

## Statement of Intent

### “The important thing is to never stop questioning” Albert Einstein

Science has changed our lives and is vital to the world’s future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science. Our Science curriculum intends to build up a body of key foundational knowledge and concepts, where pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena.

These aims ensure that all pupils:

- Develop scientific knowledge and conceptual understanding through **learning** across specific disciplines of biology, chemistry and physics.
- Develop understanding of the nature, processes and methods of science through different types of science enquiries that **inspire** them to answer scientific questions about the world around them.
- Are equipped with the scientific knowledge required to **flourish**, understanding the uses and implications of science, today and for the future.
- We ensure that the Working Scientifically skills are built-on and developed throughout children’s time at the school so that they can apply their knowledge of science when using equipment, conducting experiments, building arguments and explaining concepts confidently and continue to ask questions and **enjoy** being curious about their surroundings.



# Science at Wantage CE Primary

Design Revision Sept 2022



## Implementation

### **Planning and Lesson**

Teachers create a positive attitude to science learning within their classrooms and reinforce an expectation that all children are capable of achieving high standards in science. Our whole school approach to the teaching and learning of science involves the following;

- In EYFS the specific area of Understanding the World in the Early Years Foundation Stage contains the Science objectives which should be covered. Pupils should be learning scientific knowledge and vocabulary and 'working scientifically' appropriate to their developmental age through practical science linked to their termly Topic.
- From the long-term overview, teachers plan a sequence of lessons, using the skills and knowledge progression document alongside the National Curriculum.
- Through our planning, we involve problem solving opportunities that allow children to find out for themselves using independent practice. Children are encouraged to ask their own questions and be given opportunities to use their scientific skills and research to discover the answers. This is supported by our participation in 'The Big Science Project'.
- Planning involves teachers creating engaging lessons, often involving high-quality resources to aid understanding of conceptual knowledge. Teachers use precise questioning in class to test conceptual knowledge and skills, and assess children regularly using both weekly and monthly reviews, to identify those children with gaps in learning, so that all children keep up.
- We build upon prior learning and skill development of the previous years using small steps. As the children's knowledge and understanding increases, and they become more proficient in selecting, using scientific equipment, collating and interpreting results, they become increasingly confident in their growing ability to come to conclusions based on real evidence.
- Working Scientifically skills are embedded into lessons through guided practice, to ensure these skills are being developed throughout the children's school career and new vocabulary and challenging concepts are introduced through direct teaching. Teachers demonstrate how to use scientific equipment, and the various Working Scientifically skills in order to embed scientific understanding
- Teachers find opportunities to develop children's understanding of their surroundings by accessing outdoor learning and having Areas of English with a scientific focus.

### **Enhancements:**

- Children are offered a wide range of extra-curricular activities, visits, trips and visitors to complement and broaden the curriculum. These are purposeful and link with the knowledge being taught in class. For example Year 2 visit Winchester Science Museum and in Key stage 2 they visit Bristol Aquarium. External visitors from Bright Sparks Science are frequent and supplemented with kit loans to support teaching in school. This is also supported by a dedicated yearly Science Week.
- Children learn the possibilities for careers in science, as a result of our community links and connection with local agencies such as Harwell Science Park and Science Oxford and learn from and work with professionals, ensuring that children have access to positive role models within the field of science from the immediate and wider local community.

### **Assessment:**

Pupils are assessed against the criteria in their Science EYEs, which aligns with the National Curriculum. Pupils outcomes are formally recorded in Year 2 and Year 6 using the following criteria: HNM= Has Not Met or EXS= Expected. In all other primary years, pupils are assessed as: B=Working well below the age-related expectations; WTS= Working towards the age-related expectations; ARE= Working at age-related expectations.

