocabulary correctly and with confidence, using their growing word-reading and spelling knowledge.



During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes, and skills through the teaching of the programme of study content:


- 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.


Prior Learning:


- Explore how things work. (Nursery – Sound)
- Describe what they see, hear, and feel whilst outside. (Reception – Sound)
- 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)

Future learning:


- Waves on water as undulations which travel through water with transverse motion; these waves can be reflected and add or cancel – superposition. (KS3)
- Frequencies of sound waves, measured in Hertz (Hz); echoes, reflection and absorption of sound. (KS3)
 - Sound needs a medium to travel, the speed of sound in air, in water, in solids. (KS3)
 - Sound produced by vibrations of objects, in loudspeakers, detected by their effects on microphone diaphragm and the ear drum; sound waves are longitudinal. (KS3)
 - Auditory range of humans and animals. (KS3)
 - Pressure waves transferring energy; use for cleaning and physiotherapy by ultra-sound. (KS3)
 - Waves transferring information for conversion to electrical signals by microphone. (KS3)


Key Questions (show how content and concepts link) Differentiated Learning Objectives	Teaching and learning activities (linked directly to objectives)	Resources (to help pupils reach the learning objectives)	Written and non -written outcomes (assessment including homework's)
<p>1) How is sound made?</p> <p>SCIENCE CAPITAL: <i>How does this lesson connect with children in my class? On your way to school what sounds did you hear?</i></p> <p>Science Working scientifically Skills:</p>  <p>Science Enquiry Type</p> <p>Classify</p> <p><i>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 sound cannot travel through a vacuum (an area empty of matter). The vibrations cause parts of our body inside our ears to vibrate, allowing us to hear (sense) the sound. The loudness (volume) of the sound depends on the strength (size) of vibrations which decreases as they travel through the medium. Therefore, sounds decrease in volume as you move away from the source. A sound insulator is a material which blocks sound effectively. Pitch is the highness or lowness of a sound and is affected by features of objects producing the sounds. For example, smaller</i></p>	<p>Science reasoning task: explorify: Lyre liar - Explorify</p> <p>Activity 1: PowerPoint go over sound vibrations- how do instruments make sound? Classify items that make sound- some pupils using own classification criteria.</p> <p>Activity 2: explain and model vibrations using tuning fork.</p> <p>Activity 3: map of the school grounds and sound monitors to measure the noise level in different areas of school.</p> <p>Misconception: Some children may think:</p> <p>Pitch and volume are frequently confused, as both can be described as high or low. Some children may think:</p> <ul style="list-style-type: none"> • 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. 	<p>Activity 1: PowerPoint / Venn diagram What is sound? Physics - House of Sound - YouTube</p> <p>Activity 2: PowerPoint.</p> <p>Activity 3- school map and survey log</p>	<p>Assessment: can pupils identify sounds around the school ground?</p>


<p>objects usually produce higher pitched sounds.</p>			
<p>2) LO: How does sound travel?</p> <p>SCIENCE CAPITAL: <i>How does this lesson connect with children in my class? When you are on the playground – how can you hear voices at a distance?</i></p> <p>Science Working scientifically Skills:</p>  <p>Science Enquiry Type Research</p> <p><i>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 sound cannot travel through a vacuum (an area empty of matter). The vibrations cause parts of our body inside our ears to vibrate, allowing us to hear (sense) the sound. The loudness (volume) of the sound depends on the strength (size) of vibrations which decreases as they travel through the medium. Therefore, sounds decrease</i></p>	<p>Science reasoning task: explorify: The sound of silence - Explorify</p> <p>Activity 1: PowerPoint how sounds travel</p> <p>Activity 2: complete reading comprehension</p> <p>Activity 3: Label the ear and use to verbally explain how sound travels and how we hear.</p> <p>Misconception: Some children may think:</p> <p>Pitch and volume are frequently confused, as both can be described as high or low. Some children may think:</p> <ul style="list-style-type: none"> • 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. 	<p>Activity 1: PowerPoint: Science with Grammarsaurus - How does sound travel? - YouTube</p> <p>Activity 2: differentiated reading comprehension</p> <p>Activity 3: classification templates.</p>	<p>Assessment: Are pupils able to identify parts of the ear and how they contribute to how we hear?</p> <p>Homework: Are pupils able to classify and identify different sounds around them?</p>

<p><i>in volume as you move away from the source. A sound insulator is a material which blocks sound 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.</i></p>			
<p>3) LO: How can we change the pitch and volume of different instruments?</p> <p>SCIENCE CAPITAL: <i>How does this lesson connect with children in my class? Which instrument sound do you enjoy- does it make a loud or quiet sound?</i></p> <p>Science Working scientifically Skills:</p>  <p>Science Enquiry Type</p> <p>Classify</p> <p><i>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 sound cannot travel through</i></p>	<p>Science reasoning task: explorify: Keeping track - Explorify</p> <p>Activity 1: know the difference between pitch and volume.</p> <p>Activity 2: explore pitch and change the pitch using instruments made out of plastic, rubber bands and lentils. Observe how to create different pitch and volume.</p> <p>Activity 3: listen to musical instrument and discuss how instruments make different sounds.</p> <p>Misconception:</p> <p>Some children may think:</p> <p>Pitch and volume are frequently confused, as both can be described as high or low.</p> <p>Some children may think:</p> <ul style="list-style-type: none"> • 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. 	<p>Activity 1: write definition of pitch and volume</p> <p>Changing Pitch in Musical Instrument (Grade 4) ---- Science for You - YouTube</p> <p>Activity 2: range of lentils, rubber bands and plastic cups.</p> <p>Activity 3: musical clip to identify the different sounds.</p>	<p>Assessment: Are pupils able identify the difference between pitch and volume?</p>

