RAEDWALD ACADEMY TRUST

Long Term Plan and progression outline:

Science Key Stage Two

	Science – Programme of Study KEY STAGE 2					
KS1/ Year 2	Prior learning Working scientifically • *Ask simple questions and recognise that they can be answered in different ways Observe closely, using simple equipment* • *Perform simple tests* • *Identify and classify* • *Use their observations to suggest answers to questions* • *Gather and record data to help answer questions* Animals, including humans • Notice that animals, including humans, have offspring which grow into adults • Find out about and describe the basic needs of animals, including humans, for survival; water, food, air Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene Plants • 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 • Identify and compare the suitability of a variety of everyday materials (wood, metal, plastic, glass, brick, rock, paper, cardboard) for particular uses • 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 • Explore and compare differences between things that are living, dead and were never alive • Identify that most living things suited and adapted to their habitats • Describe how different habitats provide for the basic needs of different animals and plants • Identify and name a variety of plants and animals in their habitats, including micro-habitats • Describe how animals obtain food from plants and other animals using a simple food chain • Identify and name different sources of food					
Lower Key	**Year 3**	**Plants**	**Animals, including Humans**	**Rocks**	**Light**	**Forces and Magnets**

RAEDWALD ACADEMY TRUST

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Stage 2	**Taught content: Knowledge/Skills**	• 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	• 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	• 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	• 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	• compare how things move on different surfaces • notice that some forces need contact between 2 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

		• explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.			by an opaque object • find patterns in the way that the size of shadows change	variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials • describe magnets as having 2 poles • predict whether 2 magnets will attract or repel each other, depending on which poles are facing

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	Year 4	Living Things and Their Habitats	Animals, including Humans	States of Matter	Sound	Electricity
	Taught content: Knowledge/Skills	• 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	• 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	• 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	• identify how sounds are made, associating some of them with something vibrating • 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	• identify common appliances that run on electricity • construct a simple series electrical circuit, identifying and naming its 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

				the rate of evaporation with temperature	from the sound source increases	simple series circuit • recognise some common conductors and insulators, and associate metals with being good conductors
	Working Scientifically					
	• Ask relevant questions and use different types of scientific enquiries to answer them • Set up simple practical enquiries, comparative and fair tests • Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers • 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 • Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • Identify differences, similarities or changes related to simple scientific ideas and processes • Use straightforward scientific evidence to answer questions or to support their findings.					

RAEDWALD ACADEMY TRUST

Long Term Plan and progression outline:

Science Key Stage Two

	Science – Programme of Study KEY STAGE 2					
Upper Key Stage 2	**Year 5**	**Living Things and Their Habitats**	**Animals, including Humans (Y5)**	**Properties and Changes of Materials**	**Earth and Space**	**Forces and Magnets**
	Taught content: Knowledge/Skills	• describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird • describe the life process of reproduction in some plants and animals	• describe the changes as humans develop to old age	• 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 • know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution	• 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	• 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

				• 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 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		
	Year 6	**Living Things and Their Habitats**	**Animals, including Humans (Y6)**	**Evolution and Inheritance**	**Light**	**Electricity**
	Taught content: Knowledge/Skills	• describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms,	• 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	• 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	• 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	• 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

		plants and animals • give reasons for classifying plants and animals based on specific characteristics	the way their bodies function • describe the ways in which nutrients and water are transported within animals, including humans	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	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	loudness of buzzers and the on/off position of switches • use recognised symbols when representing a simple circuit in a diagram

Working Scientifically

- planning different types of scientific enquiries to answer questions, including recognising and controlling variables where data and results of increasing complexity using scientific diagrams and labels, classification keys, necessary
- Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
- Recording 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 a 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