

Science - Whole School Curriculum Map - Mrs P Woodley

Year Group:	Autumn Term:	Spring Term:	Summer Term:
EYFS <u>Understanding the world</u>	<p>Early learning goal – the world. Children know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur, and talk about changes.</p> <p>Early learning goal – technology. Children recognise that a range of technology is used in places such as homes and schools. They select and use technology for particular purposes. (Science links)</p>		
Reception:	<p>Identify parts of the human body – developing the skills of using senses and understanding of the different body parts and explaining their purposes.</p> <p>Seasons – autumn walks to explore the current seasonal changes.</p> <p>Identify how these will differ in seasons.</p> <p>Observe the changes in their environment.</p>	<p>Exploring cultural differences between China and our own lives.</p> <p>Investigate Chinese Food Tasting – using our senses, sharing our opinions.</p> <p>Investigate and measure Bean planting – what a plant needs to grow, changes over time, care for living things etc.</p> <p>Measure and explain Pancake day – make pancakes; learning about recipes, weighing out ingredients, explain food safety.</p> <p>Learning about spring – minibeasts, new life, life cycles, seasonal changes.</p> <p>Science - non-magnetic and magnetic, waterproof materials.</p>	<p>Exploring changes seeds make to grow into plants.</p> <p>Exploring animal life cycles – butterflies.</p> <p>Identify all four seasons and comparing the differences.</p> <p>Investigate and classify floating and sinking.</p>
KS1 Working Scientifically Planning Observing Investigating	<p>Observe closely, using simple equipment.</p> <p>Ask simple questions and recognise they can be answered in different ways.</p> <p>Perform simple tests and discuss the level of fairness involved.</p> <p>Recording findings.</p> <p>Use observations and ideas to suggest answers to questions.</p> <p>Gather and record data to help answer questions.</p> <p>Explore the work of Scientists and appreciate the impact this has had on Science.</p>		
Year 1: <i>Order changed 2020-21 from agreed Prog Grid:</i> <i>Materials</i> <i>Animals inc. Humans</i> <i>Plants</i>	<p style="text-align: center;"><u>Animals, including Humans</u></p> <p>Me, Myself and I</p> <p>Identify & name basic body parts.</p> <p>Identify, name and compare common animals and their habitats</p> <p>Know and use vocabulary associated with animals (carnivore, herbivore and omnivore).</p> <p><u>Seasonal changes</u> Observe weather associated with changes of season.</p> <p><u>Key Skills</u> Identify some of the differences between different animals. Identify and name a variety of common animals (birds, fish, amphibians, reptiles, mammals, invertebrates) Identify and name a variety of common animals that are carnivores, herbivores and omnivores.</p>	<p style="text-align: center;"><u>Everyday Materials</u></p> <p>There's No Place Like Home 1st Katie Morag/ 2nd On the farm</p> <p>Distinguish between objects & materials Identify & name common materials.</p> <p>Describe simple properties of some materials Compare & classify materials.</p> <p><u>Seasonal changes</u> Observe weather associated with changes of season.</p> <p><u>Key Skills</u> Distinguish between an object and the material from which it is made. * Describe materials using their senses. Describe materials using their senses, using specific scientific words. *</p>	<p style="text-align: center;"><u>Plants</u></p> <p>Buckets and Spades</p> <p>Identify basic plant parts (roots, leaves, flowers, stem etc.) including trees.</p> <p>Know and use vocabulary associated with plants and trees (deciduous and evergreen).</p> <p><u>Seasonal changes</u> Observe weather associated with changes of season.</p> <p><u>Key Skills</u> Name the petals, stem, leaf, bulb, flower, seed, stem and root of a plant. Identify and name a range of common plants and trees. Recognise deciduous and evergreen trees. Name the trunk, branches and root of a tree. Describe the parts of a plant (roots, stem, leaves, and flowers).</p>

