Flookburgh C of E Primary School

Science Knowledge: EYFS

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Science Knowledge: Key Stage 1

Working Scientifically

- Ask questions such as:
  - Why are flowers different colours?
  - Why do some animals eat meat and others do not?
  - Why do trees lose their leaves in Autumn and others do not?
  - How long are roots of tall trees?
  - Why do some animals have underground habitats?
- Set up a test to see which materials keeps things warmest, know if the test has been successful and can say what has been learned
- Explain to someone what has been learned from an investigation they have been involved with and draw conculsions from the answers to the questions asked
- Use equipment such as thermometes and rain gauges to help observe changes to local environemtn as the year progresses
- Use microscopes to find out more about small creatures and plants
- Know how to set up a fair test and do so when finding out about how seeds grow best
- Classify or group things according to a given riteria, e.g. decisuous and confierous trees
- Draw conclusions from fair test and explain what has been found out
- Use measures (Y2 mathemtaical limits) to help find out more about the invesetigations they are engaged with

	Biology			**Chemistry**	**Physics**
	Animals in. Humans	**Animals in. Humans**	**Plants**		
National Curriculum	*Name common animals* *Carnivores, etc* *Alive or dead* *habitats* *Adaptations* *Food chains*	*Human body and senses* *Animal reproduction* *Healthy living* *Basic needs*	*Common plants* *Plant structure* *Plant and seed growth* *Plant reproduction* *Keeping plants healthy*	*Properties of materials* *Grouping materials* *Identify different materials* *Name everyday materials* *Properties of materials*	*The four seasons* *Seasonal weather* *Compare the use of different materials* *Compare movement on different surfaces*
Knowledge Acquired	• Know how to classify a range of animals by amphibian, reptile, mammal, fish and birds • Know and classify animals by what they eat (carnivore, herbivore and omnivore) • Know how to sort by living and non living things • Classify things by living, dead or never lived • Know how a specific habitat provides for the basic needs of things living there (plants and animals) • Match living things to their habitat • Name some different sources of food for animals • Know about and explain a simple food chain	Know the name of parts of the human body that can be seen Know the basic stages in a life cycle for animals, (including humans) Know why exercise, a balanced diet and good hygiene are important for humans	Know and name a variety of common wild and garden plants Know and name the petals, stem, leaves and root of a plant Know and name the roots, trunk, branches and leaves of a tree Know and explain how seeds and bulbs grow into plants Know what plants need in order to grow and stay healthy (water, light & suitable temperature)	Know the name of the materials an object is made from Know about the properties of everyday materials Know how materials can be changed by squashing, bending, twisting and stretching	Name the seasons and know about the type of weather in each season Know why a material might or might not be used for a specific job

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Science Knowledge: Lower Key Stage 2

Working Scientifically

- *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.*

	Biology			Chemistry	Physics	
	Animals in. Humans	**Plants**	**Plants**	**Rocks**	**Forces**	**Light**
National Curriculum	• *Skeleton and muscles* • *Nutrition* • *Exercise and health* • *Digestive system* • *Teeth* • *Food chains*	• *Plant life* • *Basic structure and functions*	• *Life cycle* ○ *Water transportation*	• *Fossil formation* • *Compare and group rocks* • *Soil*	• *Different Forces* • *Magnets*	• *Reflections* • *Shadows*
Knowledge Acquired	• Know about the importance of a nutritious, balanced diet • Know how nutrients, water and oxygen are transported within animals and humans • Know about the skeletal and muscular system of a human • Identify and name the parts of the human digestive system • Know the functions of the organs in the human digestive system • Identify and know the different types of human teeth • Know the functions of different human teeth • Use and construct food chains to identify producers, predators and prey	• Know the function of different parts of flowing plants and trees • •	• Know how water is transported within plants • Know the plant life cycle, especially the importance of flowers	• Compare and group rocks based on their appearance and physical properties, giving reasons • Know how soil is made and how fossils are formed • Know about and explain the difference between sedimentary, meta morphic and igneous rock	• Know about and describe how objects move on different surfaces • Know how a simple pulley works and use to on to lift an object • Know how some forces require contact and some do not, giving examples • Know about and explain how magnets attract and repel Predict whether magnets will attract or repel and give a reason	• Know that dark is the absence of light • Know that light is needed in order to see and is reflected from a surface • Know and demonstrate how a shadow is formed and explain how a shadow changes shape • Know about the danger of direct sunlight and describe how to keep protected

		All Living Things and Their Habitats	States of Matter	Electricity	Sound

		• *Grouping living things*
		• *Classification keys*
		  ○ *Adaptation of living things*
			• *Compare and group materials*
			• *Solids, liquids and gases*
			• *Changing state*
			  ○ *Water cycle*
				• *Uses of electricity*
				• *Simple circuits and switches*
				• *Conductors and insulators*
					• *How sounds are made*
					• *Sound vibrations*
					• *Pitch and Volume*

		• Use classification keys to group, identify and name living things • Know how changes to an environment could endanger living things • Group materials based on their state of matter (solid, liquid or gas)	• Know the temperature at which materials change state • Know about and explore how some materials can change state • Know the part played by evaporation and condensation in the water cycle	• Identify and name appliances that require electricity to function • Construct a series circuit • Identify and name the components in a series circuit (including cells, wires, bulbs, switches and buzzers) • Predict and test whether a lamp will light within a circuit • Know the function of a switch • Know the difference between a conductor and an insulator; giving examples of each	• Know how sound is made, associating some of them with vibrating • Know how sound travels from a source to our ears • Know the correlation between pitch and the object producing a sound • Know the correlation between the volume of a sound and the strength of the vibrations that produced it • Know what happens to a sound as it travels away from its source

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Science Knowledge: Upper Key Stage 2

Working Scientifically

- *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 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*

	Biology		Chemistry	Physics	
	Animals in. Humans	**All Living Things and Their Habitats**	**Properties and Changes in Materials**	**Forces**	**Earth and Space**
National Curriculum	• *Changes as humans develop from birth to old age* • *The circulatory system* • *Water transportation* • *Impact of exercise on body*	• *Life cycles – plants and animals* • *Reproductive processes* • *Famous naturalists* • *Classification of living things and the reasons for it*	• *Compare properties of everyday materials* • *Soluble/ dissolving* • *Reversible and irreversible substances*	• *Movement of the Earth and the planets* • *Movement of the Moon* • *Night and day*	• *Movement of the Earth and the planets* • *Movement of the Moon* • *Night and day*
Knowledge Acquired	• Create a timeline to indicate stages of growth in humans • Identify and name the main parts of the human circulatory system • Know the function of the heart, blood vessels and blood • Know the impact of diet, exercise, drugs and lifestyle on health • Know the ways in which nutrients and water are transported in animals, including humans	• Know the life cycle of different living things e.g. mammal, amphibian, insect and bird • Know the differences between different life cycles • Know the process of reproduction in plants • Know the process of reproduction in animals • Classify living things into broad groups according to observable characteristics and based on similarities and differences Know how living things have been classified Give reasons for classifying plants and animals in a specific way	• Compare and group materials based on their properties (e.g. hardness, solubility, transparency, conductivity, [electrical & thermal], and response to magnets • Know and explain how a material dissolves to form a solution • Know and show how to recover a substance from a solution • Know and demonstrate how some materials can be separated (e.g. through filtering, sieving and evaporating) • Know and demonstrate that some changes are reversible and some are not Know how some changes result in the formation of a new material and that this is usually irreversible	• Know about and explain the movement of the Earth and other planets relative to the Sun • Know about and explain the movement of the Moon relative to the Earth • Know and demonstrate how night and day are created • Describe the Sun, Earth and Moon (using the term spherical) •	• Know about and explain the movement of the Earth and other planets relative to the Sun • Know about and explain the movement of the Moon relative to the Earth • Know and demonstrate how night and day are created • Describe the Sun, Earth and Moon (using the term spherical)
			Evolution and Inheritance	**Electricity**	**Light**
			• *Identical and non-identical off-spring* • *Fossil evidence and evolution* *Adaptation and evolution*	• *Electrical components* • *Simple circuits* • *Fuses and voltage*	• *How light travels* • *Reflection* • *Ray models of light*
			• Know how the Earth and living things have changed over time • Know how fossils can be used to find out about the past • Know about reproduction and offspring (recognising that offspring normally vary and are not identical to their parents) • Know how animals and plants are adapted to suit their environment • Link adaptation over time to evolution Know about evolution and can explain what it is	• Compare and give reasons for why components work and do not work in a circuit • Draw circuit diagrams using correct symbols • Know how the number and voltage of cells in a circuit links to the brightness of a lamp or the volume of a buzzer	• Know how light travels • Know and demonstrate how we see objects • Know why shadows have the same shape as the object that casts them • Know how simple optical instruments work e.g. peris cope, telescope, binocular s, mirror, magnifying glass etc.