

Our school provides a foundation for **all to flourish** rooted in the person and work of Jesus;



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Carleton Endowed CE (VA) Primary School

Whole School Science


Science Curriculum Intent

At Carleton Endowed Primary school we increase pupils' knowledge and understanding of our world, and with developing skills associated with Science as a process of enquiry. We intend to achieve this by fostering a natural curiosity in the children, encourage respect for living things and physical environment as well as providing opportunities for critical evaluation of evidence.

Our Intentions:

- Help develop and extend our children's scientific knowledge and conceptual understanding about their world.
- Equip pupils with the skills to live in an increasingly scientific and technological world.
- Build on our children's natural curiosity and developing a scientific approach to problems.
- Use practical experiment and explorations to develop the skills of investigation, including: observing, measuring, predicting, hypothesising, experimenting, communicating, interpreting, explaining and evaluating.
- Use essential scientific enquiry skills to deepen their scientific knowledge.
- Develop the use of scientific language and recording techniques.
- Actively make links between science and other subjects.

Whole School Science Progression Map

Our Curricular Goal:							
 <small>gg70215345 GoGraph.com</small>	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Working scientifically							

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	End of FS	End of KS1	End of LKS2	End of UKS2
	<p>I can:</p> <ul style="list-style-type: none"> -Answer how and why questions about experiences (Understanding) -Choose resources needed for activities (self-confidence and self-awareness) -Make observations and talk about why things occur and change (The World) 	<p>I can:</p> <ul style="list-style-type: none"> -Ask simple scientific questions - Use simple equipment to make observations - Carry out simple tests - Identify and classify things -Suggest what I have found out - Use simple data to answer questions 	<p>I can:</p> <ul style="list-style-type: none"> -Ask relevant scientific questions. -Use observations and knowledge to answer scientific questions. -Set up a simple enquiry to explore a scientific question. -Set up a test to compare two things. -Set up a fair test and explain why it is fair. -Make careful and accurate observations, including the use of standard units. -Use equipment to make measurements. -Gather, record, classify and present data in different ways to answer scientific questions. -Use diagrams, keys bar charts and tables, using scientific language. -Use findings to report in different ways, including oral and written explanations. -Draw conclusions and suggest improvements. -Make a prediction with a reason. 	<p>I can:</p> <ul style="list-style-type: none"> - Plan different types of scientific enquiry. - Control variables in an enquiry. -Measure accurately and precisely using a range of equipment. -Record data and results using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. -Use the outcome of test results to make predictions and set up a further comparative fair test. -Report findings from enquires in a range of ways. -Explain a conclusion from an enquiry. -Explain causal relationships in an enquiry. -Relate the outcomes from an enquiry to scientific knowledge in order to state whether evidence supports or refutes and argument/ theory. - Read, spell and pronounce scientific vocabulary accurately

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			-Identify differences, similarities and changes related to an enquiry.			
Biology						
I can: -know the importance for good health of physical exercise and a healthy diet, and talk about ways to keep health and safe (health and selfcare) -know about the similarities between myself and others (People and Communities) - know about similarities and differences in relation to places, objects, materials and living things (The World)	I can: (Plants) - identify and name a variety of common wild and garden plants, including deciduous and evergreen trees, e.g. five examples of each from the school's locality - identify and describe the basic structure of a variety of common flowering plants, including trees, and name parts, e.g. leaves, flowers, roots, stem/trunk.	I can: Plants -Observe and describe how bulbs and seeds grow into mature plants -Recognise and describe how plants need water, light and a suitable temperature for survival and growth -explain why and how seeds are dispersed -investigate germination	I can: Plants - name and locate the main parts of plants e.g. roots, stem/trunk, leaves and flowers and describe their functions -Describe the basic requirements of plants for life and growth, i.e. air, light, water, nutrients from soil, and room to grow , and how they vary from plant to plant	I can: Living things and their habitats -Group living things in different ways -Use classification keys to group, identify and name living things. Including plants in the local and wider environment -Create classification keys to group, identify and name living things.	I can: Living things and their habitats. -Describe and compare differences in the life cycles of a mammal, an amphibian, an insect and a bird -Describe and compare different reproductive processes in some animals and plants, including asexual (e.g. taking cuttings) and sexual reproduction in plants and sexual reproduction in animals.	I can: Living things and their habitats -Describe how living things have been classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals -Give reasons for classifying plants and animals in a specific way. -Identify and classify organisms in the local area -find out about Carl

