

The Science Curriculum at Hunsley Primary

Within our science curriculum, our children gain an understanding of many scientific concepts and learn through developing their working scientifically skills. Our children know which area of science they are studying and how the different scientific concepts are linked together. Our curriculum aims to develop inquisitive thinkers: who can ask questions, develop investigations, make observations and draw conclusions about what they have discovered. Our science curriculum gives our children the opportunity to learn about the world around them, to explore how things work and why things happen. They have the opportunities to apply this learning within our local context and make links with the wider world. This will be enhanced through visits, visitors in school and location field work. Through all their learning, our curriculum allows our children to identify and analyse the impact of the work of current and past scientists, and look at how science impacts our everyday lives. They will be able to discuss the moral and ethical nature of science discovery and its impact on the world.

Key threshold concepts – working scientifically

- Our children ask scientific questions
- Our children predict what might happen based on scientific knowledge
- Our children choose the best way to measure results
- Our children choose how to record data and results in different ways
- Our children understand and use scientific vocabulary
- Our children explain what happened and why using PEE (Point, Evidence, Explanation)
- Our children understand and plan fair tests
- Our children observe and describe accurately
- Our children classify accurately and in different ways
- Our children choose the appropriate equipment and investigation needed to answer a question
- Our children repeat tests and look for patterns

Key threshold concepts – chemistry, physics and biology

- Our children know there are different types of forces and how they affect the way things move.
- Our children understand how electrical circuits work; recognising symbols and drawing simple circuit diagrams.
- Our children know about how and why we see objects and hear sounds. They understand what a shadow and that dark is the absence of light. They know that light travels in straight lines and that sound travels through a medium to the ear.
- Our children understand the processes of reproduction and photosynthesis, explaining their importance to life in the world.
- Our children name a variety of plants and animals in different habitats and can classify these plants and animals in different ways. They understand basic evolution and inheritance and how plants and animals have changed and adapted to their surroundings.
- Our children can explain the functions of organs and systems within the human body.
- Our children can name materials, understand how their properties affect their uses and investigate how materials can be changed. They know what makes a good insulator and conductor.
- Our children know how rocks and fossils are formed.
- Our children can understand, and explain the importance of, the water cycle.
- Our children understand how solids, liquids and gases are formed through heating and cooling. They understand that some changes are reversible and some are not.
- Our children can describe the movement of the Earth, and other planets, relative to the Sun in the solar system. They understand that this is what gives us night, day and different seasons throughout the year.

	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Chemistry	Distinguish between an object and the material it is made from Identify and name a variety of everyday materials Use simple properties of materials to compare and group them	Explore the suitability of different materials for their purpose Explore how materials can be changed by squashing, stretching and twisting.	Explore how materials change state (solids, liquids, gases) Compare and group materials, based on whether they are solids, liquids or gases	Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature	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.	Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution 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 Carry out and apply fair tests to materials to test these properties and give reasons for the properties and grouping	Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating Demonstrate that dissolving, mixing and changes of state are reversible changes 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
Physics	Explore light and shadow, describing what they see Explore ways to make different sounds Explore the four seasons	Recognise that we need light to see things and that dark is the absence of light Know that light is reflected from surfaces Know that light from the sun is dangerous Explore how shadows are made Explore how the length of the day varies through the year.	Identify common appliances that use electricity Compare how things move on different surface Construct a simple circuit, naming basic parts and being introduced to simple basic symbols Identify whether or not a lamp will light in a simple series circuit, based on whether or not the	Identify how sounds are made (vibrations) Know that vibrations 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 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 Identify the effects of air resistance, water resistance and friction, that act between moving surfaces	Recognise that light appears to travel in straight lines Explore how objects are seen Explore further how light and shadows shape is the same, but size is different 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	Explore how you can make a buzzer louder or a bulb brighter Explore and explain the reasons for change in components of a circuit Further work on electrical symbols Design and carry our own forces investigations to apply knowledge

Curriculum Subject Sequencing Maps

			<p>lamp is part of a complete loop with a battery</p> <p>Compare how things move on different surface</p> <p>Explore magnetic force and how this can act at a distance</p> <p>Observe how magnets attract and repel each other and attract some materials and not others</p> <p>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</p> <p>Describe magnets as having two poles</p> <p>Predict whether two magnets will attract each other or repel each other depending which poles are facing</p>	<p>Recognise that sounds get fainter as the distance from the sound source increases</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>Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object</p> <p>Recognise forces change when using some mechanisms including levers, pulleys and gears</p>	
Biology	<p>Explore how to take care of animals (pets)</p> <p>Explore basic animal lifecycles (chicken, frog, butterfly)</p> <p>Observe, describe and name a range of common garden and wild plants (local)</p> <p>Observe, describe and name a range of common animals (local)</p> <p>Name simple external parts of the human body</p>	<p>Study a local habitat, revisit and apply knowledge of common garden/wild plants and animals</p> <p>Explore things that are living, dead and were never alive</p> <p>Name more complex external parts of the human body</p> <p>Explore the human lifecycle</p> <p>Know how to take care of ourselves</p> <p>Know the categories for classifying animals (fish, amphibian, mammal, insect, reptile, bird, carnivore, herbivore, omnivore)</p> <p>Know the basic structure of a plant and tree</p>	<p>Name plants and animals in a range of different habitats</p> <p>Investigate the needs of plants and animals within these habitats, including sources of food and their suitability to the habitat (initial evolution/adaptability).</p> <p>Explore simple food chains</p> <p>Develop and compare lifecycles linked to animal categories</p> <p>Observe, describe and compare how seeds and bulbs grow</p> <p>Investigate the effect of water, light, food on the growth of a plant</p>	<p>Know that humans can't make their own food</p> <p>Know the right types of nutrition for healthy growth</p> <p>Explore the human skeleton and muscles</p> <p>Describe the life process of reproduction in some plants</p> <p>Identify the function of parts of flowering plants</p> <p>Know about pollination and seed dispersal</p> <p>Explore how the needs of plants might change depending on its environment (e.g. cactus verses a water lily)</p> <p>Explore how water is transported within plants</p>	<p>Describe the simple functions of the basic parts of the digestive system in humans</p> <p>identify the different types of teeth in humans and their simple functions</p> <p>investigate more complex food chains and make comparisons between food chains (using science vocabulary of predator, consumer and so on)</p> <p>Name a range of living things in the local and wider environment, grouping them in a variety of ways</p> <p>Understand and use classification keys</p> <p>Recognise that environments can change and that this can sometimes pose dangers to living things</p>	<p>Explore the changes in humans as they grow and develop</p> <p>Describe the life process of reproduction in some animals</p> <p>Classification of plants and animals depending on habitats, lifecycles and food chains</p>	<p>Exploring human systems (heart, lungs and so on)</p> <p>Exploring the impact of diet, exercise, drugs and lifestyle choices on our bodies</p> <p>Describe how nutrients and water are transported around the body</p> <p>Exploring evolution and inheritance</p> <p>Using characteristics to classify and giving reasons for this</p>