Science Curriculum Statement of Intent, Implementation and Impact

Intent

At Humshaugh C of E (Aided) First School, we recognise the importance of Science in daily life. Science is a way of making sense of the world. For example, children will discover how our bodies work and apply this knowledge to keeping ourselves healthy and making good choices. Scientific learning will encompass expanding the children's knowledge and understanding of the world, and the development of skills associated with Science as a process of enquiry. In line with our school vision of "being good soil" it is our intention to develop the natural curiosity of every child, to give them the courage to investigate new concepts and encourage respect for living organisms and the physical environment developing a passion to pursue Science roles in years to come. This is the first of our values - "sowing the seed well" to prepare the children for their place in society as lifelong learners and contributors.

Through Science, we are able to "cultivate good soil" for our children by providing a high quality, nurturing environment with opportunities to study and examine the world around them. They will explore and observe what is happening in the local environment. They will notice and identify real life problems, in which to apply their learning, thinking like Scientists. Children will discover answers independently by making predictions and testing their theories. Children will practise measuring, counting, and comparing to develop their analytical thinking skills. They will consider, conclude and evaluate new things they have learned. By analysing data and findings, children will develop their higher-level thinking skills. By observing, questioning, predicting, experimenting and concluding, children will apply their understanding and learning as Scientists to solve real life problems. They will learn about key scientific events, inventions and discoveries, for example the discovery of x-rays and the invention of the lightbulb. This is to inspire them to develop an enjoyment of scientific learning and discovery, which they will carry with them through into middle school and beyond. Through encouraging the children to challenge themselves, to strive for continuous improvement and aspire to always give of their best, we aim to enable each child to "flourish and achieve".

Ensuring the way that we teach Science is diverse and inclusive is a priority. Our knowledge-rich curriculum should belong to every child and the attainment of skills should be accessible to and achievable for all. We continue to strive to weave into our curriculum a balanced representation of disability, faith, gender, race, culture and heritage. For example, in Year 4 children learn about such inventors as Lewis Howard Latimer, whose parents escaped from slavery, and who invented the carbon filament that allowed Thomas Edison's light bulb to be developed. In Year 1, children learn about their senses and reflect upon the challenges faced by Helen Keller who achieved a university degree despite being blind and deaf. We acknowledge that there is always more we can do and we continue to reflect on our curriculum choices and to build an inviting and inclusive school community where all members, both children and adults, are valued and care for each other. This is our "bumper crop" - children equipped with the knowledge and understanding to respect all people and the world we share together.

Our Science curriculum is further enriched by our Forest School programme whereby children are given the opportunity to explore and discover the natural world, as well as take part in scientific activities including plant identification and dissection, stream dipping and bug hunts.

Implementation – How do we teach Science?

At Humshaugh C of E First School we aim for our children to develop a love of Science. The science curriculum follows the year-by-year progression of knowledge and skills as set out in the National Curriculum. As we have mixed year group classes, a two-year rolling programme is followed to ensure full coverage of the curriculum. This two-year cycle - A and B - for each phase (Key Stage 1 and lower Key Stage 2) enables our children to experience the full National Curriculum content for both years, but some pupils meet the content in cycle A first and others meet the content in cycle B first. The two cycles in each phase are constructed so that topics included in each do not rely on prior learning that only features in the other cycle. Within topics where these learning interdependencies occur, both statements in both cycles are covered in a distinctly different way within each year group. For example, if pupils in Year 1 encounter the Year 2 Plants topic as the first cycle, they would not have the necessary prior knowledge from the Year 1 topic to access the learning. Consequently, Year 1 NC statements would be covered in both cycles but with a different focus. Children in the Early Years are taught science as part of their continuous provision.

