



## Curriculum Planning

### Intent

- Our Science curriculum has been carefully planned and designed to encompass the content of the National Curriculum and the North Yorkshire Scheme of Learning (NySoL).
- Pupils' science education begins in the early years and builds year on year, developing pupils' expertise.
- Curriculum plans have been constructed effectively in line with the NySoL Scheme to ensure that pupils know more, remember more and are able to do more.
- Key knowledge has been mapped out from the early years to the end of KS2 to ensure that the curriculum is coherently sequenced and there is clear progression.
- The organisation of the curriculum builds both knowledge and skills of enquiry so that pupils can draw on it in future learning.
- Each of the 5 types of enquiry (Research, Comparative and Fair Tests, Pattern Seeking, Grouping and Classifying, Observing Over Time) is taught at least once every term.
- Working scientifically skills are embedded into every lesson to ensure these skills are being developed throughout the curriculum.
- Vocabulary has been identified and outlined clearly so that this can be taught explicitly within lessons.
- Clearly defined end points have been identified to ensure that pupils build upon prior learning and develop their knowledge of key concepts.
- Pupils commit knowledge to their long-term memory through recalling and repeated practice outlined in plans.

### Implementation

Within and beyond our classrooms we provide a range of opportunities and implement a range of teaching methods to ensure that over the course of study, teaching is designed to help learners to remember in the long term the content they have been taught and to integrate new knowledge into larger concepts.

- Knowledge organisers which outline knowledge (including vocabulary) all children must master and apply in lessons are introduced at the start and referred to throughout a unit of study.
- A well sequenced cycle of lessons carefully plans for progression and depth concentrating on the scientific knowledge and skills suited to the age group.
- Lessons follow a consistent structure of retrieval, explanation, application and assessment which may include such features as questioning, modelling, individual, partner, group or whole class activities.
- Regular practical experiments are carried out focusing on scientific enquiry
- Enrichment activities, including visits and visitors to school
- Working walls reflect what is being taught, vocabulary, relevant diagrams, photos and display the 5 types of science enquiry characters
- Our inclusive approach is demonstrated through the way in which tasks and activities are adapted to ensure that all pupils are able to access the curriculum.
- Through retrieval, teachers make sure that pupils can draw on what they already know so that they can remember more.
- Key vocabulary is explicitly taught to enable pupils to develop their range of geographical vocabulary and understanding.
- Assessment for learning strategies are used at the start, during and at the end of lessons to assess pupils' learning and identify any gaps or misconceptions.

### Impact

- Our Science Curriculum is high quality, well thought out and is planned to demonstrate progression. If children are keeping up with the curriculum, they are deemed to be making good or better progress. In addition, we measure the impact of our curriculum through the following methods:
  - Pre and post unit assessments
  - Assessment against end of year expectations detailed on Pupil Progress Records with clearly identified end points. These are then passed to the receiving teacher to ensure any gaps can be addressed when a key concept is revisited.



### Progression of Working Scientifically vocabulary

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
What...? How ....? Why ...? Similar different best and worst Change Plan look biggest and smallest compare sort group	observe change slowly quickly Describe name identify label record measure bigger and smaller pattern notice cycle predict	gradually identify observe Recognise investigate record units table fair evidence research Length observations prediction	similarities differences research and source scientists discovery process cycle Measurements conclude evaluate rank plan vary keep the same/constant bar graph table tally	classify interpret pattern relationship prediction analyse interpret conclude evaluate rank variable constants control repeat key relationship line graph	hypothesis variable constants evaluate plan conclude interpret classify categorise database enquiry control repeat support refute degree of trust scatter graph



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KS1 Medium Term Plans	Autumn Term		Spring Term		Summer Term		
<p><b>Prior Knowledge (Retrieval)</b></p>	<p><b>KS1</b> Distinguish between an object and the material from which it is made</p> <p>Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock</p> <p>Describe the simple physical properties of a variety of everyday materials</p> <p>Compare and group together a variety of everyday materials based on their simple physical properties</p> <p>Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for uses</p>	<p><b>KS1</b> Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching</p>	<p><b>KS1</b> Notice that animals, including humans, have offspring which grow into adults</p> <p>Find out about and describe the basic needs of animals, including humans, for survival (water, food and air)</p> <p>Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene</p>	<p><b>KS1</b> 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>KS1</b> Observe and describe how seeds and bulbs grow into mature plants</p> <p>Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy</p>		
<p><b>Working Scientifically (Skills to be taught throughout the year)</b></p>	<p><b>PLAN</b></p>		<p><b>DO</b></p>		<p><b>REVIEW</b></p>		
	<p>Ask questions and recognise that there are different types of enquiries.</p>	<p>Set up a simple practical enquiry and begin to understand how to make a test fair</p> <p>Make suggestions about what observations and measurements to make and what equipment is need.</p>	<p>Begin to make systematic and careful observations. sometimes using standard units.</p> <p>With help use information sources provided to find things out.</p>	<p>Gather data and use a pre-prepared table Record data.</p> <p>Record finding using a drawing and/or words.</p>	<p>With help, present data</p>	<p>Use results when talking about what happened.</p>	<p>Talk about what went wrong</p> <p>Suggest ideas about what else could be found out.</p>