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	<p>Identify the main parts of the human body and link them to their senses. Classify animals by what they eat (carnivore, herbivore, omnivore) Identify the main parts of the human body and link them to their senses. Name the parts of the human body that they can see. Draw & label basic parts of the human body. Name the parts of an animal's body. Name a range of domestic animals. Compare the bodies of different animals. Describe how an animal is suited to its environment? Sort photographs of living things and non-living things.</p> <p>For Summer --> Autumn... Observe changes across the four seasons. Name the four seasons in order. Observe and describe weather associated with the seasons. Observe and describe how day length varies</p>	<p>Explain what material objects are made from. * Explain why a material might be useful for a specific job. * Name some different everyday materials. e.g. wood, plastic, metal, water and rock * Sort materials into groups by a given criteria. *</p> <p>Explain how solid shapes can be changed by squashing, bending, twisting and stretching.</p> <p>Describe things that are similar and different between materials. * Explain what happens to certain materials when they are heated, e.g. bread, ice, chocolate. Explain what happens to certain materials when they are cooled, e.g. jelly, heated chocolate.</p> <p>For Autumn --> Spring... Observe changes across the four seasons. Name the four seasons in order. Observe and describe weather associated with the seasons. Observe and describe how day length varies</p>	<p>For Spring--> Summer... Observe changes across the four seasons. Name the four seasons in order. Observe and describe weather associated with the seasons. Observe and describe how day length varies</p>
Year 2:	<p style="text-align: center;"><u>Animals, inc. Humans</u></p> <p>Identify and classify different categories of animals (working scientifically link).</p> <p>Notice that animals, including humans, have offspring that grow into adults.</p> <p>Describe needs of humans and animals for survival.</p> <p>Describe the importance of a healthy lifestyle, including regular exercise.</p>	<p style="text-align: center;"><u>Uses of Everyday Materials</u></p> <p><i>Classifying and grouping materials</i> Describe the simple physical properties of a variety of everyday materials.</p> <p>Compare and group together a variety of materials based on their simple physical properties.</p> <p><i>Changing materials</i> Explore how the shapes of solid objects can be changed (squashing, bending, twisting, stretching).</p> <p>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> <p>Explain how things move on different surfaces.</p> <p style="text-align: center;"><u>Plants</u></p> <p>Describe what plants need to survive.</p> <p>Observe and describe how seeds and bulbs grow into mature plants.</p> <p>Find out & describe how plants need water, light and a suitable temperature to grow and stay healthy.</p>	<p style="text-align: center;"><u>Living Things and their Habitats</u></p> <p>Match certain living things to the habitats they are found in.</p> <p>Explain the differences between living and non-living things and never been alive.</p> <p>Describe some of the life processes common to plants and animals, including humans.</p> <p>Decide whether something is living, dead or non-living.</p> <p>Describe how a habitat provides for the basic needs of things living there.</p> <p>Describe a range of different habitats.</p> <p>Describe how plants and animals are suited to their habitat.</p> <p>Name some characteristics of an animal that help it to live in a particular habitat.</p> <p>Describe what animals need to survive and link this to their habitats.</p>

