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|  **Creech St Michael Primary School** |
| **Science: Physics** | **Sound** | **Year 3 / 4**  |

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| **Background understanding (what I should already know)…** |
| * **Hearing is one of my five senses**
* **Sounds can be combined using musical instruments**
* **What the word vibration means**
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| **Key vocabulary** |
| **Vibration** | **A movement backwards and forwards** |
| **Sound wave** | **Vibrations travelling from a sound source** |
| **Volume** | **The loudness of a sound** |
| **Amplitude** | **The size of a vibration. A larger amplitude = a louder sound**  |
| **Ear** | **An organ used for hearing** |
| **Particles** | **Solids, liquids and gases are made of particles. They are so small we are unable to see them** |
| **Distance** | **A measurement of length between two points** |
| **Soundproof** | **To prevent sound from passing** |
| **Absorb sound** | **To take in sound energy. Absorbent materials have the effect of muffling sound** |
| **Vacuum** | **A space where there is nothing. There are no particles in a vacuum** |
| **Eardrum** | **A part of the ear that is a thin, tough layer of tissue that stretches out like a drum skin. It separates the outer ear from the middle and inner ear. Sound waves make the eardrum vibrate.** |
| **Pitch** | **How high or low a sound is!**  |
| **Echolocation** | **Using sound waves to locate things** |
| **Supersonic** | **Faster than the speed of sound.** |
| **Frequency** | **Amount of vibrations per second.** |
| **Decibel** | **Unit of loudness.** |
| **Volume** | **The closer you are to the source of the sound, the louder the sound will be.**   |

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| **What I will know by the end of the unit…** |
| **What are sounds?** | * **Sound is a type of energy caused by vibrations.**
* **Sounds are made when objects and materials vibrate (even if you cannot see the vibrations).**
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| **How do we measure sound?** | * **Amplitude measures how strong a sound wave is.**
* **Decibels measure how loud a sound is.**
* **Frequency measures the number of times per second that the sound wave cycles**
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| **How do sounds change?** | **Pitch*** **High pitch sounds (created by short sound waves). Whereas, low-pitched sounds are created by long sound waves.A squeak of mouse has a highpitch. The roar of a lion has a low pitch.**

**Volume*** **The volume of a sound is how loud or quiet itis.**
* **When a sound is created by a little amount of energy, a weak sound wave is created which does not travel far (quiet sound).**
* **A vibration with lots of energy makes a powerful sound wave and therefore a loud sound.**
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| **Can sounds travel through different materials?** | * **Vibrations from sound sources travel through different materials to the ear. Sound can travel through solids, liquids and gases. However, some materials allow sound pass through them more easily than others**
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| **How do we hear sounds?** | * **When an object vibrates, the air around it vibrates too. This vibrating air is known as sound waves.**
* **The sound waves travel to the ear and make the eardrums vibrate.**
* **Messages are sent to the brain which recognises the vibrations as sounds.**
* **Sounds get fainter as the distance from the sound source increases**
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| **Who (famous people)**  |
| **Galileo Galilei****(1546-1642)** | **Robert Boyle** **(1627–1691)** | **Alexander Graham Bell****(1847-1922)** |
| **The modern study of sound waves and acoustics is said to have originated with Galileo (the Italian astronomer and physicist).****He studied vibrations and the correlation between pitch and the frequency of the sound source.** | **Boyle is a famous Irish scientist who discovered that sound cannot pass through a vacuum.** **In his experiment, he put a ringing bell under a glass cover called a bell jar. After the air removed, the ringing disappeared.****He also discovered that sound needs a medium (solid, liquid or gas) to pass through.** |  **Bell was a Scottish-born scientist and inventor best known for inventing the first working telephone in 1876.****Bell's success came through his experiments in sound and the furthering of his family's interest in assisting deaf people with communication.** |

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| **Working Scientifically: Possible Investigations** |
| * **Fill identical jars with different volumes of water. Which one creates the highest pitch?**
* **Which material would make the best sound defender? How can you investigate this?**
* **Make musical instruments using different length strings - how do their pitches differ?**
* **Carry out an investigation to explore what happens to sound as it gets further away**
* **Investigate different instruments and make generalisations about pitch**
* **Test what happens to the pitch of a string when you alter the length, tightness and thickness**
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**Scientific skills and enquiry (Year 3 and 4)**

* Ask relevant questions and use different types of scientific enquiries to answer them.
* Set up simple practical enquiries, comparative and fair tests.
* Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.
* Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables.
* Gather, record, classify and present data in a variety of ways to help in answering questions.
* Identify differences, similarities or changes related to simple scientific ideas and processes.
* Report on findings from enquiries including oral and written explanations, displays or presentations of results and conclusions.
* Use straightforward scientific evidence to answer questions or to support their findings.
* Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.