Templenewsam Halton Primary
Science Long Term Plan

	Autumn	Spring	Summer
Early Years – Nursery **(Understanding the World ELGs)**	**My Family, fieldwork (school grounds), routines and routes** • Begin to make sense of their own life story and family history • Respect and care for the natural environment **Seasons- Autumn, Day and Night animals, Days of the Week** • Continue to develop a positive attitude about the differences between people	**Seasons- Winter, Special times with my family** • Use all their senses in hands on exploration of natural materials • Explore and talk about different forces they can feel • Talk about the differences between materials and changes they notice **Seasons- Spring, farm animals, different types of home** • Explore collections of materials with similar or different properties • Talk about what they see, using a wide range of vocabulary	**Planting bulbs, how a seed grows, fieldwork (school grounds), Beebots** • Explore how things work • Plant seeds and care for growing plants • Understand the key features of lifecycles **Seasons- Summer, simple maps, road signs and safety, changes in transport** • Show interest in different occupations • Know that there are different countries in the world • Talk about the differences they have seen

Early Years – Reception **(Understanding the World ELGs)**	**Seasonal Changes** • Explore the natural world around them, making observations and drawing pictures of plants at different points throughout the year. **Materials - changing states (ice)** • Understand some important processes and changes in the natural world including changes states of matter. **Growing – lifecycles and body parts** • Explore the natural world. Making observations and drawing pictures. • Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class.	**Forces (push and pull toys/gravity)** • Understand some important processes and changes in the natural world including changes states of matter. **Animals including humans (lifecycles)** • Explore the natural world. Making observations and drawing pictures of animals**.** • Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class. **Plants (growing plants)** • Explore the natural world. Making observations and drawing pictures of plants. • Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class.	**Materials (floating and sinking)** • Understand some important processes and changes in the natural world including changes states of matter. **Living things and their habitats (lifecycles/seasons/habitats)** • Explore the natural world. Making observations and drawing pictures of animals**.** • Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class.

<table>
<tr><td>Ongoing themes</td><td colspan="3">ELG: Speaking
• Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary</td></tr>
<tr><td></td><td colspan="3">ELG working scientifically objectives:
ELG: Listening, Attention and Understanding
• Make comments about what they have heard and ask questions to clarify their understanding
ELG: Fine motor skills
• Use a range of small tool, including scissors, paint brushes and cutlery
ELG: Building Relationships
• Work and play cooperatively and take turns with others</td></tr>
<tr><td>Year 1</td><td>Everyday Materials
• distinguish between an object and the material from which it is made
• identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock
• describe the simple physical properties of a variety of everyday materials
• compare and group together a variety of everyday materials on the basis of their simple physical properties.

Animals inc. Humans (parts of the human body statements)
• identify, name, draw and label the basic parts of the human body and</td><td>Everyday Materials
• distinguish between an object and the material from which it is made
• identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock
• describe the simple physical properties of a variety of everyday materials
• compare and group together a variety of everyday materials on the basis of their simple physical properties.

Animals including humans (animal statements)
• identify and name a variety of common animals including fish,</td><td>Everyday Materials
• distinguish between an object and the material from which it is made
• identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock
• describe the simple physical properties of a variety of everyday materials
• compare and group together a variety of everyday materials on the basis of their simple physical properties.

Seasonal Changes
• observe changes across the four seasons</td></tr>
</table>

	say which part of the body is associated with each sense.	amphibians, reptiles, birds and mammals • identify and name a variety of common animals that are carnivores, herbivores and omnivores • describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets)	• observe and describe weather associated with the seasons and how day length varies. **Plants** • identify and name a variety of common wild and garden plants, including deciduous and evergreen trees • identify and describe the basic structure of a variety of common flowering plants, including trees.
Ongoing themes	**Plants:** While learning to name and identify plants, the pupils should be drawing on a range of different clues. Many plants change in appearance over the year –losing leaves, buds developing into flowers, flowers developing into seeds or berries. At any particular time, only some of these parts will be present. To ensure correct identification, all parts should be considered. Pupils should therefore visit the same plants throughout the year gathering additional clues for identification. **Seasonal Change:** Pupils should be gathering data about seasonal change regularly throughout the year. As part of this, they will be making observations about the weather and how this affects living things. If data is gathered regularly, this can be reviewed at the end of the year.		
	KS1 working scientifically objectives: • asking simple questions and recognising that they can be answered in different ways • observing closely, using simple equipment • performing simple tests • identifying and classifying • using their observations and ideas to suggest answers to questions • gathering and recording data to help in answering questions.		