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<p><u>Lower KS2 Working Scientifically</u></p> <p>Planning Observing Investigating</p>	<p>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>		
<p>Year 3/4:</p>	<p><u>Cycle 1:</u></p> <p style="text-align: center;"><u>Forces and Magnets</u></p> <p>Compare how things move on different surfaces.</p> <p>Observe magnetic forces transmitting without direct contact.</p> <p>Observe how some magnets attract or repel each other.</p> <p>Classify which materials are attracted to magnets and which are not.</p> <p>Recognise that some forces need contact between two objects, but magnetic forces can act at a distance.</p> <p>Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet.</p> <p>Identify some magnetic materials.</p> <p>Explain that magnets have having two poles.</p> <p>Predict whether two magnets will attract or repel each other depending on which poles are facing.</p> <p style="text-align: center;"><u>Electricity</u></p> <p>Identify common appliances that run on electricity.</p> <p>Construct a simple series circuit.</p> <p>Identify and name basic parts in a series circuit, including cells, wires, bulbs, switches and buzzers.</p> <p>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.</p> <p>Recognise that a switch opens and closes a circuit.</p>	<p><u>Cycle 1:</u></p> <p style="text-align: center;"><u>Rocks</u></p> <p>Compare and group together different rocks on the basis of their appearance and simple physical properties.</p> <p>Describe and explain how different rocks can be useful to us.</p> <p>Describe and explain the differences between sedimentary and igneous rocks, considering the way they are formed.</p> <p>Describe in simple terms how fossils are formed when things that have lived are trapped within rock.</p> <p>Recognise that soils are made form rocks and organic matter.</p> <p>Classify igneous and sedimentary rocks.</p> <p>Begin to relate the properties of rocks with their uses.</p> <p style="text-align: center;"><u>States of Matter</u></p> <p>Compare and group materials together, according to whether they are solids, liquids or gases.</p> <p>Explain what happens to materials when they are heated or cooled.</p> <p>Measure or research the temperature at which different materials change state in degrees Celsius.</p> <p>Use measurements to explain changes to the state of water.</p> <p>Identify the part that evaporation and condensation has in the water cycle.</p> <p>Associate the rate of evaporation with temperature.</p>	<p><u>Cycle 1:</u></p> <p style="text-align: center;"><u>Animals inc. Humans (Yr3)</u></p> <p>Explain the importance of a nutritionally balanced diet.</p> <p>Describe how nutrients, water and oxygen are transported within animals and humans.</p> <p>Identify that animals, including humans, cannot make their own food: they get nutrition from what they eat.</p> <p>Describe and explain the skeletal system of a human.</p> <p>Describe and explain the muscular system of a human.</p> <p>Explain how the muscular and skeletal systems work together to create movement.</p> <p style="text-align: center;"><u>Animals inc. Humans (Yr4)</u></p> <p>Identify and name the basic parts of the digestive system in humans.</p> <p>Describe the simple functions of the basic parts of the digestive system in humans.</p> <p>Identify the simple function of different types of teeth in humans.</p> <p>Compare the teeth of herbivores and carnivores.</p> <p>Explain what a simple food chain shows.</p> <p>Construct and interpret a variety of food chains, identifying producers, predators and prey.</p> <p>Classify living things and non-living things by a number of characteristics.</p> <p>Explain how people, weather and the environment can affect living things.</p>

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	<p>Associate a switch opening with whether or not a lamp lights in a simple series circuit.</p> <p>Recognise some common conductors and insulators.</p> <p>Associate metals with being good conductors.</p> <p>Cross Curricular – DT project to make a simple buzz-wire game to construct a simple series electric circuit.</p> <p>Cycle 2:</p> <p style="text-align: center;"><u>Light</u></p> <p>Recognise that they need light in order to see things.</p> <p>Use knowledge to demonstrate that dark is the absence of light.</p> <p>Light is reflected from surfaces.</p> <p>Explain why sunlight can be dangerous and identify ways to protect eyes.</p> <p>Explain how shadows are formed.</p> <p>Finding patterns in the way shadows change.</p> <p>Explain why lights need to be brighter or dimmer according to need.</p> <p>Explain the difference between transparent, translucent and opaque.</p>	<p>Group and classify a variety of materials according to the impact of temperature on them.</p> <p>Explain what happens over time to materials such as puddles on the playground or washing hanging on a line.</p> <p>Relate temperature to the change of state of materials.</p> <p>Cycle 2:</p> <p style="text-align: center;"><u>Plants</u></p> <p>Identify and describe the functions of different parts of flowering plants (roots, stem/trunk, leaves and flowers).</p> <p>Explore the requirement of plants for life and growth (air, light, water, nutrients from soil, and room to grow).</p> <p>Investigate the way in which water is transported within plants.</p> <p>Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</p> <p>Classify a range of common plants according to many criteria (environment found, size, climate required, etc.).</p>	<p>Explain how certain living things depend on one another to survive.</p> <p>Cycle 2:</p> <p style="text-align: center;"><u>Living things and their Habitats</u></p> <p>Recognise that living things can be grouped in a variety of ways.</p> <p>Explore and use a classification key to group, identify and name a variety of living things (plants, vertebrates, invertebrates).</p> <p>Compare the classification of common plants and animals to living things found in other places (under the sea, prehistoric).</p> <p>Recognise that environments can change and this can sometimes pose a danger to living things.</p> <p>Give reasons for how they have classified animals and plants, using their characteristics and how they are suited to their environment.</p> <p>Explore the work of pioneers in classification e.g. Carl Linnaeus.</p> <p>Name and group a variety of living things based on feeding patterns.</p>
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Sound

Describe a range of sounds and associate sounds with vibrations.

Explain how to change a sound.

Recognise how vibrations from sound travel through a medium to the ear.

Identify patterns between the pitch and volume of a sound and features of the object that produce it.

Explain that sounds get fainter as the distance from the sound source increases.