## Impact

By the time the children at Wantage leave our school they should have developed:

- ❖ A passion for Science and an enthusiastic engagement in learning, which develops their sense of curiosity about scientific phenomena, which builds on their foundations of knowledge for understanding the world.
- ❖ recognise that scientific ideas change and develop over time
- ❖ can select the most appropriate ways to answer science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests and finding things out using a wide range of secondary sources of information
- ❖ draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to explain their findings

**Skills Key:** Working Scientifically Biology (Human/Animals & Plants) Chemistry (Materials/Rocks) Physics (Forces/Electricity/Earth and Space/Sound/Light)

| Year/<br>Term    | Term 1                                                                                                                                                                                                                                                                                                                                                                           | Term 2                                                                                            | Term 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Term 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Term 5                                                                                                                                                                                                                                                                                                              | Term 6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
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| <b>Nursery</b>   | Learn about how food is produced and harvested                                                                                                                                                                                                                                                                                                                                   | Contrast light and dark as part of a variety of play activities                                   | Learn about 'hot' and cold' through a variety of play activities / stories. Keep a daily chart                                                                                                                                                                                                                                                                                                                                                                                                         | Observe seasonal change and look for signs of spring<br><br><b>Link:</b> To next Science focus-plants                                                                                                                                                                                                                                                                                                                                                                                                                      | Learn about lifecycles and animals that lay eggs. Observe tadpoles, germinating seeds etc. Plant vegetables and care for the garden<br><b>Link:</b> Back to harvest-Term 1                                                                                                                                          | Examine real objects: fish, shells, wet/dry sand, minibeasts                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Reception</b> | <p>Investigation – what's the best material to build a house?</p> <ul style="list-style-type: none"> <li>➤ use all their senses in hands-on exploration of natural materials</li> <li>➤ explore collections of materials with similar or different properties</li> <li>➤ talk about what they see, using a wide vocabulary</li> </ul> <p><b>Link:</b> Homes topic in History</p> | <p><b>Materials-</b> Potions investigation</p> <p><b>Link:</b> Expressive art and design link</p> | <p>Ice investigation</p> <ul style="list-style-type: none"> <li>➤ explore and talk about different forces they can feel</li> <li>➤ talk about the differences between materials and changes they notice</li> </ul> <p><b>Linked Ideas</b></p> <ul style="list-style-type: none"> <li>➤ how the water pushes up when they try to push a plastic boat under it</li> <li>➤ how they can stretch elastic, snap a twig, but cannot bend a metal rod</li> <li>➤ magnetic attraction and repulsion</li> </ul> | <p>Seasons and spring linked to Easter</p> <ul style="list-style-type: none"> <li>➤ plant seeds and care for growing plants</li> <li>➤ understand the key features of the life cycle of a plant and an animals</li> <li>➤ explore the natural world around them</li> <li>➤ describe what they see, hear and feel whilst outside</li> <li>➤ recognise some environments that are different from the one in which they live</li> <li>➤ understand the effect of changing seasons on the natural world around them</li> </ul> | <p>Life cycles and growth Tad poles</p> <ul style="list-style-type: none"> <li>➤ explore how things work</li> <li>➤ understand the key features of the life cycle of a plant and an animal</li> <li>➤ begin to understand the need to respect and care for the natural environment and all living things</li> </ul> | <p>Understanding importance of healthy bodies and lifestyles</p> <p>Through adult modelling and guidance, they will learn how to look after their bodies, including healthy eating, and manage personal needs independently</p> <ul style="list-style-type: none"> <li>➤ be increasingly independent in meeting their own care needs, for example, brushing teeth, using the toilet, washing and drying their hands thoroughly</li> <li>➤ make healthy choices about food, drink, activity and tooth brushing</li> </ul> |

