



Grazeley Primary School Science Knowledge and Skills Progression

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Asking Questions	Thinking of ideas	ask with prompting, simple questions that can be tested e.g. about plants growing in their habitat	ask simple questions that can be tested, e.g. about the local environment and how organisms depend on each other	With support develop relevant testable questions, e.g. what happens to shadows when the light source moves	Develop relevant testable questions, e.g. based on observations of animals	ask relevant scientific questions and use previous knowledge to consider how to answer them	ask questions which link and build on previous learning
Investigating	Planning, making decisions about how to approach a task, solve a problem and reach a goal Making predictions	Offer ways of gathering the evidence to answer the question e.g. by deciding on the best material to use for a particular application	Suggest different ways of answering a question, e.g. testing changes to the human body when exercising	Plan an enquiry, such as comparative or fair test, e.g. comparing how reflective different materials are	Plan investigations using different types of scientific enquiry, e.g. exploring various rocks by observing change over time, running comparative tests and conducting surveys	set up practical enquiries, comparative and fair tests	plan different types of scientific enquiries and investigations to answer questions
	Testing their ideas Developing ideas of grouping, sequences, cause and effect	Conduct, with support, simple tests e.g. comparing the properties of different materials	Conduct a simple test, e.g. setting up comparative tests to show that plants need water and light	Set up a comparative test, e.g. finding patterns in the sounds made by elastic bands of different thicknesses	Set up comparative and fair tests e.g. how far things move on different surfaces	With prompting, identify and manage variables, e.g. when exploring the brightness of a bulb	Identify and manage variables, e.g. speed and sizes in falling parachutes
Observing	Paying attention to details	Examine objects to note key features, e.g. observe growth of plants they have planted	Examine carefully, e.g. using a magnifying glass	Use various equipment as instructed, such as data loggers	Use various equipment, as instructed, repeatedly and with care, e.g. rulers	Following a discussion of alternatives, select appropriate equipment, e.g. a thermometer	Use appropriate equipment, such as a metre rule, to take measurements, e.g. measuring the force needed to pull different shapes of boat through the water

	Checking how well their activities are going	Collect data, e.g. comparing and contrasting familiar plants	Collect data relevant to the answering of questions, e.g. seeing how plants in different conditions grow	Indicate findings from an enquiry that could be reported, e.g. answering questions about how humans digest food		Take measurements that are precise as well as accurate e.g. the amount of sugar which can be dissolved in different temperatures of water.	Consider how, by modifying instrument or technique, measurements can be improved, e.g. when recording the apparent movement of the sun
Measuring and Recording	Explore the natural world around them, making observations and drawing pictures of animals and plants	Identify, with support what needs to be recorded, e.g. drawing structures of plants or recording changing day length	Draw and label diagrams e.g. recording plants changing over time, starting from a seed or bulb	Use standard measurements when taking measurements, e.g. measuring distances between a light source and an object	Recognises the importance of using standard units and measures accurately, e.g. measuring distance a car travels on different surfaces	know how to process repeat readings, e.g. when investigating the behaviour of components in a circuit.	Identify situations in which taking repeat readings will improve the quality of the evidence, e.g. investigating the effect of gravity on a falling object
				With prompting, gather and display evidence in various ways, e.g. comparing the teeth or herbivores and carnivores	Use various ways to record, group and display evidence, e.g. grouping and classifying various rocks	Start to use labelled diagrams to show more complex outcomes, e.g. demonstrating how the circulatory system works	Use labelled diagrams to show complex outcomes, e.g. relating specific adaptations of organisms to environmental factors
				With prompting draw and label diagrams, e.g. to show how muscles work in pairs	Use words and diagrams to record findings, e.g. how habitats change during the year	With prompting, use various ways to record a complex evidence, e.g. the behaviour of particles in different states of matter and when changing between states	Use various ways, as appropriate, to record complex evidence, e.g. in the construction of a key to aid plant identification
				With prompting, use tables to record evidence, e.g. record what happens to teeth when left in different liquids.	Use various ways to record evidence, e.g. about the way in which magnets behave in relation to one another	Use a line graph to record basic data, e.g. length and mass of a baby as it grows	Use line graphs to display complex data, e.g. time of day in relation to the position of a shadow.

