Helsby Hillside Primary School

Science Essential Learning

With kindness, respect and gratitude, together we aim high in all we do.

Year Group	Unit of Work	Science - Essential Learning
Year 1	Seasonal Changes	In this unit, the children will: • Be able to Identify the four seasons. (L1 Seasonal changes) • Understand the changes that occur in each season. (L2 – 5 Seasonal changes)
	Animals Including Humans (All about me, All about Animals)	In this unit, the children will: • Recognise the senses and the parts of the body they relate to (L2 to 6 All about me) • Identify parts of the human body (L1 All about me) • Be able to identify common fish, amphibians, reptiles, birds and mammals (L2 and L3 All about animals) • Be able to identify basic differences between different species (L1 All about animals) • Understand the terms carnivores, herbivores and omnivores. (L4 All about animals)
	Plants	In this unit, the children will: • Know that seeds grow into plants (L1Pplants) • Be able to identify the parts of a plant and a tree (L2 Plants) • Know that different plants grow in different environments. (L3 Plants) • Understand the terms deciduous and evergreen. (L4 Plants) • Be able to talk about Linda Brown Buck and her discovery that mammals have odorant receptors in their nose.
	Exploring Everyday Materials (1 and 2)	In this unit, the children will: • Be able to talk about common everyday objects are made from and discuss some of the properties which it is made from (L1 and L3 Everyday materials 1) • Know what a natural material is and what a man-made material is. (L4 Everyday materials 1) • Know what properties make the materials above suitable for different tasks. (L6 Everyday materials 1 and L6 Everyday materials 2) • Be able to discuss George James Symon and is invention of the rain gauge.
Year 2	Use of Everyday Materials	In this unit, the children will: • Be able to identify which everyday materials are most suitable for different tasks. (L1 Use of everyday materials) • Learn about Charles Macintosh and his invention of waterproof materials L5 Use of everyday materials). • Understand that the shape of some materials can be changed by squashing, bending, twisting or stretching. (L4 Uses of everyday materials) • Understand that the shape of some materials cannot be changed without the change being permanent. (L6 Uses of everyday materials)
	Living Things and Their Habitats	In this unit, the children will: • Understand the difference between things that are living, dead and things that have never been alive. (L1 Living things and their habitats 1)

		• Know the term microhabitat and identify plants and animals within a habitat, understanding that they each depend on each other. (L2 and L3 Living things and their habitats 1) • Understand a simple food chain (L5 Living things and their habitats 1) • Identify and name some different sources of food, understanding the basic journey from farm to supermarket. (L6 Living things and their habitats 1)
	Animals Including Humans (Growth and Life Cycles)	In this unit, the children will: • Understand the importance of eating the right food and be able to identify the different food groups (L3 and L4, Animals including humans- growth) • Understand the importance of hygiene to keep us fit and healthy. (L5 and L6, Animals including humans – growth) • Know the different stages of specific life cycles (human, frog and butterfly) (L1, L5 and L6, Animals including humans – Life cycles) • Know that animals including humans, have offspring that grow into adults. (L3, Animals including humans – Life cycles) • Be able to talk about Louis Pasteur and his discovery that germs can be spread through touch and the air.
	Plants	In this unit, the children will: • Know the difference between seeds and bulbs (L1 Plants) • Understand that plants need water, light and a suitable temperature to grow (L2 and L3, Plants) • Be able to describe the life cycle of a plant (L4 Plants)
Year 3	Animals Including Humans	In this unit, the children will: • Identify the five key food groups and discuss the amount of each that should make up a meal. (L1 Animals including humans) • Know that the skeleton provides support and protection while muscles provide us with movement (L4 and L6, Animals including humans) • Understand that animals, including humans cannot make their own food, they get their nutrition from what they eat. (l2 Animals including humans) • Be able to talk about Marie Curie and the impact she had on the development of the x-ray.
	Rocks	In this unit, the children will: • Be able to compare and group rocks based on their appearance and simple physical properties • Know the terms igneous, sedimentary, and metamorphic rocks and what this means when discussing rocks. (L1 and L2, Rocks) • Understand how fossils are formed. (L5 Rocks) • Understand there are different types of soil. (L6 Rocks)
	Plants	In this unit, the children will: • Identify and describe the functions of different parts of a flowering plant. (L2 plants) • Discuss what can happen if plants do not get the right amount of water, light or the correct temperature. (L1 plants) • Be able to explain how water is transported through a plant. (L3 plants)