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| <p><b>Year 1</b></p> | <p><b>Where are my body parts and how do my senses work?</b></p> <p><b>National curriculum:</b><br/>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> <p><b>Knowledge &amp; Skills:</b><br/><b>Biology-Animals, including humans</b></p> <ul style="list-style-type: none"> <li>➤ name the parts of the human body that I can see</li> <li>➤ link the correct part of the human body to each sense</li> </ul> <p><b>Key Vocabulary:</b> head, neck, arms, elbows, legs, knees, face, ears, eyes, hair, mouth, teeth,</p> | <p><b>Why do we have different materials?</b></p> <p><b>National Curriculum:</b><br/>Distinguish between an object and the material from which it is made<br/>Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock.<br/>Describe the simple physical properties of a variety of everyday materials<br/>Compare and group together a variety of everyday materials on the basis of their simple physical properties.</p> <p><b>Knowledge &amp; Skills:</b><br/><b>Chemistry -Everyday materials</b></p> <ul style="list-style-type: none"> <li>➤ distinguish between an object and the material it is made from.</li> <li>➤ explain the materials that an object is made from.</li> <li>➤ name wood, plastic, glass, metal, water and rock.</li> </ul> <p><b>Key Vocabulary:</b><br/>hard/soft; stretchy/stiff; shiny/dull; rough/smooth; bendy/not bendy; waterproof/not waterproof; absorbent/not absorbent; opaque/transparent</p> | <p><b>What animals live in our local habitat and how can we identify them?</b><br/>Animals in the local area</p> <p><b>National Curriculum:</b><br/>use the local environment throughout the year to explore and answer questions about animals in their habitat. They should understand how to take care of animals taken from their local environment and the need to return them safely after<br/>Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals.<br/>Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets)</p> <p><b>Knowledge &amp; Skills:</b><br/><b>Biology-Animals, including humans</b></p> <ul style="list-style-type: none"> <li>➤ name a variety of animals including fish, amphibians, reptiles, birds and mammals</li> <li>➤ sort animals into categories (including fish, amphibians, reptiles, birds and mammals)</li> <li>➤ sort living and non-living things</li> </ul> | <p><b>What materials are suitable for a castle?</b></p> <p><b>Big Science Investigation-</b><br/>Pupil led investigation<br/>Link to materials to cover<br/><b>Knowledge &amp; Skills:</b></p> <p><b>Working Scientifically</b></p> <ul style="list-style-type: none"> <li>➤ ask simple scientific questions</li> <li>➤ use simple equipment to make observations.</li> <li>➤ carry out simple tests</li> <li>➤ suggest what I have found out</li> </ul> <p>use simple data to answer questions</p> <p><b>Knowledge &amp; Skills:</b><br/><b>Chemistry -Everyday materials</b></p> <ul style="list-style-type: none"> <li>➤ describe the properties of everyday materials.</li> <li>➤ group objects based on the materials they are made from.</li> <li>➤ explain why a material might be useful for a specific job</li> <li>➤ explain how solid shapes can be</li> </ul> | <p><b>What animals live in hotter habitats and how are they different?</b></p> <p><b>Animals 2 – looking at animals in a hotter climate different locality.</b><br/><b>National Curriculum:</b><br/><b>Animals in different settings</b><br/>Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals.<br/>Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets)<br/>Identify and name a variety of common animals that are carnivores, herbivores and omnivores</p> <p><b>Knowledge &amp; Skills:</b><br/><b>Biology-Animals, including humans</b></p> <ul style="list-style-type: none"> <li>➤ name a variety of animals including fish, amphibians, reptiles, birds and mammals</li> <li>➤ classify and name animals by what they eat (carnivore, herbivore and omnivore)</li> </ul> | <p><b>How do the seasons and plants change overtime?</b></p> <p><b>National Curriculum:</b><br/>Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees<br/>Identify and describe the basic structure of a variety of common flowering plants, including trees.</p> <p><b>Knowledge &amp; Skills:</b><br/><b>Biology Plants</b></p> <ul style="list-style-type: none"> <li>➤ name a variety of common wild and garden plants</li> <li>➤ name the petals, stem, leaf and root of a plant</li> <li>➤ name the roots, trunk, branches and leaves of a tree</li> </ul> <p><b>Key Vocab:</b> deciduous and evergreen trees, and plant structures (including leaves, flowers (blossom), petals, fruit, roots, bulb, seed, trunk, branches, stem</p> <p>Observe changes across the four seasons<br/>Observe and describe weather associated with the seasons and how day length varies.</p> <p><b>Knowledge &amp; Skills:</b> Link plants to change in seasons</p> <p><b>Physics -Seasonal changes</b></p> |
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| Year 2 | <p><b>Why do we make things out of different materials?</b></p> <p><b>National Curriculum:</b><br/>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><b>Knowledge &amp; Skills:</b></p> <p><b>Chemistry -Everyday materials</b></p> <ul style="list-style-type: none"> <li>➤ identify and name a range of materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard</li> </ul> <p><b>Link Famous Scientist in history:</b><br/>Waterproof (chemistry) – link with significant individual, Charles Mackintosh<br/>Float/sink (physics)</p> | <p><b>Do living things change or stay the same?</b></p> <p><b>National Curriculum:</b><br/>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).</p> <p><b>Knowledge &amp; Skills:</b></p> <p><b>Biology-Life Cycles</b></p> <ul style="list-style-type: none"> <li>➤ explain the basic stages in a life cycle for animals, including humans</li> <li>➤ explain that animals grow and reproduce</li> <li>➤ describe what animals and humans need to survive</li> </ul> | <p><b>Children to create their own question based around diet, exercise and hygiene.</b></p> <p><b>National Curriculum:</b><br/>Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.</p> <p><b>Biology – Importance of good personal hygiene diet and exercise.</b></p> <ul style="list-style-type: none"> <li>➤ describe why exercise, a balanced diet and good hygiene are important for humans</li> </ul> <p><b>Big Science investigation</b> -child led</p> <p><b>Knowledge &amp; Skills:</b></p> <p><b>Working Scientifically</b></p> <ul style="list-style-type: none"> <li>➤ ask simple scientific questions</li> <li>➤ use simple equipment to make observations.</li> <li>➤ carry out simple tests</li> <li>➤ suggest what I have found out</li> <li>➤ use simple data to answer questions</li> </ul> <p><b>Link to History:</b> Changes in hygiene since Victorian time. Also link to prior history topic on</p> | <p><b>How do I grow a healthy plant?</b></p> <p><b>National Curriculum:</b><br/>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> <p><b>Knowledge &amp; Skills:</b></p> <p><b>Biology-Plants</b></p> <ul style="list-style-type: none"> <li>➤ describe how seeds and bulbs grow into plants</li> <li>➤ describe what plants need in order to grow and stay healthy (water, light and suitable temperature)</li> <li>➤ explain that plants grow and reproduce</li> <li>➤ compare how plants grow in different conditions by making measurements</li> </ul> | <p><b>How can materials be manipulated /changed?</b></p> <p>This should build on term 1s knowledge of materials.</p> <p><b>National Curriculum:</b><br/>Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.</p> <p><b>Chemistry -Everyday materials</b></p> <ul style="list-style-type: none"> <li>➤ suggest why a material might or might not be used for a specific job</li> <li>➤ explore how shapes can be changed by squashing, bending, twisting and stretching</li> </ul> <p>How can a material be changed by physical force? – squash, twist etc Pattern seeking, how do materials change with heat? How have materials changed over time? – research based</p> | <p><b>Who eats what?</b></p> <p><b>National Curriculum:</b><br/>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 micro-habitats. 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> <p><b>Knowledge &amp; Skills:</b></p> <p><b>Biology-Living things and their habitats</b></p> <ul style="list-style-type: none"> <li>➤ identify things that are living, dead and never lived</li> <li>➤ describe how a specific habitat provides for the basic needs of things living there (plants and animals)</li> <li>➤ identify and name plants and animals in a range of habitats</li> </ul> |

