

South Avenue Primary School

Science Progression of Skills



Science Curriculum Intent	<p>At South Avenue, our curriculum is designed with the intent that each child becomes a caring, confident and curious young person with a passion for learning and achieving.</p> <p>Through the teaching and learning of science, we encourage children to be inquisitive throughout their time at school and beyond. From EYFS up to KS2 our pupils will build up a body of key foundational knowledge and skills in core science areas. Pupils are encouraged to recognise the power of enquiry, rational explanation and develop a sense of excitement and curiosity while using key skills from Reading, Writing and Mathematics to explore scientific phenomena. We also believe it is important to promote respect for the living and non-living world around us including the importance of a healthy diet and exercise.</p> <p>We ensure that the Working Scientifically skills are built-on and developed throughout the children's time at school so that they can apply their knowledge of science through asking questions and conducting research, setting up tests, observing, recording data and evaluating their results.</p>						
Working Scientifically	EYFS <ul style="list-style-type: none"> Learn new vocabulary and use it in everyday conversations Engage in non-fiction books Talk about what they see, using a wide vocabulary 	Year 1 <ul style="list-style-type: none"> Ask simple questions and recognise that they can be answered in different ways Observe closely, using simple equipment Perform simple tests Identify and classify Use their observations and ideas to suggest 	Year 2 <ul style="list-style-type: none"> Ask simple questions and recognise that they can be answered in different ways Observe closely, using simple equipment Perform simple tests Identify and classify Use their observations and ideas to suggest 	Year 3 <ul style="list-style-type: none"> Ask relevant questions and using 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 	Year 4 <ul style="list-style-type: none"> Ask relevant questions and using 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 	Year 5 <ul style="list-style-type: none"> 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, take 	Year 6 <ul style="list-style-type: none"> 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, take

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		<p>answers to questions</p> <ul style="list-style-type: none"> Gather and record data to help answer questions 	<p>answers to questions</p> <ul style="list-style-type: none"> Gather and record data to help answer questions 	<p>using standard units, using a range of equipment, including thermometers and data loggers</p> <ul style="list-style-type: none"> 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 	<p>using standard units, using a range of equipment, including thermometers and data loggers</p> <ul style="list-style-type: none"> 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 	<p>repeat readings when appropriate</p> <ul style="list-style-type: none"> 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 Report and present findings from enquiries, including conclusions, causal relationships and explanations of 	<p>repeat readings when appropriate</p> <ul style="list-style-type: none"> 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 Report and present findings from enquiries, including conclusions, causal relationships and explanations of
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				<p>presentations of results and conclusions</p> <ul style="list-style-type: none">• 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 their findings.	<p>presentations of results and conclusions</p> <ul style="list-style-type: none">• 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 their findings.	<p>and a degree of trust in results, in oral and written forms such as displays and other presentations</p> <ul style="list-style-type: none">• Identify scientific evidence that has been used to support or refute ideas or arguments	<p>and a degree of trust in results, in oral and written forms such as displays and other presentations</p> <ul style="list-style-type: none">• Identify scientific evidence that has been used to support or refute ideas or arguments
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Biology

