

Science | Year 3/4 - Sound | Autumn 2019-20

1. identify how sounds are made, associating some of them with something vibrating
2. recognise that vibrations from sounds travel through a medium to the ear
3. find patterns between the pitch of a sound and features of the object that produced it
4. find patterns between the volume of a sound and the strength of the vibrations that produced it
5. recognise that sounds get fainter as the distance from the sound source increases

	Assessment guidance	Key learning	Key vocabulary
Sound	Shows understanding of a concept using scientific vocabulary correctly	<p>A sound source 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.</p> <p>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.</p> <p>Pitch is the highness or lowness of a sound.</p>	sound source vibrate vibration travel, pitch (high, low) volume faint loud insulation
	Applying knowledge in familiar related contexts, including a range of enquiries	<p>Classify sound sources</p> <p>Explore making sounds with a range of objects such as musical instruments and other household objects</p> <p>Explore using objects that change in feature to change pitch and volume such as length of guitar string, bottles of water or tuning forks</p> <p>Measure sounds over different distances</p> <p>Measure sounds through different insulation materials</p>	

Science | Year 3/4 – States of Matter| Autumn – Spring 2019-20

1. compare and group materials together, according to whether they are solids, liquids or gases
2. observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C)
3. identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature

	Assessment guidance	Key learning	Key vocabulary
States of Matter	Shows understanding of a concept using scientific vocabulary correctly	<p>A solid keeps its shape and has a fixed volume. A liquid has a fixed volume but changes in shape to fit the container. A liquid can be poured and keeps a level, horizontal surface. A gas fills all available space; it has no fixed shape or volume. Granular and powdery solids like sand can be confused with liquids because they can be poured, but when poured they form a heap and they do not keep a level surface when tipped. Each individual grain demonstrates the properties of a solid. Melting is a state change from solid to liquid. Freezing is a state change from liquid to solid. The freezing point of water is 0°C. Boiling is a change of state from liquid to gas that happens when a liquid is heated to a specific temperature and bubbles of the gas can be seen in the liquid. Water boils when it is heated to 100°C. Evaporation is the same state change as boiling (liquid to gas) but it happens slowly at lower temperatures and only at the surface of the liquid. Evaporation happens more quickly if the temperature is higher, the liquid is spread out or it is windy. Condensation is the change back from a gas to a liquid caused by cooling. Water at the surface of seas, rivers etc. evaporates into water vapour (a gas). This rises, cools and condenses back into a liquid forming clouds. When too much water has condensed the water droplets in the cloud get too heavy and fall back down as rain, snow, sleet etc. and drain back into rivers etc. This is known as precipitation. This is the water cycle.</p>	solid liquid gas state change melting freezing melting point boiling point evaporation temperature water cycle
	Applying knowledge in familiar related contexts, including a range of enquiries	<p>Observe closely and classify a range of solids Observe closely and classify a range of liquids Explore making gases visible e.g. squeezing sponges under water to see bubbles, and showing their effect e.g. using straws to blow objects, trees moving in the wind Classify materials according to whether they are solids, liquids and gases Observe a range of materials melting e.g. ice, chocolate, butter Investigate how to melt ice more quickly Observe the changes when making rocky road cakes or ice-cream Investigating melting point of different materials e.g. ice, margarine, butter and chocolate Explore freezing different liquids e.g. tomato ketchup, oil, shampoo Use a thermometer to measure temperatures e.g. icy water (melting), tap water, hot water, boiling water (demonstration) Observe water evaporating and condensing e.g. on cups of icy water and hot water Set up investigations to explore changing the rate of evaporation e.g. washing, puddles, handprints on paper towels, liquids in containers Use secondary sources to find out about the water cycle</p>	

Teaching and Learning sequence – Sound

Session	Key learning	Activity
1	Sound is produced by a source	Sound walk around school
2	Sound sources produce vibrations that travel	Musical instrument exploration
3	Size of vibrations affect volume (amplitude)	Vibration carousel – drums and rice, tuning fork and water, cymbals and different material beaters, elastic band guitars
4	The frequency of the vibration affects pitch	Water in jars of different amounts – changing pitch exploration
5	How do we hear? – use of ears to collect vibrations	Animal ears, ear cone investigation and discussion questions
6	Sounds get fainter the further away you are from the source	How far sound travels investigation – planning and completing investigation sheet
7	Sound travels through different medium (not a vacuum)	Video and discussion questions
8	How sounds travel through different materials	Plan investigation for ear defenders