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| Year 3 | <p><b>How are different rocks formed?</b></p> <p><b>National Curriculum:</b><br/>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> <p><b>Knowledge &amp; Skills:</b><br/><b>Chemistry -Rocks</b></p> <ul style="list-style-type: none"> <li>➤ compare and group rocks based on their appearance and physical properties, giving a reason.</li> <li>➤ describe how fossils are formed.</li> <li>➤ describe how soil is made.</li> <li>➤ describe and explain the difference between sedimentary and igneous rock.</li> <li>➤ describe and explain how different rocks can be useful to us</li> </ul> <p><b>Link:</b> Properties of rocks to stone age tools in history topic</p> | <p><b>What happens without light?</b></p> <p><b>National Curriculum:</b> 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> <p><b>Knowledge &amp; Skills:</b><br/><b>Physics -Light</b></p> <ul style="list-style-type: none"> <li>➤ describe what dark is (the absence of light)</li> <li>➤ explain that light is needed in order to see</li> <li>➤ explain that light is reflected from a surface</li> <li>➤ explain and demonstrate how a shadow is formed.</li> <li>➤ explore shadow size and explain</li> <li>➤ explain the danger of direct sunlight and describe how to keep protected</li> </ul> | <p><b>Why do I have a skeleton?</b></p> <p><b>National Curriculum:</b><br/>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> <p><b>Knowledge &amp; Skills:</b></p> <p><b>Biology-Animals, including humans</b></p> <ul style="list-style-type: none"> <li>➤ explain the importance of a nutritious, balanced diet</li> <li>➤ explain how nutrients, water and oxygen are transported within animals and humans</li> <li>➤ describe and explain the skeletal system of a human</li> <li>➤ describe and explain the muscular system of a human</li> </ul> | <p><b>How do magnets work?</b></p> <p><b>National Curriculum:</b><br/>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> <p><b>Knowledge &amp; Skills:</b></p> <p><b>Physics-Magnets</b></p> <ul style="list-style-type: none"> <li>➤ explain how some forces require contact and some do not, giving examples</li> <li>➤ explore and explain how objects attract</li> </ul> | <p><b>When does Friction occur?</b></p> <p>Compare how things move on different surfaces notice that some forces need contact between two objects.</p> <p><b>Physics – Forces friction</b></p> <ul style="list-style-type: none"> <li>➤ explore and describe how objects move on different surfaces</li> </ul> | <p><b>Why do plants have different parts?</b></p> <p><b>National Curriculum:</b><br/>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> <p><b>Knowledge &amp; Skills:</b></p> <p><b>Biology-Plants</b></p> <ul style="list-style-type: none"> <li>➤ describe the function of different parts of flowering plants and trees</li> <li>➤ explore and describe the needs of different plants for survival</li> <li>➤ explore and describe how water is transported within plants</li> <li>➤ describe the plant life cycles, especially the importance of flowers</li> </ul> |