Year 2	**Plants (planning for growing bulbs outside)** • find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. **Living Things and their habitats** • explore and compare the differences between things that are living, dead, and things that have never been alive • identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other • identify and name a variety of plants and animals in their habitats, including microhabitats • describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.	**Animals including humans (basic needs and keeping healthy statements)** • find out about and describe the basic needs of animals, including humans, for survival (water, food and air) • describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. **Plants (planning for planting seeds)** • observe and describe how seeds and bulbs grow into mature plants **Uses of Everyday Materials (changing shapes of materials statements)** • find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.	**Living things and their habitats (making comparisons between seasons)** *Recap of Year 1 objectives* **Animals including humans (offspring statements)** • notice that animals, including humans, have offspring which grow into adults **Plants (harvesting and cooking)** • observe and describe how seeds and bulbs grow into mature plants • find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.

	Uses of everyday materials (properties and uses of materials statements) • identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses		
Ongoing themes	**Living Things and Their Habitats:** While learning to name and identify plants, the pupils should be drawing on a range of different clues. Many plants change in appearance over the year – losing leaves, buds developing into flowers, flowers developing into seeds or berries. At any particular time, only some of these parts will be present. To ensure correct identification, all parts should be considered. Pupils should therefore visit the same plants throughout the year gathering additional clues for identification. Animals visible in a habitat will change depending on the weather on the day and the season. In order to build up a full picture of the animals in a habitat, the habitat should be visited at different times throughout the year. **Plants:** Seeds and bulbs need to be planted at different times of the year (bulbs in Autumn and seeds, generally, in Spring). For these to reach full maturity, they need to complete their life cycle. This will be determined by the plant, not the time allocated to the topic. Once planted, the beds will need to be visited regularly to weed and make observations of growth.		
	KS1 working scientifically objectives: • asking simple questions and recognising that they can be answered in different ways • observing closely, using simple equipment • performing simple tests • identifying and classifying • using their observations and ideas to suggest answers to questions • gathering and recording data to help in answering questions.		

Year 3	**Animals including Humans** • identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat • identify that humans and some other animals have skeletons and muscles for support, protection and movement. **Rocks, soil and fossils** • compare and group together different kinds of rocks on the basis of their appearance and simple physical properties • describe in simple terms how fossils are formed when things that have lived are trapped within rock • recognise that soils are made from rocks and organic matter	**Forces and magnets** • compare how things move on different surfaces • notice that some forces need contact between two objects, but magnetic forces can act at a distance • observe how magnets attract or repel each other and attract some materials and not others • compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials • describe magnets as having two poles • predict whether two magnets will attract or repel each other, depending on which poles are facing.	**Plants** • 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. **Light** • recognise that they need light in order to see things and that dark is the absence of light • notice that light is reflected from surfaces • recognise that light from the sun can be dangerous and that there are ways to protect their eyes • recognise that shadows are formed when the light from a light source is blocked by an opaque object

			• find patterns in the way that the size of shadows change.
Ongoing themes	**Plants:** Many plants have an annual cycle – having buds, flowers, seeds/berries at certain times in the year. Pupils should therefore visit the same plants throughout the year gathering evidence linked to their life cycle e.g. collecting seeds and taking photographs or making observational drawings for buds, flowers etc. This evidence can then be reviewed at the end of the year to exemplify a range of plants' life cycles.		
	LKS2 working scientifically objectives: • asking relevant questions and using different types of scientific enquiries to answer them • setting up simple practical enquiries, comparative and fair tests • making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers • gathering, recording, classifying and presenting data in a variety of ways to help in answering questions • recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables • reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • identifying differences, similarities or changes related to simple scientific ideas and processes • using straightforward scientific evidence to answer questions or to support their findings.		
Year 4	**Electricity** • identify common appliances that run on electricity • construct a simple series electrical circuit, identifying and naming its	**States of matter** • 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	**Sound** • identify how sounds are made, associating some of them with something vibrating

