Standlake CE Primary School Curriculum Handbook Science

Curriculum Statement

Intent

At Standlake CE Primary School, we recognise the importance of science in helping children to understand the world around them and their place within it. Our intent is to inspire pupils to become curious, engaged, ambitious and reflective learners who develop a deep and secure understanding of the natural world. We aim for all children to think and work like scientists—asking questions, making observations, carrying out investigations and drawing conclusions based on evidence.

Central to our approach is the development of oracy within science. We recognise that high-quality talk is fundamental to learning, and we prioritise opportunities for pupils to articulate their thinking, justify ideas, challenge one another respectfully and use precise scientific vocabulary. Through structured discussion, partner talk and collaborative enquiry, pupils develop confidence in expressing their understanding and deepen their scientific reasoning.

Our teaching is strongly influenced by the Thinking Doing Talking Science approach, which places equal emphasis on thinking, practical investigation and purposeful talk. This ensures that every science lesson includes practical, thought provoking moments that get the children excited and enthused.

At Standlake CE Primary School, our science curriculum provides high-quality, practical and engaging learning experiences, placing enquiry at the heart of science. Lessons are carefully structured with clear knowledge-based and skills-based objectives. Pupils are supported to make observations, carry out investigations, and analyse and present their results with increasing confidence and independence. Recording in books should align specifically with the learning objectives and be succinct and focused.

Careful curriculum design ensures progression in both knowledge and scientific skills. Our Knowledge, Concepts and Vocabulary (KCV) documents, aligned with the National Curriculum, provide a clear structure for learning. These support pupils in building on prior knowledge, developing subject-specific vocabulary and acquiring skills progressively across year groups. Teaching is sequenced to enable cumulative learning, ensuring all pupils can access an ambitious curriculum and achieve their full potential.

Science learning extends beyond the classroom. Pupils are encouraged to engage with the local environment through outdoor learning and enrichment opportunities, as well as through links with the wider community. These experiences help children to see the relevance of science in everyday life and its role in shaping the future, while also challenging stereotypes about who scientists are and what they do.

We are committed to high expectations and inclusion for all learners. Through adaptive teaching, purposeful talk, targeted support and appropriate challenge, we ensure that every child is engaged, makes progress and achieves success. Collaborative learning further strengthens communication skills and reflects our commitment to learning together.

Ultimately, our aim is to foster a lifelong love of science. At Standlake CE Primary School, we strive to develop confident, inquisitive and articulate learners who see themselves as scientists and are equipped with the knowledge, skills and mindset to contribute positively to the world around them.

Implementation

At Standlake CE Primary School, science is taught weekly through a carefully sequenced, spiral curriculum designed to ensure that children revisit and deepen their understanding of key scientific concepts as they progress through the school. This approach enables pupils to make meaningful connections

between ideas, reinforce prior learning, and steadily build towards secure mastery over time.

Key concepts are revisited regularly throughout the curriculum, with each encounter increasing in depth and complexity. Rather than simply repeating content, learning is expanded and developed, allowing pupils to strengthen their understanding and apply it in increasingly challenging contexts. This structured revisiting of knowledge supports long-term retention and helps prevent learning from being forgotten.

The spiral design also supports progressive skill development, enabling pupils to refine their scientific enquiry skills and apply them across a range of investigations. As a result, children grow in confidence as critical thinkers and problem solvers, able to approach new scientific questions with increasing independence.

The curriculum is adaptive in nature, building on pupils' prior knowledge so that all learners are appropriately supported and challenged. This ensures that those who need further reinforcement can consolidate their understanding, while those ready for greater depth are extended through richer and more complex learning opportunities.

In each unit, children will learn about a famous scientist. Studying famous scientists helps children understand how discoveries and inventions have changed the world. It also inspires curiosity, creativity, and a love of learning by showing that ordinary people can achieve extraordinary things through hard work and perseverance.

