



Navenby Church of England Primary School: Science Curriculum coverage

Intent: At Navenby Church of England Primary School, we believe that our Science curriculum fosters a healthy curiosity in children about our universe and promotes respect for the living and non-living. Through *inspirational teaching*, we want our pupils to be *inspired learners* who will have *aspirational prospects*. This encompasses the acquisition of knowledge, concepts, skills and positive attitudes. In each year group, children will acquire and develop the key knowledge that has been identified within each unit, whilst building on prior knowledge. Our curriculum is linked to our three school drivers: Community, Wider opportunities and Well-being to ensure that our children receive a diverse and meaningful education.

Implementation: 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; Science will be taught in planned and arranged topic blocks by the class teacher. This is a strategy to enable the achievement of a greater depth of knowledge. Children will revisit prior learning in the first lesson to ensure that previous learning has been embedded before moving on. Through teacher assessments and planning, we ensure that all children needs are met. Our inspirational teaching ensures that the children are given opportunities to solve problems and find out for themselves. Children are encouraged to ask their own questions and are given opportunities to use their scientific skills and research to discover the answers. Working Scientifically skills are embedded into lessons to ensure these skills are being developed throughout the children’s school career and new vocabulary and challenging concepts are introduced through direct teaching.

Impact: Our lessons are taught in a fun, engaging, practical way, that provides children with the foundations and knowledge for understanding the world. Our engagement with the local community ensures that children learn through varied and first hand experiences of the world around them. Children learn the possibilities for careers in science, as a result of our community links and connection with RAF Conningsby the children take part in STEM workshops and work with professionals, ensuring that they have access to positive role models within the field of science from the immediate and wider local community.

Key Concepts	<p>The National Curriculum for Science outlines the lines of enquiry, which we have chosen to use as our threshold concepts. These threshold concepts act as the foundations for everything that we do. These are:</p> <ul style="list-style-type: none"> ● Pattern Seeking ● Observation over time ● Grouping and classifying ● Using equipment and fair testing ● Research <p>Within each of the threshold concepts, we have matched the scientific skills as well as the knowledge objectives. Therefore, each science unit covers a different threshold concept. These concepts are resisted in each year group, ensuring our children have a deep understand of the concepts behind each scientific enquiry.</p>
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	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
EYFS	<p>Nursery Rhymes <i>Shows care and concern for living things and the environment.</i> – link to incy wincy spider, How does your garden grow, Baa Baa Black sheep.</p> <p>Pattern Seeking</p>	<p>Celebrations <i>Enjoys joining in with family customs and routines.</i> Children to learn about celebrations around the world. They can talk about the similarities and differences to their own traditions and celebrations</p> <p>Grouping and classifying</p>	<p>Traditional Tales <i>Talks about why things happen and how things work.</i> Linked to materials. Investigate the strongest material to build a house for the three pigs</p> <p>Using equipment and fair testing</p>	<p>People who Help us <i>Children know about similarities and differences in relation to places, objects, materials and living things.</i> Learn about different emergency services. Link floating / sinking to staying safe around water.</p> <p>Research</p>	<p>Minibeasts <i>Make observations of animals and plants and explain why some things occur, and talk about changes.</i> Linked to different types of minibeasts and their lifecycles. Learn about changing of the seasons, planting and growing.</p> <p>Observation over time</p>	<p>Under the Sea <i>Talk about the features of their own immediate environment and how environments might vary from one another.</i> Compare animals under the sea to animals on land. Learn about different lifecycles of under the sea creatures in comparison to land animals.</p> <p>Grouping and classifying</p> <p>Research</p>
Year 1	<p>Seasonal changes Observe changes across four seasons (linked to harvest)</p> <p>Observe and describe weather associated with the seasons and how day length varied.</p> <p>Sound: Explore how to change the volume of a sound during music lessons. (pre teach for year 2)</p> <p>Animals including humans: 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>Materials: 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>Forces: Explore floating and sinking, pushes and pulls. (pre teach year 2)</p>	<p>Earth and space Know that the Sun is a star. Know that the Moon orbits the Earth. Name the planets. (pre teach year 5)</p> <p>Light: Know that light is needed to see. (pre teach for year 3)</p>	<p>Plants: Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. Identify and describe the basic structure of a variety of common flowering plants, including trees.</p> <p>Seasonal changes: Observe changes across four seasons</p>	<p>Animals including humans: Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. Identify and name a variety of common animals that are carnivores, herbivores and omnivores. Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets).</p>	<p>Seasonal changes: Observe changes across four seasons.</p>