	basic parts, including cells, wires, bulbs, switches and buzzers • identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery • recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit • recognise some common conductors and insulators, and associate metals with being good conductors. **Animals including humans** • describe the simple functions of the basic parts of the digestive system in humans • identify the different types of teeth in humans and their simple functions • construct and interpret a variety of food chains, identifying producers, predators and prey	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.	• recognise that vibrations from sounds travel through a medium to the ear • find patterns between the pitch of a sound and features of the object that produced it • find patterns between the volume of a sound and the strength of the vibrations that produced it • recognise that sounds get fainter as the distance from the sound source increases. **Living things and their habitats** • recognise that living things can be grouped in a variety of ways • explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment • recognise that environments can change and that this can sometimes pose dangers to living things.
Ongoing themes	**Living things and their habitats:** naming and identifying living things in the local environment, thinking particularly about the survival needs of the living things found. In summer, when revisiting and making comparisons between the seasons, children should be thinking about the food chains based on their first-hand experiences. Food chains is an Animals Inc. Humans curriculum statement; however, it should be taught after they have visited their local habitat.		

	LKS2 working scientifically objectives: • asking relevant questions and using different types of scientific enquiries to answer them • setting up simple practical enquiries, comparative and fair tests • making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers • gathering, recording, classifying and presenting data in a variety of ways to help in answering questions • recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables • reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • identifying differences, similarities or changes related to simple scientific ideas and processes • using straightforward scientific evidence to answer questions or to support their findings.		
Year 5	**Properties and Changes in Materials (properties of materials statements)** • compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets	**Forces** • 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.	**Properties and changes of materials (changes of materials statements)** • know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution • use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating • give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday

	Living Things and their habitats (life cycle and reproduction of animals statements) • describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird • describe the life process of reproduction in animals.	**Earth and Space** • describe the movement of the Earth, and other planets, relative to the Sun in the solar system • describe the movement of the Moon relative to the Earth • describe the Sun, Earth and Moon as approximately spherical bodies • use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.	materials, including metals, wood and plastic • demonstrate that dissolving, mixing and changes of state are reversible changes • explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda. **Animals including humans** • describe the changes as humans develop to old age. **Living things and their habitats (life cycle and reproduction of plants statements)** • describe the life process of reproduction in some plants
Ongoing themes	**Properties and changes of materials:** select a range of materials and place these in an area outside, for example each material in a Tupperware (unsealed). Children to predict and observe how investigating how weather can change materials over time. As further investigation, control materials could be set up, for example placing a nail outside and leaving one inside. **Earth and Space:** investigating how the sun's position in the sky changes over the year. Throughout the year, children to investigate how the sun's position in sky changes. This can be done through photographs or investigating through shadow length.		

	UKS2 working scientifically objectives: • planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary • taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate • recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs • using test results to make predictions to set up further comparative and fair tests • reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations • identifying scientific evidence that has been used to support or refute ideas or arguments.		
Year 6	**Electricity** • 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 **Living things and their habitats** • describe how living things are classified into broad groups	**Animals including humans** • identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood • recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function • describe the ways in which nutrients and water are transported within animals, including humans. **Evolution and inheritance** • recognise that living things have changed over time and that fossils provide information about living	**Evolution and inheritance** • recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago • recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents • identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.

	according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals • give reasons for classifying plants and animals based on specific characteristics	things that inhabited the Earth millions of years ago • recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents • identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.	**Light** recognise that light appears to travel in straight lines • use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye • explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes • use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.
Ongoing themes	**Living things and their habitats –** linked to the learning on different types of plants, children are to observe how different types of plants in the school grounds can change throughout the year. This could include sketches, notes or photographs showing how some plants can change. Children could also observe fruit over a period of time and observe the changes in regards to mould growing. This could be carried out in the first instance during colder, winter months and then repeated during a hot summer's day to note if there is any different in mould growing.		
	UKS2 working scientifically objectives: • planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary • taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate • recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs • using test results to make predictions to set up further comparative and fair tests		

	• reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations • identifying scientific evidence that has been used to support or refute ideas or arguments.