Knowsley Junior School

Science Skills and Knowledge in Year 4

National Curriculum objectives: In this unit, children will be taught to:

Working Scientifically

Pupils should be able to:

- Ask relevant scientific questions and explain how they could investigate them.
- Plan and carry out practical enquiries, including comparative and fair tests.
- Make careful and systematic observations, recording them in tables, charts, or notes.
- Take accurate measurements using standard units and a variety of equipment (e.g., thermometers, rulers, data loggers).
- Record and present results using labelled diagrams, tables, bar or line graphs, and keys.
- Identify patterns, similarities, differences, and changes in results.
- Draw conclusions, make predictions, suggest improvements, and raise further questions.
- Use evidence from practical work or secondary sources to answer questions.
- Recognise naturally occurring patterns and relationships in data.

Developing Our Science Skills

- Create questions that encourage higher-order thinking.
- Select appropriate types of enquiry and explain why they are suitable.
- Make predictions based on prior knowledge or experience.
- Write clear instructions for investigations.
- Construct tables suitable for recording results accurately.
- Sort and classify items using Venn diagrams.
- Use scientific equipment safely and take accurate readings.
- Draw labelled scientific diagrams.
- Present data clearly in bar or line graphs.
- Write conclusions that are supported by evidence from investigations.

States of Matter

- Observe, describe, and classify materials as solids, liquids, or gases.
- Compare and group materials based on their properties.
- Observe and record changes of state when materials are heated or cooled, measuring temperatures in °C.
- Explain the processes of evaporation and condensation and their role in the water cycle.
- Investigate how temperature affects the rate of evaporation.
- Describe George Stephenson’s contribution to science.

Teeth and Eating

- Identify the different types of teeth in humans and their functions.
- Explain the importance of healthy teeth and eating habits.
- Describe Pierre Fauchard’s contribution to dental science.

Habitats

- Identify and classify living things in their local and wider environment.

	• Use classification keys to group, identify, and name a variety of organisms. • Recognise that environments can change and explain how this may pose risks to living things. • Construct and interpret simple food chains, identifying producers, predators, and prey. **Electricity** • Identify common electrical appliances and the energy they use. • Construct simple series circuits and name the parts (cell, wire, bulb, switch, buzzer). • Use circuits to create simple devices. • Draw simple pictorial representations of circuits. • Describe precautions for working safely with electricity. • Predict whether a lamp will light in a series circuit and explain why. • Explain how a switch opens and closes a circuit. • Identify common conductors and insulators and explain why metals conduct electricity. • Describe Benjamin Franklin's contributions to the study of electricity. **Sound** • Describe how sounds are made and associate them with vibrations. • Explain how vibrations travel through a medium to the ear. • Investigate patterns between pitch and features of the object producing the sound. • Investigate patterns between volume and the strength of vibrations. • Observe that sounds get fainter as the distance from the source increases. • Describe Alexander Graham Bell's contributions to the understanding of sound.