Each year, the final unit of work is a 'Making Connections' unit. These units are designed around the principle that deep learning occurs when children can link new information with existing knowledge. They allow children to revisit, revise and apply their learning in a new context.

At Standlake, science is celebrated throughout the year, with key events and notable scientists recognized during British Science Week. Activities include Collective Worship, guest visitors, workshops, whole-school challenges, and a Science Fair where pupils showcase their home-designed projects.

Our Science Lead supports teachers in planning learning objectives, ensuring alignment with the KCV document and the National Curriculum. Strong subject knowledge is vital for delivering a robust science curriculum. Using Kapow , each lesson unit includes teacher videos and resources to develop address support subject misconceptions, ongoing knowledge, and professional development (CPD).

Science Leads from each EPA primary school meet regularly to share best practices. They also conduct book reviews

throughout the year to ensure high-quality written work and ample opportunities for scientific learning. The Science Lead conducts lesson observations to ensure that teaching quality meets at least a 'good' standard and aligns with Standlake's educational intent. Each classroom features a working wall displaying termly science vocabulary and supportive photographic images.

Impact

The impact of Science at Standlake CE Primary School is that pupils are engaged, curious, ambitious, and reflective learners who enjoy their science lessons and develop a strong sense of enquiry. Children are encouraged to ask questions, explore ideas, and develop an understanding of how and why things happen in the world around them.

Pupils leave Standlake with the knowledge, skills, and enthusiasm needed to continue their scientific learning and to see science as an exciting and essential part of their future.

Science lessons are designed to foster confidence and curiosity, with pupils regularly contributing ideas, posing questions, and planning investigations. The long-term goal is for children to see themselves as scientists and to recognise the relevance of science in everyday life.

Recording of Work

Science work is recorded in individual science books. Each unit begins with a Knowledge, Concept and Vocabulary (KCV) overview sheet, which is stuck into books to support learning and retrieval.

Evidence from each lesson is recorded in the children's science books. Recording is directly linked to the lesson's learning objective. Pupils are not expected to write up full investigations in extended form unless appropriate; instead, recording focuses on key learning and understanding.

Wherever possible, work is handwritten by pupils to ensure ownership and pride in presentation. Worksheets are used selectively where they best support learning. Written work is presented to a high standard, including an underlined date, learning objective, and clearly structured layout. Diagrams are drawn in pencil and neatly labelled, and tables are completed with care using rulers where appropriate.

If a lesson is best evidenced through practical activity, a clear photograph may be included in books with the learning objective recorded beneath it. Some extended written outcomes, such as biographies, explanations, diary entries, or non-chronological reports, may be recorded in English books where appropriate.

There is clear progression in recording scientific data, beginning with simple pictograms in lower years and developing through to Venn diagrams, bar charts, and line graphs in upper Key Stage 2.

EYFS

Science at Foundation Stage is covered in the 'Understanding the World' area of the EYFS Curriculum. It is introduced indirectly through a variety of activities that encourage every child to explore, problem solve, observe, predict, think, make decisions and talk about the world around them.

Children are encouraged to observe, question, and explore the world around them through activities such as gardening, experimenting with materials, exploring weather and seasons, and caring for living things. Scientific skills are developed through curiosity, discussion, and problem-solving, helping children to build an understanding of natural processes and develop a lifelong interest in learning about the world.

Assessment

Assessment in Science is ongoing and formative throughout each unit. Teachers assess understanding in lessons and make a summative judgement at the end of each unit and at the end of the academic year.

Learning objectives are recorded in books and reviewed by teachers. Each lesson begins with retrieval practice to revisit prior learning through quizzes, questioning, or analysis of scientific images, diagrams, or statements.

Key Concept Questions are used to assess and deepen pupils' understanding of each unit. These may be used during lessons or as written responses, including through teacher feedback or "Purple Pen" responses, to demonstrate progress and address misconceptions.

In the Early Years Foundation Stage, evidence of science learning is recorded through photographs, drawing and group recording in their workbooks.

