

Science Topics Overview 2019-2020 For ideas to help with planning and to help with assessing knowledge please look at the ASE PLAN science on the server and at <https://www.ase.org.uk/plan>. TAPs plans (assessment of ‘Working Scientifically’) for all year groups can be found at <https://pstt.org.uk/resources/curriculum-materials/assessment> Scroll down to ‘Focused Assessment Database’ to find year group activities.

Year group	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
R Provisional plan – depends on the children’s interests both for the topic as a whole and the elements we look at as part of the topic.	All about me - families, bodies, senses, growing and changing L Red Hen bread making	Dinosaurs - fossils Myself, living things and not living things	Castles – different materials Testing strength	Vehicles – floating/sinking, forces - making something move magnets	Animals - Sorting and categorising Nocturnal animals – light and dark. Food drink and health	To be confirmed (child-led)

1	<p>Working scientifically - asking simple questions and recognising that they can be answered in different ways - observing closely, using simple equipment - performing simple tests - identifying and classifying -using their observations and ideas to suggest answers to questions - gathering and recording data to help in answering questions. Please read the N.C. for ideas of how to work scientifically in each topic area.</p> <p>Seasonal Changes -observe changes across the four seasons - observe and describe weather associated with the seasons and how day length varies. Assessment – Seasonal Change TAPs plan (in Summer 2)</p>					
	<p>Plants (intro) - 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> <p>Observations over time – start to observe local plants and trees through the year.</p>	<p>Humans Identifying - parts of the human body/senses.</p> <p>Seasonal Changes: Autumn Observations over time. Pattern Seeking. Working Scientifically, keeping records and detailed drawings.</p>	<p>Animals incl. humans (Birds) Identification of birds in their habitats, including those living in our school grounds.</p> <p>Observations over time – Bird population: before and after the supply of bird food in the KS1 area.</p>	<p>Animals, including humans - Looking at and classifying types of animals/creatures /fish/ birds. Working Scientifically – grouping animals. Researching habitats, foods etc for different living things.</p>	<p>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</p>	<p>Plants (follow up) - 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>

<p>Assessment – Plant structure TAPs plan</p> <p><u>Animals including humans</u> 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 Research – comparing animal groups.</p>	<p>Assessment – Body Parts TAPs plan</p>	<p>Fair testing – which is the “best type of beak” for picking up a range of objects (pretending to be food types)</p> <p>Seasonal Changes: Winter Observations over time. Pattern Seeking. Working Scientifically, keeping records and detailed drawings.</p>	<p>Seasonal Changes: Spring Identifying and classification of blossom to tree within school grounds. Observations over time. Pattern Seeking. Working Scientifically, keeping records and detailed drawings. Assessment – Animal Classification TAPs plan</p>	<p>- 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> <p>Comparative Testing – designing a lunch box for a dog to take to sea.</p> <p>Everyday materials. Fair Testing suitable – floating and sinking comparing materials.</p> <p>Everyday materials: Shells Identifying and classifying different shell types. Pattern seeking – similar patterns in nature.</p>	<p>Observations over time – continue and sum up observations through the year of plants and trees in school grounds.</p> <p>Observing and classifying types of plants – conditions to grow through growing own plants. Trip to allotment.</p> <p>Working Scientifically – close observation, drawing diagrams, keeping records of how plants have changed over time.</p> <p>Seasonal Changes: Summer Observations over time. Pattern Seeking. Working Scientifically, keeping records and detailed drawings.</p>
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					<p>Assessment – Floating and Sinking TAPs plan</p> <p>ANIMALS Life Cycles – Frogs and Butterflies.</p> <p>Observation over time. Assessment – Reflection Tests? TAPs plan</p>	<p>Assessment – Seasonal Change TAPs plan</p>
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2 Working scientifically - asking simple questions and recognising that they can be answered in different ways - observing closely, using simple equipment - performing simple tests - identifying and classifying -using their observations and ideas to suggest answers to questions - gathering and recording data to help in answering questions.

Please read the N.C. for ideas of how to work scientifically in each topic area.