<p>Sc1</p>	<ul style="list-style-type: none"> ➤ Gather and record data to help in answering questions. ➤ Identify and classify. <p>Grouping and classifying</p>	<ul style="list-style-type: none"> ➤ Perform simple tests. ➤ Use simple equipment to observe closely. <p>Using equipment and fair testing</p>	<ul style="list-style-type: none"> ➤ Ask simple questions and recognise that they can be answered in different ways <p>Research</p>	<ul style="list-style-type: none"> ➤ Use his/her observations and ideas to suggest answers to questions. <p>Observation over time</p>	<ul style="list-style-type: none"> ➤ Identify and classify. <p>Grouping and classifying</p>	<ul style="list-style-type: none"> ➤ Use his/her observations and ideas to suggest answers to questions. ➤ Use simple equipment to observe closely. <p>Pattern Seeking</p>
<p>Year 2</p>	<p>Materials and states of matter (year 1 recap properties of materials) Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. Describe how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.</p> <p>Sound Exploring how to change the volume and pitch of a sound during music lessons. (pre teach for year 3)</p>	<p>Electricity: Know that electricity is needed to make some things work. Know that some appliances need batteries and some use mains electricity to work. (Pre teach for year 4)</p> <p>Forces: Explore cars moving quicker on different surfaces. Sort objects using a magnet. (pre teach year 3)</p>	<p>Seasonal changes: Polar Ice caps Year 1 recap</p> <p>Plants: 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>Animals including humans: Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.</p>	<p>Animals including humans: Understand that animals including humans, have offspring which grow into adults. Describe the basic needs of animals, including humans, for survival (water, food and air).</p>	<p>Living things and their habitats: 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>Sc1</p>	<ul style="list-style-type: none"> ➤ Identify, group and classify. ➤ Perform simple comparative tests. ➤ Gather and record data to help in answering questions including from secondary sources. of information <p>Grouping and classifying</p> <p>Using equipment and fair testing</p> <p>Research</p>		<ul style="list-style-type: none"> ➤ Perform simple comparative tests. ➤ Ask simple questions and recognise that they can be answered in different ways including use of scientific language from the national curriculum. ➤ Use his/her observations and ideas to suggest answers to questions noticing similarities, differences and patterns. <p>Pattern Seeking</p> <p>Observation over time</p>	<ul style="list-style-type: none"> ➤ Use simple equipment to observe closely including changes over time. <p>Using equipment and fair testing</p> <p>Observation over time</p>	<ul style="list-style-type: none"> ➤ Ask simple questions and recognise that they can be answered in different ways including use of scientific language from the national curriculum. ➤ Identify, group and classify. ➤ Gather and record data to help in answering questions including from secondary sources. of information <p>Grouping and classifying</p> <p>Research</p> <p>Pattern Seeking</p>
<p>Year 3</p>	<p>Rocks & Soils</p> <p>Different types of rocks & how they are formed Appearance & physical properties Fossilisation Organic matter</p>	<p>Plants</p> <p>I can identify and describe the functions of different parts of flowering plants including, roots, stem/trunk, leaves and flowers.</p> <p>I can 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.</p>	<p>Animals Including Humans</p> <p>I can identify that animals, including humans, need the right types and amount of nutrition. I can identify that they cannot make their own food and that they get nutrition from what they eat.</p> <p>I can identify that humans and some other animals have skeletons and muscles for support, protection and movement.</p> <p>Types of teeth pre-learning for Y4</p>	<p>Forces & Magnets</p> <p>I can compare how things move on different surfaces.</p> <p>I can notice that some forces need contact between two objects, but magnetic forces can act at a distance.</p> <p>I can observe how magnets attract or repel each other and attract some materials and not others.</p> <p>I can compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet. I</p>	<p>Light</p> <p>I can recognise that we need light in order to see things and that dark is the absence of light.</p> <p>I can notice that light is reflected from surfaces.</p> <p>I can recognise that light from the sun can be dangerous and that there are ways to protect my eyes.</p> <p>I can recognise that shadows are formed when the light from a light source is blocked by a solid object.</p>