Inclusion

At Standlake CE Primary School, we are committed to ensuring that every child is valued, appropriately challenged, and supported to succeed in Science. Lessons are carefully planned to be inclusive and accessible to all learners.

Teachers use a range of strategies to support inclusion, including vocabulary banks, carefully structured partner and group work, and writing frames where appropriate. Adaptations are made to ensure all pupils can access learning and make progress.

We place strong emphasis on talk and practical activity, enabling pupils to learn through discussion, collaboration, and hands-on exploration. Pupils are encouraged to learn from mistakes and to engage confidently with scientific investigation and enquiry.

Cultural Capital

We recognise that science capital—the science-related knowledge, experiences, attitudes, and resources that pupils gain throughout their lives—has a significant impact on future aspirations. At Standlake CE Primary School, we are committed to increasing pupils' science capital through rich and meaningful experiences.

We aim to expose children to a wide range of scientific opportunities that help them see themselves as scientists and understand the role of science in the world. Throughout the year, pupils take part in workshops, visits, and enrichment activities, including opportunities linked to organisations such as the Oxford Science Centre.

We celebrate British Science Week through a range of whole-school projects, visits, guest speakers and workshops.

Developing science capital is not only intended to encourage future participation in STEM careers but also to broaden horizons, raise aspirations, and support social equity by improving life chances and opportunities for all pupils.

Curriculum Overview - Year A

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 1/2 A	Plants: Introduction to plants	Animals, including humans: Life cycles and health	Seasonal changes	Plants: Plant growth	Living things: Habitats	Making connections: Ocean protectors
Famous Scientist	Percy Julian		David Attenborough		Jeanne Villepreux	
Year 3/4 A	Energy: Light and shadows	Energy: Electricity and circuits	Animals, including humans: Movement and nutrition	Animals, including humans: Digestion and food	Materials: Rocks and soil	Making connections: How does food affect muscle fatigue?
Famous Scientist	Thomas Edison		John Boyd Orr		Mary Anning	
Year 5/6 A	Forces and space: Unbalanced forces	Energy: Circuits, batteries and switches	Living things: Classifying big and small	Living things: Evolution and inheritance	Living things: Life cycles and reproduction	Animals: Human timeline / How does light affect the direction of plant growth?
Famous Scientist	Galileo Galilei/Isaac Newton		Charles Darwin		Alfred Russel Wallace	

Curriculum Overview - Year B

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 1/2 B	Materials: Everyday materials	Animals, including humans: Sensitive bodies	Materials: Uses of everyday materials	Animals, including humans: Comparing animals	Living things: Microhabitats	Making connections: Fairytale science
Famous Scientist	Charles Macintosh		Jane Goodall		Beatrix Potter	
Year 3/4 B	Forces and space: Forces and magnets	Energy: Sound and vibrations	Living things: Classification and changing habitats	Plants: Plant reproduction	Materials: States of matter	Making connections: How does wind force affect seed dispersal?
Famous Scientist	Alexander Graham Bell		Carl Linnaeus		Greta Thunberg	
Year 5/6 B	Materials: Mixtures and separation	Materials: Properties and changes	Forces and space: Earth and space	Energy: Light and reflection	Animals, including humans: Circulation and health	Making connections: How reflective are space blankets?
Famous Scientist	Dmitri Mendeleev		Nicolaus Copernicus		Tim Peake	

