Subject Overview 2024/25: Science
Curriculum and Pedagogy
Knowledge and skills coverage

	Year 3	Year 4	Year 5	Year 6
NC Objectives:	**Autumn 1** **Rocks** Pupils should be taught to: • To compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. • To describe in simple terms how fossils are formed when things that have lived are trapped within rock. • To recognise that soils are made from rock and organic matter.	**Autumn 1** **Animals including humans** Pupils should be taught to: • I can describe the simple functions of the digestive system in humans. • I can identify different teeth in humans and name their functions. • I know how to keep my teeth healthy • I can identify and compare teeth of carnivores, herbivores and omnivores. • I can construct and interpret a variety of food chains identifying producers, predators and prey by examining animal faeces (poo) • I can identify animal habitats in the locality and observe what they eat	**Autumn 1** **Forces** Pupils should be taught to: • Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. *(The act of gravity on our lives)* • Identify the effects of air resistance, water resistance and friction, which act between moving surfaces. • Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.	**Autumn 1** **Animals including humans** Pupils should be taught to: • I can identify the main parts of the human circulatory system and describe the function of the heart, blood vessels and blood. • I can describe the ways in which nutrients and water and transported within animals including humans. • I can recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.
WS Objectives:	Pupils should be taught to: • Ask relevant questions and use different scientific enquiries. • Make systematic and careful observations, take accurate measurements using standard units, use a range of equipment. • Gather, record, classify and present data in a	Pupils should be taught to: • Ask relevant questions. • Make careful observations and use a range of equipment. • Gather, record and classify data. • Record findings using scientific language, drawings, labelled diagrams. • Identify similarities and differences.	Pupils should be taught to: • planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary (Lessons 2,4 and 6) • Taking measurements, using a range of scientific equipment, with increasing accuracy and precision,	Pupils should be taught to: • Evaluate different aspects of their enquiries such as equipment and accuracy of measurements. • Make predictions about which materials are soluble or insoluble. • Use scientific language and illustrations to discuss, communicate and justify scientific ideas. • Make careful observations when heating solutions.

Subject Overview 2024/25: Science
Curriculum and Pedagogy
Knowledge and skills coverage

	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. • Use results to draw simple conclusions, suggest improvements and raise further questions. • Identify similarities and differences. • Use straightforward scientific evidence to answer questions or to support their findings.	• Use straightforward scientific evidence to answer questions to support findings. • Interpret models to demonstrate how things work. • Record findings using labelled diagrams	taking repeat readings when appropriate (Lesson 1) • Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs (Lesson 5) • Using test results to make predictions to set up further comparative and fair tests (Lesson 6) • Reporting and presenting 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 (Lesson 3) • Identifying scientific evidence that has been used to support or refute ideas or arguments. (Lesson 1/3)	• Plan own investigation to test how materials react with each other. • Record my results in a table.
	Key Vocabulary Rock, stone, pebble, boulder, grain, **crystals**, layers, hard, soft, **texture, absorb**, water, soil, fossil, marble, chalk,	**Key Vocabulary** Digestive system, **digestion**, mouth, teeth, **saliva, oesophagus**, stomach, small intestine, **nutrients**, large intestine, rectum, anus, incisor, canine, **herbivore, omnivore.**	**Key vocabulary** Force, Gravity, Earth, **air resistance**, **water resistance**, **friction**, mechanisms, simple machines, levers, pulleys, gears, Newton, **up thrust**,	**Key Vocabulary** Heart, **pulse**, rate, pumps, blood, **blood vessel,** transported, lungs, oxygen, carbon dioxide, nutrients, water, muscles, **cycle**, **circulatory system**, diet, exercise, **drugs,** lifestyle.