We believe that for the children to become scientists, they not only need knowledge, but also the skills to work scientifically and opportunities for skills and knowledge to be applied. Therefore, we aim to teach through focused exploration, experiment and investigation. Our curriculum plan uses the Association for Science Education (ASE) Primary Assessment Network (PLAN) and Teaching and Assessment of Primary Science (TAPS) assessment materials to support planning and assessment. This provides clear guidance on the progression and application of skills and knowledge expected for each topic, in each year group. Key vocabulary is identified for each science topic and these keywords are explored through teaching and displayed on science working walls. Wow moments linked to real-life concepts, big questions and key ideas (and misconceptions) are included within the curriculum planning; these promote discussion, evoke critical thinking and ensure the full coverage of all five types of scientific enquiry - observing over time; pattern seeking; identifying, classifying and grouping; comparative and fair testing; and researching using secondary sources. Websites such as Explorify, Developing Experts and STEM Learning are used as lesson resources. Both formative and summative assessment is used and children are provided with opportunities to self-assess as well as peer assess their work. At the start of each topic prior learning is checked through the use of concept cartoons or mind-maps, retained knowledge is assessed weekly by written quick-quiz answers in KS2 and targeted questioning in KS1, and end of topic tests are used to check that children "know more and remember more". Attainment is recorded on Year Group specific grids that provide an overview for each individual child to indicate whether they are at or below ARE.

Children have the opportunity to develop their science capital through visitors (Pennines Wildlife Rescue, Blue Cross Animal Welfare, Falconry Days) and trips (e.g., Life Science Centre, Discovery Museum and the Great North Museum: Hancock)) and special science learning days (STEM ambassadors and Beekeepers). The school takes part in national science events such as British Science Week, The Great Science Share and Citizen Science projects (e.g., Zooniverse Plastic Coastal Litter Project and RSPB Big Garden Birdwatch). We extend our children's' learning through the use of STEM Bins and Lego construction and provide opportunities for children to share their enthusiasm for learning Science through Science selfie competitions and seasonal slime-making sessions. We make full use of our unique school grounds and rural setting; for example, our woodland where Forest School is held, and school field area with stream and allotment, or by arranging visits from local farmers and wildlife charities. Our promotion of outdoor learning complements the science curriculum and provides a real context for the children to apply their knowledge and skills. Although the majority of the science teaching (y1-4) is taught as a discrete subject by the subject leader, there is an expectation that all class teachers will promote and incorporate science across the wider curriculum as and when the learning opportunities arise. This ensures that meaningful cross-curricular links are made.

Impact – What will this look like?

We want children to enjoy and value science and appreciate the range of skills it will provide them with. To marvel at the awe and wonder and to have those “Eureka” moments. An essential part of the children becoming scientists is promoting curiosity and encouraging the children to ask questions. By the end of LKS2, when our children leave the school, our expectation is that children will be able to develop their own questions, plan different types of enquiries to answer those questions and communicate their findings in a variety of ways. Children will understand that part of science is failing and that problem solving helps us to overcome these failures. Children will have a clear understanding of how scientists both past and present have contributed to society's understanding of the world around them. They will understand the role that science and other STEM subjects play in solving some of the key problems facing the world, such as climate change.

Pupils are provided with a range of opportunities to showcase and communicate their ideas, research and findings. They are also encouraged to fill in a pupil voice questionnaire to assess their enjoyment of Science and to further develop the curriculum. A variety of assessment tools is used, including: pre and post learning unit tasks, pupil discussions about their learning and their books and digital platforms and iPad apps such as School 360, Busy Things Science and BBC Bitesize quizzes. The use of TAPS and PLAN assessment materials, regular CPD and attendance at area subject leader meetings and STEM Hubs, supports the Science teacher to ensure a robust and effective assessment method is in place. Standards and progression are monitored in a variety of ways such as Governor learning walks, lesson observations and book scrutinies.