Progression of Knowledge

Plants			
EYFS	**Year 1/2**	**Year 3/4**	**Year 5/6**
To know the name for the basic plant parts (leaves, flowers, stem and roots.) To know the names of some familiar flowering plants. To know plants are alive. To know that seeds need water to grow. To know that seeds grow into plants if taken care of	To know a variety of common plants, and how they differ. To know that deciduous trees lose their leaves seasonally, but evergreen trees do not. To know the basic structure (including leaves, flowers (blossom), fruit, roots, bulb, seed, trunk, branches, stem) of a variety of common plants, including flowering plants and trees. To begin to understand how plants grow and change over time. To know that seeds and bulbs grow into seedlings by producing roots and shoots. To know that seedlings grow into mature plants by developing parts such as roots, stems, leaves and flowers. To know that seeds need water and warmth to germinate. To know that plants need water, light and a suitable temperature for growth and health.	To understand the functions of the basic parts of a plant and the relationship between structure and function. To know that water is transported within a plant from the root, through the stem, to the leaves. To know that plants need water, light, air, nutrients and a suitable temperature for growth and health. To understand that the needs for growth and health vary from plant to plant. To know the life cycle of a plant from seed to mature plant. To know that flowers are the reproductive organ of a plant. To know that the process of pollination is the transfer of pollen to the female (part of the) flower. To know that the process of seed formation is the growth of a seed after pollination.. To know some different methods of seed dispersal and the benefits of each.	

Animals, Including Humans

EYFS	Year 1/2	Year 3/4	Year 5/6
To know the names of familiar animals (e.g. farm animals, pets and animals seen in storybooks.) To know the main body parts of common animals (number of legs, wings, fur, tail). To know that animals, including humans use their senses to explore the world. To know that animals need food	To know a variety of common animals (including fish, amphibians, reptiles, birds and mammals). To understand how living things change, and that animals have offspring that grow into adults. To know which offspring comes from which parent animal. To know the stages in some animal life cycles. To know the main body parts of common animals (arms, legs, wings, tails, fins, head, trunk, horns/tusks, shell) To know key parts of the human body (including head, neck, arms, elbows, legs, knees, face, ears, eyes, hair, mouth, teeth). To know the five main senses: sight, smell, hearing, taste and touch. To know that the skin is used for touch, the tongue is used for taste, the nose is used for smell, the eyes are used for sight and the ears are used for hearing. To know that a carnivore is an animal that eats other animals and give some examples. To know that a herbivore is an animal that eats only plants and give some examples.	To know that animals can be grouped based on the presence of a skeleton. To know that the skeleton in humans and some animals is used for movement, protection and support. To know that the muscular system in humans and some animals works with the skeleton for movement. To know the main bones in the body. To know the main organs of the human digestive system (mouth, teeth, tongue, oesophagus, stomach, small and large intestines) and describe their simple functions. To know the different types of human teeth (incisor, canine, premolar and molar) and their simple functions. To know that animals, including humans, need the right types and amount of nutrition. To understand that humans cannot make their own food and therefore eat to get the nutrition needed. To know the main food groups (carbohydrates, protein, fats, fibre, vitamins, minerals and water) and their simple functions. To know that a balanced diet should include all food groups.	To describe the human life cycle, including the stages of growth and development (baby, toddler, child, teenager, adult, elderly). To describe changes that occur during puberty (in boys and girls). To know that gestation periods vary across mammals. To know the main parts of the human circulatory system (heart, blood vessels and blood). To know that the heart pumps blood around the body. To know that the blood vessels transport blood around the body. To know that the blood transports vital substances around the body, including oxygen and nutrients. To understand the relationships between different organ systems. To understand the impact of diet, exercise, drugs and lifestyle on the way a body functions. To know that the heart rate is the number of beats per minute. To know that exercise increases heart rate.

	To know that an omnivore is an animal that eats both animals and plants, and to give some examples. To know that animals, including humans, need water, food and air to survive. To understand the importance of exercise, a balanced diet and hygiene for humans.	To describe the diets of different animals. To know that teeth can be damaged, including the effect of sugary and acidic food. To know that it is important to brush teeth twice a day, make good food choices and visit the dentist regularly. To describe the teeth of carnivores and herbivores, and understand why they are different. To know that predators hunt for their food and prey are the animals being hunted. To know that producers make their own food. To know that food chains begin with a producer followed by consumers, and arrows to show the energy passed on.	

