Science

at Norton CP School

The aim of our science curriculum is to provide our pupils with the following:

Our science curriculum engages and enthuses children by providing relevant, first-hand experiences of scientific phenomena in the everyday world. From their low starting points, children build secure knowledge and terminology for each area of study. Excellent teaching ensures this is consolidated and extended during children's time at our school.

We encourage children to develop and maintain an inquisitive mind, questioning what they see, hear and feel. Children's ideas are valued and respected. Teachers' detailed yet flexible planning ensures that children's natural curiosity is captured to enable them to extend their scientific understanding.

From an early age, children are supported to think scientifically, using new vocabulary to effectively communicate their thoughts and observations. As they progress through the Programme of Study, teachers guide children to plan, lead and reflect on scientific investigations, developing independent thought and learning.

Contents

Animals Including Humans

EYFS	Year One	Year Two	Year Three	Year Four	Year Five	Year Six
3-4 Understand the key features of the life cycle of an animal. Begin to understand the need to respect and care for the natural environment and all living things. **ELG** Explore the natural world around them, making observations and drawing pictures of animals.	Identify and name common animals including fish, amphibians, reptiles, birds and mammals. Identify and name common animals that are carnivores, herbivores and omnivores.	Notice that animals, including humans, have offspring which grow into adults. Find out about and describe the basic needs of animals, including humans, for survival. Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.	Identify that animals, 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.	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. Construct and interpret a variety of food chains, identifying producers, predators and prey.	Describe the changes as humans develop to old age.	Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. Describe the ways in which nutrients and water are transported within animals, including humans.

Plants

EYFS	Year One	Year Two	Year Three	Year Four	Year Five	Year Six
3-4 Plant seeds and care for growing plants. Understand the key features of the life cycle of a plant. Help maintain and develop the EYFS allotment, showing good knowledge of plants and how to care for them. Begin to understand the need to respect and care for the natural environment and all living things. ELG Explore the natural world around them, making observations and drawing pictures of plants.	Identify and name common wild and garden plants, including deciduous and evergreen trees. Identify and describe the basic structure of common flowering plants and trees.	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.	Identify and describe the functions of different parts of flowering plants. Explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow. Investigate the way in which water is transported within plants. Explore the part that flowers play in the life cycle of flowering plants.			

Seasonal Changes

EYFS	Year One	Year Two	Year Three	Year Four	Year Five	Year Six
3-4 Begin to understand the need to respect and care for the natural environment and all living things. **RA** Explore the natural world around them. Describe what they see, hear and feel whilst outside. Recognise some environments that are different to the one in which they live. Understand the effect of changing seasons on the natural world around them. **ELG** Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. 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.	Observe changes across the four seasons. Observe and describe weather associated with the seasons and how day length varies.					

Everyday Materials

EYFS	Year One	Year Two	Year Three	Year Four	Year Five	Year Six
3-4 Talk about the differences between materials and changes they notice. Explore different materials freely, in order to develop their ideas about how to use them and what to make. Develop their own ideas and then decide which materials to use to express them. Join different materials and explore different textures.	Distinguish between objects and materials. Identify and name a variety of everyday materials. Describe the simple physical properties of everyday materials. Compare and group together everyday materials on the basis of their simple physical properties.	Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.		**States of matter** Compare and group together, solids, liquids or gases. Observe, measure and research the temperature at which materials change state. Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	**Properties and changes of materials** 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.	

Living Things and Their Habitats

EYFS	Year One	Year Two	Year Three	Year Four	Year Five	Year Six
Begin to understand the need to respect and care for the natural environment and all living things. **ELG** Explore the natural world around them, making observations and drawing pictures of animals.		Explore and compare the differences between living and dead things. Identify habitats and describe the basic needs they provide. Identify and name a variety of plants and animals in their habitats, including microhabitats. Use a simple food chain to identify and describe different sources of food.		Recognise that living things can be grouped in a variety of ways. Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. Recognise that environments can change and that this can sometimes pose dangers to living things.	Describe the differences in the life cycles of a mammal, an 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 including microorganisms, plants and animals. Give reasons for classifying plants and animals based on specific characteristics.

Sound

EYFS	Year One	Year Two	Year Three	Year Four	Year Five	Year Six
Explore how things work.				Identify how sounds are made. Recognise that vibrations from sounds 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 sounds get fainter as the distance from the sound source increases.		

Electricity

EYFS	Year One	Year Two	Year Three	Year Four	Year Five	Year Six
Explore how things work.				Identify common appliances that run on electricity. Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. Identify whether a lamp will light in a simple series circuit. Recognise that a switch opens and closes a circuit. Recognise some common conductors and insulators, and associate metals with being good conductors.		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. Use recognised symbols when representing a simple circuit in a diagram.

Rocks

EYFS	Year One	Year Two	Year Three	Year Four	Year Five	Year Six
			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**.**			**Evolution and inheritance** Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.