Subject Overview 2024/25: Science
Curriculum and Pedagogy
Knowledge and skills coverage

	granite, sandstone, slate, soil, peat, sandy/chalk/clay soil.		opposing, streamline, brake, cog, weight, mass.	
NC Objective	**Autumn 2** **Forces and magnets** • Pupils should be taught to: • 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	**Autumn 2** **Living things and their habitats** Pupils should be taught to: • 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 the environment. • Recognise that environments can change and this can sometimes pose dangers to living things.	**Autumn 2** **Earth and Space** Pupils should be taught to: • 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 approximate spherical bodies. • Use Earth rotation to explain day and night due to the apparent movement of the sun across the sky.	**Autumn 2** **Light** Pupils should be taught to: • 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.

Subject Overview 2024/25: Science
Curriculum and Pedagogy
Knowledge and skills coverage

	repel each other, depending on which poles are facing.			
WS Objective	Pupils should be taught to: • Ask relevant questions and use different scientific enquiries. • Make systematic and careful observations, take accurate measurements using standard units, use a range of equipment. • 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.	Pupils should be taught to: • Ask relevant questions. • Make careful observations and use a range of equipment. • Gather, record and classify data. • Record findings using scientific language, drawings, labelled diagrams. • Identify similarities and differences. • Use straightforward scientific evidence to answer questions to support findings.	Pupils should be taught to: • planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. • Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. • Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. • Using test results to make predictions to set up further comparative and fair tests • Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of	Pupils should be taught to: • Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary • Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate • Recording data and results of increasing complexity using scientific diagrams and labels. • Use test results to make predictions to set up further comparative and fair tests • 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

Subject Overview 2024/25: Science
Curriculum and Pedagogy
Knowledge and skills coverage

	• Use results to draw simple conclusions, suggest improvements and raise further questions. • Identify similarities and differences. • Use straightforward scientific evidence to answer questions or to support their findings.		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.
	Key Vocabulary Force, push, pull, twist, contact force, **non-contact force**, magnetic force, magnet, strength, bar magnet, ring magnet, button magnet, horseshoe magnet, **attract, repel**. Magnetic material, metal, iron, steel, poles, north pole, south pole.	**Key Vocabulary** **Classification**, classification keys, environment, **habitat**, human impact, positive, negative, migrate, hibernate, fish, **amphibian**, reptile, bird, mammal, **vertebrate, invertebrate**, shelter, food, protection.	**Key Vocabulary** Earth, sun, moon, Mercury, Jupiter, Saturn, Venus, Mars, Uranus, Neptune, Pluto (dwarf planet), spherical, **solar system**, rotates, star, **orbit**, planets, **axis**, night, day, season, **galaxy. Meteorite, celestial**.	**Key Vocabulary** Light, light source, dark, absence of light, **transparent, translucent, opaque**, shiny, matt, surface, **shadow, reflect,** mirror, sunlight, dangerous, **refraction, medium, dense.**
NC Objective	**Spring 1** **Animals including Humans** Pupils should be taught to: - I can identify that humans and some other animals have skeletons and muscles for support,	**Spring 1** **Sound** Pupils should be taught to: - To identify how sounds are made, associating some of them with something vibrating. (Vibration stations)	**Spring 1** **Properties of materials** Pupils should be taught to: - Compare and group together everyday materials based on their properties, including hardness, solubility,	**Spring 1** **Electricity** Pupils should be taught to: • To 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.

Subject Overview 2024/25: Science
Curriculum and Pedagogy
Knowledge and skills coverage

	protection and movement. - I can 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.	- Recognise that vibrations from sounds travel through a medium to the ear. (String phones) - Find patterns between 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 sound gets fainter as the distance from the sound source increases	transparency, conductivity and response to magnets. - Know that some materials will dissolve in liquid to form a solution and describe how to recover a substance from a solution. - Use knowledge of solid, liquid and gas to decide how mixtures might be separated including through filtering, sieving and evaporation. - Give reasons based on evidence from comparative 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 this kind of change is not usually reversible including changes associated with burning and the action of acid on bicarbonate of soda.	• To associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. • To use recognised symbols when representing a simple circuit in a diagram.

