

Science



The Oaklands Primary School

Science Curriculum Overview

Year group		Autumn 1	Autumn 2	Spring 1		Spring 2	Summer 1	Summer 2
Early Years								
1	Project Title	Super Senses	Memory Box	Bright lights, big city	Rain and Sunrays	Paws, Claws and Whiskers	The Enchanted Woodland	Dinosaurs
	Subject focus	Biology - Plants and animals, including humans	Chemistry - Everyday materials	Chemistry - Everyday materials		Biology - Animals, including humans	Biology – Plants and Animals, including humans	Biology - Animals, including humans
2	Project Title	Let's Explore Our World	Towers, Turrets and Tunnels	Muck, Mess and Mixtures	Movers and Shakers		The Scented Garden	Beach Combers
	Subject focus			Chemistry - Uses of everyday materials			Biology - Plants/ Living things and their habitats	Biology - Animals including Humans
3	Project Title	Scrumdiddlyumptous	Tribal Tales	Tremors		Urban Pioneers	Gods and Mortals	Flow Mighty Metals
	Subject focus	Biology - Animals, including humans	Physics - Light	Chemistry - Rocks		Biology - Plants		Physics - Forces and magnets
4	Project Title	Burps, bottoms and bile	I am a warrior	Potions		Misty Mountain Sienna	Traders and Raiders	Blue Abys
	Subject focus	Biology - Animals, including Humans Person of note: Mary Mallon	Physics – sound	Chemistry - States of Matter Person of note: Marie Curie		Chemistry - States of Matter Physics - Electricity		Biology – Living things and Animals, including Humans
5	Project Title	Amazon Adventure	Pharaohs	Stargazers		A Greener Future	Peasants, Princes and Pestilence	Mesmerising Mayans
	Subject focus	Biology – Animals, including Humans and Living Things	Chemistry – Properties and Changes in Materials	Physics – Earth and Space Person of note: Annie Jump Cannon / Sally Ride		Physics - Light		
6	Project Title	Off with Her head	Frozen Kingdom	Revolution		A Child's War		Scream Machine / Gallery Rebels
	Subject focus	Biology – Animals, including Humans Person of note: William Harvey	Biology – Evolution and Living things					Physics – Forces Physics – Electricity

Science Progression of knowledge and skills

NC Science Unit	Area of Study	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Plants	Biology	<p><u>Knowledge:</u> UTW- Understand the key features of the life cycle of a plant and an animal.</p> <p>Begin to understand the need to respect and care for the natural environment and all living things</p> <p><u>Skills:</u> UTW - Plant seeds and care for growing plants.</p> <p>Use all their senses for hands-on exploration and natural materials</p>		<p><i>Enchanted Woodland</i></p> <p><u>Knowledge:</u> Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees.</p> <p>Identify and describe the basic structure of a variety of common flowering plants, including trees</p> <p><u>Skills:</u> Observe changes in growing plants</p> <p>Classify plants into groups (deciduous and evergreen)</p> <p><i>Paws, claws and whiskers</i></p> <p><u>Knowledge:</u> Identify and name a variety of common animals, including fish, amphibians, reptiles, birds and mammals</p>	<p><i>Scented Garden</i></p> <p><u>Knowledge:</u> Observe and describe how seeds and bulbs grow into mature plants.</p> <p>Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.</p>	<p><i>Urban Pioneers</i></p> <p><u>Knowledge:</u> 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 air to grow) and how they vary from plant to plant.</p> <p>Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</p> <p><u>Skills:</u> Investigate the way in which water travels through a plant.</p>			

			<p>Describe and compare the structures of a variety of common animals (fish, amphibians, reptiles, birds and mammals including)</p> <p><i>Dinosaurs</i></p> <p><u>Knowledge:</u> Identify and name a variety of common animals that are carnivores, herbivores and omnivores</p> <p><i>Super Senses</i></p> <p><u>Knowledge:</u> 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>					
--	--	--	---	--	--	--	--	--