Concluding	Making links and noticing patterns in their experience	Identify key findings from an enquiry e.g. noting how plants have changed over time	identify and group key outcomes from an enquiry, e.g. describing conditions in different habitats and how these affect the number and types of organisms	With prompting, write a conclusion based on evidence, e.g. the size of shadows through the day	Present findings either in writing or orally, e.g. relating to investigating which materials are conductors Write a conclusion based on evidence, e.g. materials electrical conductors are made from	With support, display and present key findings from enquires orally and in writing, e.g. suggesting reasons for similarities and differences between various animals With support, indicate why some results may not be entirely trustworthy, e.g. in relating bulb brightness of a bulb to voltage supplied With prompting, write a conclusions using evidence and identifying causal links, e.g.what makes a bulb shine brightly	Display and present key findings from enquiries orally and in writing, e.g. deciding how well classifications fit unfamiliar animals and plants In conclusions, indicate how trustworthy they are, e.g. when timing falling objects Write a conclusion using evidence and identifying causal links, e.g investigating what makes a parachute fall quicker
Evaluating	Offer explanations for why things might happen, making se of recently introduced vocabulary from stories, nonfiction, rhymes and poems	Suggest answers to enquiry questions using data, e.g. describe how to group plants	Answer enquiry questions using data and ideas, e.g. to help decide why certain animals and plants live in specific habitats.	Recognise patterns that relate to scientific ideas, e.g. finding out why certain materials make better earmuffs	Recognise patterns that relate to scientific ideas, e.g. relate the rate of evaporation with the temperature	Show how evidence supports a conclusion, e.g. researching gestation periods of various mammals and relating them to adult mass. Suggest further, relevant comparative or fair tests, e.g. when testing materials for various properties to determine their suitability for an application	Identify how an idea is supported or refuted by evidence, e.g. selective breeding to produce animals or plants with desirable characteristics Use evidence to suggest further comparative or fair tests that would develop the investigation. E.g. in the design of paper aeroplanes

	EYFS	Year 1 and Year 2	Year 3 and Year 4	Year 5 and Year 6
Animals including Humans	<p>The Natural World:</p> <p>Explore the natural world around them, making observations and drawing pictures of animals and plants</p>	<p>What are the five senses and how do we use these to find out about the world</p> <p>Explain their ideas as responses to an issue. Identify, name common and compare animals. (fish, amphibians, reptiles, birds and mammals)</p> <p>Identify and name common animals (carnivores, herbivores and omnivores)</p> <p>How do humans keep healthy? (exercise, food, hygiene)</p> <p>What are the basic needs for survival? (water, food, air)</p>	<p>Animals including humans need the right amount of nutrition</p> <p>Animals including humans get their nutrition from what they eat.</p> <p>Why do we have a skeleton and what does it protect?</p> <p>How do animals move their muscles? How do muscles work?</p> <p>What are the simple functions of the basic parts of the digestive system in humans?</p> <p>What are the different types of teeth in a human and what are their simple functions?</p> <p>Construct and interpret a variety of food chains. Identify producers, predators and prey.</p>	<p>What are the changes as humans develop to old age?</p> <p>What are the main parts of the human circulatory system?</p> <p>What are the functions of the heart, blood vessels and blood. What is the impact of diet, exercise, drugs and lifestyle on the way the body functions?</p> <p>What ways are nutrients and water transported within animals, including humans?</p>
Vocabulary	Plant, Animal	<p>Senses Fish, Reptiles, Mammals, Birds, Amphibians Herbivore, Omnivore, Carnivore, Wings, Beak</p> <p>Survival, Water, Air, Food, Adult, Baby, Offspring, Kitten, Calf, Puppy, Exercise, Hygiene</p>	<p>Nutrition Movement, Muscles, Bones, Skull, Nutrition, Skeleton, Mouth, Tongue, Teeth, Oesophagus, Stomach, Small Intestine, Large Intestine, Herbivore, Carnivore, Canine, Incisor, Molar</p>	<p>Foetus, Embryo, Womb, Gestation, Baby, Toddler, Teenager, Elderly, Growth, Development, Puberty</p> <p>Circulatory, Heart, Blood Vessels, Veins, Arteries, Oxygenated, Deoxygenated, Valve, Exercise, Respiration</p>
Plants	<p>The Natural World:</p> <p>Explore the natural world around them, making observations and drawing pictures of animals and plants</p> <p>Know some similarities and differences between the</p>	<p>Can you name the parts of a flowering plant and trees?</p> <p>What do plants need to grow well?</p> <p>What plants can you find by our school?</p> <p>Can you identify and name common wild and garden plants (deciduous and evergreen trees)</p> <p>How do seeds and bulbs grow into mature plants?</p> <p>Find out and describe how plants need water, light and suitable temperature to grow and stay healthy.</p>	<p>Explore the part the flower plays in the life cycle of flowering plants including pollination, seed formation and seed dispersal.</p> <p>How is water transported through the plant?</p> <p>What are the requirements of plants for life and growth (air, light, water, nutrients from soil and room to grow)</p> <p>How can this vary from plant to plant?</p> <p>What is the job of roots, leaves and stems/trunk and flowers</p>	