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|        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <p><b>Link:</b> Light to the topic of 'Is fire a gift or a curse?'</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <p>and repel in relation to objects and other magnets</p> <ul style="list-style-type: none"> <li>➤ predict whether objects will be magnetic and carry out an enquiry to test this out</li> <li>➤ describe how magnets work</li> <li>➤ predict whether magnets will attract or repel and give a reason</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Year 4 | <p><b>How do circuits work?</b><br/><b>National Curriculum:</b><br/>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><b>Knowledge &amp; Skills:</b><br/><b>Physics-Electricity</b></p> <ul style="list-style-type: none"> <li>➤ Identify and name appliances that require electricity to function</li> </ul> | <p><b>What happens to our food?</b><br/><b>National Curriculum:</b><br/>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> <p><b>Knowledge &amp; Skills:</b><br/><b>Biology-Digestion</b></p> <ul style="list-style-type: none"> <li>➤ identify and name the parts of the human digestive system</li> <li>➤ describe the functions of the organs in the human digestive system</li> <li>➤ identify and describe the different types of teeth in humans</li> <li>➤ describe the functions of different human teeth</li> <li>➤ use food chains to identify producers, predators and prey</li> <li>➤ construct food chains to identify producers, predators and prey</li> </ul> | <p><b>Solid, liquid or gas?</b><br/><b>National Curriculum:</b><br/>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)</p> <p><b>Chemistry-States of Matter</b></p> <ul style="list-style-type: none"> <li>➤ group materials based on their state of matter (solid, liquid, gas)</li> <li>➤ describe how some materials can change state</li> <li>➤ explore how materials change state</li> </ul> <p>measure the temperature at which materials change state</p> | <p><b>How do we hear noises?</b><br/><b>Big Science Investigation</b><br/><b>National Curriculum:</b><br/>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> <p><b>Knowledge &amp; Skills:</b><br/><b>Physics-Sound</b></p> <ul style="list-style-type: none"> <li>➤ describe how sound is made.</li> <li>➤ explain how sound travels from a source to our ears.</li> <li>➤ explain the place of vibration in hearing.</li> </ul> | <p><b>Where does water come from?</b><br/><b>National Curriculum:</b><br/>Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</p> <p><b>Letcombe Brook project</b></p> <p><b>Knowledge &amp; Skills:</b><br/><b>Chemistry-States of Matter</b></p> <ul style="list-style-type: none"> <li>➤ I describe the water cycle</li> <li>➤ explain the part played by evaporation and condensation in the water cycle</li> </ul> | <p><b>How can we protect our environment?</b><br/><b>National Curriculum:</b><br/>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><b>Knowledge &amp; Skills:</b><br/><b>Biology-Living things and their habitats</b></p> <ul style="list-style-type: none"> <li>➤ group living things in different way</li> <li>➤ use classification keys to group, identify and name living things</li> <li>➤ create classification keys to group, identify and name living things (for others to use)</li> <li>➤ describe how changes to an environment could endanger living things</li> </ul> |