<p>Animals, including humans</p>	<p>Biology</p>	<p>Knowledge: Understand the key features of an animal</p> <p>Begin to understand the need to respect and care for the natural environment and all living things.</p> <p>Make healthy choices about food, drink, activity and teeth brushing.</p> <p>Skills: Use all their senses for hands-on exploration and natural materials</p>	<p>Knowledge: Describe what they see, hear and feel whilst outside (plants, trees, animals and insects)</p> <p>Skills: Explore the natural world around them</p>	<p><i>Paws, claws and whiskers</i></p> <p>Knowledge: Identify and name a variety of common animals, including fish, amphibians, reptiles, birds and mammals</p> <p>Describe and compare the structures of a variety of common animals (fish, amphibians, reptiles, birds and mammals including)</p> <p><i>Dinosaurs</i></p> <p>Knowledge: Identify and name a variety of common animals that are carnivores, herbivores and omnivores</p> <p><i>Super Senses</i></p> <p>Knowledge: 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>	<p><i>Beach combers</i></p> <p>Knowledge: Notice that animals, including humans, have offspring which grow into adults.</p> <p>Find out about and describe the basic needs of animals, including humans, for survival (water, food and air)</p> <p>Describe the importance for human of exercise, eating the right amounts of different types of food, and hygiene.</p> <p>Skills: Asking simple questions and recognising that they can be answered in different ways</p> <p>Observing closely, using simple equipment Identifying and classifying</p> <p>Gathering and recording data to help answer questions</p>	<p><i>Scrumdiddlyumptious</i></p> <p>Knowledge: 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 animals have skeletons and muscles for support, protection and movement</p> <p>Skills: Make systematic and careful observations and where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.</p> <p>Setting up simple practical enquiries, comparative and fair tests</p> <p>Identifying differences, similarities or changes related to simple scientific ideas and processes</p> <p>Using results to draw simple conclusions, make predictions for new values, suggest improvements and</p>	<p><i>Burps, Bottoms and Bile</i></p> <p>Knowledge: describe the simple functions of the basic parts of the digestive system in humans</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>Skills: Use straightforward scientific evidence to answer questions or to support their findings</p> <p>Make systematic and careful observations and where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.</p> <p>Setting up simple practical enquiries, comparative and fair tests Identifying differences, similarities or</p>	<p><i>Amazon Adventure</i></p> <p>Knowledge: Describe the changes as humans develop to old age.</p>	<p><i>Off with her head</i></p> <p>Knowledge: identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood</p> <p>recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function</p> <p>describe the ways in which nutrients and water are transported within animals, including humans.</p> <p>Skills: planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</p> <p>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</p>
---	-----------------------	--	--	--	--	---	--	--	---

						<p>raise further questions.</p> <p>Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.</p>	<p>changes related to simple scientific ideas and processes</p> <p>Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.</p> <p>Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions</p> <p>Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</p>		
--	--	--	--	--	--	--	---	--	--

<p>All living things and their habitats (inc. evolution)</p>	<p>Biology</p>	<p>UTW- Understand the key features of the life cycle of a plant and an animal.</p> <p>Begin to understand the need to respect and care for the natural environment and all living things</p>	<p>UTW - Explore the natural world around them.</p> <p>Describe what they see, hear and feel while they are outside.</p> <p>Recognise some environments that are different to the one in which they live.</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 natural world around them and contrasting environments, drawing on their experiences and what has been read in class.</p>		<p><i>Scented Garden (inc. Wriggle & Crawl)</i></p> <p>Knowledge: Explore and compare the differences between things that are living, dead and things that have never been alive.</p> <p>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.</p> <p>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> <p>Skills:</p>		<p><i>Blue Abyss</i></p> <p>Knowledge: recognise that 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 to living things</p>	<p><i>Amazon Adventure</i></p> <p>Knowledge: 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.</p> <p>Skill: Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.</p>	<p><i>Frozen Kingdom</i></p> <p>Knowledge: recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago</p> <p>recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents</p> <p>identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution</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>Give reasons for classifying plants and animals based</p>
---	-----------------------	---	---	--	--	--	--	---	--

