

Parkstone Primary School
Science Long Term Plan - Updated July 2018



Blue= Ideas to enhance science teaching and learning

Yellow = Type of scientific enquiry to be completed that term **as a minimum**. Additional opportunities for scientific enquiry should be planned for where possible.

'Working scientifically' specifies the understanding of the nature, processes and methods of science for each year group. **It should not be taught as a separate strand.** The notes and guidance give examples of how 'working scientifically' might be embedded within the content of biology, chemistry and physics, focusing on the key features of scientific enquiry, so that pupils learn to use a variety of approaches to answer relevant scientific questions (NC).

Key Stage 1

	Autumn Term	Spring Term	Summer Term	Scientific Enquiry
Year 1 of cycle	<p style="text-align: center;">Seasonal Changes (1) Observing over time Pupils should be taught to:</p> <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. <p style="text-align: center;">Everyday Materials (1) Comparative - waterproof materials Researching Pupils should be taught to:</p> <ul style="list-style-type: none"> ♣ 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. 	<p style="text-align: center;">Seasonal Changes (1) Observing over time Pupils should be taught to:</p> <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. <p style="text-align: center;">Animals including humans (1) Identify and classify. Pupils should be taught to:</p> <ul style="list-style-type: none"> ♣ 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. 	<p style="text-align: center;">Seasonal Changes (1) Pattern seeking Pupils should be taught to: ♣ observe changes across the four seasons ♣ observe and describe weather associated with the seasons and how day length varies.</p> <p style="text-align: center;">Plants (1) Observing over time Pupils should be taught to:</p> <ul style="list-style-type: none"> ♣ 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. 	<p>Working scientifically' is described separately in the programme of study, but must always be taught through and clearly related to the teaching of substantive science content in the programme of study. Throughout the notes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content.</p> <p style="text-align: center;">Pattern seeking✓ Comparative testing✓ Identifying/classifying✓ Obs over time✓ Researching✓</p>

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Year 2 of cycle</p>	<p style="text-align: center;">Materials (2)</p> <p style="text-align: center;">Research- famous scientists John McAdam etc</p> <p>Pupils should be taught to:</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 materials can be changed by squashing, bending, twisting and stretching. <p style="text-align: center;">Lab rascals states of matter workshop.</p>	<p style="text-align: center;">Living things and their habitats (2)</p> <p style="text-align: center;">Identify/classify -mini beast's habitats</p> <p>Pupils should be taught to:</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 ♣ identify and name a variety of plants and animals in their habitats, including microhabitats <ul style="list-style-type: none"> ♣ 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 style="text-align: center;">Yorkshire wildlife park/East park animals</p>	<p style="text-align: center;">Animals including humans (2)</p> <p style="text-align: center;">Pattern seeking</p> <p style="text-align: center;">Observing over time - after exercise</p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> ♣ 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 and air) ♣ describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. <ul style="list-style-type: none"> • TESCO FARM TO FORK- Healthy eating / RSPCA Workshop <p style="text-align: center;">Use of everyday Plants (2)</p> <p style="text-align: center;">Comparative - what do plants need to grow?</p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> ♣ 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. 	<p>Working scientifically' is described separately in the programme of study, but must always be taught through and clearly related to the teaching of substantive science content in the programme of study. Throughout the notes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content.</p> <p style="text-align: center;">Pattern seeking✓ Comparative testing✓ Identifying/classifying✓ Obs over time✓ Researching✓</p>
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Year 3 and 4

	Autumn Term	Spring Term	Summer Term	Scientific Enquiry
Year 1 of cycle	<p>States of matter (4) Observing over time - melting</p> <p>Pupils should be taught to:</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 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. <p>Rocks (3) Identify/classify - Comparative - hardest rock Pupils should be taught to:</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 trapped within rock ♣ recognise that soils are made from rocks and organic matter. 	<p>Forces and Magnets (3) Comparative/fair test - surfaces Pupils should be taught to:</p> <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 some magnetic materials ♣ describe magnets as having two poles ♣ predict whether two magnets will attract or repel each other, depending on which poles are facing <p>Animals incl humans (3) Start Spring into Summer Pattern seeking - hand span/height Pupils should be taught to:</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 (3) Pattern seeking - growing cress in different ways Observing over time - transference water Pupils should be taught to:</p> <ul style="list-style-type: none"> ♣ 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. <p>Animals incl humans (3) started Spring into Summer Researching Pupils should be taught to:</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>TESCO FARM TO FORK- Healthy eating</p>	<p>'Working scientifically' is described separately at the beginning of the programme of study, but must always be taught through and clearly related to substantive science content in the programme of study. Throughout the notes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content.</p> <p>Pattern seeking✓ Comparative testing✓ Identifying/classifying✓ Obs over time✓ Researching✓</p>