	natural world around them and contrasting environments drawing on their experiences and what has been read in class.			
Vocabulary	Plant, Flower, Grass, Tree	Deciduous, Evergreen trees, Leaves, Flowers, Petals, Fruit, Roots, Bulb, Seed, Trunk, Branches, Stem Seeds, Bulbs, Water, Light, Temperature, Growth	Air, Light, Water, Nutrients, Soil, Reproduction, Transportation, Dispersal, Pollination, Flower	
Living things and their habitats	<p>The Natural World: Explore the natural world around them, making observations and drawing pictures of animals and plants</p> <p>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.</p>	<p>Identify/name plants and animals including microhabitats.</p> <p>How can we sort living, dead and never been alive things?</p> <p>Describe how animals get food – food chain.</p> <p>What are the similarities and differences between local habitats and how does it affect the animals and plants that live there?</p>	<p>Recognise that living things can be grouped in a variety of ways.</p> <p>How do I use a key to identify local plants and animals?</p> <p>That environments can change and that this can sometimes pose dangers to living things.</p> <p>What ways can we protect living things and the environment?</p>	<p>What is the difference between the life cycles of a mammal, an amphibian, and insect and a bird?</p> <p>Describe the life process of reproduction in some plants and animals .</p> <p>Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences including micro-organisms, plants and animals.</p> <p>What are the reasons for classifying plants and animals (specific characteristics)</p>

Vocabulary	Plant, Animal, Home	Living, Dead, Habitat, Energy, Food chain, Predator, Prey, Woodland, Pond, Desert	Vertebrates, Fish, Amphibians, Reptiles, Birds, Mammals, Invertebrates, Snails, Slugs, Worms, Spiders, Insects, Environment, Habitats	Mammal, Reproduction, Insect, Amphibian, Bird, Offspring Classification, Vertebrates, Invertebrates, Microorganisms, Amphibians, Reptiles, Mammals, Insects
Rocks	The Natural World: Understand some important processes and changes in the natural world around them, including the seasons and change in states of matter		Compare and group together different kinds of rocks based on appearance and simple physical properties. Describe in simple terms how fossils are formed when things have lived and then are trapped within rock. Recognise that soils are made from rocks and organic matter.	
Vocabulary	Hard, Smooth, Rough		Fossils, Soils, Sandstone, Granite, Marble, Pumice, Crystals, Absorbent	
Evolution and Inheritance	The Natural World: Explore the natural world around them, making observations and drawing pictures of animals and plants			How do living things change over time? What information does a fossil provide? (information about living things that inhabited the Earth millions of years ago) Living things produce offspring of the same kind, but offspring vary and are not identical to their parents. How do animals and plants adapt to suit their environment? How does adaptation lead to evolution?

Vocabulary				Fossils, Adaptation, Evolution, Characteristics, Reproduction, Genetics
Materials	<p>The Natural World: 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.</p> <p>Showing curiosity about objects events and people and using senses to explore the world around them.</p>	<p>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.</p> <p>To describe the simple physical properties of a variety of everyday materials</p> <p>Compare and group together a variety of everyday materials based on their simple properties.</p> <p>Identify and compare the suitability of a variety of everyday materials including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.</p> <p>Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.</p>		<p>Compare and group together everyday materials on the basis of the properties including hardness, solubility, transparency, conductivity (electricity and thermal) and response to magnets.</p> <p>Some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution. Separate solids, liquids and gases through filtering, sieving and evaporating</p> <p>Give reasons, based on evidence from comparative and fair tests, for the particular use of everyday materials including wood, plastic and metals.</p> <p>Demonstrate that dissolving, mixing and changes of state are reversible changes.</p> <p>Some changes result in the formation of new materials.</p> <p>Changes associated with burning and the action of acid on bicarbonate of soda are irreversible</p>
Vocabulary	Sand, Playdough, Paint, Mix, Soft, Hard	Wood, Plastic, Glass, Paper, Water, Metal, Rock, Hard, Soft, Bendy, Rough, Smooth Stretchy, Shiny, Dull, Rough, Smooth, Bendy, Waterproof, Absorbent, Opaque, Transparent Brick, Paper, Fabrics, Squashing, Bending, Twisting, Stretching Elastic, Foil		Hardness, Solubility, Transparency, Conductivity, Magnetic, Filter, Evaporation, Dissolving, Mixing