					<p>Asking simple questions and recognising that they can be answered in different ways</p> <p>Observing closely, using simple equipment</p> <p>Identifying and classifying</p> <p>Gathering and recording data to help answer questions</p>				<p>on specific characteristics</p>
--	--	--	--	--	---	--	--	--	------------------------------------

<p>Everyday materials</p>	<p>Chemistry</p>	<p>Knowledge: Talk about differences between materials and changes they notice</p> <p>Skills: Explore a range of natural and man-made materials</p>		<p>Memory Box Knowledge: Distinguish between an object and the material from which it made</p> <p>Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock</p> <p>Describe the simple physical properties of a variety of everyday materials</p> <p>Compare and group together a variety of everyday materials on the basis of their simple physical properties</p> <p>Skills: Asking simple questions and recognising that they can be answered in different ways Identifying and sorting</p>	<p>Muck, Mess and Mixtures Knowledge: 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>Skills: Asking simple questions and recognising that they can be answered in different ways</p> <p>Observing closely, using simple equipment</p> <p>Identifying and classifying</p> <p>Using their observations and ideas to suggest answers to questions</p>			<p>Pharaohs Knowledge: 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</p> <p>Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution</p> <p>Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating</p> <p>give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic</p> <p>demonstrate that dissolving, mixing and changes of state are reversible changes</p>	
----------------------------------	-------------------------	---	--	---	---	--	--	--	--

								<p>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>Skills: taking measurements, using a range of scientific equipment, with increasing accuracy and precision,</p> <p>taking repeat readings when appropriate</p> <p>recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</p> <p>using test results to make predictions to set up further comparative and fair tests</p> <p>reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of</p>	
--	--	--	--	--	--	--	--	---	--

								<p>and a degree of trust in results, in oral and written forms such as displays and other presentations</p> <p>identifying scientific evidence that has been used to support or refute ideas or arguments</p>	
--	--	--	--	--	--	--	--	---	--

<p>States of matter</p>	<p>Chemistry</p>	<p><u>Knowledge:</u> Talk about differences between materials and changes they notice</p> <p><u>Skills:</u> Explore a range of natural and man-made materials</p>	<p><u>Knowledge:</u> Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.</p>				<p><i>Potions</i></p> <p><u>Knowledge:</u> compare and group materials 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 (°C)</p> <p><u>Skills:</u> Use straightforward scientific evidence to answer questions or to support their findings</p> <p>Make systematic and careful observations and where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.</p> <p>Setting up simple practical enquiries, comparative and fair tests</p> <p>Identifying differences, similarities or</p>		
--------------------------------	-------------------------	---	--	--	--	--	---	--	--

							<p>changes related to simple scientific ideas and processes</p> <p>Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.</p> <p>Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.</p> <p>Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions</p> <p>Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</p> <p><i>Misty Mountain Sienna</i></p> <p>Knowledge: Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature</p>		
--	--	--	--	--	--	--	--	--	--

							<p><u>Skills:</u> Use straightforward scientific evidence to answer questions or to support their findings</p> <p>Identifying differences, similarities or changes related to simple scientific ideas and processes</p>		
--	--	--	--	--	--	--	--	--	--

