

Ashtree Primary School and Nursery Medium Term Plan for Science

Year 4 Autumn Term – Light and Sound – Sound

Prior Knowledge – Y3 - Light

Step 1 - name several light sources, including the **sun**, describe and compare some light sources, recognise that light travels from a source - **light, travels, light source, torch, lamp**

Step 2 - state that light sources are seen when light from them enters the eyes, recognise that they cannot see in the dark, explain that places are dark because there is no light and a light source is needed to help us see in such places - **light, travels, light source, torch, lamp, daytime, night-time**

Step 3 - state that **reflections** can be seen in **shiny** surfaces, demonstrate **light travelling** using a torch and record **light bouncing** off a mirror

Step 4 - explain that they cannot see shiny objects in the dark because there are no light sources

Step 5 - recognise that when light is **blocked**, a **shadow** is formed, recognise that shadows are similar in shape to the objects forming them, explain that shadows are formed when light from a source is blocked

Step 6 - make observations of changes in **shadows**, state that even **transparent** objects block some light and form shadows, describe the difference in shadows cast by **opaque, translucent, and transparent**

Prior Skills – Y3 - Step 1 - with support, records and presents findings using drawings, labelled diagrams, keys, tally charts, Carroll diagrams, Venn diagrams, bar charts and tables, sets up simple practical enquiries, comparative and fair tests with support, asks relevant questions and uses, with support, different types of scientific enquiries to answer them, beginning to make systematic and careful observation, reports on findings from enquiries, in simple scientific language, using oral and written explanations, Using model frames for support, gathers and records data in a variety of ways to help in answering questions for changes, patterns, and relationships in their data

Key Vocabulary - Sound, pitch, volume, vibrations, medium, insulation, travel, instrument

Key Knowledge

- **Step 1** - recognise and describe many **sounds** and sound sources and state that they hear sounds through their ears.
- **Step 2** - recognise that when sounds are generated by objects, something moves or **vibrates** and identify what is **vibrating** in a range of musical instruments
- **Step 3** - describe how sounds are generated by specific objects and suggest ways of producing sounds.
- **Step 4** - distinguish between **pitch and volume** (loudness) and describe differences in pitch and volume
- **Step 5** - know that altering vibrations alters the pitch or volume and explore how to vary the pitch and volume of sounds from a variety of objects or instruments
- **Step 6** - suggest how to change the loudness of the sounds produced by a range of musical **instruments**
- **Step 7** - describe what they observe when they move further away from a source of sound

Key Skills

- Step 1 - records and presents findings using drawings, labelled diagrams,**
- Step 2 - records and presents findings using drawings, labelled diagrams,**
- Step 3 - sets up simple practical enquiries, comparative and fair tests**
- Step 4 - identifies differences, similarities or changes related to simple scientific ideas and processes**
- Step 5 - sets up simple practical enquiries, comparative and fair tests**
- Step 6 - sets up simple practical enquiries, comparative and fair tests**

Curriculum Enhancements

- *Variety of musical instruments on display.*
- *Model of human ear on display.*
- *Link to music lessons and music appreciation*



Suggested Activities

S1 – Sound walk around the school. What did you hear?

S2 – Experimenting with different musical instruments and identifying which parts are vibrating.

S3 – Describe which part of a musical instrument is vibrating to make the sound. How might we produce sounds on non-musical instruments?

S4 – Children listen to a musical instrument which can have a breadth of pitch and volume – e.g. piano. Create a word bank to describe the different pitches heard and the different volumes.

S5 – Problem solving. How can I make my instrument louder? (Need to create bigger vibrations)

S6 – Use a variety of musical instruments and describe which they could hear from the furthest distance and give a reason why this might be.

Possible Misconceptions

Pitch and volume are frequently confused, as both can be described as high or low.

Some children may think:

- 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.

This will lead to . . . Year 6 – Light

Step 1 - explore how light travels using torches and

periscopes, describe reflection as light 'bouncing off' objects

Step 2 - understand that in order to be seen, all **non-luminous** objects must **reflect** light

Step 3 - diagrammatically represent light from sources and bouncing off **reflective** surface using arrows, draw diagrams to illustrate how light is travelling from the source to the eye

Step 4 - describe a variety of ways of changing the size of the shadow produced by an object

Step 5 - describe the relationship between the size of a shadow and the distance between the light source and an object

Step 6 - diagrammatically represent the formation of shadows using arrow convention