



Singlewell Primary School

cares about being...

Curious
Ambitious
Resilient
Equal
Safe

Science Curriculum Document

Intent for Science Curriculum

At Singlewell Primary School, we *care* about the teaching and learning of Science. We aim to provide our pupils with the key knowledge and skills required to answer scientific questions whilst encouraging them to be *curious* through questioning. We would like our pupils to leave Singlewell Primary with a confident understanding of how and why the science around them is relevant and important in their lives. Our curriculum has been carefully planned and enables our pupils to build upon their science skills year by year. We aim to instil an *ambitious* approach to investigative work and hope to create *resilient* learners. We follow the National Curriculum and The Developing Experts Scheme online; this is enhanced by digital experiences which emphasises the benefit of oracy, enjoyment and collaboration in Science. Our classrooms highlight the importance of Science at Singlewell as each one features a Science Working Wall with key vocabulary known as Rocket words displayed for each topic. Pupils are introduced to Working Scientifically skills from EYFS to Year 6 through our consistent Science non-negotiables that are displayed in every classroom. We further enhance our Science curriculum through Science Week activities which include educational visits, visitors and *safe* online exploration. We want our pupils to know about key influencers, to see themselves as *equals* in the Science world and to *care* about Science throughout their lives.

Science in Our Early Years Foundation Stage

3-4 Years		Reception		Early Learning Goal	
Communication and Language	Understand 'why' questions, like: "Why do you think the caterpillar got so fat?"	Communication and Language	- Learn new vocabulary. - Ask questions to find out more and to check what has been said to them. - Articulate their ideas and thoughts in well-formed sentences. - Describe events in some detail. - Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen. - Use new vocabulary in different contexts.	Communication and Language: Listening, Attention and Understanding	Make comments about what they have heard and ask questions to clarify their understanding.
Personal, Social and Emotional Development	Make healthy choices about food, drink, activity and tooth brushing.	Personal, Social and Emotional Development	- Know and talk about the different factors that support their overall health and wellbeing: -regular physical activity -healthy eating -tooth brushing -sensible amounts of 'screen time' -having a good sleep routine -being a safe pedestrian	Personal, Social and Emotional Development: Managing Self	Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices.
Understanding the World	- Use all their senses in hands-on exploration of natural materials. - Explore collections of materials with similar and/or different properties. - Talk about what they see, using a wide vocabulary. - Begin to make sense of their own life-story and family's history. - Explore how things work. - 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 and talk about different forces they can feel. - Talk about the differences between materials and changes they notice.	Understanding the World	- Explore the natural world around them. - Describe what they see, hear and feel while they are outside. - Recognise some environments that are different to the one in which they live. - Understand the effect of changing seasons on the natural world around them.	Understanding the World: The Natural World	- Explore the natural world around them, making observations and drawing pictures of animals and plants. - 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. - Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.

	Reception	Y1	Y2	Y3	Y4	Y5	Y6
Working Scientifically	I know that a question is a phrase or sentence which asks for information. I can begin to ask simple questions.	I know that there are many questions for finding answers. I can begin to answer yes/no questions to aid sorting. I can ask questions about the world around us.	I know that questions can be tested to see if they are true. I can begin to recognise that questions can be answered in different ways. I can answer yes/no questions to aid sorting. I can identify the question to investigate from a scenario or choose a question from a range provided. I can ask a question about what might happen in the future based on observation. I can ask a question that is looking for a pattern based on observation.	I know that questions can be answered through scientific enquiry. I can begin to ask some relevant questions and use different types of scientific enquiries to answer them. I can begin to ask a range of yes/no questions to aid sorting.	I can ask a range of relevant scientific questions and use different types of scientific enquiries and use different types of scientific enquiries to answer them. Be able to ask a range of yes/no questions to aid sorting.	I can begin to select and plan the most appropriate ways to answer science questions using different types of scientific enquiry. I can begin to ask a range of yes/no questions to aid sorting and decide which aid of sorting will give useful information.	I can select and plan the most appropriate ways to answer science questions using different types of scientific enquiry. I can ask a range of yes/no questions to aid sorting and decide which ways of sorting will give useful information. I can ask a range of questions recognising that some can be answered through research and others may not. I can ask further questions based on results.

