

Ampney Crucis C of E Primary School Progression Map for Science

Intent:

At Ampney Crucis C of E Primary, we recognise the importance of science in every aspect of daily life. As one of the core subjects taught in primary schools, we give the teaching and learning of science the prominence it requires.

The scientific area of learning is concerned with increasing pupils' knowledge and understanding of our world, and with developing skills associated with science as a process of enquiry. It will develop the natural curiosity of the child, encourage respect for living organisms and the physical environment and provide opportunities for critical evaluation of evidence.

	Throughout the Year	Autumn	Spring	Summer
Year 1 and 2 Cycle A	<p>Working Scientifically</p> <ul style="list-style-type: none"> ➤ Ask simple questions and recognising they can be answered in different ways ➤ Observe closely, using simple equipment ➤ Perform simple Tests ➤ Identifying and classifying ➤ Use observations and ideas to suggest answers to questions ➤ Gathering and recording data to help answer questions. 	<p>Biology Animals including humans (Y1 and Y2) How are humans and animals different and the same?</p> <ul style="list-style-type: none"> • Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals (Y1) • Identify and name a variety of common animals that are carnivores, herbivores and omnivores (Y1) • Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets)(Y1) • Identify, name, draw and label the basic parts of the human body and say which part of the body is associated to which sense (Y1) • Notice that animals, including humans, have offspring which grow into adults (Y2) • Find out about and describe the basic needs of animals, including humans, for survival (water, food and air) (Y2) • Describe the importance for humans of exercise, eating the right amounts of different foods, and hygiene 	<p>Y2) Physics Seasonal changes - Spring and Summer (Y1) How does Spring change into Summer?</p> <ul style="list-style-type: none"> • Observe changes across the four seasons • Observe and compare weather associated with the seasons and how day length varies 	<p>Biology Plants (Y1 and Y2) How do plants grow?</p> <ul style="list-style-type: none"> • Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees (Y1) • Identify and describe the basic structure of a variety of common flowering plants, including trees (Y1) • Observe and describe how seeds and bulbs grow into mature plants (Y2) • Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy (Y2)

