St Mark's C of E Primary School: Medium Term Planning
Science: Cycle B Summer Term

KS1

Unit Focus **Uses of Everyday Materials & Seasonal Changes**

Rationale: This unit was not covered in Cycle A. It needs to be taught in Cycle B so that Year 2 will have the necessary knowledge to progress onto identifying properties of rocks, and states of matter in LKS2 The units have been organised so the children will be taught the Year 1 content in the first half of the year and then move onto the Year 2 content in the second part of the year. Seasonal changes will be covered for Summer in this term.

NC Objectives:

- Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.
- Carry out simple tests, observe and record data.
- Explore the work and findings of John McAdams.
- Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching
- observe changes across the four seasons
- observe and describe weather associated with the seasons and how day length varies.
-

Uses of Everyday Materials- Year 2 Investigation			
	Learning Objective What is being learned rather than what is being done	**Resources** Any links to resources.	**End-point knowledge** What knowledge should children have gained by the end of the lesson? This will be the focus of retrieval activities and monitoring.
1	**L.O. Make observations to answer questions**	CPG+ Road Test Resources- gravel, cereal, shaving foam, cars	**Vocabulary: observe, predict, material, hard, soft, bendy, not bendy, waterproof, not waterproof** - Identify and compare the suitability of a variety of everyday materials - Make observations to answer questions such as a prediction

	about the suitability of a material.		- Record observations based on what they know.
2	**L.O. Carry out a simple test and record data**	CPG+ Road Test Resources- gravel, cereal, shaving foam, cars	**Vocabulary: fair test, observe, test, material** - Identify and compare the suitability of a variety of everyday materials - Observe closely and carry out simple tests - Record simple data
3.	**L.O. Identify and answer questions about the suitability of a material.**	CPG+ Road Test	**Vocabulary: material, hard, soft, bendy, not bendy, waterproof, not waterproof, observe, suitable, data** - Identify and compare the suitability of a variety of everyday materials - Answer simple questions about what has been observed - Record simple data
4	**L.O. Explore and find out about John McAdams**	Twinkl BBC Bitesize	**Vocabulary: inventor, material, properties** - Find out about an inventor - Recognise how they impacted materials and science
5	**L.O. Explore and find out about John McAdams**	Twinkl BBC Bitesize	**Vocabulary: inventor, material, properties** - Find out about an inventor: John McAdams - Recognise how they impacted materials and science
Seasonal Changes- Year 1 Unit Summer			
	Learning Objective What is being learned rather than what is being done	**Resources** Any links to resources.	**End-point knowledge** What knowledge should children have gained by the end of the lesson? This will be the focus of retrieval activities and monitoring.
1	**LO: To observe changes in the weather across summer**	Twinkl Grammarsaurus	**Vocabulary: summer, weather, temperature** - Talk about weather in summer i.e. warm, hot, dry - Talk about and observe how the temperature changes - Talk about the types of clothing worn in summer
2.	**L.O. Recognise the importance of sun safety**	Twinkl	**Vocabulary: summer, sun rays, temperature, safety** - Investigate how sun rays can impact living things - Recognise ways to safe in the sun

3	**L.O. To observe the signs of the changes in summer.**	Twinkl Grammarsaurus	**Vocabulary: summer, daylight hours,** - Observe and talk about the changes from spring to summer i.e. less rain, wildlife visiting plants, longer days. - Recognise how the length of the day changes i.e. longer daylight hours.
4.	**L.O. Recognise and present the changes in the four seasons**	Twinkl Grammarsaurus	**Vocabulary: spring, summer, autumn, winter, changes, weather** - Recognise features of all seasons including weather, living things such as plants and animals - Display and present ideas to the group (English link)

LKS2

Unit Focus **Plants and State of Matter**

Rationale: Plants was not covered in Cycle A. The units have been organised so the children will be taught the LKS2 content which builds on plant knowledge from KS1.

During KS1 children were taught to name everyday materials and explore the uses of everyday materials. This unit will now build on this knowledge, exploring how solids, liquids and gases can be changed. Introducing children the ideas of heating, cooling, evaporation and condensation. They will also become familiar with a water cycle.