TOPIC OVERVIEW

CYCLE A (Year 2 and Year 4 Knowledge and Understanding NC objectives) *see Progression of Skills document for further breakdown*

YEAR GROUP	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
EYFS (Knowledge and Understanding)	ALL ABOUT ME	TRADITIONAL TALES 1	WHAT IS IT LIKE IN THE WOOD AND IN THE JUNGLE?	WEATHER AND GROWING THINGS	PIRATES AND THE SEA	PIRATES AND THE SEA
YEAR 1/2	ANIMALS INCLUDING HUMANS	USES OF EVERYDAY MATERIALS	LIVING THINGS AND THEIR HABITATS	LIVING THINGS AND THEIR HABITATS	PLANTS	PLANTS
YEAR 3/4	ANIMALS INCLUDING HUMANS	ANIMALS INCLUDING HUMANS	ELECTRICITY	STATES OF MATTER	SOUND	LIVING THINGS AND THEIR HABITATS

The **Working Scientifically NC objectives** *(see Progression of Skills document for further breakdown)* are not taught as a separate strand but are woven into the content of Biology, Chemistry and Physics, focusing on the key features of scientific enquiry.
The types of scientific enquiry are: observing over time; pattern-seeking; identifying, classifying and grouping; comparative and fair testing; and researching using secondary sources.

TOPIC OVERVIEW

CYCLE B (Year 1 and Year 3 Knowledge and Understanding NC objectives) *see Progression of Skills document for further breakdown*

YEAR GROUP	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
EYFS (Knowledge and Understanding)	MAGICAL ME/HOW I AM CHANGING	TRADITIONAL TALES 2	WHAT IS IT LIKE IN THE WINTER IN THE UK AND ARCTIC?	PEOPLE WHO HELP US	ALL AROUND THE WORLD: WHAT IS IT LIKE IN OTHER COUNTRIES?	ALL AROUND THE WORLD: WHAT IS IT LIKE IN OTHER COUNTRIES?
YEAR 1/2	ANIMALS INCLUDING HUMANS SEASONAL CHANGES	ANIMALS INCLUDING HUMANS SEASONAL CHANGES	EVERYDAY MATERIALS SEASONAL CHANGES	EVERYDAY MATERIALS SEASONAL CHANGES	PLANTS SEASONAL CHANGES	PLANTS SEASONAL CHANGES
YEAR 3/4	ANIMALS INCLUDING HUMANS	ANIMALS INCLUDING HUMANS	LIGHT	FORCES AND MAGNETS	ROCKS	PLANTS

Progression in working scientifically skills
For EYFS-see separate document

YEAR 1/2	Y3/4
Asking simple questions and recognising that they can be answered in different ways • While exploring the world, the children develop their ability to ask questions (such as what something is, how things are similar and different, the ways things work, which alternative is better, how things change and how they happen). Where appropriate, they answer these questions. • The children answer questions developed with the teacher often through a scenario. • The children are involved in planning how to use resources provided to answer the questions using different types of enquiry, helping them to recognise that there are different ways in which questions can be answered.	**Asking relevant questions and using different types of scientific enquiries to answer them** • The children consider their prior knowledge when asking questions. They independently use a range of question stems. Where appropriate, they answer these questions. • The children answer questions posed by the teacher. • Given a range of resources, the children decide for themselves how to gather evidence to answer the question. They recognise when secondary sources can be used to answer questions that cannot be answered through practical work. They identify the type of enquiry that they have chosen to answer their question.
Observing closely, using simple equipment • Children explore the world around them. They make careful observations to support identification, comparison and noticing change. They use appropriate senses, aided by equipment such as magnifying glasses or digital microscopes, to make their observations. • They begin to take measurements, initially by comparisons, then using non-standard units.	**Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers** • The children make systematic and careful observations. • They use a range of equipment for measuring length, time, temperature and capacity. They use standard units for their measurements.
Performing simple tests • The children use practical resources provided to gather evidence to answer questions generated by themselves or the teacher. They carry out: tests to classify; comparative tests; pattern seeking enquiries; and make observations over time. **Identifying and classifying** • Children use their observations and testing to compare objects, materials and living things. They sort and group these things,	**Setting up simple practical enquiries, comparative and fair tests** • The children select from a range of practical resources to gather evidence to answer questions generated by themselves or the teacher. • They follow their plan to carry out: observations and tests to classify; comparative and simple fair tests; observations over time; and pattern seeking. **Explanatory note** A comparative test is performed by changing a variable that is

