

Science

We want our learners to be successful scientists who will show curiosity in the world around them and who explore and investigate scientific concepts. We want our learners to become problem solvers using the skills and knowledge learnt in science, that will support their functional life skills and knowledge, including healthy lifestyles, understanding of growth and life cycles and how science can impact their daily life through electricity and technology, cooking/ preparing meals and hygiene. As scientists we want our learners to appreciate nature and the world around them, understanding the cause and effect of simple actions. They will be able to complete experiments, work practically using all of their senses and use simple scientific vocabulary.

Scientific skills have been carefully considered through 'Being Scientists' to ensure progression. These skills will be threaded through the teaching of the five identified topics listed below, as part of the Long-Term Plans.

Whilst we maintain high expectations and encourage rapid progress in all our learners, we recognise them as individuals who have, or are still overcoming multiple barriers to learning, considering their EHCP outcomes alongside a Personalised Learning Plan, that ensures the progress they make is meaningful and purposeful to their development.

	STAGE 1	STAGE 2	STAGE 3	Extended Learning
Being Scientists	<p>Repeat actions that have an effect</p> <p>Talk about what they see and encourage vocabulary such as family names (mum, dad, nana, etc.), plant, familiar animal names (dog, cat, pig, cow, sheep, fish, bird)</p> <p>Talk about what they can hear in the environment (animal noises, rain, hail, traffic)</p> <p>Explore how things work and demonstrate curiosity</p> <p>Observe, using simple equipment</p> <p>Begin to identify and classify</p> <p>Match objects based on obvious criteria</p> <p style="padding-left: 20px;">- Shape</p>	<p>Ask simple questions</p> <p>Perform simple tests</p> <p>Suggest answers to questions</p> <p>Gather and record data using a simple tally chart</p> <p>Notice patterns, group and classify</p>	<p>Ask relevant questions and use different types of scientific enquiries to answer them (e.g., asking what a plant needs to grow and conducting a cress growing experiment)</p> <p>Observe closely using simple equipment</p> <p>Use observations to draw simple conclusions and make predictions</p> <p>Identify differences, similarities or changes related to simple scientific ideas and processes</p> <p>Gather, record, classify and present data in a variety of ways to help in answering questions</p>	<p>Use straightforward scientific evidence to answer questions or to support their findings</p> <p>Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</p> <p>Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</p> <p>Use test results to make predictions and to set up further comparative and fair tests</p> <p>Identifying scientific evidence that has been used to support or refute ideas or arguments</p>

	<ul style="list-style-type: none"> - Colour - Size - Object 			
Animals, including humans, living things and their habitats	<p>Know and name a variety of animals; bird, cat, dog, fish, sheep, pig, cow</p> <p>Know where you would find some of these animals; bird, cat, dog, fish, sheep, pig, cow</p> <p>Know and name common body parts; head, eyes, nose, mouth, ears, arms, hands, legs, feet</p>	<p>Know that humans are animals</p> <p>Know that some animals can be grouped into fish, birds, mammals and insects</p> <p>Know that animals, including humans, live in different places; fish in the sea, birds in trees, mammals need shelter and insects underground (habitats)</p> <p>Know the function of ears, eyes, nose, mouth, hands (touch) (5 senses)</p>	<p>Know that some animals can be grouped further into reptiles and amphibians</p> <p>Know that all animals, including humans, follow a similar life cycle (birth, growth, maturity, old age, death)</p> <p>Know that animals, including humans, produce offspring</p> <p>Know and describe the basic needs of animals, including humans, for survival (air, water, food)</p> <p>Know that most living things live in habitats to which they are suited</p>	<p>Know and describe how to keep healthy (diet, exercise, drugs and lifestyle)</p> <p>Know the effect of keeping healthy on our bodies (strong bones, healthy teeth, muscles and breathing)</p> <p>Know that some animals are adapted to suit their environment (camels having storage humps, polar bears camouflaging against their white habitat)</p>
Key Vocabulary	animal, body, bird, cat, dog, fish, sheep, pig, cow, house, garden, sea, tree, farm, field, inside, outside, head, eyes, nose, mouth, ears, arms, hands, legs, feet	human, mammal, shelter, insects, touch, sense, hear, smell, taste, see	reptile, amphibian, life cycle, birth, growth, maturity, old, age, death, baby, offspring, habitat, classify, healthy	diet, exercise, drugs, lifestyle, bones, muscles, teeth, adaptation, environment, camouflage
Plants	<p>Know that plants grow</p> <p>Name four simple parts of a plant (stem, leaf, flower, root)</p>	<p>Know that trees are also plants</p> <p>Know that trees have a trunk, rather than a stem</p> <p>Begin to know the function of two of the simple parts of the plant Stem- keeps plant/ flower upright Roots- absorb water from the ground</p>	<p>Know that plants need water and light to grow and be healthy</p> <p>Know some of the other requirements of plants for life and growth (air, nutrients from soil and room to grow)</p> <p>Know that some plants/ trees produce seeds or fruits instead of or as well as flowers</p>	<p>Understand and describe reproduction in plants, including flower structure, wind and insect pollination, fertilisation, seed and fruit formation and dispersal</p>

