



Hemington Primary School Science Curriculum Statement

Intent

- At Hemington we aim to develop our pupils' intentional curiosity about the world, and to foster an environment where our children actively ask questions, whilst acquiring specific skills and knowledge to help them to think scientifically, to gain an understanding of scientific processes and also an understanding of the uses and implications of Science, today and for the future.

Implementation

- Planning ensures that pupils revisit key scientific skills during topics throughout the year, putting an emphasis on building on prior knowledge.
- Teachers ensure that pupils learn and use appropriate scientific vocabulary which progresses throughout the school.
- Teachers provide problem solving opportunities that allow children to find out for themselves. Children are encouraged to ask their own questions and be given the 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 our pupils' learning careers.
- Teachers use outdoor learning as an opportunity to engage learners and develop children's understanding of the world around them, we use inspirational trips and visitors to offer experiences which enhance our pupils' understanding and enjoyment of science.
- Pupils are taught that scientists have shaped our understanding of the world, and that science is an extremely varied field with many possible career choices.

Impact

- Our pupils recognise and use scientific skills and concepts such as: enquiry, observation, measuring, planning and carrying enquiries and drawing conclusions from what they observe. By the end of their time at Hemington, they realise what it is to be a scientist.
- Our pupils access a fun, engaging, high quality science curriculum that provides them with the foundations for understanding the world. They are encouraged to be curious, ask questions and use and apply the knowledge and skills they have been taught to investigate for themselves.
- Pupils understand that science happens beyond the classroom and that the world is greatly enhanced by science. They recognise that science could provide many exciting and varied careers for them in the future.
- Children will know more, remember more and understand more about the curriculum. This is evidenced through teacher questioning and pupil voice, work in books and assessment data.



Hemington Primary School Science Progression

EYFS	Subject Knowledge	Vocabulary	Working scientifically including key equipment
	<p>ELG: Children know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur, and talk about changes.</p> <p>ELG: Children know the importance for good health of physical exercise, and a healthy diet, and talk about ways to keep healthy and safe. They manage their own basic hygiene and personal needs successfully, including dressing and going to the toilet independently</p> <p>Understand the importance of Exercise and Diet for Good Health Can tell adults when hungry or tired or when they want to rest or play. Observe the effects of activity on their bodies. Eat a healthy range of foodstuffs and understand the need for variety in food. Show some understanding that good practices with regard to exercise, eating, sleeping and hygiene can contribute to good health.</p> <p>Talk About Ways to Keep Health and Safe Understand that equipment and tools have to be used safely Show an understanding of the need for safety when tackling new challenges, and consider and manage some risks Practise some appropriate safety measures without direct supervision. Show understanding of how to transport and store equipment safely</p>	<p>5 senses Parts of a flower Test Camouflage Hibernate</p> <p>Healthy lifestyle, healthy food choices, being healthy, getting exercise, Materials, changes, push, pull, germs, hygiene, clean, wash, animals, plants. Senses Forces Body Parts Plants Animals</p>	<p>Spotting patterns (sorting materials) Magnifying glasses Egg timers Safe</p> <p>Magnets, food and cooking equipment, books, physical development equipment,</p>
KS1	Subject Knowledge	Vocabulary	Working scientifically including key equipment
	<p>Working Scientifically: Ask simple questions. Observe closely, using simple equipment. Perform simple tests. Identify and classify. Use observations and ideas to suggest answers to questions. Gather and record data to help in answering questions. Biology: Plants</p>	<p>Reptiles /Mammals/ Amphibians Carnivore /Omnivore/ Herbivore Deciduous/Evergreen</p>	<p>Resources for working scientifically: Magnifying glasses Stop watches IPads Weighing Scales Measuring beakers</p>