<p><i>a vacuum (an area empty of matter). The vibrations cause parts of our body inside our ears to vibrate, allowing us to hear (sense) the sound. The loudness (volume) of the sound depends on the strength (size) of vibrations which decreases as they travel through the medium. Therefore, sounds decrease in volume as you move away from the source. A sound insulator is a material which blocks sound 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.</i></p>			
<p>4) LO: How does our ear help us hear sounds?</p> <p>SCIENCE CAPITAL: <i>How does this lesson connect with children in my class? What sounds do you enjoy hearing?</i></p> <p>Science Working scientifically Skills:</p>	<p>Science reasoning task: You could hear every sound at equal volume? - Explorify</p> <p>Activity 1: PowerPoint describe the parts of the ear and how the sound travels.</p> <p>Activity 2: explain how sounds travel over distance – model making a string telephone.</p>	<p>Activity 1: PowerPoint - How Your Ear Works? - The Dr. Binocs Show Best Learning Videos For Kids Peekaboo Kidz - YouTube</p> <p>Activity 2: worksheet cut and stick sequence of how sound travels.</p> <p>Activity 3: mini-investigation of how to hear over a distance.</p>	<p>Assessment: Able to identify what happens to sound over a distance.</p> <p>Homework: research the creation of telephone.</p>

 <p>Science Enquiry Type Research</p> <p><i>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 sound cannot travel through a vacuum (an area empty of matter). The vibrations cause parts of our body inside our ears to vibrate, allowing us to hear (sense) the sound. The loudness (volume) of the sound depends on the strength (size) of vibrations which decreases as they travel through the medium. Therefore, sounds decrease in volume as you move away from the source. A sound insulator is a material which blocks sound 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</i></p>	<p>Activity 3: look at different animals/ species and the position of their ears / size and how their specific characteristics help them to hear.</p> <p>Misconception: Some children may think:</p> <p>Pitch and volume are frequently confused, as both can be described as high or low. Some children may think:</p> <ul style="list-style-type: none"> • 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. 		
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<p>produce higher pitched sounds.</p>			
<p>5) Which material helps to reduce sounds?</p> <p>SCIENCE CAPITAL: <i>How does this lesson connect with children in my class? Can you think of what would happen if Peterborough had no parks?</i></p> <p>Science Working scientifically Skills:</p>  <p>Science Enquiry Type</p> <p>Comparative</p> <p><i>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 sound cannot travel through a vacuum (an area empty of matter). The vibrations cause parts of our body inside our ears to vibrate, allowing us to hear (sense) the sound. The loudness (volume) of the sound depends on the strength (size) of vibrations which decreases as they travel through the medium.</i></p>	<p>Science reasoning task: explorify: Hidden depths - Explorify</p> <p>Activity 1: PowerPoint recap sound and vibration.</p> <p>Activity 2: Discuss the problem of- to reduce the sound – plan an investigation.</p> <p>Activity 3: carry out experiment and conclude.</p> <p>Misconception: Some children may think:</p> <p>Pitch and volume are frequently confused, as both can be described as high or low. Some children may think:</p> <ul style="list-style-type: none"> • 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. 	<p>Activity 1: PowerPoint</p> <p>Activity 2: discussion / question cards to discuss</p> <p>Activity 3: different materials, different number of layers.</p>	<p>Assessment: Are pupils able to use work scientifically?</p>

<p><i>Therefore, sounds decrease in volume as you move away from the source. A sound insulator is a material which blocks sound 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.</i></p>			
<p>6) How to create a musical instrument? SCIENCE CAPITAL: <i>How does this lesson connect with children in my class? When would you need to hear loud sounds?</i> Science Working scientifically Skills:  Science Enquiry Type Research <i>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 sound cannot travel through a vacuum (an area empty of matter). The vibrations</i></p>	<p>Sounds like science! - Explorify Activity 1: PowerPoint recap facts about learning so far and to use to plan musical instrument. Activity 2: make musical instrument. Activity 3: Evaluate and review musical instrument created. Misconception: Some children may think: Pitch and volume are frequently confused, as both can be described as high or low. Some children may think: <ul style="list-style-type: none"> • 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. </p>	<p>Activity 1: PowerPoint / plan musical instrument. Activity 2: range of resources to create musical instrument. Activity 3: evaluation prompt conditions.</p>	<p>Assessment: Are pupils able to use their knowledge to create a musical instrument.</p>

<p><i>cause parts of our body inside our ears to vibrate, allowing us to hear (sense) the sound. The loudness (volume) of the sound depends on the strength (size) of vibrations which decreases as they travel through the medium. Therefore, sounds decrease in volume as you move away from the source. A sound insulator is a material which blocks sound 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.</i></p>			
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