

St Gabriel's RC Primary Science Long Term Plan 2021-2022

National Curriculum Objectives covered within year Group Cornerstone topics.

Overview of Science Skills and Knowledge

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
<u>Reception</u>	Me and My Community Exploring Autumn	Once Upon a Time Sparkle and Shine	Starry Night Winter Wonderland	Dangerous Dinosaurs Puddles and Rainbows	Sunshine and Sunflowers Shadows and Reflections	Big Wide World Splash
	Healthy eating Seasons My body and changes	Investigating materials Self-care Light sources				
<u>Year 1</u> Knowledge	Moon Zoom BIOLOGY Animals, including Humans Human body and senses. Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.	Splendid Skies PHYSICS Seasonal change. The four seasons Name the seasons and know about the type of weather in each season.	Paw, Claws and Whiskers. BIOLOGY Animals, including Humans Know how to sort by living and non-living things. Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals.	Dinosaur Planet BIOLOGY Animals, including Humans Identify and name a variety of common animals that are carnivores, herbivores and omnivores.	Superheroes CHEMISTRY 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	Big lights, Big City BIOLOGY Plants Plant Structure Identify and name a variety of common wild and garden plants, including evergreen trees. Identify and describe the

			Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets)		variety of everyday materials. Compare and group together a variety of everyday materials on the basis of their simple physical properties.	basic structure of a variety of common flowering plants, including trees.
Working Scientifically	<p>Asking simple questions and recognising that they can be answered in different ways Observing closely, using simple equipment Performing simple tests □ identifying and classifying Using their observations and ideas to suggest answers to questions Gathering and recording data to help in answering questions.</p> <p>Ask questions such as:</p> <ul style="list-style-type: none"> • Why are flowers different colours? • Why do some animals eat meat and others do not? <p>Set up a test to see which material would be the best for an umbrella, know if the test has been successful and can say what has been learned</p> <p>Explain to someone what has been learned from an investigation they have been involved with and draw conclusions from the answers to the questions asked Measures (within Year 1 mathematical limits) to help find out more about the investigations undertaken</p>					
Year 2	Wriggle and Crawl	Muck, Mess and Mixtures	Street Detectives	Beat Band Boogie	Scented Garden	Land Ahoy
Knowledge	BIOLOGY Living things and habitats.	CHEMISTRY	BIOLOGY Animals, including Humans	See street detectives.	BIOLOGY Plants	CHEMISTRY Materials.

	<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>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.</p> <p>Towers, Tunnels and Turrets BIOLOGY Animals, including Humans</p> <p>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>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 and air)</p> <p>Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.</p>		<p>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>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>Working Scientifically</p>	<ul style="list-style-type: none"> • Asking simple questions and recognising that they can be answered in different ways. • Observing closely, using simple equipment. • Performing simple tests. • Identifying and classifying. • Using their observations and ideas to suggest answers to questions. • Gathering and recording data to help in answering questions. 					

Ask questions such as:

- Why do some trees lose their leaves in Autumn and others do not?
- How long are roots of tall trees?
- Why do some animals have underground habitats?
- Use equipment such as thermometers and rain gauges to help observe changes to local environment 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 criteria, e.g. deciduous and coniferous trees
- Draw conclusions from fair tests and explain what has been found out

Use measures (within Year 2 mathematical limits) to help find out more about the investigations they are engaged with.

