

# Physics

## Strand: Sound

### Working Scientifically Drives All of the Knowledge & Understanding

NC Objectives	Key Scientific Knowledge	Key Vocabulary	Working Scientifically
<b>Year 4</b>			
<p>To identify how sounds are made, associating some of them with something vibrating</p>	<p>To know sound is energy; to understand that sound is made by a vibration/ something vibrating</p>	<p>Sound, energy, vibrating, vibration</p>	<p>Explore how sound are made and <b>observe vibrations</b> e.g. rice on drum, ruler twanging, feeling vibration in voice-box, seeing and feeling vibrations when tuning fork is put in water creating ripples.</p>
<p>To recognise that vibrations from sounds travel through a medium to the ear</p>	<p>To describe how sounds travel from one place to another travelling through solid/ liquid/ gas (medium).</p> <p>To understand that for us to hear something sound must enter the ear.</p>	<p>Vibration, sound, travel, medium, solid, liquid, gas, energy, ear</p>	<p><b>Draw diagrams</b> to show sound travelling through different media or use diagrams to show how sound is travelling (particles vibrating).</p> <p>Explore whether or not they can hear sounds well through different materials.</p> <p>Experiment with string telephones and <b>make observations about vibrations/ volume of sound</b>; what happens when someone holds the string (stopping the vibration/ therefore the sound travelling)</p> <p>Further questions: can we hear all sounds? Which animals have the best/ greatest range of hearing? How is this useful to them? What about protecting our ears from sound? How do we do this e.g. ear- defenders/ test insulation.</p>

<p>To find patterns between the pitch of a sound and features of the object that produced it</p>	<p>To be able to describe the pitch of a sound as how high/ low it is.</p> <p>To understand that the longer strings make lower sounds; shorter strings make high pitch sounds</p>	<p>Pattern, link, pitch, high, low, vibration</p>	<p><b>Pattern-seeking:</b>  Q: Are there patterns/ links between pitch and instrument size/ design?  Explore and <b>test</b> different pitched objects and link to features e.g. length of string (guitar/ violin) /size of bottle with water in; test elastic bands with different thicknesses/ tightness.  Chn to suggest patterns/ links.</p>
<p>To find patterns between the volume of a sound and the strength of the vibrations that produced it</p>	<p>To be able to describe the volume of a sound as how loud/ quiet it is.</p> <p>To identify that the louder the sound, the greater the vibration e.g. I pluck my guitar string hard = louder sound</p>	<p>Volume, loud, quiet, vibration</p>	<p><b>Pattern-seeking</b>  Investigate hitting drums softly/ hard and link to height of vibration/ volume of sound. Does this raise further questions?  Consider: which animals can make the loudest/ highest pitch/ lowest sounds?</p>
<p>To recognise that sounds get fainter as the distance from the sound source increases.</p>	<p>To be able to describe that sounds get fainter the further the distance from the sound source</p> <p>To be able to link the sound getting fainter, the greater the distance from the sound source, as the sound spreading out (only some of the vibration enters the listener's ear when further away).</p>	<p>Faint, loud, sound source, hearing, distance, decibel (dB), data-logger,</p>	<p><b>Predict and test</b> what happens to sounds as the distance from the sound source increases e.g. chn design own experiment and record sound levels using data-loggers.</p> <p>Chn <b>use simple scientific language to present their findings</b> orally and then in writing: they <b>look for patterns</b> to <b>draw conclusions</b> from their data sets.</p> <p>Chn should begin to <b>evaluate their data</b> (orally) and consider how to make data more reliable e.g. through repeating measurements/ experiment/ adapting experimental design (to make exp more valid).</p>