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	<p>-talk about the immediate environment and how environments might vary from one to another (The World)</p> <p>-make observations of animals and plants and talk about why some things occur and talk about changes (The World)</p>	<p>-understand what a plant is</p> <p>-make observations of growing plans.</p> <p>Animals (including humans)</p> <p>- Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals</p> <p>-Identify and name a variety of common animals that are omnivores, herbivores and carnivores</p> <p>-Describe and compare the structure of a variety of common animals including pets</p>	<p>Animals (Including humans)</p> <p>-notice that animals, including humans have offspring which grow in to adults</p> <p>-describe the basic needs of animals they have found, including humans, for survival i.e. water, food and air.</p> <p>-describe the importance for humans to exercise, have a balanced diet and use good hygiene</p> <p>-understand the different ways</p>	<p>-Investigate how water is transported within plants.</p> <p>-Name simple parts of a flower and describe their function, i.e. stigma, style, carpel, ovary, pollen</p> <p>-Describe the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal</p> <p>-understand the structure of seeds and their importance as a food source</p>	<p>-Explain how environments can change and that this can sometimes pose dangers to living things.</p> <p>-Identify a variety of habitats and explore why organisms live in different habitats</p> <p>Animals including humans</p> <p>-Name and locate the main parts of the digestive system, i.e. mouth, tongue, teeth, oesophagus, stomach, small intestine, large intestine, in humans.</p>	<p>-to find out about the work of naturalists</p> <p>Changes and reproduction</p> <p>-describe the changes as humans develop to old age</p> <p>-know the stages in the gestation period of humans and compare them to other animals</p> <p>-To recognise the stages of development during childhood and link to needs</p> <p>-To understand bodily changes during puberty and how they differ for boys and girls</p> <p>-Understand how the body changes</p>	<p>Linnaeus and his classification system</p> <p>-explore ways of distinguishing between organisms that have similar characteristics</p> <p>Animals including humans</p> <p>-Name and locate the main parts of the human circulatory system, i.e. heart, blood vessels and blood.</p> <p>-Describe the function of the heart, blood vessels and blood.</p> <p>-Describe the effects of diet, exercise, drugs and lifestyle on how their bodies function.</p>
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		<ul style="list-style-type: none"> -identify how to take care of animals -collect data about animals and answer questions -identify, name, draw and label simple parts of the human body, including those related to the senses, e.g. parts of the face, arm, shoulder, leg, knee, wrist, hand, finger, ankle, toe, foot. Link parts of the body to each sense. -know which part of our bodies we use for different activities -explore each of the senses in depth 	<ul style="list-style-type: none"> animals reproduce -explore the environment as a factor for survival Living things and their habitats -explore and compare the differences between things that are alive, dead, or have never been alive -describe the survival needs of animals, including humans - identify that most living things live in habitats to which they are suited and describe how different habitats provide for the 	<ul style="list-style-type: none"> Animals (including humans) -identify that animals, including humans need the right types and amount of nutrition, and they cannot make their own food -to understand that animals including humans get nutrition from what they eat -Show knowledge of simple food groups – dairy, vegetables and fruit. -Explain how nutrients, water 	<ul style="list-style-type: none"> -Describe the functions of the organs in the human digestive system. -Identify and describe the different types of teeth in humans. -Describe the functions of different human teeth. -Construct and interpret food chains to identify producers, predators and prey -Explore ways of keeping teeth healthy 	<ul style="list-style-type: none"> during adulthood and old age 	<ul style="list-style-type: none"> -Describe the ways in which nutrients and water are transported within animals including humans. -Find out about how scientific ideas about food and diet were tested in the past and how that contributes to our knowledge and understanding of a balanced diet -Explain why a variety of foods is important for a healthy diet Evolution and inheritance -Describe how the earth and living things have changed over time and how a number
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			<p>basic needs of different kinds of animals and plants, and how they depend on each other</p> <ul style="list-style-type: none"> -describe how animals and plants depend on each other (links to food chains and feeding relationships) -identify and name a variety of plants and animals in their habitats, including micro-habitats e.g. under log, on stony path, under bushes -describe how animals get their food from other animals and/or from 	<p>and oxygen are transported within animals and humans.</p> <ul style="list-style-type: none"> -Identify and describe how humans and some animals have skeletons and muscles for support, protection and movement -explore human and animal skeletons -Find out what muscles are and how skeletal muscles aid movement 			<p>of factors can affect a species' evolution</p> <ul style="list-style-type: none"> -Explain how fossils provide information about living things that inhabited the Earth millions of years ago -Explain that living things produce offspring of the same kind and that normally these vary and are non-identical to parents -Explain how animals and plants are adapted to suit their environment in different ways. -Use the basic ideas of inheritance, variation and adaptation to describe how living things have
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			plants using the idea of a simple food chain and identify and name different sources of food (link to carnivores, herbivores and omnivores Y1)				changed over time and evolved. -Explain evolution and how the work of scientists has helped develop our understanding -To understand how human behaviour can affect change in species over time
Chemistry							
I can: -explore characteristics of everyday objects (shape, space and measures) -know about similarities and differences in relation to materials (The World) -explore a variety of materials.....experi	I Can: - identify and name a variety of everyday materials, e.g. a variety of objects/items made of wood, plastic, glass, metal, water, and rock - use simple language to describe the physical properties of a variety of everyday materials,	I can: identify and compare the uses of a variety of everyday materials including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses -find out how the shapes of solid objects can	I can: (Rocks) Compare and group rocks in different ways according to their appearance and simple physical properties -Describe how fossils are formed and identify fossilised remains	I can: States of matter -Compare and group materials based on their state of matter (solid, liquid, gas). -Observe and describe how a variety of materials change state when they are heated or cooled and	I can: Properties and changes to materials -Compare and group materials based on their properties - hardness, solubility, transparency, conductivity and response to magnets. -know that some materials will		