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|        | <ul style="list-style-type: none"> <li>➤ construct a series circuit.</li> <li>➤ Identify and name the components in a series circuit (including cells, wires, bulbs, switches and buzzers)</li> <li>➤ Draw a circuit diagram</li> <li>➤ predict and test whether a lamp will light within a circuit</li> <li>➤ describe the function of a switch in a circuit</li> <li>➤ Describe the difference between a conductor and insulators; giving examples of each</li> </ul> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <ul style="list-style-type: none"> <li>➤ explore the correlation between pitch and the object producing a sound.</li> <li>➤ explore the correlation between the volume of a sound and the strength of the vibrations that produced it.</li> <li>➤ describe what happens to a sound as it travels away from its source</li> </ul>                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Year 5 | <p><b>How does a life cycle work?</b><br/><b>National Curriculum:</b></p> <p>Describe the life process of reproduction in some plants and animals.</p> <p><b>Knowledge &amp; Skills:</b></p> <p><b>Biology- Habitats</b></p> <ul style="list-style-type: none"> <li>➤ describe the life cycle of different plants</li> <li>➤ describe the process of reproduction in plants.</li> </ul> <p><b>Link:</b> Geography-How is land used; how could this impact habitats?</p> | <p><b>Why do objects always fall to the ground?</b><br/><b>National Curriculum:</b></p> <p>Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.</p> <p>Identify the effects of air resistance, water resistance and friction that act between moving surfaces.</p> <p><b>Knowledge &amp; Skills:</b></p> <p><b>Physics -Forces</b></p> <ul style="list-style-type: none"> <li>➤ explain what gravity is and its impact on our lives.</li> <li>➤ identify and explain the effect of air resistance.</li> </ul> | <p><b>What is up in space and how does it work?</b><br/><b>National Curriculum:</b></p> <p>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</p> <p>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><b>Knowledge &amp; Skills:</b></p> <p><b>Physics -Earth and space</b></p> <ul style="list-style-type: none"> <li>➤ describe and explain the movement of the Earth and other planets relative to the Sun</li> </ul> | <p><b>Why do we need Levers Pulleys and Gears?</b><br/><b>Big Science question</b></p> <p><b>National Curriculum:</b></p> <p>Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.</p> <ul style="list-style-type: none"> <li>➤ identify and explain the effect of friction.</li> <li>➤ explain how levers, pulleys and gears allow a smaller force to have a greater effect.</li> </ul> | <p><b>How does a life cycle work?</b><br/><b>National Curriculum:</b></p> <p>Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird</p> <p>Describe the life process of reproduction in some animals.</p> <p><b>Knowledge &amp; Skills:</b></p> <p><b>Biology- Habitats</b></p> <ul style="list-style-type: none"> <li>➤ describe the life cycle of different living things e.g mammal, amphibian, insect, bird.</li> <li>➤ describe the difference between different life cycles.</li> </ul> | <p><b>How can materials be changed and is this reversible?</b><br/><b>National Curriculum:</b></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>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 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.</p> |