		<p>I can investigate the way in which water is transported within plants.</p> <p>I can explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</p>		<p>can identify some magnetic materials.</p> <p>I can describe magnets as having two poles.</p> <p>I can predict whether two magnets will attract or repel each other, depending on which poles are facing.</p>	<p>I can find patterns in the way that the size of shadows change.</p> <p>Pitch & volume: I can find patterns between the pitch of a sound and features of the object that produced it. I can find patterns between the volume of a sound and the strength of the vibrations that produced it.</p> <p>pre-learning for Y4 in Music</p>	
Sc1	<ul style="list-style-type: none"> ➤ Ask relevant questions and use different types of scientific enquiries to answer them. ➤ Gather, record, classify and present data in a variety of ways to help in answering questions. <p>Using equipment and fair testing</p> <p>Research</p>	<ul style="list-style-type: none"> ➤ Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. <p>Grouping and classifying</p>	<ul style="list-style-type: none"> ➤ Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. ➤ Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. <p>Pattern Seeking</p> <p>Observation over time</p>	<ul style="list-style-type: none"> ➤ Set up simple practical enquiries, comparative and fair tests. ➤ Use straightforward scientific evidence to answer questions or to support his/her findings. <p>Using equipment and fair testing</p>	<ul style="list-style-type: none"> ➤ Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. ➤ Identify differences, similarities or changes related to simple scientific ideas and processes <p>Observation over time</p>	
Year 4	<p>Sound</p> <p>I can identify how sounds are made, associating some of them with something vibrating.</p>	<p>Electricity</p> <p>I can identify common appliances that run on electricity.</p>	<p>The Water Cycle</p> <p>I can compare and group materials together, according to whether they are solids, liquids or gases.</p>	<p>Humans including animals:</p> <p>I can describe the simple functions of the basic parts of the digestive system in humans.</p>	<p>Humans including animals:</p> <p>I can construct and interpret a variety of food chains, identifying producers, predators and prey.</p>	<p>Classification</p> <p>Grouping animals & plants Use of classification keys</p> <p>Y3 Plants recap (variation)</p>

	<p>I can recognise that vibrations from sounds travel through a medium to the ear.</p> <p>I can find patterns between the pitch of a sound and features of the object that produced it.</p> <p>I can find patterns between the volume of a sound and the strength of the vibrations that produced it.</p> <p>I can recognise that sounds get fainter as the distance from the sound source increases.</p>	<p>I can construct a simple series electrical circuit, identifying and naming it's basic parts, including cells, wires, bulbs, switches and buzzers.</p> <p>I can 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.</p> <p>I can recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit.</p> <p>I can recognise some common conductors and insulators, and associate metals with being good conductors.</p>	<p>I can 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 (degree C).</p> <p>I can identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</p> <p>Animals Including Humans I can identify the different types of teeth in humans and their simple functions.</p> <p>Y3 Plants recap in Topic work (using herbs)</p>		<p>Y3 Plants recap (producers)</p> <p>Living things and their habitats: I can recognise that environments can change and that this can sometimes pose dangers to living things.</p> <p>Y3 Rocks & Soils recap (coal industry in PSHE/Geography)</p>	
Sc1	<ul style="list-style-type: none"> ➤ Ask relevant questions and use different types of scientific enquiries to answer them. ➤ Use straightforward scientific evidence to answer questions or to support his/her findings. <p>Using equipment and fair testing</p>	<p>I can use results to draw simple conclusions and suggest improvements, new questions and predictions for setting up further tests.</p> <p>Pattern Seeking</p> <p>Research</p>	<ul style="list-style-type: none"> ➤ Set up simple practical enquiries, comparative and fair tests. ➤ Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. <p>Using equipment and fair testing</p> <p>Observation over time</p>	<ul style="list-style-type: none"> ➤ Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. <p>Research</p>	<ul style="list-style-type: none"> ➤ Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. ➤ Gather, record, classify and present data in a variety of ways to help in answering questions. 	<ul style="list-style-type: none"> ➤ Identify differences, similarities or changes related to simple scientific ideas and processes. <p>Grouping and classifying</p>