	Y1	Y2	Y3	Y4	Y5	Y6
BIOLOGY: Animals including Humans	I can identify, name, draw & label the basic parts of the human body and say which part of the body is associated with each sense. I can identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. I can identify and name a variety of common animals that are carnivores, herbivores and omnivores. I can describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). <u>Vocabulary</u> fish, amphibian, reptile, bird, mammal head, face, ears, hair, eyes, nose, mouth, teeth, cheek, chin, neck, body, arms, hands, fingers, paws, fins, wings, legs, feet, toes, tail, skin, scales, fur, feathers herbivore, carnivore, omnivore see, look, hear, listen, touch, feel, taste, smell	I can understand that animals, including humans, have offspring, which grow into adults. I can describe the basic needs of animals, including humans, for survival (water, food and air). I can describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. <u>Vocabulary</u> reproduce, offspring, grow, adults survival, water, food, air, shelter exercise, fit, healthy, food, fruit, vegetables, meat, fish, eggs, nuts, pulses, beans, milk, cheese, bread, pasta, rice, butter, vegetable oil, olive oil amphibians, reptiles, birds, mammals, humans herbivore, carnivore, omnivore	I can 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. I can identify that humans and some animals have skeletons and muscles for support, protection and movement. <u>Vocabulary</u> humans, food, feeding, balanced diet, meat, fish, eggs, nuts, pulses, beans, cereal, fruit, vegetables, dairy products milk, cheese, butter, potatoes, bread, rice, pasta, vitamins, minerals food pyramid: fats, proteins, dairy, carbohydrates, fruit and vegetables fish, amphibian, reptile, bird, mammal skeleton, skull, ribs, spine, joints, support, muscles	I can describe the simple functions of the basic parts of the digestive system in humans. I can identify the different types of teeth in humans and their simple functions. I can construct and interpret a variety of food chains, identifying producers, predators and prey. <u>Vocabulary</u> digestion, mouth, teeth, tongue, saliva, oesophagus, stomach, gastric juices, enzyme, small intestine, bile, pancreatic juice, large intestine, rectum teeth, incisors, cut, slice, canines, grip, pierce, premolars, molars, crush, grind, dental, dentist, disclosing tablets food chain, producers, predators, prey, herbivore, carnivore, omnivore	I can describe the changes as humans develop to old age. <u>Vocabulary</u> gestation, fetus, fertilisation, species, birth, death baby, toddler, adolescent, adult, elderly person puberty, hormones, pituitary gland, testosterone, estrogen *Vocabulary to be decided alongside PSHE puberty topic	I can identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. I can recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. I can describe the ways in which nutrients and water are transported within animals, including humans. <u>Vocabulary</u> blood, heart, heart rate, circulation, oxygen, lungs, veins, arteries, cells, pulse rate, healthy diet, exercise, drugs, nutrients, water

	Y1	Y2	Y3	Y4	Y5	Y6
BIOLOGY: Living Things and their Habitats		I can 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. I can explore and compare the differences between things that are living, dead, and things that have never been alive. I can 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. I can identify and name a variety of plants and animals in their habitats, including micro-habitats. <u>Vocabulary</u> living, dead, non-living, habitat, micro-habitat, food chain, field, hedgerow, pond, woodland, seashore, ocean, rainforest, arctic, desert, air, food, water, shelter, heat, warmth, sun		I can recognise that living things can be grouped in a variety of ways. I can explore and use classification keys to help group, identify, and name a variety of living things in their local and wider environment. I can recognise that environments can change and that this can sometimes pose dangers to living things. <u>Vocabulary</u> classify, classification, animal, vertebrates, fish, amphibians, reptiles, birds, mammals, invertebrates, flowering plants, non-flowering plants, environment, habitat, micro-habitat, adaption, human impact, ecological, ecosystem, nature reserves, parks, ponds, pollution, litter, deforestation, field, hedgerow, pond, woodland, seashore, ocean, rainforest, arctic, desert, nest, burrow, air, food, water, shelter, heat, warmth, sun, camouflage.	I can describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. I can describe the life process of reproduction in some plants and animals. <u>Vocabulary</u> life-cycle, reproduction, asexual, sexual, animal, vertebrates, invertebrates, amphibians, reptiles, birds, mammals, insect, babies, young, grow, adult, egg, caterpillar, larva, chrysalis, pupa, head, abdomen, thorax, wings, fur, feathers, scales, plants, seeds, stem, root cuttings, tubers, bulbs, pollen, leaves, flowers, blossom, petals, fruit, roots, bulb, seed, trunk, branches, stem, , stamen, anther, filament, stigma, carpel, ovary, ovule, style, stigma, pollen, seed formation, seed dispersal, pollination, photosynthesis	I can 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. I can give reasons for classifying plants and animals based on specific characteristics. <u>Vocabulary</u> vertebrates, amphibians, reptiles, birds, mammals, invertebrates, insects, spiders, snails, worms, head, abdomen, thorax, wings, fur, feathers, scales, plants, micro-organisms, kingdom, species