Key Vocabulary	plant, grow, stem, leaf, flower, root	tree, trunk, function, absorb	healthy, life, growth, nutrients, seed, fruit	reproduction, pollination, fertilisation, dispersal
Materials	<p>Know that objects are made from different materials; wood, metal, plastic, fabric, rocks</p> <p>Begin to know and describe four different properties of materials (soft, hard, rough, smooth)</p> <p>Knows how to explore a range of natural objects through,</p> <ul style="list-style-type: none"> - Smelling - Looking - Touching - Tasting (where appropriate) - Shaking - Turning 	<p>Know further materials; water, glass, sponge</p> <p>Know and describe further properties of materials (waterproof & not waterproof, stiff & stretchy)</p> <p>Know what materials are best for a certain purpose (What is best for a... glass/ pillow/ table?)</p>	<p>Know why some materials are more suitable for some purposes than others e.g. an umbrella needs to be waterproof, windows need to be transparent</p>	<p>Know about the changes that can happen to water (boiling, freezing and melting)</p> <p>Know that some materials will dissolve in water (sugar in tea)</p> <p>Know that some changes are reversible (melted chocolate can become hard again, water can freeze, melt and boil)</p> <p>Know that some changes are irreversible (a baked cake cannot go back in to the ingredients of flour, sugar, eggs)</p>
Key Vocabulary	material, object, wood, metal, fabric, plastic, rock, soft, hard, rough, smooth	properties, water, glass, sponge, waterproof, stiff, stretch, purpose	suitable, transparent, opaque, solid	boil, melt, freeze, liquid, gas, change, reversible, irreversible, reaction
Seasonal changes, light and sound	<p>Know that some things make sound; musical instruments, doors, people, TV/ computer</p> <p>Know that some things make light; light bulbs, lamps, sensory lights, sun</p> <p>Know and name a variety of weather of types: rain, wind, sunny, snow</p> <p>Knows whether something is hot or cold</p>	<p>Know that sounds can vary (loud and quiet)</p> <p>Know that light can vary (bright and dim)</p> <p>Know two differences between summer and winter (cold and dark/ short nights, hot and sunny)</p>	<p>Know that sound travels to our ears</p> <p>Know that light travels to our eyes</p> <p>Know the four seasons, describing some of their differences</p>	<p>Know that sound travels in waves</p> <p>Know that light travels in straight lines</p> <p>Begin to know that seasonal changes are linked to the Earth's position to the sun</p>

Key Vocabulary	light, sound, noise, weather, rain, sunny, wind, snow, hot, cold	loud, quiet, bright, dim, summer, winter, cold, hot, dark	seasons, autumn, spring, travel, shadow	waves, Earth, sun, position
Forces, magnets and electricity	<p>Know that some everyday items turn on and off: lamp, TV, computer screen, iPad, oven</p> <p>Know that some objects can be pushed and pulled: door, wheel/ push chair, drawer, toy car, ball</p> <p>Knows how to manipulate objects to make them move in different directions</p> <ul style="list-style-type: none"> - Pushing - Pulling - Rolling - Rotating - Spinning <p>Repeat actions that have an effect</p> <ul style="list-style-type: none"> - Pushing - Pulling - Rolling - Rotating - Spinning 	<p>Know that some everyday items need to be plugged in or 'charged' to turn on and off</p> <p>Know that a toy car and ball will move differently on different surfaces (carpet, grass, linoleum floor, rough floor/ surface)</p> <p>Know how to make a simple prediction</p>	<p>Know that magnets only attract certain materials (steel and iron)</p> <p>Know how to conduct a simple experiment with a toy car</p>	<p>Know that electricity is used to power or charge some everyday items</p> <p>Know that objects fall back to Earth because of gravity</p>
Key Vocabulary	on, off, push, pull, roll, spin, rotate	plug, charge, force, move, surface, predict	magnet, attract, magnetic	electricity, gravity

St. Andrew's Holmes School