Subject Overview 2024/25: Science
Curriculum and Pedagogy
Knowledge and skills coverage

WS Objective	Pupils should be taught to: - Asking relevant questions and using different types of scientific enquiry to answer them. - Setting up simple practical enquiries, comparative, and fair tests. - Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. - Gathering, recording, classifying, and presenting data in a variety of ways to help in answering questions. - Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables.	Pupils should be taught to: - Ask relevant questions. - Make careful observations and use a range of equipment. - Gather, record and classify data. - Record findings using scientific language, drawings, labelled diagrams. - Identify similarities and differences. - Use straightforward scientific evidence to answer questions to support findings.	Pupils should be taught to: • Evaluate different aspects of their enquiries such as equipment and accuracy of measurements. • Make predictions about which materials are soluble or insoluble. • Use scientific language and illustrations to discuss, communicate and justify scientific ideas. • Make careful observations when heating solutions. • Plan own investigation to test how materials react with each other. • Record my results in a table.	Pupils should be taught to: • recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. • reporting and presenting 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. • identifying scientific evidence that has been used to support or refute ideas or arguments. • Answer questions by investigating. • Make predictions using own ideas and subject knowledge.

	- Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. - Using results to draw simple conclusions, make predictions for new values, suggest improvements, and raise further questions. - Identify differences, similarities or changes related to simple scientific ideas and processes. - Use straightforward scientific evidence to answer questions or to support their findings.			
	Key vocabulary **Nutrition**, **nutrients, carbohydrates**, sugars, **protein, vitamins, minerals, fibre**, fat, water, skeleton, bones, muscles, support, protect, skull, ribs, spine, **muscles, joints**.	**Key Vocabulary** Sound, source, **vibrate, vibration**, travel, **pitch**, volume, **faint**, loud, **insulation**.	**Key vocabulary** **Thermal/electrical insulator/conductor**, change of state, mixture, dissolve, **solution**, **soluble, insoluble,** filter, sieve, **reversible/not reversible**, change, burning, rusting, new material.	**Key Vocabulary** **Circuit, complete circuit, circuit diagram, circuit symbol, cell**, battery, bulb, buzzer, motor, switch, **voltage.** NB Children do not need to understand what voltage is but will use volts and voltage to describe different batteries.

Subject Overview 2024/25: Science
Curriculum and Pedagogy
Knowledge and skills coverage

				The words cells and batteries are now used interchangeably
	Spring 2	BRITISH SCIENCE WEEK		
NC Objective	Summer 1 **Light** Pupils should be taught to: • To recognise we need light in order to see things and that dark is the absence of light • Light is reflected from surfaces • Recognise that light from the sun can be dangerous and that there are ways to protect your eyes. • Recognise that shadows are formed when light from a source is blocked by an opaque object. • Find patterns in the way that the shadows change.	Summer 1 **Electricity** Pupils should be taught to: • I can identify common appliances that run on electricity • I can construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers • 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 • 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 • I can recognise some common conductors and insulators, and associate metals with being good conductors.	Summer 1 **Living things and their habitats** Pupils should be taught to: • Describe the differences in life cycles of a mammal, an amphibian, an insect and a bird • Describe the life process of reproduction in some plants and animals	Summer 1 **Living things and their habitats** Pupils should be taught to: • Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences including micro-organisms, plants and animals • Give reasons for classifying plants and animals based on specific characteristics.

Subject Overview 2024/25: Science
Curriculum and Pedagogy
Knowledge and skills coverage

WS Objective	Pupils should be taught to: • Asking relevant questions and using different types of scientific enquiry to answer them. • Setting up simple practical enquiries, comparative, and fair tests. • Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. • Gathering, recording, classifying, and presenting data in a variety of ways to help in answering questions. • Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables.	Pupils should be taught to: • Ask relevant questions. • Make careful observations and use a range of equipment. • Gather, record and classify data. • Record findings using scientific language, drawings, labelled diagrams. • Identify similarities and differences. • Use straightforward scientific evidence to answer questions to support findings.	Pupils should be taught to: • planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary • taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate • recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs • using test results to make predictions to set up further comparative and fair tests • reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations • identifying scientific evidence that has been used	Pupils should be taught to: • planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary • taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate • recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs • using test results to make predictions to set up further comparative and fair tests • reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations • identifying scientific evidence that has been used to support or refute ideas or arguments

	• Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. • Using results to draw simple conclusions, make predictions for new values, suggest improvements, and raise further questions. • Identify differences, similarities or changes related to simple scientific ideas and processes. • Use straightforward scientific evidence to answer questions or to support their findings.		to support or refute ideas or arguments	
	Key vocabulary Light, **light source**, dark, absence of light, **transparent, translucent, opaque,** shiny, matt, surface, **shadow, reflect**, mirror, sunlight, dangerous.	**Key Vocabulary** Electrical, appliance, mains, plug, **circuit, component, cell**, battery, **positive, negative**, connect/connectors, loose connection, **short circuit**, crocodile clip, bulb, switch, buzzer, motor, **conductor, insulator,** metal, non-metal, symbol, **voltage, current.**	**Key Vocabulary** life cycle, live, young, **fertilises,** egg, runners, **reproduce,** sperm, **metamorphosis** **gestation**, cuttings, plantlets, bulb, sexual/asexual reproduction	**Key Vocabulary** **Vertebrates**, fish, **amphibians**, reptiles, birds, mammals, **invertebrates**, insects, spiders, snails, worms, flowering and non-flowering.

Subject Overview 2024/25: Science
Curriculum and Pedagogy
Knowledge and skills coverage

NC Objective	Summer 2 **Plants** Pupils should be taught to: • I can identify and describe the functions of different parts of a flowering plant. • I can explore the requirements of plant life and growth. • I can investigate the way in which water is transported within plants • I can explore the part that flowers play in the lifecycle of flowering plants including pollination, seed formation and seed dispersal	Summer 2 **Changing States** Pupils should be taught to: • 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 • Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	Summer 2 **Animals including Humans** Pupils should be taught to: • Describe the changes as humans develop from birth to old age.	Summer 2 **Evolution and Inheritance** • Pupils should be taught to: • 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. -

Subject Overview 2024/25: Science
Curriculum and Pedagogy
Knowledge and skills coverage

WS Objective	• Pupils should be taught to: • Asking relevant questions and using different types of scientific enquiry to answer them. • Setting up simple practical enquiries, comparative, and fair tests. • Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. • Gathering, recording, classifying, and presenting data in a variety of ways to help in answering questions. • Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables.	Pupils should be taught to: • Ask relevant questions. • Make careful observations and use a range of equipment. • Gather, record and classify data. • Record findings using scientific language, drawings, labelled diagrams. • Identify similarities and differences. • Use straightforward scientific evidence to answer questions to support findings.	Pupils should be taught to: • Ask relevant questions. • Make careful observations and use a range of equipment. • Gather, record and classify data. • Record findings using scientific language, drawings, labelled diagrams. • Identify similarities and differences. • Use straight forward scientific evidence to answer questions to support findings.	Pupils should be taught to: • recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. • reporting and presenting 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. • identifying scientific evidence that has been used to support or refute ideas or arguments

	• Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. • Using results to draw simple conclusions, make predictions for new values, suggest improvements, and raise further questions. • Identify differences, similarities or changes related to simple scientific ideas and processes. • Use straightforward scientific evidence to answer questions or to support their findings.			
	Key vocabulary **Photosynthesis,** pollen, insect/wind **pollination**, **seed formation, seed dispersal- wind dispersal, animal dispersal, water dispersal, pollen**, roots, stem, trunk, leaves, **absorb, nutrients, reproduce, germination, stamen, style**.	**Key Vocabulary** Solid, liquid, gas, state, change, melting, freezing, **melting point, boiling point**, **evaporation,** temperature, **water cycle**, **matter**, air, oxygen, ice, water, water **vapor, steam**, heated, heat, cooled, cool, temperature, **degrees Celsius**, melt, melting point, freeze, freezing point, **solidify**, boil, boiling point, **evaporate**,	**Key vocabulary** **Adolescent**, adult, asexual reproduction, sexual reproduction, **fertilization,** death, teenager, elderly, toddler, **reproduction, foetus,** growth, puberty, **menstrual cycle**, **gestation**.	**Key Vocabulary** Offspring, sexual reproduction, vary, **variation**, characteristics, suited, **adapted**, environment, **inherited, species, fossils, adaptation, acquired characteristic, inherited characteristic, gene, natural selection, artificial selection**.

		evaporation, condense, condensation, precipitation, infiltration.		

