Knowledge Organiser

Subject: Science Unit: Sound

Overview:

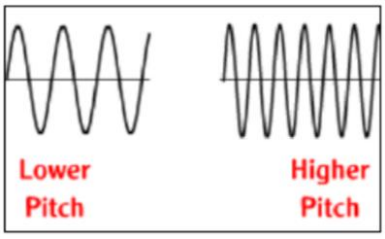
During this sequence of learning, pupils will identify how sounds are made, recognise how vibrations travel through a medium to the ear, find patterns between the pitch of a sound and the object that produced it. Pupils will also look at what happens to sounds as the distance from the sound increases and find patterns between the volume of the sound and the strength of the vibrations that produce it.

What should I already know?

- Energy comes in different forms and can be neither created or destroyed, only changed from one form to another.

What will I know by the end of the unit?

- Sound is generated when an object vibrates; some of the energy from the vibrating object is transferred to the air, making the air particles move.
- Sound is a form of energy that transfers in a longitudinal wave - like that seen in a slinky.
- Sound travels through a medium (e.g. particles in the air) and therefore sound does not travel through a vacuum which has no particles in it at all.
- Longitudinal sound waves are detected in the ear by humans and the brain interprets this as the sounds we hear.
- Sound travels at different speeds through different objects; it travels at around 340 metres per second in air, much slower than light travels; this is why we often hear thunder after we see lightning as the light reaches our eye before the sound reaches our ears.
- Pitch is how high or low a sound is and this is determined by how many vibrations per second are being made by the vibrating object; the number of vibrations per second is called frequency. The higher the rate of vibrations, the higher the pitch.



- Volume is how loud or quiet a sound is and this is determined by the amount of energy in the wave (e.g. from how hard or soft a percussion instrument is hit).
- The volume of a sound is quieter or fainter, if the listener is further away from the object.

Vocabulary:

particle	Tiny bits of matter that make up everything in the universe.
vibration	A rapid motion back and forth.
percussion instrument	Musical instruments that are played by striking or shaking them e.g. a drum.
wind instrument	A musical instrument which makes a sound by the vibration of air usually from a person's breath e.g. a clarinet.
string instrument	A musical instrument sounded by plucking, striking or drawing a bow across strings e.g. a guitar.
frequency	The number of times something happens – in this instance it is the number of vibrations per second.
volume	How loud or quiet something is.
pitch	How high or low a sound is.
longitudinal wave	A longitudinal wave is a wave that travels in the same direction as the object that caused it.
vacuum	A space which has nothing in it, not even air.