NC Objectives:

- identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers
- explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant
- investigate the way in which water is transported within plants
- explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal
- compare and group materials together, according to whether they are solids, liquids or gases
- observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C)
- identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature

	Plants- Year 3 Unit		
1	**L.O. Identify and describe the functions of different parts of a flowering plant**	Twinkl www.stem.org.uk Need- House plants	**Vocabulary- roots, stem, trunk, leaves, flowers, anchor, nutrients, transport, seeds, carbon dioxide, sunlight, absorb.** - To identify the different parts of flowering plants: roots, stem/trunk, leaves and flowers - To explain the job different parts of a plant do.
2.	**LO: Explain what a plant needs for life and growth**	Twinkl www.stem.org.uk	**Vocabulary- plant, seed, water, sunlight, warmth, energy, nutrients, air** - Recognise what a plant needs to grow well. - Understand different plants have different needs.

3.	**L.O. Understand and investigate the purpose of roots**	Twinkl www.stem.org.uk Need- Flowers such as carnations, food dye.	**Vocabulary- transport, stem, evaporate, compare, temperature, leaves, flower, observe,** - Explain the function of the stem. - Understand how water is transported in a plant. - Set up a comparative investigation. I can suggest ways to find answers. - Make a prediction based on what I know about plants.
4.	**L.O. Understand and investigate the purpose of roots**		**Vocabulary- transport, stem, evaporate, compare, temperature, leaves, flower, prediction, conclusion** - Understand how water is transported in a plant. - Reflect on a prediction I made - Explain my conclusion and what I have observed.
5.	**L.O. Name parts of a flower, understanding their role in pollination and fertilisation.**	Twinkl www.stem.org.uk	**Vocabulary- petals, sepal, stamen, anther, filament, stigma, style, ovary, ovule, pollen tube, pollen, pollination, fertilisation.** - Identify the different parts of a flower. - Explain what each part of a flower does. - Explain the process of pollination and how it leads to fertilisation. Pupils can be introduced to the idea that plants can make their own food, but at this stage they do not need to understand how this happens.
6.	**L.O. Sequence and explain the life cycle of a plant**	Twinkl www.stem.org.uk	**Vocabulary- dispersal, pollination, fertilisation, germination, life cycle** - Understand seed dispersal. - Understand the processes of pollination, fertilisation and germination. - Order the different stages of the life cycle of a flowering plant
		States of Matter	
1.	**L.O. Compare and group solids, liquids and gases.**	Twinkl www.stem.org.uk	**Vocabulary- solid, liquid, gas, particles, state, material, properties** - Sort and group materials into solids, liquids or gases. - Describe the properties of solids, liquids and gases. - Represent the difference between the particles in solids, liquids and gases.

2.	**L.O. Investigate gases and explain their properties.**	Twinkl www.stem.org.uk	**Vocabulary- gas, carbon dioxide, state, matter, material, weight, mass.** - Investigate gases and explain their properties. - Identify solids, liquids and gases. - Explain some uses of gases.
3.	**L.O. Investigate how heating and cooling can change a material's state.**	Twinkl www.stem.org.uk	**Vocabulary- solid, liquid, particles, melt, freeze, thermometer, temperature** - Understand how heat can cause solids to change to liquids and vice versa. - Identify materials that melt at different temperatures. - Investigate the melting and freezing temperature of a material.
4.	**L.O Explore how water can change its state to a solid, liquid or a gas**	Twinkl www.stem.org.uk	**Vocabulary- solid, liquid, particles, melt, freeze, temperature** - Identify the different states water can be in. - Identify the temperatures at which water changes state. - Observe and identify the processes that cause water to change state.
5.	**L.O. Investigate and report how water evaporates.**	Twinkl www.stem.org.uk	**Vocabulary- evaporation, particles, liquid, gas, weight, dry, energy, state, heat**. - Explain the effect of temperature on the process of evaporation. - Plan and carry out a comparative test using equipment accurately - Record results and conclude my findings.
6.	**L.O. Identify and describe the different stages of the water cycle.**	Twinkl www.stem.org.uk	**Vocabulary- evaporation, condensation, precipitation, collection** - Describe the different stages of the water cycle. - Explain the role of evaporation and condensation in the water cycle. Year 4 pupils will have covered the Water Cycle in Geography last year.