Living Things And Their Habitats			
EYFS	**Year 1/2**	**Year 3/4**	**Year 5/6**
To know that animals and plants move, grow and feed. To know the difference between things that are living and things that have never been alive. To know that some animals hibernate or store food in winter. To know the names of familiar animals (e.g. farm animals, pets and animals seen in storybooks.)*	To begin to understand some of the life processes, including movement, reproduction, sensitivity, growth, excretion and nutrition. To know the difference between things that are living, dead, and things that have never been alive, using some of the life processes. To know a variety of plants and animals and describe some differences.	To know that living things can be grouped in different ways. To know that a classification key can be used to group and identify plants and animals. To know that vertebrates are animals which have a backbone and invertebrates are animals which do not have a backbone. To know that plants can be grouped into flowering or non-flowering varieties.	To know that 'organism' is a term used to refer to an individual living thing. To know that micro-organisms are incredibly small and cannot usually be seen by the naked eye. To know the characteristics of the different groups of vertebrates and commonly found invertebrates. To know that a life cycle shows the changes an animal or plant goes through until the

To know the names of some familiar flowering plants (e.g. daisy, rose, sunflower, daffodil).* To know that plants and animals live in a range of different places (land, sea, air). To name some different places where animals live on the school site.	To name a variety of habitats, including woodland, ocean, rainforest and seashore. To know that a habitat is the environment where an animal or plant lives/ grows, because it provides what they need to survive. To know that a micro-habitat is a very small habitat (e.g. stones, logs and leaf litter). To know that living things depend upon each other (e.g. for food, shelter.) To understand that a food chain can be used to show how animals obtain food from eating either plants and/or other animals.	To know that flowering plants include grasses and non-flowering plants includes ferns and mosses. To know that there are five main vertebrate groups: birds, mammals, reptiles, amphibians and fish. To know that invertebrate groups include snails, slugs, worms, spiders and insects. To know that habitats can change throughout the year and this can be dangerous for living things. To know that humans can have both a positive and negative impact on the environment.	reproduction of a new generation when the cycle starts again.

Materials/States of Matter

EYFS	Year 1/2	Year 3/4	Year 5/6
To recognise that things around us are made from different materials. To know objects float or sink. To know some objects move when pushed or pulled. To know some objects freeze or melt.	To know that a material is what an object is made from. To identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock. To know that property refers to how a material can be described. To describe the physical properties of a variety of everyday materials.	To know that all substances around us can exist as solids, liquids and gases. To know that a property of a solid is that it keeps its shape unless a force is applied to it. To know that a property of a liquid can flow freely and take on the shape of a container. To know that a property of a gas does not have a fixed shape and can escape from an unsealed container.	To describe a broader range of materials and their properties, including hardness, solubility, transparency, conductivity and response to magnets. To know that some substances will dissolve in a liquid to form a solution. To know the factors that affect the time taken to dissolve, including temperature and stirring. To understand that dissolving, mixing and changes of state are reversible changes.

	To understand that materials can be grouped based on their physical properties. To know why objects are made from particular materials and to give examples of their suitability. To know that one material can be used for a range of purposes (and to give examples.) To know that different materials can be used for the same purpose (and to give examples.) To know why certain materials are unsuitable for particular objects. To know that a push or pull must be applied to change the shape of a solid object. To know that solid objects can be squashed, bent, twisted or stretched. To know that different solid objects may take a different amount of force to change shape.	To know that heating causes solids to turn into liquids (melting) and liquids to turn into gases (evaporating). To know that cooling causes gases to turn into liquids (condensing) and liquids to turn into solids (freezing). To know that water can exist as a solid, a liquid or a gas. To know that the melting point of water is zero degrees Celsius and the boiling point of water is 100 degrees Celsius. To know that water flows around the world in a continuous process called the water cycle. To know that in the water cycle, evaporation is when bodies of water are heated and turn into water vapour. To know that in the water cycle, condensation is the process of water vapour cooling to form water droplets in clouds, which can result in precipitation. To know that the rate of evaporation increases as temperature rises.	To know that some liquids and solids can be separated using sieving, filtering and evaporation and to describe these processes. To understand that some changes result in the formation of new materials and that these are usually irreversible. (e.g. burning, rusting, the action of acid on bicarbonate of soda.)