	Y1	Y2	Y3	Y4	Y5	Y6
BIOLOGY: Evolution and inheritance						I can recognise that living things have changed over time and that fossils provide information about living things that inhabited Earth millions of years ago. I can recognise that living things produce offspring of the same kind, but normally, offspring vary, and are not identical to their parents. I can identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution <u>Vocabulary</u> fossils, evolution, evolve inherit, inheritance offspring, vary, variation, species adapted, environment, climate, habitat, suited

	Y1	Y2	Y3	Y4	Y5	Y6
BIOLOGY: Plants	I can identify & name a variety of common wild & garden plants, including deciduous and evergreen trees. I can identify and describe the basic structure of a variety of common flowering plants, including trees. <u>Vocabulary</u> leaves, flowers, blossom, petals, fruit, roots, bulb, seed, trunk, branches, stem local environment grass, clover, daisy, buttercup, dandelion, oak, holly, daffodil, tulip lettuce, tomatoes, cucumber, radish, herb	I can observe and describe how seeds and bulbs grow into mature plants. I can describe how plants need water, light and a suitable temperature to grow and stay healthy, and describe the impact of changing these. <u>Vocabulary</u> seeds, bulbs, grow, healthy, water, light, temperature, soil, nutrients leaves, flowers, blossom, petals, fruit, roots, trunk, branches, stem local environment grass, clover, daisy, buttercup, dandelion, oak, holly, daffodil, tulip	I can identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers. I can 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. I can investigate the way in which water is transported within plants. I can explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. <u>Vocabulary</u> leaves, flowers, blossom, petals, fruit, roots, bulb, seed, trunk, branches, stem stamen, anther, filament, stigma, carpel, ovary, ovule, style, stigma air, light, water, nutrients, soil, transport, seed, seedling, bulb, compost, decay, die, fruit, moisture pollen, pollination, seed formation, reproduce dispersal: wind, animal, water, plants			

	Y1	Y2	Y3	Y4	Y5	Y6
PHYSICS: Light			I can recognise that they need light in order to see things and that dark is the absence of light. I can notice that light is reflected from surfaces. I can recognise that light from the sun can be dangerous and that there are ways to protect their eyes. I can recognise that shadows are formed when a solid object blocks the light from a light source. I can find patterns in the way that the size of shadows changes. <u>Vocabulary</u> see, eyes, light, dark, absence, sight light sources, sun, dangerous, lamp, flame, torch, light bulb, day, night, light, dark, dim, sunrise, sunset, dusk reflect, reflection, reflected, shadows, size, shape, pattern, shades			I can recognise that light appears to travel in straight lines. I can use the idea that light travels in straight lines to explain that objects are seen because they give out light into the eye. I can 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. I can use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them. <u>Vocabulary</u> see, eyes, light, sight straight lines, reflect, reflected, reflection light sources, shadows, size, shape, pattern, mirrors rainbows, colour, colour filters, water, refraction

	Y1	Y2	Y3	Y4	Y5	Y6
PHYSICS: Forces			I can compare how things move on different surfaces. I can notice that some forces need contact between two objects, but magnetic forces can act at a distance. I can observe how magnets attract or repel each other and attract some materials and not others. I can 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. I can describe magnets as having two poles. I can predict whether two magnets will attract or repel each other, depending on which poles are facing. Vocabulary force, contact, non-contact, move, pull, push surface, material, carpet, tiles, wood, lino, bubble wrap, sandpaper, fleece, polythene, towel magnet, magnetic, magnetic field, bar, horseshoe, ring, strength, strong, weak, metal, coated attract, repel, poles, north, south		I can explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. I can identify the effects of air resistance, water resistance and friction that act between moving surfaces. I can recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. Vocabulary force, contact, non-contact, gravity, falling, friction, air resistance, water resistance newton, force metre, drag, levers, pulleys, gears move, surface, material, carpet, tiles, wood, lino, bubble wrap, sandpaper, fleece, polythene, towel	