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	<p>menting with texture (Exploring and Using Media and Materials)</p>	<p>e.g. soft/hard, rough/smooth, shiny/dull - use the physical properties of a variety of everyday materials to describe and compare and group them - distinguish between an object and the material from which it is made -describe why some materials used for certain objects are better than others</p>	<p>be changed by squashing, bending, twisting and stretching -identify a variety of man-made and natural materials and sort according to criteria -Identify material inventions and discoveries</p>	<p>-Explain, in simple terms, that soils are made when rocks are weathered and break down into small particles which combine with organic matter to become soil. -Describe and explain the difference between sedimentary and igneous rock. -Identify naturally occurring rocks -Identify rocks that are used for different purposes</p>	<p>measure or research the temperature at which this happens - Describe the water cycle. -Understand the process of evaporation and condensation -Explain the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. -Identify and explore the properties of gasses</p>	<p>dissolve in liquid to form a solution, and describe how to recover a substance from a solution -Describe processes that might be used to separate mixtures including through filtering, sieving and evaporating -Show how to recover a substance from a solution. -Give evidenced reasons why materials should be used for specific purposes including metals, wood and plastic. -Demonstrate that dissolving, mixing and changes of state are reversible changes</p>	
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						-Explain how some changes result in the formation of a new material and that this is usually irreversible (include changes associated with burning and the action of acid on bicarbonate of soda).	
Physics							
I can: -Explore how objects move	I can: -observe and describe changes across four seasons, including changes to trees -observe and describe the weather and how it varies -observe and describe how day length changes at different times of the year	I can: -understand how animals and humans are affected by the seasons	I can: Light -Explain that we need light in order to see and that darkness is the absence of light - Explain that light is reflected from surfaces of a variety of objects (and this enables us to see them)	I can: Sound -Describe how sound is made, associating some of them with something vibrating. -Explain how vibrations from sounds travel through a medium to our ears.	I can: Earth and space -Describe and explain the movement of the Earth and other planets relative to the Sun. -Describe and explain the movement of the Moon relative to the Earth. -Describe the Sun, Earth and Moon	I can: Electrician - Explain how the number and voltage of cells in a circuit links to the brightness of a lamp or the volume of a buzzer. -Compare and give reasons for variations in how components function, including the brightness of	

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		-understand how animals and humans are affected by the seasons		-Explain that shadows are formed when light from a source is blocked by solid, opaque object - Find patterns in the way that the size of shadows change (based on practical investigations of how shadows behave) -Explore the sun as a light source and identify the difference between night and day -Explain the danger of direct sunlight and describe how to	-Explain the place of vibration in hearing -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 -Explain the correlation between the volume of a sound and the distance from the ear -Investigate whether sounds can travel through different	(using the term spherical) - find out about the size of the Earth, Moon and Sun and how far they are away from each other -Explain the apparent movement of the sun across the sky in terms of the earth's rotation and that this results in day and night. -Use data to draw conclusions about the Sun at different times of the year Forces -Explain that unsupported objects fall towards the Earth because	bulbs and the loudness of buzzers and the on/off position of switches -Draw circuit diagrams using recognised symbols. -Investigate how changing the wire in a circuit affects bulb brightness Light -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
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				<p>keep eyes protected.</p> <p>Forces and magnets</p> <ul style="list-style-type: none"> -Describe and compare how things move on different surfaces e.g. comment on the effects of simple forces like friction on the way objects move -Explore what forces are and explain how some forces require contact between two objects but magnetic forces can act at a distance -Observe how magnets attract 	<p>materials and recognise that some materials effectively prevent this</p> <p>Electricity</p> <ul style="list-style-type: none"> -Identify and name appliances that need electricity to function. -Construct a simple series electrical circuit, identifying and naming its components -Draw a circuit diagram. -Predict and test whether a lamp will light within a circuit, based on whether or not the lamp is part 	<p>of the force of gravity</p> <ul style="list-style-type: none"> -Identify and explain the effect of air resistance and of water resistance. -Identify and explain the effect of friction. - Explain how levers, pulleys and gears allow a smaller force to have a greater effect. 	<p>light sources to our eyes or from light sources to objects and then to our eyes</p> <ul style="list-style-type: none"> -Use the idea that light travels in a straight line to explain why shadows have the same shape as the objects that cast them -Plan and investigate how shadows behave -Explore the difference between shadow and reflection -Investigate reflections from a variety of surfaces
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				or repel each other and attract some materials and not others -Predict and investigate whether objects will be magnetic and carry out an enquiry to test this out. -Compare and group materials on the basis of whether they are magnetic or not -Describe magnets as having two poles -Predict whether magnets will attract or repel and give a reason.	of a complete loop with a battery -Recognise that a switch opens and closes a circuit and create associate this with whether or not a lamp lights in a simple series circuit -Name common conductors (such as metals and water) and insulators (such as wood, plastic) and associate materials with being good conductors -Investigate the difference between a mains and battery powered circuit		
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					-Plan and carry out an experiment to see how to change the brightness of a bulb		
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