Rocks and Soils			
EYFS	**Year 1/2**	**Year 3/4**	**Year 5/6**
		To know that rocks can be grouped based on their appearance or properties, (e.g. colour, texture, hardness, permeability.) To	

		know that rocks may contain grains, crystals or fossils. To know that grains and crystals appear differently and can be used to classify rocks. To understand the relationship between the properties of rocks and their uses. To know that soils are made from rocks and dead matter. To know that fossils can form from the remains of living things. To know that rocks can change over time (e.g. erosion, weathering).	

Light			
EYFS	**Year 1/2**	**Year 3/4**	**Year 5/6**
To know day is light because the sun is in the sky. To know night is dark because the sun is not in the sky. To know shadows are created when something blocks the light.		To know that light travels from a source (e.g. the Sun, light bulbs and torches). To know that light is needed to see things and that dark is the absence of light. To know that light from the Sun can be dangerous and how to protect their eyes. To know that all materials reflect light. To know that shadows are formed when the light from a light source is blocked by an opaque object. To know that shadows change as a result of different factors:	To know that light travels in a straight line from a light source. To understand that luminous objects are seen as a result of light directly entering the eye, whereas non-luminous objects reflect light into the eye. To know that shiny surfaces reflect light uniformly. To know that when light is reflected off a surface, its direction changes. To know that mirrors and periscopes work using reflection of light on smooth surfaces.

		- Changing the position of the light source. - Changing the distances between the light source, object and surface. To know that shadows change position and length throughout the day as the Sun changes position in the sky.	To understand why shadows have the same shape as the objects that cast them as a result of light travelling in straight lines. To understand relationships between light sources, objects and shadows. To understand how and why the distance between the object and the screen affects the size of the shadow. To understand how the angle of a reflected ray is affected by the angle of the incoming ray on a smooth surface.

Forces and Magnets			
EYFS	**Year 1/2**	**Year 3/4**	**Year 5/6**
		To know some examples of contact and non-contact forces. To know that some forces are a result of contact between two surfaces, but some forces can act at a distance (e.g. magnetism). To know the North and South poles of a magnet. To know some examples of magnetic materials, including iron and nickel, and how they react to a magnet and each other. To know some different examples of magnets, including bar, horseshoe, button and ring, To know some uses of magnets.	To know that gravity is a non-contact force that pulls objects together. To know that air resistance and water resistance are both types of friction. To know that unsupported objects fall towards the Earth because of gravity. To know that friction, air resistance and water resistance act in the opposite direction to a moving object. To know that when forces are imbalanced, the speed, shape or direction of an object changes.

		To know that friction is a contact force that acts between two surfaces to slow an object down. To know that magnetism is a non-contact force that affects objects containing magnetic metal. To understand that the opposite poles of a magnet attract one another and like poles repel one another. To know that rougher surfaces have more friction between them than smoother surfaces. To understand that the strength of different magnets may vary.	To know that when forces are balanced the speed, shape or direction of an object stays the same. To know that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect. To know that rougher surfaces have more friction between them than smoother surfaces and how that may affect movement. To know that the larger the surface area of an object the greater the air or water resistance it creates.

Sound			
EYFS	**Year 1/2**	**Year 3/4**	**Year 5/6**
To know about differences in sounds.		To understand that sound is a result of vibrations. To know that vibrations from sounds travel through mediums to the ear. To know that an insulating material reduces the amount of vibrations that pass through it and this can be used to protect the ears from damaging sounds.	