2	<p><u>Animals, including humans</u> – 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</p>	<p><u>Uses of everyday materials</u> - 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</p>	<p>Reinforce <u>Animals including humans</u> – Find out about and describe the basic needs of animals, including humans, for survival (water, food and air) Identifying and classifying</p>	<p><u>Living things and their habitats</u> – 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</p>	<p><u>Plants</u> – 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. Observation over time</p>	<p>Reinforce <u>Uses of everyday materials</u> - Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses</p>
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	<p>different types of food, and hygiene.</p> <p>Observation over time (effect of exercise experiment)</p> <p>Fair/ comparative testing (Which drink has the most sugar in it?)</p> <p>Assessment – Hand spans TAPs plan</p>	<p>some materials can be changed by squashing, bending, twisting and stretching.</p> <p>Identifying and classifying (properties of materials)</p> <p>Fair testing (Best material to keep traction man dry)</p> <p>Assessment – Waterproof TAPs plan</p>	<p>(organising survival needs by importance)</p> <p>Research (Additional animal survival needs)</p>	<p>describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other</p> <ul style="list-style-type: none"> - 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. <p>Research (animals and plants in each habitat/food chains)</p> <p>Identifying and classifying (dead and living things)</p> <p>Assessment -</p>	<p>(diary of plant growth)</p> <p>Fair test (best conditions to grow a plant)</p> <p>Pattern spotting (how water travels through plants)</p> <p>Assessment - Compare Growth TAPs plan</p>	
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				Nature Spotters TAPs plan Or Woodlice		
3	<p><u>Working Scientifically</u> During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:</p> <ul style="list-style-type: none"> - asking relevant questions and using different types of scientific enquiries to answer them - setting up simple practical enquiries, comparative and fair tests - making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers - gathering, recording, classifying and presenting data in a variety of ways to help in answering questions - recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables - reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions - using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions - identifying differences, similarities or changes related to simple scientific ideas and processes - using straightforward scientific evidence to answer questions or to support their findings. <p>Please read the N.C. for ideas of how to work scientifically in each topic area.</p>					
3	<p><u>Rocks</u> -Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties, fossil formation and soils.</p> <ul style="list-style-type: none"> - 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><u>Forces and magnets</u> – Compare how things move on different surfaces</p> <ul style="list-style-type: none"> - notice that some forces need contact between two objects, but magnetic forces act at a distance - observe how magnets attract or repel each other and attract some 	<p>Science Week</p>	<p><u>Plants</u> - identify and describe the functions of different parts 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 	<p><u>Animals, including Humans</u> – 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</p>	<p><u>Light</u> -recognise that they need light in order to see things and that dark is the absence of light</p> <ul style="list-style-type: none"> - notice that light is reflected from surfaces - recognise that light from the sun can be dangerous and that there are

	<p>Identifying and classifying – sorting different types of rocks and soils.</p> <p>Research – Finding out about Mary Anning and fossil formation</p> <p>Assessment – Rock Reports TAPs plan and/or </p>	<p>materials and not others</p> <ul style="list-style-type: none"> - 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>Fair/ comparative testing of objects on different surfaces</p> <p>Identifying and classifying – sorting materials magnetic/ non-magnetic</p> <p>Pattern seeking – comparing different magnets/ strengths</p> <p>Assessment – Strongest magnet TAPs plan</p>		<p>they vary from plant to plant - investigate the way in which water is transported within plants</p> <ul style="list-style-type: none"> - explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. <p>Record findings using simple scientific language, drawings and labelled diagrams</p> <p>Observations over time plus</p> <p>Fair/comparative testing – do plants need leaves to grow well? What condition do plants need to grow well?</p> <p>Assessment – Function of Stem TAPs plan</p>	<ul style="list-style-type: none"> - identify that humans and some other animals have skeletons and muscles for support, protection and movement. <p>Assessment – Investigating Skeletons TAPs plan</p>	<p>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>Observations over time – measuring our shadows during a day.</p> <p>Research – the Sun, dangers</p> <p>Fair testing – what changes the length of a shadow?</p> <p>Assessment – Making Shadows TAPs plan</p>
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				Assessment – Measuring Plants TAPs plan		
4	<p><u>Working Scientifically</u> During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:</p> <ul style="list-style-type: none"> - asking relevant questions and using different types of scientific enquiries to answer them - setting up simple practical enquiries, comparative and fair tests - making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers - gathering, recording, classifying and presenting data in a variety of ways to help in answering questions - recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables - reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions - using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions - identifying differences, similarities or changes related to simple scientific ideas and processes - using straightforward scientific evidence to answer questions or to support their findings. <p>Please read the N.C. for ideas of how to work scientifically in each topic area.</p>					