<p>Year 1 and 2 Cycle B (2021-22)</p>	<p>Working Scientifically</p> <ul style="list-style-type: none"> ➤ Ask simple questions and recognising they can be answered in different ways ➤ Observe closely, using simple equipment ➤ Perform simple Tests ➤ Identifying and classifying ➤ Use observations and ideas to suggest answers to questions ➤ Gathering and recording data to help answer questions. 	<p>Physics Seasonal changes – Autumn and Winter (Y1) What are the seasons and how are they different?</p> <ul style="list-style-type: none"> • Observe changes across the 4 seasons • Observe and describe weather associated with the seasons and how day length varies <p>Chemistry Everyday materials (Y1 and Y2)</p> <p>What are objects made from and why are they different?</p> <ul style="list-style-type: none"> • Distinguish between an object and the material from which it was made (Y1) <ul style="list-style-type: none"> • Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock (Y1) • Describe the simple physical properties of a variety of everyday materials (Y1) • Compare and group together a variety of everyday materials on the basis of their simple physical properties (Y1) <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 (Y2) • Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching 	<p>Space Scientists & Science Capital</p> <p>Know what skills a scientist uses.</p> <p>Name some jobs that scientists would do and what they would need to do those jobs.</p>	<p>(Y2) Biology Living things and their habitats (Y2) Where do plants and animals live and how do they survive?</p> <ul style="list-style-type: none"> • Explore and compare the differences between things that are living, dead and 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 • 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
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Year 3 and 4 Cycle A	<p>Working Scientifically</p> <ul style="list-style-type: none"> ➤ Asking relevant questions and using different types of scientific enquiries to answer them ➤ Setting up simple practical enquires, 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 and presenting data in a variety of ways to help answer 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 or 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 support their findings. 	<p>Physics Forces and magnets (Y3) Are all metals magnetic?</p> <ul style="list-style-type: none"> • 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 but not others • Compare and group together a variety of everyday materials on the basis of whether they 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, depending on which poles are facing 	<p>Physics Electricity (Y4) How does a circuit work?</p> <ul style="list-style-type: none"> • Identify common appliances that run on electricity • Construct a simple series electrical, identifying and naming its basic parts, including cells, buzzers, wires, bulbs and switches 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 	<p>The BIG experiment - Investigations - Testing - Prediction making - Conclusions - Using equipment</p>	<p>Chemistry Rocks (Y3) Fossils</p> <p>What do rocks tell us?</p> <ul style="list-style-type: none"> <input type="checkbox"/> Compare and group together different types of rocks on the basis of their appearance and simple physical properties <input type="checkbox"/> Describe in simple terms how fossils are formed when things that have lived are trapped within rock <input type="checkbox"/> Recognise that soils are made from rocks and organic matter 	<p>Physics Sound (Y4) Why do some noises sound different to others?</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>Light</p> <p>Why can't we see in the dark?</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 a solid object • Find patterns in the way that the size of shadows change
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Year 3 and 4 Cycle B	<p>Working Scientifically</p> <ul style="list-style-type: none"> ➤ Asking relevant questions and using different types of scientific enquiries to answer them ➤ Setting up simple practical enquires, 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 and presenting data in a variety of ways to help answer 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 or 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 support their findings. 	<p>Animals including Humans</p> <p>Biology Animals including humans (Y3 and Y4) Why do animals need food? • 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 (Y3) • Identify that humans and some other animals have skeletons and muscles for support, protection and movement (Y3) • Describe the simple functions of the basic parts of the digestive system in humans (Y4) • Identify the different types of teeth in humans and their simple functions (Y4) • Construct and interpret a variety of food chains, identifying producers, predators and prey (Y4)</p>	<p>Biology Living things and their habitats (Y4)</p> <p>What is the difference between a shark and a deer? • 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 thing</p>	<p>States of matter (Y4) link with Topic of Climate Change (Geography Unit)</p> <p>Chemistry States of matter (Y4) How do some materials change state? • 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 • Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature</p>	<p>Being Plants</p> <p>Biology Plants (Y3) How do plants survive? • 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 • Identify the way in which water is transported within plants • Explore the part that flowers play in the life cycle</p>	<p>Being A scientist</p>
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Year 5 & 6 Cycle A	<p>Working scientifically</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, bards 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, casual 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>Living Things and their habitats: Life Cycles</p> <ul style="list-style-type: none"> ♣ describe the differences in the life cycles of a mammal, an amphibian, an insect describe the life process of reproduction in some plants and animals- animals and a bird 	<p>Physics Forces (Y5)</p> <p>How has our knowledge of forces influenced everyday life?</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, the act between moving surfaces • Recognise that some mechanisms, including levels, pulleys and gears, allow a smaller force to have a greater effect 	<p>Animals including humans – the Heart and Lungs</p> <p>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>	<p>Biology Living things and their Habitats</p> <p>Classify living things into broad groups according to observable characteristics and based on similarities and differences (Y6)</p> <ul style="list-style-type: none"> • Know how living things have been classified (Y6) • Give reasons for classifying plants and animals in a specific way 	<p>(Y6) Physics Earth and space (Y5)</p> <p>Why is it important for everyday life that we understand about the movement of the earth? • 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>	<p>Field Studies- Decay and Recycling.</p>
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Year 5 & 6 Cycle B	<p>Working scientifically</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, bars 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>Living Things and their Environment</p> <p>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</p> <p>give reasons for classifying plants and animals based on specific characteristic</p>	<p>Materials and their Properties</p> <p>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> <p>give reasons, based on evidence from comparative and fair tests, for the 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 that some changes result in the formation of new materials,</p>	<p>Humans and other Animals</p> <p>Describe the changes as humans develop to old age by drawing a timeline to indicate stages in the growth and development of humans. I can describe the stages of human development. I can explain how babies grow and develop. Record data and results of increasing complexity using bar and line graphs in the context of the growth of babies in height and/or weight during their first year after birth. I can present data. I can record complex data using graphs and models. Reporting and presenting findings from enquiries, including causal relationships by analysing data on gestation periods and life expectancies of animals.</p>	<p>Evolution and inheritance</p> <p>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> <p>recognise that 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>Electricity</p> <p>associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit ♣</p> <p>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 ♣</p> <p>use recognised symbols when representing a simple circuit in a diagram</p>	<p>Light</p> <p>recognise that light appears to travel in straight lines</p> <p>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</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>
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