		• Describe the part that flowers play in in the life cycle of a flowering plant. (L4 and L5 plants) • Be able to talk about either Sir Joseph Banks or David Douglas and their finding related to plants/trees.
	Forces and Magnets	In this unit, the children will: • Explain how 2 magnets will attract or repel each other, depending on which poles are facing each other. (L2 and L3 Forces and magnets) • Be able to identify and group everyday materials which are magnetic and non-magnetic. (L4 Forces and magnets) • Understand that magnets can act at a distance. (L5 Forces and magnets)
	Light	In this unit, the children will: • Understand that light is reflected from surfaces and the absence of light is dark. (L3 Light) • Know that light from the sun can be dangerous and they will be able to suggest ways to protect their eyes. (L2 Light) • Recognise that shadows are formed when a light source is blocked by an opaque object. (L4 Light) • Begin to find patterns in the way that the shadow size changes. (L5 and L6 Light)
Year 4	Animals, Including Humans	In this unit, the children will: • Be able to name the organs in the digestive system and describe how they work. (L1 and L2, Animals including humans) • Be able to identify the different teeth of humans and describe the functions of them. (L3, Animals including humans) • Know the effect that different liquids can have on teeth. (L4, Animals including humans) • Identify the producer, predator, and prey within a food chain and begin to create slightly more complex chains. (L5 and 6 Animals including humans)
	Living Things and Their Habitat and Conservation	In this unit, the children will: • Understand that living things can be grouped in different ways. (L3, Living things and their habitats) • Be able to use classification keys to help group and identify living things within the local environment. (L3 Living things and their habitats) • Create their own simple classification key. (L4 Living things and their habitats) • Understand how changes to an environment can be dangerous for the living things in that environment.
	States of Matter	In this unit, the children will: • Understand what makes a solid, a liquid and a gas and be able to group materials accordingly. (L1 and L2, States of matter) • Understand that some materials can change state when they are heated or cooled. (L3 and L4, States of matter) • Understand that some changes of state are reversible, and some are unreversible. (L3 and L4, States of matter) • Be able to describe the water cycle, showing an understanding of the term's evaporation and condensation. (L5 and L6 States of matter)
	Sound	In this unit, the children will: • Explain how sounds are made, using the term vibration. (L1 Sound) • Understand that vibrations from sounds travel through the medium to the ear. (L2 Sound)

		• Explain that the strength of the vibration effects the volume of the sound. (L4 Sound) • Understand and explain pitch (L5 Sound) • Know about Alexander Graham Bell and the telephone.
	Electricity	In this unit, the children will: • Construct a simple circuit and understand that to light a bulb the circuit must be a complete loop. (L1 and L2 Electricity) • Identify the symbols for cells, wires, bulbs, switches and buzzers. (L1 and L2 Electricity) • Be able to identify some common conductors and insulators. (L4 Electricity) • Understand that a switch can open and close and that this effects whether a bulb lights or not. (L5 Electricity) • Talk about Thomas Edison and his invention of the light bulb.
Year 5	Forces	In this unit, the children will: • Be able to explain that unsupported objects fall towards the Earth because of the force of gravity. (L1 Forces) • Show an understanding of who Isaac Newton is and his theory. (L1 Forces) • Understand that air resistance, water resistance and friction are forces which act between moving surfaces. (L2, L3 and L4 Forces) • Understand that levers, pulleys and gears allow a small force to have a greater effect. (L5 Forces)
	Materials (Properties and Changes)	In this unit, the children will: • Be able to compare and group materials based on properties including their hardness, transparency and conductivity. (L1 Properties of materials) • Understand that some materials dissolve in water to form a solution and be able to describe how to recover a substance from a solution. (L3 Properties of materials, L1 Changes of materials) • Explain how mixtures of solids, liquids and gases can be separated including through filtering, sieving and evaporating. (L6 Properties of materials) • Be able to identify changes that are reversible and unreversible including burning/cooking and chemical reactions such as using acids and bicarbonate of soda. (L2, L5 and L6 Changes of materials)
	Animals, Including Humans	In this unit, the children will: • Be able to discuss the key stages of a mammal's life cycle. (L1 Animals including humans) • Understand that the period of gestation varies between mammals. (L2 Animals including humans) • Be able to explain in simple terms foetal development during gestation. (L3, Animals including humans) • Understand some of the changes that children will experience during puberty and old age. (L5 and L6 Animals including humans)
	Living Things and Their Habitats.	In this unit, the children will: • Be able to describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird (L2, L3, and L4 Living things and their habitats). • Be able to describe the process of reproduction in some plants and animals. (L1 Living things and their habitats) • Find out about the work of Jane Goodall or David Attenborough. (L5 Living things and their habitats)