identifying their own criteria for sorting. • They use simple secondary sources (such as identification sheets) to name living things. They describe the characteristics they used to identify a living thing.	qualitative e.g. the type of material, shape of the parachute. This leads to a ranked outcome. A fair test is performed by changing a variable that is quantitative e.g. the thickness of the material or the area of the canopy. This leads to establishing a causative relationship.
Gathering and recording data to help in answering questions • The children record their observations e.g. using photographs, videos, drawings, labelled diagrams or in writing. • They record their measurements e.g. using prepared tables, pictograms, tally charts and block graphs. • They classify using simple prepared tables and sorting rings.	**Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions** **Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables** • The children sometimes decide how to record and present evidence. They record their observation e.g. using photographs, videos, pictures, labelled diagrams or writing. They record their measurements e.g. using tables, tally charts and bar charts (given templates, if required, to which they can add headings). They record classifications e.g. using tables, Venn diagrams, Carroll diagrams. • Children are supported to present the same data in different ways in order to help with answering the question.
Using their observations and ideas to suggest answers to questions • Children use their experiences of the world around them to suggest appropriate answers to questions. They are supported to relate these to their evidence e.g. observations they have made, measurements they have taken or information they have gained from secondary sources.	**Using straightforward scientific evidence to answer questions or to support their findings.** • Children answer their own and others' questions based on observations they have made, measurements they have taken or information they have gained from secondary sources. The answers are consistent with the evidence.
Using their observations and ideas to suggest answers to questions • The children recognise 'biggest and smallest', 'best and worst' etc. from their data.	**Identifying differences, similarities or changes related to simple scientific ideas and processes** • Children interpret their data to generate simple comparative statements based on their evidence. They begin to identify naturally occurring patterns and causal relationships. **Using results to draw simple conclusions, make predictions for new**

	values, suggest improvements and raise further questions • They draw conclusions based on their evidence and current subject knowledge.
	Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • They identify ways in which they adapted their method as they progressed or how they would do it differently if they repeated the enquiry. **Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions** • Children use their evidence to suggest values for different items tested using the same method e.g. the distance travelled by a car on an additional surface. • Following a scientific experience, the children ask further questions which can be answered by extending the same enquiry.
	Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • They communicate their findings to an audience both orally and in writing, using appropriate scientific vocabulary.

Progression in knowledge

National Curriculum statements in red are from other linked topics.

PLANTS

Birth to three	• Explore natural materials, indoors and outside.
Nursery	• Use all their senses in hands-on exploration of natural materials. Explore collections of materials with similar and/or different properties. • Plant seeds and care for growing plants. • Understand the key features of the life cycle of a plant and an animal. • Begin to understand the need to respect and care for the natural environment and all living things
Reception	• Draw information from a simple map. (Reception – Living things and their habitats) • Explore the natural world around them. (Reception – Living things and their habitats) • Describe what they see, hear and feel whilst outside. (Reception – Living things and their habitats) • Recognise some environments that are different to the one in which they live. (Reception – Living things and their habitats) Understand the effect of changing seasons on the natural world around them. (Reception – Seasonal changes)
Year 1	• 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.
Year 2	• 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 name a variety of plants and animals in their habitats, including microhabitats. (Y2 - Living things and their habitats)
Year 3	• 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. • Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.
Year 4	• Recognise that living things can be grouped in a variety of ways. (Y4 - Living things and their habitats) • Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. (Y4 - Living things and their habitats) • Recognise that environments can change and that this can sometimes pose dangers to living things. (Y4 - Living things and their habitats)

Progression in knowledge

National Curriculum statements in red are from other linked topics.