<h1 style="writing-mode: vertical-rl; transform: rotate(180deg);">Biology</h1>	<ul style="list-style-type: none"> Plant seeds and care for growing plants. Understand the key features of the life cycle of a plant and an animal. Begin to understand the need to respect and care for the natural environment and all living things. Explore the natural world around them Describe what they see, hear and feel whilst outside Recognise some environments 	<p>Animals including humans</p> <ul style="list-style-type: none"> Know about their senses and how they use them to describe the world. Identify and name the basic external parts of the human body. Recognise the functions of some body parts, including the sense organs. Describe and compare common animals Recognise and name a variety of animals and their body parts Construct and label a map of 	<p>Animals including humans</p> <ul style="list-style-type: none"> notice that animals, including humans, have offspring which grow into adults: How humans change as they grow, Life cycles of a frog and butterfly. find out about and describe the basic needs of animals, including humans, for survival (water, food and air) Sort animals in different ways Identify what our pets need to stay happy 	<p>Animals including humans</p> <ul style="list-style-type: none"> 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 Identify that humans and some other animals have skeletons and muscles for support, protection and movement. <p>Plants</p> <ul style="list-style-type: none"> identify and describe the functions of different parts 	<p>Animals including humans</p> <ul style="list-style-type: none"> describe the simple functions of the basic parts of the digestive system in humans- for example, mouth, tongue, teeth, oesophagus, stomach and small and large intestine and explore questions that help them to understand their special functions. identify the different types of teeth in humans and their simple functions 	<p>Animals including humans</p> <ul style="list-style-type: none"> describe the changes as humans develop to old age. draw a timeline to indicate stages in the growth and development of humans. They should learn about the changes experienced in puberty. <p>Living things and their habitats</p> <ul style="list-style-type: none"> describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird describe the life process of 	<p>Animals including humans</p> <ul style="list-style-type: none"> Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. Atria, ventricles, aorta, valves, arteries, veins. Explain how the circulatory system enables the body to function. recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. Effect on heart rate. describe the ways in which nutrients and water are transported within animals, including humans. Mouth, salivary glands, tongue, teeth, oesophagus, stomach, pancreas,
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	<p>that are different from the one in which they live</p> <ul style="list-style-type: none"> Understand the effect of changing seasons on the natural world around them. 	<p>the human body</p> <ul style="list-style-type: none"> Draw comparisons between human and animal body parts Consider how I treat other people and living things with care and respect. Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. Sharks, frogs, lizards, penguins and polar bears. Describe and compare the structure of a 	<p>and healthy: Food, water, fresh air</p> <ul style="list-style-type: none"> describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene: Handwashing, hygiene, germs, positives about exercise, types of sport, effects of exercise on the body, healthy meals, balanced diet, foods we should eat often, sometimes and rarely. 	<p>of flowering plants: roots, stem/trunk, leaves and flowers</p> <ul style="list-style-type: none"> explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant investigate the way in which water is transported within plants explore the part that flowers play in the life cycle of flowering plants, including pollination, seed 	<p>Living things and their habitats</p> <ul style="list-style-type: none"> Recognise that living things can be grouped in a variety of ways Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. Pupils begin to put vertebrate animals into groups such as amphibians, reptiles, birds, and mammals; and invertebrates into snails and slugs, worms, 	<p>reproduction in some plants and animals.</p>	<p>liver, gall bladder, duodenum, small intestine, large intestine, anus, rectus.</p> <p>Living things and their habitats</p> <ul style="list-style-type: none"> 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. Classify animals into commonly found invertebrates (such as insects, spiders, snails, worms) and vertebrates (fish, amphibians, reptiles, birds and mammals). give reasons for classifying plants and animals based on specific
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		<p>variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). E.g. fins for a fish, wings for a bird.</p> <ul style="list-style-type: none"> • can name and identify animals that are herbivore, carnivore or omnivore. • can identify a variety of common animals. <p>Plants</p> <ul style="list-style-type: none"> • identify and name a variety of common wild (Dandelion, daisy, buttercup, 	<p>Living things and their habitats</p> <ul style="list-style-type: none"> • 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>formation and seed dispersal.</p>	<p>spiders, and insects.</p> <ul style="list-style-type: none"> • Recognise that environments can change and that this can sometimes pose dangers to living things • Construct and interpret a variety of food chains, identifying producers, predators and prey. 	<p>characteristics. Find out about the significance of the work of scientists such as Carl Linnaeus, a pioneer of classification.</p> <p>Evolution and inheritance</p> <ul style="list-style-type: none"> • recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. Discover how Charles Darwin developed the idea of evolution. • recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. Characteristics are
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		<p>nettles, ivy, dog rose, clover, brambles) and garden plants (fuchsia, pansy, sweet pea, sunflower, rose, lavender and iris), including deciduous and evergreen trees.</p> <ul style="list-style-type: none">• identify and describe the basic structure of a variety of common flowering plants, including trees. Roots, stem, leaves, flowers, petals, fruit, seed, bulb.	<ul style="list-style-type: none">• identify and name a variety of plants and animals in their habitats, including micro-habitats• mini-beast, survey, pictogram, habitat• 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>Plants</p> <ul style="list-style-type: none">• observe and describe how seeds and			<p>passed from parents to their offspring, for instance consider different breeds of dogs, and what happens when, for example, Labradors are crossed with poodles.</p> <ul style="list-style-type: none">• identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. Variation in offspring over time can make animals more or less able to survive in particular environments, for example, by exploring how giraffes' necks got longer, or the development of insulating fur on the arctic fox.
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			<p>bulbs grow into mature plants</p> <ul style="list-style-type: none"> find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. 				
Chemistry	<ul style="list-style-type: none"> Use all their senses in hands-on exploration of natural materials Explore collections of materials with similar and/or different properties Talk about the differences between materials and changes they notice 	<p>Everyday Materials</p> <ul style="list-style-type: none"> Describe the physical properties of a variety of everyday materials Compare and group together a variety of everyday materials according to their properties Describe the properties of different 	<p>Uses of everyday materials</p> <ul style="list-style-type: none"> identify and compare the suitability 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 made from some 	<p>Rocks and soils</p> <ul style="list-style-type: none"> Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties describe in simple terms how fossils are formed when things that have lived are 	<p>States of matter</p> <ul style="list-style-type: none"> compare and group materials together, according to whether they are solids, liquids or gases. observe that some materials change state when they are heated or cooled, and measure or research the temperature 	<p>Materials</p> <ul style="list-style-type: none"> 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 	