<p>Year 2 of cycle</p>	<p style="text-align: center;">Light (3) Comparative/fair testing</p> <p>Pupils should be taught to:</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 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 an opaque object ♣ find patterns in the way that the size of shadows change. <p style="text-align: center;">Sound (4) Observations over time</p> <p>Pupils should be taught to:</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 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. <p>Lab Rascals light/sound workshop? Magma?</p>	<p style="text-align: center;">Electricity (4) Researching-</p> <p>Pupils should be taught to:</p> <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 and associate this with whether or not a lamp lights in a simple series circuit ♣ recognise some common conductors and insulators, and associate metals with being good conductors <p style="text-align: center;">Visit from M- the electrician?</p> <p style="text-align: center;">Animals incl humans (4) Comparative - teeth Pattern seeking</p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> ♣ 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 producers, predators and prey. 	<p style="text-align: center;">Animals incl humans (4) *finishing food chains etc</p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> ♣ 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 producers, predators and prey. <p style="text-align: center;">All living things and their habitats (4) Classifying - Pond dipping</p> <p>Pupils should be taught to:</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 ♣ recognise that environments can change and that this can sometimes pose dangers to living things. <p style="text-align: center;">RSPCA free workshop</p>	<p>'Working scientifically' is described separately at the beginning of the programme of study, but must always be taught through and clearly related to substantive science content in the programme of study. Throughout the notes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content.</p> <p style="text-align: center;">Pattern seeking✓ Comparative testing✓ Identifying/classifying✓ Obs over time✓ Researching✓</p>
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Year 5 and 6

	Autumn Term	Spring Term	Summer Term	Scientific Enquiry
Year 1 of cycle	<p>Properties and changes of materials (5) Observing over time - evaporation Pupils should be taught to:</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 materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution ♣ 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, 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. 	<p>Evolution and Inheritance (6) Pattern seeking - Peppered moth Pupils should be taught to:</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 ♣ 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 <p>Forces (5) Comparative testing friction/air/water resistance- fair test Pupils should be taught to:</p> <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>All living things and their habitats (5) Identify and classify - insects/pollinating plants Pupils should be taught to:</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 reproduction in some plants and animals. <p>Animals incl humans (5) Research the gestation periods of other animals and comparing them with humans; by finding out and recording the length and mass of a baby as it grows. Pupils should be taught to:</p> <ul style="list-style-type: none"> ♣ describe the changes as humans develop to old age 	<p>'Working and thinking scientifically' is described separately at the beginning of the programme of study, but must always be taught through and clearly related to substantive science content in the programme of study. Throughout the notes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content.</p> <p>Pattern seeking✓ Comparative testing✓ Identifying/classifying✓ Obs over time✓ Researching✓</p>

<p>Year 2 of cycle</p>	<p>Earth and space (5) Observing over time - shadows Pupils should be taught to:</p> <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. <p>Lab rascals planetarium dome. Light (6) Pattern seeking Pupils should be taught to:</p> <ul style="list-style-type: none"> ♣ 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 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. 	<p>All living things and their habitats (6) Identify and classify - insects / pollinating plants Pupils should be taught to:</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 ♣ give reasons for classifying plants and animals based on specific characteristics. <p>FREE RSPCA workshop Electricity (6) Fair testing - Amplitude - Sirius North Pupils should be taught to:</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 ♣ 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. 	<p>Animals including humans (6) Researching - exploring the work of scientists and scientific research about the relationship between diet, exercise, drugs, lifestyle and health. Pupils should be taught to:</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 ♣ recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function ♣ describe the ways in which nutrients and water are transported within animals, including humans. <p>FREE Tesco farm to fork- healthy eating / food for fuel.</p>	<p>'Working and thinking scientifically' is described separately at the beginning of the programme of study, but must always be taught through and clearly related to substantive science content in the programme of study. Throughout the notes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content.</p> <p>Pattern seeking✓ Comparative and fairtesting✓ Identifying/classifying✓ Obs over time✓ Researching✓</p>
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