Explain changes in pitch.

Investigating how different materials can affect the pitch and volume of sounds.

Compare sources of sounds and say how the sounds differ.

Work out which materials give the best insulation for sound.

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<p><u>Upper KS2 Working Scientifically</u></p> <p>Planning Observing Investigating</p>	<p>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. Explore the work of Scientists and appreciate the impact this has had on Science.</p>		
<p>Year 5/6:</p>	<p><u>Cycle 1:</u></p> <p style="text-align: center;"><u>Living Things and their Habitats</u></p> <p>Describe how & classify living things according to common observable characteristics and including micro-organisms, plants and animals.</p> <p>Give reason for classifying plants and animals based on specific characteristics.</p> <p style="text-align: center;"><u>Animals inc. Humans</u></p> <p>Identify and name the main parts of the human circulatory system.</p> <p>Describe the functions of the heart, blood vessels and blood.</p> <p>Recognise the impact of diet, exercise, drugs and lifestyle on the way our bodies function.</p> <p>Describe the ways in which nutrients and water are transported within animals, including humans.</p> <p><u>Cycle 2:</u></p> <p style="text-align: center;"><u>Electricity</u></p> <p>Demonstrate how voltage and number of cells affects electrical components.</p>	<p><u>Cycle 1:</u></p> <p style="text-align: center;"><u>Properties and Changes of Materials</u></p> <p>Compare and group everyday materials based on as range of properties.</p> <p>Understand & explain how materials respond to magnets.</p> <p>Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution.</p> <p>Use knowledge of solids, liquids and gases to separate mixtures including through filtering, sieving and evaporating.</p> <p>Give reasons for particular uses of everyday materials, including metals, wood and plastic.</p> <p>Demonstrate that dissolving, mixing and changes of state are reversible changes.</p> <p>Explain some changes result in the formation of new materials, and this change is not usually reversible eg burning, acid on bicarbonate of soda.</p> <p><u>Cycle 2:</u></p> <p style="text-align: center;"><u>Living Things and their Habitats</u></p> <p>Identify and describe life cycle differences for mammals, birds, insects, amphibians, fish.</p> <p>Identify and explain life processes of reproduction on plants and animals.</p>	<p><u>Cycle 1:</u></p> <p style="text-align: center;"><u>Evolution and Inheritance</u></p> <p>Recognise and give reasons for how living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.</p> <p>Recognise and give reasons for how living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.</p> <p>Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</p> <p style="text-align: center;"><u>Forces (Year 5 focus)</u></p> <p>Demonstrate how objects fall to Earth because of gravity by measuring effects through investigation.</p> <p>Identify and explain the effects of air resistance, water resistance and friction.</p> <p>Investigate and explain how levers, pulleys and gears use smaller forces to have a greater effect.</p> <p><u>Cycle 2:</u></p> <p style="text-align: center;"><u>Light</u></p> <p>Investigate how light travels in straight lines.</p> <p>Investigate how objects are seen by them giving out or reflecting light.</p>

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	<p>Measure bulb brightness, buzzer loudness and motor speeds.</p> <p>Compare and give reasons for variations in how electrical components function in circuits.</p> <p>Use and explain on/off positions of switches.</p> <p>Use and explain circuit symbols to represent components in circuit diagrams.</p> <p>Use specific scientific terminology of circuit symbols.</p>	<p><u>Animals inc. Humans</u></p> <p>Explain changes as humans develop to old age.</p> <p><u>Earth and Space</u></p> <p>Explain movement of Earth and planets in relation to the Sun in solar system.</p> <p>Identify and explain movements of the Moon in relation to Earth.</p> <p>Recognise Sun, Earth, Moon as spherical bodies.</p> <p>Understand Earth's rotation to explain day and night. Observe and explain Sun's apparent movement across the sky.</p>	<p>Explain how we see things using knowledge because light travels into our eyes from light sources, OR from light sources to objects and then into our eyes.</p> <p>Demonstrate how shadows have the same shape as the objects that cast them.</p> <p><u>Forces (Year 5 focus)</u></p> <p>Demonstrate how objects fall to Earth because of gravity.</p> <p>Identify and measure effects of air resistance, water resistance and friction. Use and explain how levers, pulleys and gears use smaller forces to have a greater effect.</p>
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