		To know that different materials provide different amounts of insulation against sound. To know a variety of ways to change the pitch or volume of a sound. To know that quicker vibrations cause higher-pitched sounds and slower vibrations cause lower-pitched sounds. To know that stronger vibrations cause louder sounds and weaker vibrations cause quieter sounds. To know that sounds get fainter as the distance from the sound source increases.	

Electricity			
EYFS	**Year 1/2**	**Year 3/4**	**Year 5/6**
		To know that all electrical appliances need a power source, including batteries or mains electricity. To know that an electrical circuit needs a complete path for the electrical charge to flow through. To know the main components in a simple series circuit.	To know a wider variety of components in a series circuit (including buzzer and motor). To know the conventions used to draw circuit diagrams, including the recognised symbols for common components and using straight lines. To know that the voltage of a circuit can be changed and how this affects bulb brightness (or buzzer volume).

		To know the precautions for working safely with electricity. To know that some materials allow electrical charge to pass through them quickly and these are known as electrical conductors (e.g. metals). To know that some materials do not allow electrical charge to pass through them easily and these are known as electrical insulators (e.g wood and plastic). To know that metals are used for cables and wires because they are good conductors of electricity. To know that plastic is used to cover cables and wires because it is a good insulator. To understand that an open switch breaks a series circuit so the components will be off. To understand that a closed switch completes a series circuit so the components will be on. To understand the relationship between bulb brightness and the number of bulbs in a circuit.	To know that the symbols in a circuit diagram represent different components in an electrical circuit.

Seasonal Changes			
EYFS	**Year 1/2**	**Year 3/4**	**Year 5/6**
To know that some trees change in the four seasons.	To know the name and order of the four seasons; spring, summer, autumn and winter.		

To know some signs of each season (leaves on the ground, cold weather, daffodils growing and sunny weather.) To know that some animals hibernate or store food in winter. To know that the weather changes throughout the year. To know and compare weather types (rain, sun, snow, wind).	To know that it is unsafe to look directly at the Sun. To know weather associated with the four seasons and how it changes (in the UK). To understand that day length varies across the four seasons, with fewer daylight hours in the winter and more in the summer.		

Earth and Space			
EYFS	**Year 1/2**	**Year 3/4**	**Year 5/6**
			To know that the Sun is a star at the centre of our solar system. To know that the Sun, Earth and Moon are approximately spherical bodies. To know the names, order and relative positions of the planets and other main celestial bodies. To know that a moon is a celestial body that orbits a planet and give examples of moons that orbit other planets. To know that the Earth and other planets orbit around the Sun. To know that the tilt of the Earth and its orbit around the Sun causes the seasons.

			To know that the Moon orbits around the Earth. To understand how the Earth's rotation causes day and night and the apparent movement of the Sun across the sky.

Evolution and Inheritance			
EYFS	**Year 1/2**	**Year 3/4**	**Year 5/6**
			To know that all living things must reproduce for the species to survive. To know that sexual reproduction requires two parents, whereas asexual reproduction only requires one parent. To know that there are different processes plants and animals use to reproduce (asexual and sexual reproduction). To know that living things have changed over time. To know that fossils provide us with information about living things that inhabited the Earth millions of years ago.

			To know that characteristics are passed from parents to their offspring, but that all offspring vary from their parents. To know that over time, variation in offspring can affect animals' chances of survival in particular environments. To know that animals and plants have adapted to suit their environment over many millions of years and that this process can be called evolution.

Progression of Skills – working scientifically

	Working Scientifically			
	EYFS	**Year 1/2**	**Year 3/4**	**Year 5/6**
Posing Questions	With support, asking questions about the natural world.	Exploring the world around them and raising their own simple questions. Recognising there are different types of enquiry (ways to answer a question). Responding to suggestions on how to answer questions.	Beginning to raise further questions during the enquiry process. Considering what makes a testable question. Beginning to recognise that there are different types of enquiry and that they are suitable for different questions. