

Science Curriculum - overview and skills

Science	Aut 1	Aut 2	Spring 1	Spring 2	Sum 1	Sum 2
Reception (IT and Science)	<p>IT -Introduction to computers</p> <p>Navigating programs</p> <p>2paint, Izzy's maths</p> <p>Harvest Festival</p> <p>Skills – Talks about features of his/her own immediate environment and how environments might vary from one another (The world)</p>	<p>IT – 2Go</p> <p>Using Beebots</p> <p>Nocturnal animals</p> <p>Skills – Makes observations of animals and plants and explains why some things occur and talks about changes (The World)</p>	<p>IT – using a CD / class camera</p> <p>Chinese New Year</p> <p>Healthy eating</p> <p>Skills - Knows about similarities/differences in relation to places, objects, materials and living things (The World)</p>	<p>IT – using mobile phones</p> <p>Life cycle of frog</p> <p>Life cycle of people</p> <p>Growing cress</p> <p>Skills - Talks about past/present events in his/her life and in the lives of family members (People and Communities)</p> <p>Knows that other children's don't always enjoy the same things and is sensitive to this (ELG) (People and Communities)</p>	<p>Growing seeds</p> <p>The seaside</p> <p>Exercise and healthy eating</p> <p>Skills - Enjoys joining in with familiar customs and routines (People and Communities)</p>	<p>Life cycle of the butterfly</p> <p>Local environment</p> <p>African stories, fruit, etc</p> <p>Skills - Looks closely at similarities, differences, patterns and change. (The World)</p> <p>Knows about similarities and differences between himself/herself and others, and among families, communities and traditions (ELG). (People and Communities)</p>

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<p>Year 1</p>	<p>Year 1 working scientifically (across the science subjects) Ask simple questions and recognise that they can be answered in different ways (Year 1 focus). I can ask questions and know they can be answered in different ways. Use simple equipment to observe closely (Year 1 focus). I can look closely, using equipment. Perform simple tests (Year 1 focus). I can do tests. Identify and classify (Year 1 focus). I can name and group. Use his/her observations and ideas to suggest answers to questions (Year 1 focus). I can use my observations and ideas to suggest answers to questions. Gather and record data to help in answering questions (Year 1 focus). I can collect and record data to help answer questions.</p>			
<p>Year 1</p>	<p>Y1 – Seasonal changes. Weather and day length across the 4 seasons</p> <p>Observe changes across the 4 seasons. Observe and describe weather associated with the 4 seasons.</p>	<p>Y1/Y2 – 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.</p>	<p>Y1/Y2 –Plants</p> <p>Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees.</p> <p>Identify and describe the structure a variety of simple plants.</p>	<p>Y1/Y2 –Living things and their habitats</p> <p>Identify and name a variety of common animals including fish, 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). Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.</p>

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Year 2	<p>Year 2 working scientifically (across the science subjects) Ask simple questions and recognise that they can be answered in different ways (Year 2 focus). I can ask questions and know they can be answered in different ways. Use simple equipment to observe closely (Year 2 focus). I can watch closely using equipment.</p>			
Year 2	<p>Y2: Healthy Humans</p> <p>Understand that animals, including humans, have offspring which grow into adults. Describe the basic needs of animals, including humans, for survival (water, food and air).</p> <p>Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene</p>	<p>Y1/Y2 – Everyday Materials Suitability of materials for different purposes and changing materials.</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. Describe how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.</p>	<p>Y1/Y2 –Plants Seeds, Bulbs and conditions for growth.</p> <p>Observe and describe how seeds and bulbs grow to plants. Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. Perform simple tests Identify + classify Use observations and ideas to suggest answers to questions Gather + record data to help in answering questions</p>	<p>Y1/Y2 –Living things and their habitats -Living and non-living, habitats and simple food chains. (seashore, forest, barrier reef, rock pool)</p> <p>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.</p> <p>Identify and name a variety of plants and animals in their habitats, including micro-habitats. 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.</p>

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Year 3	<p>Scientific Enquiry (across the science subjects) Ask relevant questions and use different types of scientific enquiries to answer them.</p> <p>Set up simple practical enquiries, comparative and fair tests.</p> <p>Make systematic and careful observations and where appropriate take accurate measurements using standard units using a range of equipment, including thermometers and data loggers.</p> <p>Gather, record, classify and present data in a variety of ways.</p> <p>Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables.</p> <p>Report on findings from enquiries including oral and written explanations, displays or presentations of results and conclusions.</p>				
Year 3	<p>Forces & Magnets compare how things move on different surfaces</p> <p>notice that some forces need contact between two objects, but magnetic forces can act at a distance</p> <p>observe how magnets attract or repel each other and attract some materials and not others</p> <p>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</p>	<p>Light recognise that he/she needs 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 eyes recognise that shadows are formed when the light from a light source is blocked by a solid object</p> <p>find patterns in the way that the size of shadows change</p>	<p>Animals including Humans Skills: 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</p> <p>identify that humans and some other</p>	<p>Rocks compare and group together different kinds of rocks on the basis of their appearance and simple physical properties</p> <p>describe in simple terms how fossils are formed when things that have lived are trapped within rock</p>	<p>Plants identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers</p> <p>explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how</p>

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	<p>describe magnets as having two poles</p> <p>predict whether two magnets will attract or repel each other, depending on which poles are facing</p>		<p>animals have skeletons and muscles for support, protection and movement</p>	<p>recognise that soils are made from rocks and organic matter</p>	<p>they vary from plant to plant</p> <p>investigate the way in which water is transported within plants</p> <p>explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal</p>	
Year 4	<p>Working scientifically (across the science subjects):</p> <ul style="list-style-type: none"> - 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 his/her findings. 					
Year 4	<p>Forces and magnets</p> <p>- Predict whether</p>	<p>States of Matter</p> <p>- Compare and group materials</p>	<p>Living things and their habitats</p> <p>- Recognise that</p>	<p>Animals including humans</p> <p>- Describe simple</p>	<p>Electricity</p> <p>- Identify common appliances that</p>	<p>Sound</p> <p>- Identify how sounds are made,</p>

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	<p>two magnets will attract or repel each other, depending 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, and identify some magnetic materials.</p> <p>- Describe magnets as having two poles.</p>	<p>together according to whether they are solids, liquids or gases.</p> <p>- 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.</p> <p>- Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</p>	<p>living things can be grouped in a variety of ways.</p> <p>- Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment.</p> <p>- Recognise that environments can change and that this can sometimes pose dangers and have an impact on living things.</p>	<p>functions of the basic parts of the human digestive system.</p> <p>- Identify the different types of teeth in humans and their simple functions.</p> <p>- Construct and interpret a variety of food chains, identifying producers, predators and prey.</p>	<p>run on electricity.</p> <p>- Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches, buzzers.</p> <p>- 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.</p> <p>- Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit.</p> <p>- Recognise some common conductors and insulators, and associate metals with being good conductors.</p>	<p>associating some of them with something vibrating.</p> <p>- Recognise that vibrations from sounds travel through a medium to the ear.</p> <p>- Find patterns between the pitch of a sound and features of the object that produced it.</p> <p>- Find patterns between the volume of a sound and the strength of the vibrations that produced it.</p> <p>- Recognise that sounds get fainter as the distance from the sound source increases.</p>
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Year 5	Working Scientifically (across the science subjects)					
Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary						
Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate						
Record data and results of increasing complexity, using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs						
Use test results to make predictions to set up further comparative and fair tests						
Report and present 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						
Year 5	Living things and habitats Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. Classification keys (Visit with St Richard's teacher for Woodlice investigation)	Living things and habitats Describe the life process of reproduction in some plants and animals.	Properties and changes in materials Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to	Properties and changes in materials 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	Forces Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. . (Visit to St Richard's for?)	Forces Identify the effects of air resistance, water resistance and friction, which act between moving surfaces. Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.

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			<p>magnets. Recognise 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 by filtering, sieving and evaporating.</p> <p>(Visit with St Richard's teacher)</p>	<p>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</p>		
Year 6	<p><u>Working Scientifically (across the science subjects):</u> Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary (Year 6 focus). Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate (Year 6 focus). Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs (Year 6 focus). Use test results to make predictions to set up further comparative and fair tests (Year 6 focus). Report and present 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 (Year 6 focus). Identify scientific evidence that has been used to support or refute ideas or arguments (Year 6 focus).</p>					

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<p>Year 6</p>	<p><u>Living things and habitats:</u> Classification Keys Binomial Naming System Describe the ways in which nutrients and water are transported within animals, including humans. Give reasons for classifying plants and animals based on specific characteristics. 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><u>Living things and habitats</u> 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.</p>	<p><u>Properties and changes in materials</u> 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. Recognise 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 by filtering, sieving and evaporating.</p>	<p><u>Properties and changes in materials</u> 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.</p>	<p><u>Forces</u> Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.</p>	<p><u>Forces</u> 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.</p>
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