UKS2-

Unit Focus **Forces and Electricity**

Rationale: These units were not covered in Cycle A. Building on LKS2 on forces and magnets, children will begin to investigate water resistance, air resistance and friction. They will perform fair tests, explore methods, gather and record data and conclude their results. Extending on work in LKS2, pupils should construct simple series circuits, to help them to answer question about what happens when they try different components for example; switches, bulbs, buzzers and motors. They will learn how to represent a simple circuit in a diagram using recognised symbols.

NC Objectives:

- explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.
- identify the effects of air resistance, water resistance and friction, that act between moving surfaces.
- recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect. associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit
- compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches
- use recognised symbols when representing a simple circuit in a diagram

Forces			
1.	**L.O. Identify which Force is acting upon an object**	Twinkl- Y5 www.stem.org.uk	**Vocabulary- force, push, pull, gravity, air resistance, water resistance, friction.** • Identify forces as pushes and pulls. • Identify and explain the different forces acting on objects
2.	**L.O. To investigate the effect of gravity on an object**	Twinkl- Y5 www.stem.org.uk	**Vocabulary- gravity, force, Isaac Newton, newton meter, weight, mass** • Explain the effect of gravity on unsupported objects. • Explain Isaac Newton's role in developing a theory of gravity. • Accurately measure the force of gravity pulling on objects.
3.	**L.O. To investigate the effects of air resistance.**	Twinkl- Y5 www.stem.org.uk	**Vocabulary- gravity, air resistance, Galileo Galilei, mass, force, prediction, investigation, variable** - Explain how air resistance affects moving objects. - Plan and conduct an investigation into the effects of air resistance

4.	**L.O. To explore the effects of water resistance.**	Twinkl- Y5 www.stem.org.uk	**Vocabulary-water resistance, streamline, force** - Explain the effects of water resistance. - Identify streamlined shapes. - Minimise the effects of water resistance on an object
5.	**L.O. Identify the effects of friction between moving surfaces.**	Twinkl- Y5 www.stem.org.uk	**Vocabulary- friction, force, brake, prediction, investigation, variables, results.** - Explain the effects of friction on a moving vehicle. - Investigate the effects of friction created by different materials. - Recognise and control variables in an investigation
6.	**L.O. Investigate forces by designing a simple mechanism.**	Twinkl- Y5 www.stem.org.uk	**Vocabulary- mechanism, lever, gear, cog, pulley, machine, force.** - Explain how different mechanisms work. - Investigate a simple mechanism. - Design my own mechanism for a given purpose
		Electricity	
1.	**L.O. Recognise and draw scientific circuit symbols.**	Twinkl- Y5 www.stem.org.uk	**Vocabulary- bulb, battery, cell, wires, switch, motor, buzzer, informal, circuit, scientific symbol diagram.** - Recognise the scientific symbols for the main parts of a circuit. - Create circuit diagrams using scientific symbols. Note: Pupils are expected to learn only about series circuits, not parallel circuits. Pupils should be taught to take the necessary precautions for working safely with electricity
2.	**L.O. Observe and explain the effects of differing voltages in a circuit.**	Twinkl- Y5 www.stem.org.uk	**Vocabulary- Voltage, circuit, bulb, wires, cell, battery, buzzer, motor, switch, circuit** - Draw circuit diagrams indicating the voltage. - Explain the effect of increasing or decreasing the voltage on different parts of a circuit.

3/ 4	**L.O. Plan, investigate and conclude a fair test on how variations of components function.**	Twinkl- Y5 www.stem.org.uk	**Vocabulary- plan, fair test, comparative test, conclude** - Plan and conclude a fair test - Decide which variables to control. - Explain variations in component function.
5.	**L.O. Explain the importance of the major discoveries in electricity.**	Twinkl- Y5 www.stem.org.uk	**Vocabulary- electricity, alternating current, direct current, battery, cell. (Optional, Thomas Edison, Nikola Tesla, Alessandro Volta, Michael Faraday)** - Research and present how our understanding of electricity has changed over time including how major discoveries affected our understanding and use of electricity. (Projects on an individual scientist).