Earth and Space

EYFS	Year One	Year Two	Year Three	Year Four	Year Five	Year Six
					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. Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.	

Light

EYFS	Year One	Year Two	Year Three	Year Four	Year Five	Year Six
			Recognise that they need light in order 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. Recognise that shadows are formed when the light from a light source is blocked by an opaque object. Find patterns in the way that the size of shadows change.			Recognise 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 eye. 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. Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them

Forces

EYFS	Year One	Year Two	Year Three	Year Four	Year Five	Year Six
How things work **3-4** Explore and talk about different forces they can feel. Explore how things work.			**Forces and magnets** Compare how things move on different surfaces. Notice how magnets attract or repel each other and attract some materials and not others. Identify, group and compare magnetic materials. Describe magnets as having two poles. Predict whether two magnets will attract or repel each other, depending on which poles are facing.		Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. Identify the effects of air resistance, water resistance and friction, that act between moving surfaces. Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.	

Working Scientifically

EYFS	Year One	Year Two	Year Three	Year Four	Year Five	Year Six
Characteristics of Effective learning **Playing and exploring** • finding out and exploring • using what they know in their play • being willing to have a go **Active learning** • being involved and concentrating • keeping on trying • enjoying achieving what they set out to do **Creating and thinking critically** • having their own ideas • using what they already know to learn new things • choosing ways to do things and finding new ways **ELG** Listen attentively and respond to what they hear with relevant questions, comments and actions when being read to and during whole class discussions and small group interactions; Make comments about what they have heard and ask questions to clarify their understanding; Offer explanations for why things might happen, making use of recently introduced vocabulary from non-fiction books.	Ask simple questions whilst exploring the world. Explore the world and make careful observations using their senses and equipment such as magnifying glasses. Use practical resources to gather evidence to answer questions. Record observations, using photographs and drawings.	Develop their ability to ask questions about the world. Explore the world around them and make careful observations. Perform enquiries: tests to classify, comparative tests, pattern-seeking enquiries and observations over time. Sort and group objects and living things, identifying their own criteria for grouping. Record measurements using tally charts, bar charts and pictograms. Answer questions using observations and measurements	Decide for themselves how to gather evidence to answer the question. Use a range of equipment for measuring length, time, temperature and capacity, using standard units. Follow a plan to carry out: comparative and simple fair tests, observations over time and pattern seeking. Record classifications using Venn diagrams and Carroll diagrams. Draw conclusions based on their evidence and current subject knowledge. Communicate their findings to an audience both orally and in writing.	Decide how to gather evidence to answer the question, recognising when to use secondary sources. Use a range of equipment for measuring length, time, temperature and capacity, using standard units. Present the same data in different ways to answer the question. Identify naturally occurring patterns and causal relationships. Communicate findings to an audience both orally and in writing, using appropriate scientific vocabulary.	Carry out fair tests, recognising and controlling variables, deciding what observations or measurements to make over time and for how long. Select measuring equipment to give the most precise. Decide how to record and present evidence. Discuss whether other evidence supports or refutes their answer. Write conclusions, identifying causal relationships and results that do not fit the normal pattern	Decide what observations or measurements to make over time and for how long. Look for patterns and relationships using a suitable sample. Decide whether they need to take repeat readings, increase the sample size, adjust the observation period. Discuss how their scientific ideas change due to new evidence they gave gathered. Evaluate the choice of method, control variables, accuracy of results and credibility of secondary sources used. Identify any limitations that reduce the trust they have in their data.

Breakdown for each year group

						Scientists
Year 1	Animals including humans	Plants	Seasonal changes	Everyday materials		Beatrix Potter, Charles Macintosh, Liam Dutton (meteorologist)
Year 2	Animals including humans	Plants	Living things and their habitats	Uses of everyday materials		John Boyd Dunlop, Yann le Meur (sports scientist), Dawood Qureshi (marine biologist)
Year 3	Animals including humans	Plants	Rocks	Light	Forces and magnets	Willhelm Röntgen, Mary Anning, Emma Dunne (palaeontologist),
Year 4	Animals including humans	Living things and their habitats	Electricity	Sound	States of matter	Jane Goodall, Ivan Pavlov, Michael Faraday, Evelyn Glennie (deaf percussionist).
Year 5	Animals including humans	Living things and their habitats	Earth and Space	Forces	Properties and changes of materials	Alileo Galileli, Karen Aplin (space engineer), Nicolaus Copernicus, David Attenborough.
Year 6	Animals including humans	Living things and their habitats	Electricity	Light	Evolution and inheritance	Carl Linneaus, Charles Darwin, Kelsey Byers and Telma G. Lauentino (evolutionary biologists), Alhazen, Santorio Stantorio (pulse meter)

Document Control

September 2021 – Reviewed
December 2021 – Added EYFS column and scientists column