States of Matter	<p>The Natural World:</p> <p>Understand some important processes and changes in the natural world around them, including the seasons and change in states of matter</p>		<p>Compare and group materials together according to whether they are solids, liquids or gases</p> <p>How do some materials change state when they are heated or cooled?</p> <p>Measure or research the temperature at which this change happens in degree Celsius</p> <p>Identify the part played by evaporation and condensation in the water cycle</p> <p>Associate the rate of evaporation with temperature.</p>	
Vocabulary	<p>Hard, Soft, Water, Hot, Cold</p>		<p>Solid, Liquid, Gas, Evaporation, Condensation, Particles, Temperature, Freezing, Heating</p>	
Forces	<p>Understanding the world ELG: The world Children know about similarities and differences in relation to objects and materials.</p>	<p>How do objects move?</p> <p>How do you stop or slow down an object?</p> <p>What are pushes and pulls?</p> <p>How can we control speed, direction of an object?</p> <p>How do they effect an object – can pushes and pulls change the shape of objects?</p>	<p>Compare how things move on different surfaces</p> <p>Magnets can attract, repel each other and have two poles.</p> <p>That magnets can attract some materials and not others</p> <p>Predict whether two magnets will attract or repel each other based on which poles are facing</p> <p>Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet.</p> <p>Identify some magnetic materials</p>	<p>Why do unsupported objects fall towards the Earth (forces of gravity)</p> <p>What are the effects of air resistance, water resistance and friction on moving surfaces?</p> <p>That some mechanicalness, including levers, pulleys and gears, allow a smaller force to have a greater effect.</p>

Vocabulary	Stop, Start	Stop, start, roll, Move Slow fast Push, pull, speed, direction Force	Magnetic, Force, Contact, Attract, Repel, Friction, Poles, Push, Pull	Air resistance, Water resistance, Friction, Gravity, Newton, Gears, Pulleys
Light	The Natural World: Understand some important processes and changes in the natural world around them, including the seasons and change in states of matter Use senses to explore the world around them		Recognise the need for light to see things and that dark is the absence of light? Light is reflected from surfaces Light from the sun can be dangerous and that there are ways to protect your eyes. Shadows are formed when the light from light sources is blocked by a solid object.	What direction does light travel? Objects are seen because they give out or reflect light into the eye. How do we see things? (light travels from light sources to our eyes or from light sources to objects then to our eyes) Understand that light travels in straight lines which explain why shadows have the same shape as the object that cast them.
Vocabulary	Bright, Dark		Light, Shadows, Mirror, Reflective, Dark, Reflection	Refraction, Reflection, Light, Spectrum, Rainbow, Colour,
Electricity	The Natural World: Know some similarities and differences between the natural world around them and contrasting environments		What common appliances run on electricity? Construct a simple series circuit Identify the different parts to a circuit including cell, wires, bulbs, switches and buzzers Identify whether 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. How does a switch work and will this light the lamp in the simple series circuit?	How does the number and voltage of cells effect the brightness of a lamp or the volume of a buzzer? Compare and give reasons for variations in how components function including brightness of bulb, loudness of buzzer, on/off position of switches. Recognise symbols when representing a simple circuit in a diagram.

	drawing on their experiences and what has been read in class.		What are the common conductors and isolators? Are metals good conductors?	
Vocabulary	Bright, Dark		Cells, Wires, Bulbs, Switches, Buzzers, Battery, Circuit, Series, Conductors, Insulators	Cells, Wires, Bulbs, Switches, Buzzers, Battery, Circuit, Series, Conductors, Insulators, Amps, Volts, Cell
Sound	Use senses to explore the world around them		How are sounds made? (vibration) Vibrations travel through a medium to the ear Find patterns between the volume of a sound and the strength of the vibration What happens to sound as the distance from the sound source increases?	
Vocabulary	Quiet, Loud		Volume, Vibration, Wave, Pitch, Tone	
Seasonal Change	Understand some important processes and changes in the natural world around them, including the seasons and change in states of matter	Observe changes across the four seasons. Observe and describe weather associated with the seasons Observe and describe how the day length varies based on the season		

Vocabulary	Weather rain sunshine snow cloud	Summer, Spring, Autumn, Winter, Sun, Day, Moon, Night, Light, Dark		
Earth and Space	The Natural World: 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.			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 Why does the sun seem to move across the sky, rising in the East and setting in the West Why do we have day time and night time?
Vocabulary	The world, Sky, Space, Stars, Planets			Earth, Sun, Moon, Axis, Rotation, Day, Night, Phases of the Moon, star, constellation, Solar System