Pedagogy

Science Implementation

Curriculum Approach

The objectives for Science in KS2 are clearly set out for each year group in the National Curriculum. Working Scientifically is integrated into all lessons following the objectives set out in our long term plan. An enquiry based approach is used with a clear emphasis on practically developing curiosity. This approach builds on or develops each child's science capital as well as gives opportunities to develop Scientific knowledge, understanding and skills. We emphasise vocabulary within all science lessons using a 3 tier vocabulary approach which is revisited regularly to enable understanding and retention. Pre-cueing of vocabulary is regular focus for our EAL pupils. Aspirations and possible future careers are prioritised within Science with a 'What's the Point?' approach. Our children learn about links with a range of careers linked with the topic being studied.

E.g. Yr 3 Skeletons, nutrition and Muscles: dietician, radiologist, archaeologist, chef, doctor, physiotherapist, sport scientist, surgeon, vet, etc

Links with other subjects are planned for and maximised on There is an expectation that Reading For Learning is planned for and occurs during Guided Reading. Eg. Year 5 – space Year 3 – healthy eating.

Science lessons support our school context based drivers, the 5 Es (Excel yourself, embrace yourself, Explore the world, Engage with others, Express yourself). These are explicitly shared with the children.

Teaching Approach

All pupils have a two-hour weekly Science session. A range of teaching approaches are used for different reasons but our approach is that Science should be practical, engaging and enquiry based. Consolidation of vocabulary is a priority and approaches are used to make learn child led, purposeful, fun and challenging.

These approaches include:

- I do, we, do, you do approach to develop skills and metacognition

- Use of concept cartoons to identify misconceptions and challenge thinking
- Use of scientific symbols which refer to working scientifically or scientific enquiry in order to set context or challenge thinking
- Games to promote vocabulary development e.g. chatterboxes, Blockbusters, Bingo
- Songs to promote learning
- Drama to reinforce and show learning
- Promotes learning in other subjects e.g. maths (measuring scaling, reading scales, positive and negative numbers with thermometer use); mummification of tomatoes – links with History (Egyptians);
- Interwoven scientific enquiry games to support skill development
- Outdoor learning where possible
- Linking Science to stories
- Use of technology e.g. visualisers and dataloggers
- Trips and visitors to reinforce and deepen learning
- Develop critical thinking through different strategies e.g. I see, I think, I wonder, Flat Chats, Silent Debate, etc

Adaptive Teaching/SEND

Our Science curriculum allows for inclusivity, allowing all children to engage with their lessons. It is our belief that all children have an equal right to a broad and balanced curriculum, which enables them to meet their full potential. Through our teaching, we provide learning opportunities that enable all pupils to make good progress. We strive hard to meet the needs of those pupils with special educational needs, those with disabilities, those who are deemed more-able and talented and those learning English as an additional language, and we make all reasonable adjustments to achieve this.

Subject Overview 2024/25: Science
Curriculum and Pedagogy
Knowledge and skills coverage

SMSC

Spiritual development in Science inspires the children to develop an awe and wonder of the natural world, looking in particular at the physical and human features. It also includes looking at how the world around them works for example how we know so much about different planets and the solar system as well as considering how our bodies work and look topics on the skeleton, the digestive system and also the circulatory system.

Moral education allows children to recognise that development takes place both in a global and local context. The children look at how humans develop and allows the children to explore physical and environmental influences as well as inherited characteristics..

Social education looks at the study of real people in different societies. It allows children to develop a sense of identity and allows community spirit to de strengthened. This is done by considering careers relating to the topics being taught and what qualities a person may need.