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		materials e.g. wood, metal, and plastic, rubber, fur, towelling, nylon, wool, sponge, cotton wool, paper, card, brick, ceramics and rock.	materials can be changed by squashing, bending, twisting and stretching	trapped within rock <ul style="list-style-type: none">• recognise that soils are made from rocks and organic matter.	at which this happens in degrees Celsius (°C) <ul style="list-style-type: none">• identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature	materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution <ul style="list-style-type: none">• 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,	
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						<p>including metals, wood and plastic</p> <ul style="list-style-type: none">• 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 h v	Children engage in a topic about	Seasonal Changes		Forces and magnets	Electricity	Forces	Electricity

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	<p>Space learning about</p> <ul style="list-style-type: none"> planets and the solar system transport into Space astronauts and how they live in Space. 	<ul style="list-style-type: none"> observe changes across the four seasons. observe and describe weather associated with the seasons and how day length varies. 		<ul style="list-style-type: none"> compare how things move on different surfaces notice that some forces need contact between two objects, but magnetic forces can act at a distance observe how magnets attract or repel each other and attract some materials and not others compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify 	<ul style="list-style-type: none"> identify common appliances that run on electricity construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers 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 recognise that a switch opens and closes a circuit 	<ul style="list-style-type: none"> 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 force to have a greater effect <p>Earth and space</p>	<ul style="list-style-type: none"> associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. Observing and explaining the effect of different voltages in a 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. investigating the relationship between wire length and the brightness of bulbs or the loudness of buzzers. children to create their own investigations. use recognised symbols when
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				<p>some magnetic materials</p> <ul style="list-style-type: none"> describe magnets as having two poles predict whether two magnets will attract or repel each other, depending on which poles are facing. <p>Light</p> <ul style="list-style-type: none"> recognise that they need 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 	<p>and associate this with whether or not a lamp lights in a simple series circuit</p> <ul style="list-style-type: none"> recognise some common conductors and insulators, and associate metals with being good conductors. <p>Sound</p> <ul style="list-style-type: none"> identify how sounds are made, associating some of them with something vibrating recognise that vibrations from sounds travel through 	<ul style="list-style-type: none"> 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. learn that the sun is a star at the centre of our solar 	<p>representing a simple circuit in a diagram.</p> <p>Light</p> <ul style="list-style-type: none"> recognise that light appears to travel in straight lines. Refraction. 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. travelling/investigate how we see colour. 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
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				<p>sun can be dangerous and that there are ways to protect their eyes</p> <ul style="list-style-type: none">• recognise that shadows are formed when the light from a light source is blocked by an opaque object• find patterns in the way that the size of shadows change.	<p>a medium to the ear</p> <ul style="list-style-type: none">• 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• recognise that sounds get fainter as the distance from the sound source increases.	<p>system and that it has 8 planets: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune (Pluto was reclassified as a 'dwarf planet' in 2006) and Neptune (Pluto was reclassified as a 'dwarf planet' in 2006).</p> <ul style="list-style-type: none">• understand that a moon is a celestial body that orbits a planet (Earth has 1 moon; Jupiter has 4 large moons and numerous smaller ones).	<p>as the objects that cast them.</p>
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