4	<p><u>Living Things and their Habitats-</u> 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> <p>Identifying and classifying – sorting living creatures using keys & creating own keys to sort other things</p> <p>Research (linked to work on The Broads) changing environments and dangers. Assessment – Local Survey TAPs plan</p>	<p><u>States of Matter -</u> 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> <p>Observation over time – mini water cycle in bowls, observed over a week</p> <p>Research – computer based research on watercycle in order to create a song/drama</p>	<p><u>Living Things and their Habitats-</u> 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> <p>Identifying and classifying – sorting living creatures using keys & creating own keys to sort other things</p> <p>Research (linked to work on The Broads) changing environments and dangers.</p>	<p><u>Electricity -</u> 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>	<p><u>Sound –</u> 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. Pattern seeking - making string telephones to try and</p>	<p><u>Animals, including Humans –</u> 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. Research – matching teeth and digestive sys facts to practical demos</p> <p>Obs over time – effect of different liquids on egg shells</p> <p>Identifying and classifying – looking at diff teeth types and dig systems to classify</p>
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5	<p><u>Working Scientifically</u> During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:</p> <ul style="list-style-type: none"> - planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary - taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate - 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 - reporting and presenting 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 - identifying scientific evidence that has been used to support or refute ideas or arguments. <p>Please read the N.C. for ideas of how to work scientifically in each topic area.</p>					
5	<p><u>Earth in Space</u> – describe the movement of the Earth, and other planets, relative to the Sun in the solar system</p> <ul style="list-style-type: none"> - 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>Research – find out about the solar system through a variety of sources, about times of day lengths via the internet.</p>	<p><u>Materials</u> – 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</p> <ul style="list-style-type: none"> - give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic - know that some materials will dissolve 	<p><u>Materials</u></p> <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 - demonstrate that dissolving, mixing and changes of state are reversible changes <p>Pattern seeking – soluble or insoluble? Fair and comparative testing – dissolving at different</p>	<p><u>Materials</u></p> <ul style="list-style-type: none"> - 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><u>Forces</u> – explain that unsupported objects fall towards the Earth because of the force of</p>	<p><u>Forces</u></p> <ul style="list-style-type: none"> - 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>Observation skills – how things fall (parachutes, sycamore seeds) or slow down.</p>	<p><u>Living Things and their habitats</u></p> <ul style="list-style-type: none"> - describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird - the life process of reproduction in some plants and animals. <p><u>Animals, including Humans-</u> describe the changes as humans develop to old age. Research – naturalists (D. Attenborough),</p>

	<p>Observations over time – length of shadows during the day using a calibrated measure.</p> <p>Assessment – Craters TAPs plan</p>	<p>in liquid to form a solution, and describe how to recover a substance from a solution</p> <p>Thermometer use</p> <p>Pattern seeking – thermal and electrical insulators/ conductors Identifying and classifying on the basis of properties Research – post it note glue (Spencer Silver)</p> <p>Assessment – Insulation Layers TAPs plan</p>	<p>temperatures/ different types of sugar etc.</p> <p>Assessment – Dissolving TAPs plan</p>	<p>gravity acting between the Earth and the falling object</p> <p>Observation skills – Observing changes in irreversible reactions</p>	<p>Fair testing – of different paper shapes falling or spinners, water resistance – plasticine shapes, Comparative tests for friction on blocks/ shoes of different surfaces. Observation skills – making and then observing gears and pulley systems; how levers work</p> <p>Assessment – Spinners TAPs plan and Aquadynamics TAPs plan</p>	<p>Life cycles of different animals,</p> <p>Assessment – Life Cycles Research TAPs plan Research – gestation periods of different animals compared to humans</p> <p>Assessment – Growth Survey TAPs plan</p>
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6	<p><u>Working Scientifically</u> During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:</p> <ul style="list-style-type: none"> - planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary - taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate - 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 - reporting and presenting 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 - identifying scientific evidence that has been used to support or refute ideas or arguments. <p>Please read the N.C. for ideas of how to work scientifically in each topic area.</p>					
6	<p><u>Animals, including humans</u> - identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood</p> <ul style="list-style-type: none"> - 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>Research into scientists</p> <p><u>Comparative testing</u></p>	<p><u>Living things and their habitats</u> - 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</p> <ul style="list-style-type: none"> - give reasons for classifying plants and animals based on specific characteristics. <p><u>Identifying and classifying – sorting</u></p>	<p><u>Evolution and inheritance</u> - recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago</p> <ul style="list-style-type: none"> - 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 		<p><u>Light</u> - recognise that light appears to travel in straight lines</p> <ul style="list-style-type: none"> - 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 	<p><u>Electricity</u> - associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit</p> <ul style="list-style-type: none"> -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

	<p>Which exercise makes our heart rate increase the most?</p> <p>Assessment – Heart Rate TAPs plan</p>	<p>and organising organisms depending on key features</p> <p><u>Research</u> – finding out about key scientists</p> <p>Assessment – Outdoor Keys TAPs plan</p> <p>Assessment – Invertebrate Research TAPs plan</p>	<p>are adapted to suit their environment in different ways and that adaptation may lead to evolution.</p> <p><u>Research</u> – Charles Darwin, research how animals have adapted to their surroundings e.g. camel, penguin, polar bears.</p> <p><u>Fair testing</u> – birds' beaks experiment</p> <p>Assessment – Fossil habitats or Egg Strength TAPs plans</p>		<p>- use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.</p> <p><u>Fair testing</u> – the closer the object to the light source, the larger the shadow</p> <p>Assessment – Investigating Shadows TAPs plan</p>	<p>representing a simple circuit in a diagram.</p> <p><u>Pattern seeking</u> – if one thing changes what happens to the others (eg extra lamps, switches off, extra cells)</p> <p>Assessment – Bulb Brightness TAPs plan</p>
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