Cultural education encourages the study of real science. It allows for multi-cultural education through recognising common trends and then also differences. It encourages the children to reflect on the technology available today and the science behind it. It also considers past scientists and their influence on the world today.

Reading for learning

Reading for learning is encouraged to enable learners to gain more information about the units being covered. E.G. evidence in floor books of related science topics in guided reading sessions. Each year group also has a box of books for reading around the curriculum. Within this box, there are books for every unit covered, these are for use before, during and after units are taught.

Subject Overview 2024/25: Science
Curriculum and Pedagogy
Knowledge and skills coverage

Trips and Visitors

We welcome visitors into our school to reinforce, introduce or deepen learning. Visitors related to Scientific learning include:

- Health Representatives – digestion (Yr 4) Life cycles (Yr 5)
- Keele University – space (yr 5)
- STEM theatre trip – Jina and the STEM sisters

Visits link a range of objectives from different subjects (some Science related). For example links with our differentiated text; Charlie & the Chocolate Factory; History topic – Mayans and properties and changes of materials in Science. Other visits include Safe & Sound event for year 6 (relates to healthy body, mind and drugs and alcohol)

Scientific Enquiry	
Research	
Pattern Seeking	
Observing (Over time)	
Testing	
Identifying and Classifying	
Problem solving	

Year 1 / 2 Working Scientifically

Asking simple questions and recognising that they can be answered in different ways ♣ observing closely, using simple equipment ♣ performing simple tests ♣ identifying and classifying ♣ using their observations and ideas to suggest answers to questions ♣ gathering and recording data to help in answering questions.

Year 3 / 4 Working Scientifically

Asking relevant questions and using different types of scientific enquiries to answer them ♣ setting up simple practical enquiries, comparative and fair tests ♣ making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers ♣ 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 ♣ reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions ♣ using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions ♣ identifying differences, similarities or changes related to simple scientific ideas and processes ♣ using straightforward scientific evidence to answer questions or to support their findings.

Year 5/6 Working Scientifically

Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary ♣ taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate ♣ recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs ♣ using test results to make predictions to set up further comparative and fair tests ♣ reporting and presenting 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 ♣ identifying scientific evidence that has been used to support or refute ideas or arguments.

Subject Overview 2024/25: Science
Curriculum and Pedagogy
Knowledge and skills coverage

Subject Overview 2024/25: Science
Curriculum and Pedagogy
Knowledge and skills coverage

Famous Scientists linked to each unit.	
Year 3	
Mary Anning (Fossils)	Rocks
Sir Isaac Newton Albert Einstein John McAdam	forces
See below	Animals including humans
See below	Light
Carl Linnaeus George Washington Carver Alexander Von Humboldt Oliver Rackham Dr Angie Burnett	Plants
Year 4	
See below	Animals including Humans
Alessandro Volta Thomas Edison Michael Faraday	Electricity
See below	Sound
See below	Changing state
Year 5	
Sir Isaac Newton	Forces
Neil Armstrong Tim Peak Buzz Aldrin Helen Sharman	Earth and space
Spencer Silver	Materials
Jane Goodall David Attenborough	Habitats
See below	lifecycles
Year 6	
Santorio Santorio	Animals including humans
See below	Light
Alessandro Volta	Electricity

Famous Scientists

Our children learn about scientists within each topic area in all year groups as shown:

Subject Overview 2024/25: Science
Curriculum and Pedagogy
Knowledge and skills coverage

Thomas Edison	
Aristotle Carl Linnaeus	Living things and their habitats
Charles Darwin	Evolution and Inheritance

Subject Overview 2024/25: Science
Curriculum and Pedagogy
Knowledge and skills coverage