	<p>Identify and name a variety of common plants, including garden plants, wild plants and trees and those classified as deciduous and evergreen. Identify and describe the basic structure of a variety of common flowering plants, including roots, stem/trunk, leaves and flowers. 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 and Humans Identify and name a variety of common animals that are birds, fish, amphibians, reptiles, mammals and invertebrates. 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 (birds, fish, amphibians, reptiles, mammals and invertebrates, including pets). Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. Notice that animals, including humans, have offspring which grow into adults. Investigate and describe the basic needs of animals, including humans, for survival (water, food and air). Describe the importance for humans of exercise, eating the right amounts of different types of food and hygiene. Describe and compare the structure of a variety of common animals.</p> <p>Living Things Explore and compare the differences between things that are living, that are dead and 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>Evolution and Inheritance Identify how humans resemble their parents in many features.</p> <p>Chemistry: Materials 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. Describe the simple physical properties of a variety of everyday materials. Compare and group together a variety of everyday materials on the basis of their simple physical properties. Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick/rock, and paper/cardboard for particular uses.</p> <p>Physics Movement, Forces and Magnets Notice and describe how things move, using simple comparisons such as faster and slower. Compare how different things move.</p> <p>Light and Seeing Observe and name a variety of sources of light, including electric lights, flames and the Sun, explaining that we see things because light travels from them to our eyes.</p> <p>Sound and Hearing Observe and name a variety of sources of sound, noticing that we hear with our ears.</p>	<p>Habitats / microhabitat Waterproof Absorbent / not Opaque / transparent Living / never lived / dead Parts of flowers and trees Names of body parts and associated sense Names for seasons Types of materials Food chain Prey / predator Life cycle Healthy lifestyle Function</p>	<p>Vocab/skills for working scientifically:</p> <p>Experiment Grouping (and explaining choice) Observe Idea Prediction Results table Properties Safety</p>
			<p>Focus Scientists</p> <p>Mary Anning Joseph Dalton Hooker Barnum Brown-Discovered T Rex</p>
Lower KS2	Subject Knowledge	Vocabulary	Working scientifically including key equipment

Working Scientifically

Ask relevant questions.

Set up simple practical enquiries and comparative and fair tests.

Make accurate measurements using standard units, using a range of equipment, e.g. thermometers and data loggers.

Gather, record, classify and present data in a variety of ways to help in answering questions.

Record findings using simple scientific language, drawings, labelled diagrams, bar charts and tables.

Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.

Use results to draw simple conclusions and suggest improvements, new questions and predictions for setting up further tests.

Identify differences, similarities or changes related to simple, scientific ideas and processes.

Use straightforward, scientific evidence to answer questions or to support their findings.

Biology

Plants

Identify and describe the functions of different parts of flowering plants: roots, stem, 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 role of flowers in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.

Animals and Humans

Identify that animals, including humans, need the right types and amounts of nutrition, that they cannot make their own food and they get nutrition from what they eat.

Construct and interpret a variety of food chains, identifying producers, predators and prey.

Identify that humans and some animals have skeletons and muscles for support, protection and movement.

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.

Identify the different types of teeth in humans and their simple functions.

Living Things

Explore and use classification keys.

Recognise that living things can be grouped in a variety of ways.

Recognise that environments can change and that this can sometimes pose dangers to specific habitats.

Evolution and Inheritance

Identify how plants and animals, including humans, resemble their parents in many features.

Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.

Identify how animals and plants are suited to and adapt to their environment in different ways.

Chemistry

Materials

Rocks and Soils - Compare and group together different kinds of rocks on the basis of their simple, physical properties.

Rocks and Soils - Relate the simple physical properties of some rocks to their formation (igneous or sedimentary).

Rocks and Soils - Recognise that soils are made from rocks and organic matter.

Functions of different parts of a flower and tree.

Pollination

germination

Seed dispersal

Nutrition

Skeleton

Circulatory

system

Muscles

Fossils

Sedimentary /

igneous /

metamorphic

Shadow

Magnetic force /

repel / attract

Poles

Environment /

deforestation

Adaptation

Vertebrate /

invertebrate

Digestive system

(and parts)

Evaporation /

melting

Chemical /

physical change

States of matter

Insulating /

conducting (in

both materials

and circuits)

Vibrations

Pitch / volume

Producers /

consumers

Teeth types

Electrical circuit

Negative

numbers

Freezing point

Solid liquid gass

Resources for working scientifically:

Thermometer

Stopwatch

Mirrors

Magnets

Circuits including bulbs /

buzzers / switches /

motors

Vocab for working scientifically:

Data

Observation

Fair test

Constant

Table

Conclusion

Units

Grouping / classifying

Prediction

Similarities / differences

Safety

Control

Ruler

Tape measures

pedometer

	<p>States of Matter - Compare and group materials together, according to whether they are solids, liquids or gases.</p> <p>States of Matter - Observe that some materials change state when they are heated or cooled, and measure the temperature at which this happens in degrees Celsius (°C), building on the teaching in mathematics.</p> <p>States of Matter - Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</p> <p>Physics</p> <p>Magnets, Forces and Magnets</p> <p>Compare how things move on different surfaces.</p> <p>Notice that some forces need contact between two objects and some forces act at a distance.</p> <p>Observe how magnets attract or 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 or repel each other, depending on which poles are facing.</p> <p>Light and Seeing</p> <p>Notice that light is reflected from surfaces.</p> <p>Recognise that shadows are formed when the light from a light source is blocked by a solid object.</p> <p>Recognise that light is needed in order to see things and that dark is the absence of light.</p> <p>Recognise that light from the sun can be dangerous and that there are ways to protect the eyes.</p> <p>Find patterns in the way that the size of shadows change.</p> <p>Sound and Hearing</p> <p>Identify how sounds are made, associating some of them with something vibrating.</p> <p>Recognise that vibrations from sounds travel through a medium to the ear.</p> <p>Electricity</p> <p>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>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>Recognise some common conductors and insulators and associate metals with being good conductors.</p> <p>Identify common appliances that run on electricity.</p> <p>Construct a simple series circuit identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.</p> <p>Earth and Space</p> <p>Describe the movement of the Earth relative to the Sun in the solar system.</p> <p>Describe the movement of the Moon relative to the Earth.</p>		<p>Focus Scientists Charles Darwin</p>
Upper KS2	Subject Knowledge	Vocabulary	Working scientifically including key equipment
	<p>Working Scientifically</p> <p>Plan enquiries, including recognising and controlling variables where necessary.</p> <p>Use appropriate techniques, apparatus, and materials during fieldwork and laboratory work.</p>	<p>Gestation period Reproduction Puberty Adolescence</p>	<p>Resources for working scientifically: Newton meters Thermometers Circuits- all equipment</p>

Take measurements, using a range of scientific equipment, with increasing accuracy and precision.
 Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, bar and line graphs, and models.
 Report findings from enquiries, including oral and written explanations of results, explanations involving causal relationships, and conclusions.
 Present findings in written form, displays and other presentations.
 Use test results to make predictions to set up further comparative and fair tests.
 Use simple models to describe scientific ideas, identifying scientific evidence that has been used to support or refute ideas or arguments.

Biology

Plants

Relate knowledge of plants to studies of evolution and inheritance.
 Relate knowledge of plants to studies of all living things.

Animals and Humans

Identify and name the main parts of the human circulatory system, and explain the functions of the heart, blood vessels and blood.
 Describe the changes as humans develop from birth to old age.
 Recognise the importance of diet, exercise, drugs and lifestyle on the way the human body functions.
 Describe ways in which nutrients and water are transported within animals, including humans.

Living Things

Describe the differences in the life cycles of a mammal, amphibian, an insect and a bird.
 Describe the life process of reproduction in some plants and animals.
 Describe how living things are classified into broad groups according to common observable characteristics.
 Give reasons for classifying plants and animals based on specific characteristics.

Evolution and Inheritance

Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.
 Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.
 Identify how animals and plants are suited to and adapt to their environment in different ways.

Chemistry

Materials

Compare and group together everyday materials based on evidence from comparative and fair tests, including their hardness, solubility, conductivity (electrical and thermal) and response to magnets.
 Understand how some materials will dissolve in liquid to form a solution and describe how to recover a substance from a solution.
 Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.
 Rocks and Soils - Describe in simple terms how fossils are formed when things that have lived are trapped within sedimentary rock.
 Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.
 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, oxidisation and the action of acid on bicarbonate of soda.

Reversible / irreversible change
 Filtering / sieving
 Transparent opaque
 Solubility
 Dissolving
 Acid / bicarbonate of soda
 All planets in the solar system
 Rotation
 Gravity
 Air / water resistance
 Friction
 Mechanism – levers / pulleys/ gears
 Microorganisms
 Classification system
 Circulatory system (and associated vocab)
 Drugs
 Offspring
 Hereditary
 Variation
 Component
 Symbols (for circuits)

Circuit Boards
 Light sources
 Data loggers
 Play-doh

Vocab for working scientifically:

Scientific enquiry
 Scientific evidence
 Accuracy
 Diagram
 Bar / line graphs
 Label
 Classification
 Fair test
 Constant
 Variable
 Conclusion
 Light sources
 Safety
 Relative movement

**Focus Scientists
 Charles Darwin**

Physics

Movement, Forces and Magnets

Forces - Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.

Forces - Identify the effect of drag forces, such as air resistance, water resistance and friction that acts between moving surfaces.

Forces - Describe, in terms of drag forces, why moving objects that are not driven tend to slow down.

Forces - Understand that force and motion can be transferred through mechanical devices such as gears, pulleys, levers and springs.

Forces - Understand that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.

Light and Seeing

Understand 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 eyes.

Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them, and to predict the size of shadows when the position of the light source changes.

Explain that we see things because light travels from light sources to our eyes or from objects and then to our eyes.

Sound and Hearing

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.

Electricity

Use recognised symbols when representing a simple circuit in a diagram.

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.

Earth and Space

Describe the Sun, Earth and Moon as approximately spherical bodies.

Use the idea of the Earth's rotation to explain day and night.