



## 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			
<b>Prior Knowledge (Retrieval)</b>	<b>EYFS</b> - Explore the natural world around them, making observations and drawing pictures of animals and plants; 15 - Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class ; - Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.					
	<ul style="list-style-type: none"> <li>Natural objects such as shells, sticks, soil, rock have different physical properties and children will begin to use simple terms to describe these</li> <li>Identify and name some everyday materials; fabric, wood, metal, plastic.</li> <li>Materials (fabric, wood, metal, plastic) have different physical properties and know some terms to describe these i.e. bendy, hard, strong, soft.</li> </ul>	<ul style="list-style-type: none"> <li>Name and describe some familiar plants and animals e.g. daisies, daffodils, trees/ farm animals, domestic animals, insects.</li> <li>Plants need water and sunlight to grow.</li> <li>Identify basic parts of a sunflower.</li> <li>Identify some difference between British farm animals and African animals</li> <li>Animals live in different places (mouse-woodland/whale-sea/Elephant-savanna) and begin to comment on differences in habitats.</li> <li>The lifecycle of a frog.</li> </ul>	<ul style="list-style-type: none"> <li>Name and describe some familiar plants and animals e.g. daisies, daffodils, trees/ farm animals, domestic animals, insects.</li> <li>Plants need water and sunlight to grow.</li> <li>Identify basic parts of a sunflower.</li> <li>Identify and name some everyday materials; fabric, wood, metal, plastic.</li> <li>Familiar materials (fabric, wood, metal, plastic) have different physical properties and know some terms to describe these i.e. bendy, hard, strong, soft.</li> <li>Some terms relating to change in materials; 'freezing' when exploring water turning to ice and 'melting' when exploring ice turning to water</li> </ul>			
	<u>Seasonal Changes</u> <ul style="list-style-type: none"> <li>To know Winter is 'colder' than other times of the year.</li> <li>To know Summer is 'warmer' than other times of the year.</li> <li>Children will begin to comment on seasonal observations during Summer such as more sun, hot, not as much rain, clothing changes to keep cool/protected.</li> <li>Children will begin to comment on seasonal features during Winter such as rain, snow, ice, dark on a morning, suitable clothing to keep warm.</li> </ul>					
<b>Working Scientifically (Skills to be taught throughout the year)</b>	<b>PLAN</b>		<b>DO</b>		<b>REVIEW</b>	
	With help and encouragement, ask simple questions that begin with why, what if, how or when.	Make suggestions about how to do things when they plan a simple test.	With help, use simple equipment and non-standard units to find things out.  Observe using the senses	With help, can gather and record data to help answer questions	Talk about what happened and/or what was seen.	Talk about what they did.



Y1	<u>Seasonal Changes</u> Observe changes across the four seasons *Observe and describe weather associated with the seasons and how day length varies				
	<b>Knowledge and Skills to be developed:</b>		<b>Knowledge and Skills to be developed:</b>		<b>Knowledge and Skills to be developed:</b>
	<p style="text-align: center;"><b>Materials</b></p> <p>L1- distinguish between an object and the material from which it is made            identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock</p> <p>L2 - identify objects that are made using multiple materials.</p> <p>L3 – <b><u>Grouping and sorting</u></b>            Compare and group together a variety of materials based on their properties.</p> <p>L4 – Describe the simple physical properties of a variety everyday materials</p> <p>L5 – <b><u>Fair Flow Testing</u></b>            Record and communicate findings in a range of ways and begin to use scientific language</p>	<p style="text-align: center;"><b>Animals including Humans</b></p> <p>L1 - <b><u>Researching</u></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>L2 – Seasonal changes  <b><u>Pattern Seeking</u></b>            Observe changes across the four seasons- with a focus on Autumn/ Winter</p> <p>Observe and describe weather associated with the seasons and how day length varies</p> <p>L3 - Say which part of the body is associated with each sense.            Record observations and outcomes.</p> <p><b><u>Observing over time</u></b>            L4 - Observe changes across the four seasons.</p>	<p style="text-align: center;"><b>Plants</b></p> <p>L1 - identify and describe the basic structure of a variety of common flowering plants</p> <p>L2 - identify and describe the basic structure of a variety of common trees</p> <p>L3 - identify and name a variety of common wild and garden plants, including deciduous and evergreen trees</p> <p style="text-align: center;"><b>Materials</b></p> <p><b><u>Comparative and Fair Testing</u></b>            L4 - 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>L5 - With help, I use simple equipment</p> <p>With help, I can record measurements and observations.            I talk about what happened and/or what I saw.</p> <p>I talk about what I did.</p>	<p style="text-align: center;"><b>Animals including Humans</b></p> <p>L1 - <b><u>Researching</u></b>            Identify and name a variety of common animals – BIRDS            describe and compare the structure of birds</p> <p>L2 - <b><u>Grouping and sorting</u></b>            Identify and name a variety of common animals – fish/ amphibians            describe and compare the structure of fish/ amphibians</p> <p>L3 - <b><u>grouping and sorting</u></b>            Identify and name a variety of common animals – reptiles/ mammals            describe and compare the structure of reptiles/ mammals</p> <p>L4 – <b><u>Researching</u></b>            common animals including birds, fish, amphibians, mammals and reptiles using our knowledge.</p> <p>L5 – <b><u>Grouping and sorting</u></b>            Identify and name a variety of common animals that are carnivores, herbivores and omnivores</p>	<p style="text-align: center;"><b>Plants</b></p> <p>L1 – <b><u>Researching</u></b>            Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy</p> <p><b><u>L2 - Observing over time</u></b>            Observe and describe how seeds and bulbs grow into mature plants (will be revisited through following lessons)</p> <p>L3 - identify and describe the basic structure of a variety of common flowering plants</p> <p>L4 - identify and name a variety of common wild and garden plants, including deciduous and evergreen trees</p>