Additional Famous Scientists for each unit.	
Year 3	
Wilhelm Conrad Rontgen	Developed X ray machine (nutrition, skeletons, etc)
Mary Anning (Fossils)	Rocks
Matthias Jakob Schleiden	Plants
John Dunlop (inventor of the tyre)	Forces and Magnets
Isaac Newton / Thomas Edison	Light
Year 4	
David Attenborough (nature)	Habitats
William Beaumont	Digestion
Robert Boyle (Boyle's Law)	States of Matter
Eddison	Electricity / light
Alexander Graham Bell (telephone)	Sound
Year 5	
Ruth Benerito (wrinkle free cotton) Spencer Silver (post it notes)	Materials
Ptolemy (astronomer) Copernicus (first model of the universe)	Space
Isaac Newton (gravity)	Forces
Charles Darwin	Habitats
Oscar Hertwig (reproduction)	Lifecycles
Year 6	
Jane Goodhall (primatologist) Charles Darwin (evolution) Alfred Wallace (evolution)	Evolution
Carl Linnaeus (classification)	Classification
William Harvey (described blood circulation system)	Circulatory System
Alhazan (modern optics)	Light
Tesla	Electricity

Famous Scientists

Our children learn about scientists within each topic area in all year groups as shown:

Subject Overview 2024/25: Science
Curriculum and Pedagogy
Knowledge and skills coverage

Assessment

Within Science, assessment takes place for a range of differing reasons. We use 'Teacher Assessment in Primary Science' (TAPS) which aims to develop, support for a valid, reliable and manageable system of primary science assessment which will have a positive impact on children's learning.

Assessment For Learning

The teaching sequence is determined by the teachers' use of weekly Afl and triangulation of Science evidence and their professional judgement to identify and act upon the needs of the class. The approach is flexible to allow more time to act upon the cohorts needs necessary. If more time is needed in a given area e.g. vocabulary development teachers will adapt the advised sequence.

Formative Assessment

At the start of the topic, the teacher considers prior knowledge that pupils should hold – linking this back to the last time the pupils were taught in this area. As mobility is high in our school context this is imperative to enable children to learn as prior knowledge provides the anchor for future learning opportunities. If there are gaps in attainment, then teachers build this into the planning cycl

Assessment is an integral part of every subject. The children are continuously assessed before, during and after the lessons. After each lesson, the children will be assessed using an 'I can' statement. For each lesson there can be a knowledge and a skill learning objective, this will be shown on the appropriate page in the floor book. The children will be RAG rated on how they have achieved the particular knowledge or skill they have been working on. Green will show that the child has achieved ARE within that lesson. If the name is not coloured, then that means that they are not working at ARE. This assessment will inform a teacher's judgement as to whether they are age related at the end of the unit. Any of the 5Es that are relevant to the lesson will be noted next to the learning objective on the 'I can' statement.

Reading for learning

There is an expectation that Reading for Learning is planned for and occurs during Guided Reading. Eg. Year 3 – Keeping Healthy
A range of evidence is triangulated in order to assign a teacher assessment in Science.

Summative tests
NSI half termly Science Tests and scores to saved on grids which can be found in the science file on

Other Science assessment evidence
Prior knowledge evidence
Links to careers
Evidence of quizzes
Can you still evidence
Post it notes with pupil comments
Reading for learning evidence
Famous scientist links
Discovery Dogs scientific skills
Concept cartoons
Links to transferable skills eg using newton metres in science links to measures in maths
TAPS based evidence from pupils within working scientifically objectives
Pupil diagrams, recordings and other work
Actions within investigative work
Photographs
Conversations and comments

Assessment records indicate pupil development in skills and knowledge from previous progression unit and the end of the one being currently taught. This enables teachers to assess retention and act on it in current planning.

Recording of Attainment

Subject Overview 2024/25: Science
Curriculum and Pedagogy
Knowledge and skills coverage

Spreadsheets enable knowledge and skill development to be recorded by teachers. Teachers can then check prior learning within a concept and use professional judgement in how to adapt teaching to this.

Yearly science topic overview

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 3	Rocks	Forces and magnets	Animals including humans	Light		Plants
Year 4	Animals including humans	Living things and their habitats	Sound	Electricity		States of matter
Year 5	Forces	Earth and Space	Properties of materials	Living things and their habitats		Animals including Humans
Year 6	Animals including humans	Light	Electricity	Living things and their habitats		Evolution

Note – March 7th 2025 to March 16th 2025 is British Science Week 'Change and Adapt'