	Y1	Y2	Y3	Y4	Y5	Y6
PHYSICS: Electricity				I can identify common appliances that run on electricity I can construct a simple electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. I can 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. I can recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. I can recognise some common conductors and insulators, and associate metals with being good conductors.	Vocabulary electrical appliances, mains, battery, component, bulb, buzzer, battery, cell, wire, motor, switch, open, closes, circuit, series, complete loop, bright, brightness, current, electrical insulator, plastic, fabric, electrical conductor, metals, water	I can associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. I can compare and give reasons for variations in how components function, including: brightness of bulbs; the loudness of buzzers and the on/off position of switches. I can recognise symbols when representing a simple circuit in a diagram. Vocabulary component, bulb, buzzer, battery, cell, wire, motor, switch, open, closes, circuit, series, complete loop, circuit diagram, bright, brightness, current, volume, volts, voltage, symbols *The words cells and batteries are now used interchangeably

	Y1	Y2	Y3	Y4	Y5	Y6
PHYSICS: Earth and Space					I can describe the movement of the Earth, and the other planets relative to the Sun in the solar system. I can describe the movement of the Moon relative to the Earth. I can describe the Sun, Earth and Moon as approximately spherical bodies. I can use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky. <u>Vocabulary</u> day, night, light, dark, dim, sunrise, sunset, dusk Earth, moon, moons, reflect, sun, star, spherical, rotation, Earth's axis, solar system, Mercury, Venus, Mars, Jupiter, Saturn, Uranus, Neptune (Pluto - dwarf planet) shadow clock, sundials, astronomical clock	

	Y1	Y2	Y3	Y4	Y5	Y6
PHYSICS: Sound				I can identify how sounds are made, associating some of them with something vibrating. I can recognise that vibrations from sounds travel through a medium to the ear. I can find patterns between the pitch of a sound and features of the object that produced it. I can find patterns between the volume of a sound and the strength of the vibrations that produced it. I can recognise that sounds get fainter as the distance from the sound source increases. <u>Vocabulary</u> sound, sources, vibrating, vibrations, medium, waves ear, eardrum, stirrup, cochlea, hammer, nerve, eustachian tube, anvil instruments, pitch, high, low, volume, loudness, loud, soft, quiet, insulation, sound proof, distance, fainter		

	Y1	Y2	Y3	Y4	Y5	Y6
CHEMISTRY: Materials/ States of Matter/ Rocks and Soils	I can distinguish between an object and the material from which it is made. I can identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock. I can describe the simple physical properties of a variety of everyday materials. I can compare & group together a variety of everyday materials on the basis of their simple physical properties. <u>Vocabulary</u> wood, plastic, glass, metal, water, rock, brick, paper, card, rubber, fur, fleece, cotton, wool, polyester, cotton wool, soft, hard, rough, smooth, stretchy, stiff, shiny, dull, rough, smooth, flexible, waterproof, absorbent, not see through, see through, partially see through	I can identify and compare the suitability of a variety of everyday materials, including wood, metal, plastics, glass, brick, rock, paper and cardboard for particular uses. I can describe how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. <u>Vocabulary</u> wood, plastic, glass, metal, water, rock, brick, paper, card, rubber, fur, fleece, cotton, wool, polyester, cotton wool, soft, hard, rough, smooth, stretchy, stiff, shiny, dull, rough, smooth, flexible, waterproof, absorbent, opaque, transparent, translucent, squash, bend, twist, stretch	I can compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. I can describe in simple terms how fossils are formed when things that have lived are trapped within rock. I can recognise that soils are made from rocks and organic matter. <u>Vocabulary</u> rocks, granite, limestone, sandstone, fossil, soil, sandy, peat, decay, compost, soft, hard, rough, smooth, stiff, shiny, dull, rough, texture, waterproof, absorbent, opaque, transparent, translucent	I can compare and group materials together, according to whether they are solids, liquids or gases. I can 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. I can identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. <u>Vocabulary</u> solids, liquids, gases, change state, melt, freeze, heated, cooled, temperature, Celsius, ice, water, steam, water vapour, water-cycle, evaporation, condensation, rate, precipitation, rain, rain fall, snow, sleet	I can 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. I can recognise that some materials will dissolve in liquid to form a solution and describe how to recover a substance from a solution I can use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. I can give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. I can demonstrate that dissolving, mixing and changes of state are reversible changes. I can 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.	

	Y1	Y2	Y3	Y4	Y5	Y6
PHYSICS: Seasons	I can observe changes across the four seasons. I can observe and describe weather associated with the seasons and how day length varies. <u>Vocabulary</u> spring, summer, autumn, winter day, night, light, dark, sunrise, sunset, sun, rain, snow, hail, precipitation, wind, cloud, cloud cover, deciduous, evergreen tree					