



Stoke Canon C of E Primary School

Science Progression Framework



Scientific Enquiry-The skills every pupil needs to ensure they can be a Scientist Being a Scientist-Exemplifying Scientific behaviours which ensure pupils know more and remember more			
EYFS	Year 1/2	Year 3/4	Year 5/6
Pre -school Explore, talk and uses senses to find out about science in the world around us Reception Ask questions Demonstrate curiosity about the world around them. Make predictions With support or prompting, talk about what they think might happen based on their own experiences Decide how to carry out an enquiry Respond to prompts to say what happened to objects, living things or events. Take measurements Use senses and simple equipment to explore the world around them, e.g. binoculars and magnifying glasses Record data Talk to an adult about what has been found/found out Present data Talk to an adult about what has been found/found out	E1: ask simple questions and recognise that they can be answered in different ways E2: observe closely, using simple equipment E3: perform simple tests E4: identify and classify E5: use their observations and ideas to suggest answers to questions E6: gather and record data to help in answering questions	E1: ask relevant questions and use different types of scientific enquiries to answer them E2: set up simple practical enquiries, comparative and fair tests E3: make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers E4: gather, record, classify and present data in a variety of ways to help in answering questions E5: record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables E6: report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions E7: use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions E8: identify differences, similarities or changes related to simple scientific ideas and processes E9: use straightforward scientific evidence to answer questions or to support their findings.	E1: plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary E2: take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate E3: record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs E4: using test results to make predictions to set up further comparative and fair tests E5: report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations E6: identify scientific evidence that has been used to support or refute ideas or arguments

Answer questions using data	B1: Enable pupils to experience and observe phenomena, looking more closely at the natural and humanly-constructed world around them. B2: They should be encouraged to be curious and ask questions about what they notice. B3: They should be helped to develop their understanding of scientific ideas by using different types of scientific enquiry to answer their own questions, including observing changes over a period of time, noticing patterns, grouping and classifying things, carrying out simple comparative tests, and finding things out using secondary sources of information. B4: They should begin to use simple scientific language to talk about what they have found out and communicate their ideas to a range of audiences in a variety of ways.	B1: Pupils in years 3 and 4 should be given a range of scientific experiences to enable them to raise their own questions about the world around them. B2: They should start to make their own decisions about the most appropriate type of scientific enquiry they might use to answer questions; recognise when a simple fair test is necessary and help to decide how to set it up; talk about criteria for grouping, sorting and classifying; and use simple keys. B3: They should begin to look for naturally occurring patterns and relationships and decide what data to collect to identify them B4: They should help to make decisions about what observations to make, how long to make them for and the type of simple equipment that might be used. B5: They should learn how to use new equipment, such as data loggers, appropriately. B6: They should collect data from their own observations and measurements, using notes, simple tables and standard units, and help to make decisions about how to record and analyse this data. B7: With help, pupils should look for changes, patterns, similarities and differences in their data in order to draw simple conclusions and answer questions. B8: With support, they should identify new questions arising from the data, making predictions for new values within or beyond the data they have collected and finding ways of improving what they have already done. B9: They should also recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations. B10: Pupils should use relevant scientific language to discuss their ideas and communicate their findings in ways that are appropriate for different audiences.	B1: Pupils in years 5 and 6 should use their science experiences to: explore ideas and raise different kinds of questions; select and plan the most appropriate type of scientific enquiry to use to answer scientific questions; recognise when and how to set up comparative and fair tests and explain which variables need to be controlled and why. B2: They should use and develop keys and other information records to identify, classify and describe living things and materials, and identify patterns that might be found in the natural environment. B3: They should make their own decisions about what observations to make, what measurements to use and how long to make them for, and whether to repeat them; choose the most appropriate equipment to make measurements and explain how to use it accurately. B4: They should decide how to record data from a choice of familiar approaches; look for different causal relationships in their data and identify evidence that refutes or supports their ideas. B5: They should use their results to identify when further tests and observations might be needed; recognise which secondary sources will be most useful to research their ideas and begin to separate opinion from fact. B6: They should use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas and should talk about how scientific ideas have developed over time.
------------------------------------	---	--	--