LIVING THINGS AND THEIR HABITATS

Birth to three	• Explore natural materials, indoors and outside
Nursery	• Use all their senses in hands-on exploration of natural materials. • Explore collections of materials with similar and/or different properties. • Begin to understand the need to respect and care for the natural environment and all living things.
Reception	• Draw information from a simple map. • 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
Year 1	• Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. (Y1 - Plants) • Identify and describe the basic structure of a variety of common flowering plants, including trees. (Y1 - Plants) • Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. (Y1 - Animals including humans) • Identify and name a variety of common animals that are carnivores, herbivores and omnivores. (Y1 - Animals including humans) • Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). (Y1 – Animals, including humans) • Observe changes across the four seasons. (Y1 - Seasonal change)
Year 2	• 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 microhabitats.

	• 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. • Notice that animals, including humans, have offspring which grow into adults. (Y2 - Animals including humans)
Year 3	• Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. (Y3 - Plants)
Year 4	• 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. • Construct and interpret a variety of food chains, identifying producers, predators and prey. (Y4 - Animals, including humans)

Progression in knowledge

National Curriculum statements in red are from other linked topics.

ANIMALS INCLUDING HUMANS

Birth to three	• Explore natural materials, indoors and outside. • Make connections between the features of their family and other families. • Notice differences between people.
Nursery	• Use all their senses in hands-on exploration of natural materials. • Begin to make sense of their own life-story and family's history. • Understand the key features of the life cycle of a plant and an animal. • Begin to understand the need to respect and care for the natural environment and all living things.
Reception	• Talk about members of their immediate family and community. • Name and describe people who are familiar to them. • Recognise some environments that are different to the one in which they live
Year 1	• 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). • Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.
Year 2	• 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 (water, food and air). • Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. • 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. (Y2 - Living things and their habitats)
Year 3	• 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.
Year 4	• 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.

Progression in knowledge

National Curriculum statements in red are from other linked topics.

EVOLUTION AND INHERITANCE

Birth to three	• Make connections between the features of their family and other families. • Notice differences between people.
Nursery	• Begin to understand the need to respect and care for the natural environment and all living things. (Nursery – Living things and their habitats)
Reception	• Recognise some environments that are different to the one in which they live. (Reception – Living things and their habitats)
Year 1	
Year 2	• 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. (Y2 - Living things and their habitats) • Notice that animals, including humans, have offspring which grow into adults. (Y2 - Animals, including humans)
Year 3	• Describe in simple terms how fossils are formed when things that have lived are trapped within rock. (Y3 - Rocks) • Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. (Y3 - Plants)
Year 4	• Recognise that environments can change and that this can sometimes pose dangers to living things. (Y4 - Living things and their habitats)

Progression in knowledge

National Curriculum statements in red are from other linked topics.

SEASONAL CHANGES

Birth to three	
Nursery	• Understand the key features of the life cycle of a plant and an animal. (Nursery – Plants & Animals, excluding humans)
Reception	• Explore the natural world around them. • Describe what they see, hear and feel whilst outside. • Understand the effect of changing seasons on the natural world around them
Year 1	• Observe changes across the four seasons. • Observe and describe weather associated with the seasons and how day length varies.
Year 2	
Year 3	• Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. (Y3 - Light)
Year 4	

Progression in knowledge

National Curriculum statements in red are from other linked topics.