<p>Year 3</p> <p>Knowledge</p>	<p>Scrumdiddlyumptious</p> <p>Stone Age/Tribal Tales</p> <p>CHEMISTRY Rocks</p> <p>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>Recognise that soils are made from rocks and organic matter.</p>	<p>Heroes and Villains</p> <p>BIOLOGY Animals, Including Humans.</p> <p>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>Mighty Metals</p> <p>PHYSICS Forces and Magnets</p> <p>Compare how things move on different surfaces. 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>Gods and Mortals</p>	<p>Urban Pioneers</p> <p>Tribal Tales</p> <p>PHYSICS Light</p> <p>Recognise that they need light in order to see things and that dark is the absence of light.</p> <p>Notice that light is reflected from surfaces.</p> <p>Recognise that light from the sun can be dangerous and that there are ways to protect their eyes.</p>	<p>Flow</p> <p>BIOLOGY Plants</p> <p>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</p>
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			<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>Predict whether two magnets will attract or repel each other, depending on which poles are facing.</p>		<p>Recognise that shadows are formed when the light from a light source is blocked by an opaque object.</p> <p>Find patterns in the way that the size of shadows change.</p>	<p>how 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>
<p>Working Scientifically</p>	<p>Ask questions such as:</p> <ul style="list-style-type: none"> • Why does the moon appear as different shapes in the night sky? • Why do shadows change during the day? • Where does a fossil come from? • Use a thermometer to measure temperature and know there are two main scales used to measure temperature • Gather and record information using a chart, matrix or tally chart, depending on what is most sensible • Observe at what time of day a shadow is likely to be at its longest and shortest • Group information according to common factors e.g. plants that grow in woodlands or plants that grow in gardens • Observe which types of plants grow in different places e.g. bluebells in woodland, roses in domestic gardens, etc. • Use bar charts and other statistical tables (in line with Year 3 mathematics statistics) to record findings • Use research to find out how reflection can help us see things that are around the corner • Know how to use a key to help understand information presented on a chart 					

- Use research to find out what the main differences are between sedimentary and igneous rocks
- Be confident to stand in front of others and explain what has been found out, for example about how the moon changes shape
- Test to see which type of soil is most suitable when growing two similar plants
- Present findings using written explanations and include diagrams when needed
- Test to see if their right hand is as efficient as their left hand
- Make sense of findings and draw conclusions which help them to understand more about scientific information
- Set up a fair test with different variables e.g. the best conditions for a plant to grow
- Amend predictions according to findings
- Explain to a partner why a test is a fair one e.g. lifting weights with right and left hand, etc.
- Be prepared to change ideas as a result of what has been found out during a scientific enquiry
- Measure carefully (taking account of mathematical knowledge up to Year 3) and add to scientific learning

Year 4	I am a Warrior	Playlists	Burps, Bottoms and Bile	Potions	Traders and Raiders	Blue Abyss
Knowledge	<p>Electricity Physics</p> <p>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>Sound Physics</p> <p>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</p>	<p>Biology Animals including Humans</p> <p>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>Chemistry States of matter</p> <p>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</p>	<p>Electricity (See I am Warrior)</p>	<p>Living things and their habitats. Biology</p> <p>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</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>vibrations that produced it.</p> <p>Recognise that sounds get fainter as the distance from the sound source increases.</p>		<p>degrees Celsius (°C)</p> <p>Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</p>		<p>wider environment</p> <p>Recognise that environments can change and that this can sometimes pose dangers to living things.</p> <p>Construct and interpret a variety of food chains, identifying producers, predators and prey.</p>
<p>Working Scientifically</p>	<p>Ask questions such as:</p> <ul style="list-style-type: none"> • Why are steam and ice the same thing? • Why is the liver important in the digestive systems? • What do we mean by 'pitch' when it comes to sound? • Gather and record information using a chart, matrix or tally chart, depending on what is most sensible • Group information according to common factors e.g. materials that make good conductors or insulators • Use research to find out how much time it takes to digest most of our food • Use bar charts and other statistical tables (in line with Year 4 mathematics statistics) to record findings • Use research to find out which materials make effective conductors and insulators of electricity • Present findings using written explanations and include diagrams, when needed • Carry out tests to see, for example, which of two instruments make the highest or lowest sounds and to see if a glass of ice weighs the same as a glass of water • Write up findings using a planning, doing and evaluating process • Set up a fair test with more than one variable e.g. using different materials to cut out sound • Make sense of findings and draw conclusions which helps them understand more about the scientific information that has been learned 					

- Explain to others why a test that has been set up is a fair one e.g. discover how fast ice melts in different temperatures
- When making predictions there are plausible reasons as to why they have done so
- Measure carefully (taking account of mathematical knowledge up to Year 4) and add to scientific learning
- Able to amend predictions according to findings
- Use a data logger to check on the time it takes ice to melt to water in different temperatures
- Prepared to change ideas as a result of what has been found out during a scientific enquiry

Use a thermometer to measure temperature and know there are two main scales used to measure temperature