	Earth and Space	In this unit, the children will: • Be able to discuss the movement of the Earth and the other planets relative to the sun. L1, L2 and L3 Earth and space) • Be able to explain in simple terms day and night with reference to the Earth's rotation of the sun. (L4 Earth and space) • Explain why the Sun appears to be moving through the sky during the course of the day. (L1 Earth and Space) • Describe the phrases of the moon. • Know about the work of Margaret Hamilton and the significance she had on NASA and space flights.
Year 6	Electricity	In this unit, the children will: • Be able to use symbols to create their own circuits (L1 Electricity) • Understand how the voltage of a cell effects the circuit. (L2 Electricity) • Understand how an increase or decrease in the number of components affects the output. (L4 Electricity) • Research the work of Michael Faraday and be able to talk about what he achieved.
	Light	In this unit, the children will: • Know that light appears to travel in straight lines (L1 Light) • Understand that we see objects because light travels from the source to our eyes. (L2 and L3 Light) • Be able to explain why shadows take the shape of the objects that cast them. (L5 Light) • Understand that the size of the shadow is affected by the distance of the light source from the shadow. (L4 Light)
	Animals, Including Humans	In this unit, the children will: • Be able to name the main parts of the human circulatory system and describe the functions of them within the circulatory system. (L1 and L2 Animals including humans) • Understand how nutrients and water are transported within animals, including humans. (L3 and L4 Animals including humans) • Understand the impact of diet and exercise on the heart rate. (L5 Animals including humans) • Understand the impact of drugs and alcohol on the body (L6 Animals including humans)
	Living Things and Their Habitat.	In this unit, the children will: • Be able to give their own reasons for classifying plants and animals L1 Living things and their habitat) • Use the Linnaean system to classify living things (L3 Living things and their habitat) • Understand what a microorganism is and how it can have positive and negative effects. (L4 Living things and their habitat) • Explain what asexual reproduction is and identify how plants do this using spore dispersal. (L5 Living things and their habitat)
	Evolution and Inheritance	In this unit, the children will • Explain why offspring vary and are not identical to their parents. (L1 Evolution) • Understand how animal adaptations take place over a long period of time (L2 Evolution) • Explain in simple terms the theory of evolution. (L5 and L6 Evolution) • Understand that fossils can provide information about living things that inhabited the Earth millions of years ago. (L4 Evolution)

		• Be able to talk about the work of Mary Anning, Charles Darwin or Alfred Wallace.
	Looking after the Environment	In this unit, the children will: • Explain what climate change is and what we can do to reduce it. (L1 Looking after the environment) • Understand how to reduce the amount of rubbish sent to the land fill (L2 Looking after the environment) • Understand how we can reduce our consumption of energy can be reduced by using renewable energy. (L3 and L4 Looking after the environment) • Discuss the effect of climate change of the weather. (L5 Looking after the environment)

Age Phase	Scientific Enquiry - Essential Learning
Key Stage 1	During Years One and Two, through the teaching of the National Curriculum programme of study, the children will develop the following skills: • Be able to ask simple questions and think about they can be answered. • Understand how to make observations, • Recognise how to use simple equipment. • Be able to carry out simple tests. • Understand how to identify and classifying things. • Understand how to use my observations to answer questions. • Be able to gather information and record results using simple charts.
Lower Key Stage 2	During Years Three and Four, through the teaching of the National Curriculum programme of study, the children will develop the following skills: • Be able to as relevant questions and use different types of scientific enquiries to answer • Understand how to set up simple practical enquiries ensuring it is a fair test? • Make systematic and careful observations. • Use a range of equipment taking accurate measurements. • Be able to gather, record, classify and present data in a variety of ways to help in answering questions. • Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. • Use the results of experiments to draw simple conclusions, make predictions and suggest improvements and raise further questions • Be able to find differences, similarities or changes related to simple scientific ideas and processes. Use simple scientific evidence to answer questions or to support their ideas.

Upper Key Stage 2	During Years Five and Six, through the teaching of the National Curriculum programme of study, the children will develop the following skills: • Be able to plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary, • Take accurate measurements, using a range of scientific equipment, with increasing accuracy and precision, take repeat readings when appropriate • Be able to record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. • Be able to use test results to make predictions to set up further comparative and fair tests. • Be able to present findings from enquiries, including conclusions and explanations of results • Be able to discuss the degree of trust in results, in oral and written forms. • Understand how to identify scientific evidence that has been used to support or refute ideas or arguments.