## Curriculum Planning

<b>Future Learning</b>		<p><b>Year 2</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 on the basis of their simple physical properties.</p>	<p><b>Year 2</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>Year 2</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>Year 2</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>Year 2</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>Year 2</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 on the basis of their simple physical properties.</p>
<b>Vocabulary</b>	<b>All</b>	Object, material, wood, plastic, glass, metal, brick, paper, fabric, rock, water, rough, smooth, hard, soft,	Senses, body, taste, touch, smell, hear, see, Head, leg, arm, shoulder, knee, nose, neck, feet, tongue, vulva, penis  Weather, spring, summer, autumn, winter, sunny, partly cloudy, rainy, snowy,	Leaf, flower, petal, root, seed, trunk, branch, stem, evergreen, deciduous	Bird, amphibians, reptiles, mammals, fish  wing, claw, fin, scales gills, feathers, fur, beak, hair, legs, webbed feet, babies, milk  Weather, spring, summer, autumn, winter, sunny, partly cloudy, rainy, snowy,	Leaf, flower, petal, root, seed, trunk, branch, stem, evergreen, deciduous	Weather, spring, summer, autumn, winter, sunny, partly cloudy, rainy, snowy,  Object, material, wood, plastic, glass, metal, brick, paper, fabric, rock, water, rough, smooth, hard, soft,
	<b>Most</b>	Elastic, waterproof, absorbent, shiny, dull	Heel, wrist, elbow, ankle	Bud, bark, sunflower, daffodil, snow drop, crocus, daisy	Cold blooded, warm blooded Common animals from each group	Bud, bark, sunflower, daffodil, snow drop, crocus, daisy	Elastic, waterproof, absorbent, shiny, dull
	<b>Some</b>	Transparent	Heart, lungs, brain	Blossom, berry, oak, silver birch, beech, sycamore		Blossom, berry, oak, silver birch, beech, sycamore	Transparent
<b>Quality Texts</b>		Everyday Materials – Ruth Owen	The Tree, Seasons come, seasons go – Britta Teckentrup  Pantasourus - NSPCC  Step Inside Science: Your Body: Human Body – Lara Bryan	Our World in Pictures: Trees, Leaves, Flowers & Seeds: A visual encyclopaedia of the plant kingdom – DK	First Animal Encyclopedia: A First Reference Book for Children (DK First Reference)	Our World in Pictures: Trees, Leaves, Flowers & Seeds: A visual encyclopaedia of the plant kingdom – DK	



## Curriculum Planning

Enrichment Activities (e.g. visitors/visits)		Visit to Oliver's Mount – seasons walk using the senses		Walk along the cycle track – season's walk using the senses		Seaside visit – focus on the seasons and the senses
<b>National Curriculum</b>	<p>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 name a variety of common animals including fish, amphibians, reptiles, birds and mammals</p> <p>identify and name a variety of common animals that are carnivores, herbivores and omnivores</p> <p>observe changes across the 4 seasons</p> <p>observe and describe weather associated with the seasons and how day length varies</p>	<p>identify and name a variety of common wild and garden plants, including deciduous and evergreen trees</p> <p>identify and describe the basic structure of a variety of common flowering plants, including trees.</p>	<p>identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals</p> <p>identify and name a variety of common animals that are carnivores, herbivores and omnivores</p>	<p>identify and name a variety of common wild and garden plants, including deciduous and evergreen trees</p> <p>identify and describe the basic structure of a variety of common flowering plants, including trees.</p>	