<p>Year 5</p> <p>Knowledge</p>	<p>Stargazer</p> <p>PHYSICS Earth and Space</p> <p>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.</p>	<p>Egyptians</p>	<p>Scream Machine</p> <p>PHYSICS Forces</p> <p>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</p>	<p>Time Traveller</p> <p>BIOLOGY Animals including Humans</p> <p>Describe the changes as humans develop to old age.</p>	<p>Off with their head</p> <p>CHEMISTRY Properties and Changing Materials</p> <p>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. 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.</p>	<p>Beast Creator</p> <p>BIOLOGY Living things and Habitats</p> <p>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.</p>
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			force to have a greater effect.		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.	
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Working Scientifically	<ul style="list-style-type: none"> • Set up an investigation when it is appropriate e.g. finding out which materials dissolve or not • Able to present information related to scientific enquiries in a range of ways including using IT such as power-point and iMovie • Set up a fair test when needed e.g. which surfaces create most friction? • Use diagrams, as and when necessary, to support writing • Set up an enquiry based investigation e.g. find out what adults / children can do now that they couldn't when a baby • Is evaluative when explaining findings from scientific enquiry • Know what the variables are in a given enquiry and can isolate each one when investigating e.g. finding out how effective parachutes are when made with different materials • Clear about what has been found out from recent enquiry and can relate this to other enquiries, where appropriate • Use all measurements as set out in Year 5 mathematics (measurement), including capacity and mass • Their explanations set out clearly why something has happened and its possible impact on other things • Use other scientific instruments as needed e.g. thermometer, rain gauge, spring scales (for measuring Newtons) • Able to give an example of something focused on when supporting a scientific theory e.g. how much easier it is to lift a heavy object using pulleys • Able to record data and present them in a range of ways including diagrams, labels, classification keys, tables, scatter graphs and bar and line graphs • Keep an on-going record of new scientific words that they have come across for the first time • Make predictions based on information gleaned from investigations • Able to relate causal relationships when, for example, studying life cycles • Create new investigations which take account of what has been learned previously • Frequently carry out research when
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<p><u>Year 6</u></p> <p>Knowledge</p>	<p>Hola Mexico</p> <p>PHYSICS Light</p> <p>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 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.</p>	<p>Fallen Fields Frozen Kingdom</p> <p>BIOLOGY Evolution and Inheritance. Living things and their habitats</p> <p>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 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.</p> <p>Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals. Give reasons for classifying plants and animals based on specific characteristics.</p>	<p>ID</p>	<p>Gallery Rebels</p>	<p>Blood Heart</p> <p>BIOLOGY Animals including Humans</p> <p>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. Describe the ways in which nutrients and water are transported within animals, including humans.</p>	<p>A child's War</p> <p>PHYSICS Electricity</p> <p>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 loudness of buzzers and the on/off position of switches. Use recognised symbols when representing a simple circuit in a diagram.</p>
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Working Scientifically

- Know which type of investigation is needed to suit particular scientific enquiry e.g. looking at the relationship between pulse and exercise
- Use a range of written methods to report findings, including focusing on the planning, doing and evaluating phases
- Set up a fair test when needed e.g. does light travel in straight lines?
- Clear about what has been found out from their enquiry and can relate this to others in class
- Know how to set up an enquiry based investigation e.g. what is the relationship between oxygen and blood?
- Explanations set out clearly why something has happened and its possible impact on other things
- Know what the variables are in a given enquiry and can isolate each one when investigating
- Aware of the need to support conclusions with evidence
- Justify which variable has been isolated in scientific investigation
- Keep an on-going record of new scientific words that they have come across for the first time and use these regularly in future scientific write ups
- Use all measurements as set out in Year 6 mathematics (measurement), including capacity, mass, ratio and proportion
- Use diagrams, as and when necessary, to support writing and be confident enough to present findings orally in front of the class
- Able to record data and present them in a range of ways including diagrams, labels, classification keys, tables, scatter graphs and bar and line graphs
- Able to give an example of something they have focused on when supporting a scientific theory e.g. classifying vertebrate and invertebrate creatures or why certain creatures choose their unique habitats
- Make accurate predictions based on information gleaned from their investigations and create new investigations as a result
- Frequently carry out research when investigating a scientific principle or theory
- Able to present information related to scientific enquiries in a range of ways including using IT such as power-point.