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|        |                                                                             | <ul style="list-style-type: none"> <li>➤ identify and explain the effect of water resistance.</li> </ul> | <ul style="list-style-type: none"> <li>➤ describe and explain the movement of the Moon relative to the Earth</li> <li>➤ explain and demonstrate how night and day are created</li> <li>➤ describe the Sun, Earth and Moon (using the term spherical)</li> </ul> |                                                                                                                                          | <ul style="list-style-type: none"> <li>➤ describe the process of reproduction in animals.</li> </ul> <p><b>Do we change as we grow?</b></p> <p><b>Puberty</b></p> <p><b>National Curriculum:</b><br/>Describe the differences in the life cycles of a mammal</p> <p>(Non-Statutory guidance)<br/>Pupils should draw a timeline to indicate stages in the growth and development of humans. They should learn about the changes experienced in puberty.<br/>Pupils could work scientifically by researching 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.</p> <p><b>Knowledge &amp; Skills:</b></p> <p><b>Humans and other animals</b></p> <ul style="list-style-type: none"> <li>➤ describe the changes as humans develop to old age</li> </ul> <p><b>Link:</b> PSHCE- Nurse visit-discussion on puberty</p> | <p>Demonstrate that dissolving, mixing and changes of state are reversible changes.<br/>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> <p><b>Knowledge &amp; Skills:</b></p> <p><b>Chemistry-properties and changes of materials</b></p> <ul style="list-style-type: none"> <li>➤ compare and group materials based on their properties (e.g hardness, solubility, transparency, conductivity, [electrical and thermal] and response to magnets)</li> <li>➤ describe how a material dissolves to form a solution; explaining the process of dissolving</li> <li>➤ describe and show how to recover a substance from a solution</li> <li>➤ describe how some materials can be separated</li> <li>➤ demonstrate how materials can be separated (e.g through filtering, sieving and evaporating)</li> <li>➤ know and can demonstrate that some changes are reversible and some are not</li> <li>➤ explain how some changes result in a formation of a new materials and that this is usually irreversible</li> <li>➤ discuss reversible and irreversible changes</li> <li>➤ give evidenced reasons why materials should be used for specific purposes</li> </ul> |
| Year 6 | <p>How are living things classified?</p> <p><b>National Curriculum:</b></p> | <p>What effects the brightness of a bulb?</p> <p><b>National Curriculum:</b></p>                         | <p>How does light travel?</p> <p><b>National Curriculum:</b></p>                                                                                                                                                                                                | <p>Why is it important to look after our heart?</p> <p><b>National Curriculum:</b><br/>Identify and name the main parts of the human</p> | <p>Why do things adapt?</p> <p><b>National Curriculum:</b><br/>Recognise that living things have changed over time and</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <p><b>Revisiting Science</b><br/><b>Child Led VAT Transition project</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

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|  | <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. Give reasons for classifying plants and animals based on specific characteristics.</p> <p><b>Knowledge &amp; Skills:</b></p> <p><b>Biology-Living things and their habitats</b></p> <ul style="list-style-type: none"> <li>➤ classify living things into broad groups according to observable characteristics and based on similarities and differences.</li> <li>➤ describe how living things have been classified</li> <li>➤ give reasons for classifying plants and animals in a specific way</li> </ul> | <p>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> <p><b>Knowledge &amp; Skills:</b></p> <p><b>Physics- Electricity</b></p> <ul style="list-style-type: none"> <li>➤ explain how the number and voltage of cells in a circuit links to the brightness of a lamp or the volume of a buzzer</li> <li>➤ compare and give reasons for why components work and do not work in a circuit.</li> <li>➤ draw circuit diagrams using the correct symbols.</li> </ul> | <p>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> <p><b>Knowledge &amp; Skills:</b></p> <p><b>Physics -Light</b></p> <ul style="list-style-type: none"> <li>➤ explain how light travels</li> <li>➤ explain and demonstrate how we see objects</li> <li>➤ explain why shadows have the same shape as the object that casts them</li> <li>➤ explain how simple optical instruments work e.g periscope, telescope, binoculars, mirror, magnifying glass etc</li> </ul> | <p>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><b>Knowledge &amp; Skills:</b></p> <p><b>Biology- Animals, including humans</b></p> <ul style="list-style-type: none"> <li>➤ identify and name the main parts of the human circulatory system</li> <li>➤ describe the function of the heart, bloody vessels and blood <ul style="list-style-type: none"> <li>➤ discuss the impact of diet, exercise, drugs and life-style on health</li> </ul> </li> <li>➤ describe the ways in which nutrients and water are transported in animals, including humans</li> </ul> | <p>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> <p><b>Knowledge &amp; Skills:</b></p> <p><b>Biology- Evolution and inheritance</b></p> <ul style="list-style-type: none"> <li>➤ describe how the earth and living things have changed over time</li> <li>➤ explain how fossils can be used to find out about the past</li> <li>➤ explain about reproduction and offspring (recognising that offspring normally vary and are not identical to their parents)</li> <li>➤ explain how animals and plants are adapted to suit their environment</li> <li>➤ link adaptation over time to evolution.</li> <li>➤ explain evolution</li> </ul> <p><b>Link:</b> Darwin history topic</p> |
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# Science at Wantage CE Primary

Design Revision Sept 2022