MATERIALS

Birth to three	• Explore materials with different properties. • Explore natural materials, indoors and outside.
Nursery	• Use all their senses in hands-on exploration of natural materials. • Explore collections of materials with similar and/or different properties. • Talk about the differences between materials and changes they notice.
Reception	• Explore the natural world around them. • Describe what they see, hear and feel whilst outside
Year 1	• 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
Year 2	• 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.
Year 3	• Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. (Y3 - Rocks) • Describe in simple terms how fossils are formed when things that have lived are trapped within rock. (Y3 - Rocks) • 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. (Y3 - Forces and magnets)
Year 4	• Compare and group materials together, according to whether they are solids, liquids or gases. • 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 (°C). • Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. • Recognise some common conductors and insulators, and associate metals with being good conductors. (Y4 -

	Electricity)

Progression in knowledge

National Curriculum statements in red are from other linked topics.

ROCKS

Birth to	• Explore materials with different properties.

three	• Explore natural materials, indoors and outside
Nursery	• Use all their senses in hands-on exploration of natural materials. (Nursery – Living things and their habitats) • Explore collections of materials with similar and/or different properties. (Nursery – Living things and their habitats)
Reception	• Explore the natural world around them. (Reception – Living things and their habitats) • Describe what they see, hear and feel whilst outside. (Reception – Living things and their habitats)
Year 1	• Distinguish between an object and the material from which it is made. (Y1 - Everyday materials) • Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. (Y1 - Everyday materials) • Describe the simple physical properties of a variety of everyday materials. (Y1 - Everyday materials) • Compare and group together a variety of everyday materials on the basis of their simple physical properties. (Y1 - Everyday materials)
Year 2	• Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. (Y2 - Uses of everyday materials)
Year 3	• 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.
Year 4	

Progression in knowledge

National Curriculum statements in red are from other linked topics.

LIGHT

Birth to	• Repeat actions that have an effect.

three	
Nursery	• Explore how things work. • Talk about the differences in materials and changes they notice
Reception	• Describe what they see, hear and feel whilst outside.
Year 1	• Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. (Y1 - Animals, including humans) • Describe the simple physical properties of a variety of everyday materials. (Y1 - Materials)
Year 2	
Year 3	• 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 changes.
Year 4	

Progression in knowledge

National Curriculum statements in red are from other linked topics.

FORCES

Birth to	• Repeat actions that have an effect

three	
Nursery	• Explore how things work. • Explore and talk about different forces they can feel. • Talk about the differences between materials and changes they notice
Reception	• Explore the natural world around them. • Describe what they see, hear and feel whilst outside
Year 1	
Year 2	• Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. (Y2 - Uses of everyday materials)
Year 3	• Compare how things move on different surfaces. • Notice that some forces need contact between two objects, but magnetic forces can act at a distance. • Observe how magnets attract or repel each other and attract some materials and not others. • 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. • Describe magnets as having two poles. • Predict whether two magnets will attract or repel each other, depending on which poles are facing.
Year 4	

Progression in knowledge

National Curriculum statements in red are from other linked topics.

SOUND

Birth to	• Repeat actions that have an effect.

three	
Nursery	• Explore how things work.
Reception	• Describe what they see, hear and feel whilst outside.
Year 1	• Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. (Y1 - Animals, including humans)
Year 2	
Year 3	
Year 4	• Identify how sounds are made, associating some of them with something vibrating. • 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.

Progression in knowledge

National Curriculum statements in red are from other linked topics.

ELECTRICITY

Birth to	

three	• Repeat actions that have an effect
Nursery	• Explore how things work.
Reception	
Year 1	
Year 2	
Year 3	
Year 4	• 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 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. • Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. • Recognise some common conductors and insulators, and associate metals with being good conductors.

Progression in knowledge

National Curriculum statements in red are from other linked topics.

EARTH AND SPACE

Birth to	• Explore and respond to different natural phenomena in their setting and on trips

three	
Nursery	
Reception	• Explore the natural world around them. • Describe what they see, hear and feel whilst outside
Year 1	• Observe changes across the four seasons. (Y1 - Seasonal changes) • Observe and describe weather associated with the seasons and how day length varies. (Y1 - Seasonal changes)
Year 2	
Year 3	
Year 4	