	Research			Pattern Seeking Observation over time	
Year 5	<p>Forces</p> <p>I can explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.</p> <p>I can identify the effects of air resistance, water resistance and friction that act between moving surfaces.</p> <p>I can recognise that some mechanisms, including levers, pulleys and gears allow a smaller force to have a greater effect.</p>	<p>Materials</p> <p>I can 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>I can know that some materials will dissolve in liquid to form a solution and describe how to recover a substance from a solution.</p> <p>I can use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.</p> <p>I can give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.</p> <p>I can demonstrate that dissolving, mixing and changes of state are reversible changes.</p> <p>I can explain that some changes result in the formation of new material. I can explain 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>Y3 Magnets recap (Magnetism & poles)</p> <p>Y3 Rocks & Soils recap (Natural Disasters geography work)</p> <p>Y4 Electricity recap (conductors & insulators)</p> <p>Y4 Water Cycle recap (evaporation & condensation)</p>	<p>Space</p> <p>I can describe the movement of the Earth and other planets and how they are relative to the Sun in the solar system.</p> <p>I can describe the movement of the Moon and how it is relative to the Earth.</p> <p>I can describe the Sun, Earth and Moon as approximate spherical bodies.</p> <p>I can 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>Living Things & Their Habitats</p> <p>I can describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.</p> <p>I can describe the life process of reproduction in some plants and animals.</p> <p>Y3 Plants recap (labelling reproductive parts)</p> <p>Animals Including Humans</p> <p>I can describe the changes as humans develop to old age.</p>	

<p>Sc1</p>	<ul style="list-style-type: none"> ➤ Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. ➤ Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. <p>Pattern Seeking</p> <p>Research</p>	<ul style="list-style-type: none"> ➤ Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. ➤ Use test results to make predictions to set up further comparative and fair tests. <p>Observation over time</p> <p>Using equipment and fair testing</p>	<ul style="list-style-type: none"> ➤ Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations. ➤ Identify scientific evidence that has been used to support or refute ideas or arguments. <p>Grouping and classifying</p> <p>Research</p>	<ul style="list-style-type: none"> ➤ Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations. ➤ I can use simple models to describe scientific ideas. <p>Pattern Seeking</p> <p>Grouping and classifying</p>
<p>Year 6</p>	<p>Living Things & Their Habitats</p> <p>Classification according to the Linnaean system</p> <p>Y5 Classification recap (animal characteristics)</p> <p>Evolution & Inheritance</p> <p>I can 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>I can recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.</p> <p>I can identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</p> <p>Y4 Changing environments recap (natural selection)</p>	<p>Light</p> <p>I can recognise that light appears to travel in straight lines.</p> <p>I can 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>I can 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>I can 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>Y3 Light recap (shadows, absence of light)</p> <p>Electricity</p>	<p>Animals Including Humans</p> <p>I can identify and name the main parts of the human circulatory system and describe the functions of the heart, blood vessels and blood.</p> <p>I can recognise the impact of diet, exercise, drugs and lifestyle on the way bodies function.</p> <p>I can describe the ways in which nutrients and water are transported within animals, including humans.</p> <p>Y3 Animals including Humans recap (nutrition)</p> <p>Y4 Animals including Humans recap (digestion)</p>	

		<p>I can associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit.</p> <p>I can compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches.</p> <p>I can use recognised symbols when representing a simple circuit in a diagram.</p> <p>Y4 Electricity recap (circuits, symbols & switches)</p>	
Sc1	<ul style="list-style-type: none"> ➤ Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations. ➤ Describe and evaluate their own and other people's scientific ideas related to topics in the national curriculum (including ideas that have changed over time), using evidence from a range of sources. ➤ Group and classify things and recognise patterns. <p>Pattern Seeking</p> <p>Grouping and classifying</p> <p>Research</p>	<ul style="list-style-type: none"> ➤ Plan different types of scientific enquiries to answer their own or others' questions, including recognising and controlling variables where necessary. ➤ Use test results to make predictions to set up further comparative and fair tests <p>Observation over time</p> <p>Using equipment and fair testing</p>	<ul style="list-style-type: none"> ➤ Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. ➤ Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. ➤ I can present findings in written form, displays and other presentations. ➤ I can use simple models to describe scientific ideas. ➤ I can identify scientific evidence that has been used to support or refute ideas or arguments. <p>Pattern Seeking</p> <p>Grouping and classifying</p> <p>Observation over time</p>