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Y3	Knowledge and Skills to be developed:		Knowledge and Skills to be developed:		Knowledge and Skills to be developed:	
	<p><b>Rocks and soils</b> L1 – <u>Identifying, classifying and grouping</u> To explore and group rocks based on their properties</p> <p>L2- <u>Comparative and fair testing</u> To plan and carry out a fair test based on the properties of rocks</p> <p>L3 – <u>Observing over time</u> To recognise what soils are made.</p> <p>L4 – <u>Observing over time</u> To plan and carry out a fair test around permeability</p> <p>L5 – <u>Research</u> To explain how fossils are formed.</p>	<p><b>Forces and magnets</b> L1 – <u>Identifying, classifying and grouping</u> Understand what a force is.</p> <p>L2 – <u>Comparative and fair testing</u> To compare how things move on different surfaces</p> <p>L3 – To observe how magnets attract and repel.</p> <p>L4 - <u>Identifying, classifying and grouping</u> Compare and group magnetic and non-magnetic materials.</p> <p>L5 – <u>Pattern Seeking</u> Does the size of the magnet affect how powerful it is?</p>	<p><b>Animals including Humans</b> L1 – <u>Research/grouping and classifying</u> To explain why humans and animals have a skeleton and muscles.</p> <p>L2 – <u>Research</u> To explain how body parts move</p> <p>L3 - <u>Research</u> To understand the meaning of nutrition and what the body needs.</p> <p>L4- <u>Grouping and classifying</u> Identify the types of nutrients found in different foods.</p> <p>L5 – <u>Research</u> Understand that humans need a balance diet to stay healthy</p>	<p><b>Light</b> L1 – <u>Grouping and classifying</u> To understand the difference between light and dark.</p> <p>L2 – <u>pattern seeking</u> To understand how we use light to see things.</p> <p>L3 – <u>Comparative and fair testing</u> To understand the dangers of the sun.</p> <p>L4 – <u>Comparatives and fair testing</u> Understand how a shadow is formed.</p> <p>L5- <u>Pattern Seeking</u> Investigate how the size of shadows change</p>	<p><b>Plants</b> L1 – <u>Research</u> Describe the functions of the parts of a flowering plant</p> <p>L2 – <u>Observing overtime</u> Investigate how water is transported within plants</p> <p>L3 – <u>Comparative and fair testing</u> Explore the requirements of plants for life and growth</p> <p>L4 – <u>Research</u> Explore the role of flowering plants on pollination and seed formation.</p> <p>L5 – <u>Comparative and fair testing/observing over time</u> To evaluate our practical investigation on the requirements of plants for life and growth.</p> <p>L6 – <u>Research</u> Investigate seed dispersal</p>	<p>Time to review content of Year 3 learning, and incorporate pattern seeking</p>
<p><b>Future Learning</b></p>	<p><b>Year 6</b> 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><b>Year 5:</b> 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>recognise that some mechanisms, including</p>	<p><b>Year 4</b> 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>construct and interpret a variety of food chains, identifying producers, predators and prey</p>	<p><b>Year 6</b> 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>explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes</p>	<p><b>Year 5</b> Describe the life process of reproduction in some plants and animals</p>	



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			levers, pulleys and gears, allow a smaller force to have a greater effect.		use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.		
<b>Vocabulary</b>	<b>All</b>	Types of rock, natural, manmade, layers of soil and soil.	Forces, surface, magnet, push, pull, non-contact force and contact force.	Healthy, energy, water, muscles and joints.	Light source, light, dark, reflection, surface, shadow and sunlight.	Root, stem, flower, leaf/leaves, trunk, absorb, grow, soil, air, light, water,	
	<b>Most</b>	Igneous, sedimentary, metamorphic, erosion, sediment, topsoil, sub soil and bedrock,	Repel, attract, magnetic poles, magnetic force,	Vertebrate, invertebrate, tendons, relax, contract, fats, carbohydrates, proteins, dairy, fibre, vitamins, minerals, nutrients	Pupil, rays, absence of light, reflect and reflective.	Nutrient, energy, insect/wind pollination, seed formation, seed dispersal, energy, life cycle	
	<b>Some</b>	Palaeontology, fossilisation, permeable and impermeable,	Friction and magnetic field.	Saturated and unsaturated fats ligaments exoskeleton, endoskeleton	Transparent, translucent, opaque and retina.	Photosynthesis, stigma, stamen.	
<b>Quality Texts</b>	GR texts Rock and mineral, DK eyewitness book Rock on! - Whizz pop bang magazine	GR text – what are magnets (non-fiction)	Skeletons – non-chronological report (GR/Writing)  Skeletons – Whizz, pop, bang magazine	GR text – my shadow	GR texts		
<b>Enrichment Activities (e.g. visitors/visits)</b>	Rotunda Museum Linked to Stone Age		Radiographers from hospital Vet/vet nurse visit				
<b>National Curriculum</b>	Pupils should be taught to:  Compare and group together different kinds of rocks based on 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	Pupils should be taught to:  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 and not others	Pupils should be taught to:  Identify that animal, 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	Pupils should be taught to:  Recognise that they need light 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	Pupils should be taught to:  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		



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		<p>Compare and group together a variety of everyday materials based on whether they are attracted to a magnet, and identify some magnetic materials</p> <p>Describe magnets as having 2 poles Predict whether 2 magnets will attract or repel each other, depending on which poles are facing</p>		<p>Recognise that shadows are formed when the light from a light source is blocked by an opaque object</p> <p>Find patterns in the way that the size of shadows changes</p>	<p>Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal</p>	
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