<p>Forces</p>	<p>Physics</p>	<p>Skills: Explore and talk about different forces they can feel.</p>	<p>Skills: Explore the natural world around them</p> <p>Build things using tools and explore (Magnet trays, pushing, pulling, stretching, floating and sinking, pulleys, cogs, wind up toys, messy play, baking and cooking, mud kitchen, playdough disco, malleable area)</p>			<p><i>Mighty Metals</i></p> <p>Knowledge: compare how things move on different surfaces</p> <p>notice that some forces need contact between 2 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>describe magnets as having 2 poles</p> <p>predict whether 2 magnets will attract or repel each other, depending on which poles are facing</p>			<p><i>Scream Machine</i></p> <p>Knowledge: explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object</p> <p>Identify the effects of air resistance, water resistance and friction, that act between and friction, that act between moving surfaces</p> <p>Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.</p> <p>Skills: planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</p> <p>taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking</p>
----------------------	-----------------------	--	---	--	--	--	--	--	--

									<p>repeat readings when appropriate</p> <p>recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</p> <p>using test results to make predictions to set up further comparative and fair tests</p> <p>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</p> <p>identifying scientific evidence that has been used to support or refute ideas or arguments</p>
--	--	--	--	--	--	--	--	--	--

<p>Light and Sound</p>	<p>Physics</p>	<p>Skills Listen with increased attention to sounds</p> <p>Explore a range of musical instruments and make sounds</p>	<p>Skills Explore and engage in music</p> <p>Explore a range of musical instruments and describe the noises that can be heard</p>				<p><i>I Am Warrior</i></p> <p>Knowledge: identify how sounds are made, 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> <p>Skills: Use straightforward scientific evidence to answer questions or to support their findings</p> <p>Identifying differences, similarities or changes related to simple scientific</p>	<p><i>A Greener Future</i></p> <p>Knowledge: recognise that light appears to travel in straight lines</p> <p>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</p> <p>explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes</p> <p>use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them</p> <p>Skills: planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</p> <p>taking measurements, using a range of scientific equipment, with</p>	
-------------------------------	-----------------------	--	--	--	--	--	---	---	--

							ideas and processes	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	

<p>Electricity</p>	<p>Physics</p>	<p>Skills: Explore how things work</p>					<p><i>Misty Mountain</i></p> <p>Knowledge: identify common appliances that run on electricity</p> <p>construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and 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><i>Revolution</i></p> <p>Knowledge: Associate the brightness of a lamp or the volume of a buzzer with the number of voltage of cells used in the circuit</p> <p>Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches</p> <p>Skills: planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</p> <p>taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</p> <p>recording data and results of increasing complexity using scientific diagrams and labels,</p>
---------------------------	-----------------------	---	--	--	--	--	---	--	--

									<p>classification keys, tables, scatter graphs, bar and line graphs</p> <p>using test results to make predictions to set up further comparative and fair tests</p> <p>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</p> <p>identifying scientific evidence that has been used to support or refute ideas or arguments</p>
--	--	--	--	--	--	--	--	--	--

<p>Earth and Space</p>	<p>Physics</p>		<p><u>Knowledge:</u> Recognise some environments that are different to the one in which they live (The Moon)</p>					<p><i>Stargazers</i> <u>Knowledge:</u></p> <p>describe the movement of the Earth and other planets relative to the sun in the solar system</p> <p>describe the movement of the moon relative to the Earth</p> <p>describe the sun, Earth and moon as approximately spherical bodies</p> <p>use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky</p> <p><u>Skills:</u></p> <p>planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</p> <p>taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</p>	
-------------------------------	-----------------------	--	--	--	--	--	--	--	--

								<p>recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</p> <p>using test results to make predictions to set up further comparative and fair tests</p> <p>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</p> <p>identifying scientific evidence that has been used to support or refute ideas or arguments</p>	
--	--	--	--	--	--	--	--	--	--

Seasonal Change	Physics	Skills: Explore weather and temperature when outside	Knowledge: Understand the effect of changing seasons has on the natural world around them Explore natural world for signs of seasons Skills: Explore weather and temperature when outside. Describe the temperature using hot or cold. Describe the weather using simple terms such as sunny, cloudy and raining.							
------------------------	----------------	--	---	--	--	--	--	--	--	--