Scientific Knowledge

EYFS	Year 1/2		Year 3/4		Year 5/6	
	A	B	A	B	A	B
Animals including Humans Pre-school Learn about the life cycles of animals and humans Compare adult animals to their babies Observe how baby animals change over time Learn about how to take care of themselves Learn about their senses Reception Making observations and drawing pictures of animals Know and talk about the different factors that support their overall health and wellbeing e.g. Physical Activity, Healthy eating, Teeth Begin to understand the need to respect and care for the natural environment and all living things Describe people who are familiar to them	Animals including Humans - identify and name a variety of common animals including, fish, amphibians, reptiles, birds and mammals - identify and name a variety of common animals that are carnivores, herbivores and omnivores - describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets) - identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.	Animals including Humans - 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, air) - Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.	Animals including Humans - 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	Animals including Humans - Describe the simple functions of the basic parts of the digestive system in humans - Identify the different types of teeth in humans and their simple functions - Construct and interpret a variety of food chains, identifying producer, predators and prey	Animals including Humans - Describe the changes as humans develop to old age - Changes from birth to death in humans (incl changes experienced in puberty)	Animals including Humans - 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 life-style on the way their bodies function - Describe the ways in which nutrients and water are transported within animal, including humans - Changes from birth to death in humans (incl changes experienced in puberty)
Living things and their habitats Pre-school Explore the surrounding natural environment Explore natural objects from the surrounding environment Reception Understand the key features of the life cycle of a plant and an		Living things and their habitats - explore and compare the differences between things that are living, dead, and things that have never been alive - identify that most		Living things and their habitats - 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 and their habitats - 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	Living things and their habitats Describe how living things are classified into broad groups according to common characteristics and based on similarities and differences, including

animal Name and describe animals that live in different habitats Describe different habitats Explore the plants and animals in the surrounding natural environment and in a contrasting natural environment		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 - identify and name a variety of plants and animals in their habitats, including microhabitats - 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.		living things in their local and wider environment recognise that environments can change and that this can sometimes pose dangers to living things.		microorganisms, plants and animals Give reasons for classifying plants and animals based on specific characteristics
---	--	--	--	---	--	---

Materials including changing materials Pre school Explore a range of materials Shape and join materials Combine and mix ingredients Change materials by heating and cooling, including cooking Reception Explore natural materials indoors and outside Make objects from different materials, including natural materials 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.	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 variety of everyday materials - compare and group together a variety of everyday materials on the basis of their simple physical properties	Uses of Everyday materials - - identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for different uses - find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching		States of matter - 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 at which this happens in degrees Celsius (°C) - identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	Properties and changes of Materials - 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 some materials will dissolve in liquid to form a solution, and describe how to recover a substance from solution - Use knowledge of solids, liquids and gases to decide how	
--	---	---	--	--	---	--

Observe, measure and record how materials change when heated and cooled Compare how materials change over time and in different conditions					mixtures might be separated, including through filtering, sieving and evaporation • Give reasons, based on evidence from comparative and fair tests, for particular uses of everyday materials, including metals, wood and plastic • 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.	
---	--	--	--	--	--	--

Seasonal Changes Pre school Explore and respond to different natural phenomena in their setting and on trips Reception Play and explore outside in all seasons and in different weather Observe living things throughout the year Forces Pre-school Feel forces Explore how things work Explore how objects/materials are affected by forces Reception Explore and talk about different forces they can feel Explore how to change how things work Explore how the wind can move objects Explore how objects move in water Light Pre-school Explore light sources Shine light on or through different materials Reception Explore shadows and rainbows Sound Pre-school Listen to sounds Make sounds Reception Listen to sounds outside and identify the source Make sounds Earth, Space Reception Learn about the Earth, Sun, Moon, planets and stars Learn about space travel	Seasonal Changes - observe changes across the 4 seasons - observe and describe weather associated with the seasons and how day length varies.		Light. - Recognise that they need light in order to see things and that dark is the absence of light - notice that light is reflected from surface - recognise that light from the sun can be dangerous and that there are ways to protect their eyes - recognise that shadows are formed when the light from a light source is blocked by a solid object - find patterns in the way that the size of shadows change. Forces and magnets - compare how things move on different surfaces - notice that some forces need contact between 2 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 some magnetic materials - describe magnets as having 2 poles - predict whether 2 magnets will attract or repel each other,	Sound- - Identify how sounds are made, associating some of them with something vibrating - Recognise that vibrations from sounds travel through a medium to the ear - 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 Electricity - Identify common appliances that run on electricity - Construct 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 and associate this with whether or not a lamp lights in a simple circuit	Earth, Space - 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 Forces - Explain that unsupported objects fall towards 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 - Study of Galileo and Isaac Newton	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 the 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 Electricity - 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
--	--	--	--	---	--	--

			depending on which poles are facing.	Recognise some common conductors and insulators, and associate metals with being good conductors		
--	--	--	--------------------------------------	--	--	--

Plants Pre school Plant seeds and care for growing plants Grow plants	Plants - identify and name a variety of common wild and garden plants, including deciduous and evergreen trees - identify and describe the basic structure of a variety of common flowering plants, including trees	Plants - observe and describe how seeds and bulbs grow into mature plants - find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.	Plants - identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers - 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 formation and seed dispersal.			
--	--	--	---	--	--	--

			Rocks • 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 trapped within rock • recognise that soils are made from rocks and organic matter.			Evolution and inheritance: • 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
--	--	--	---	--	--	---

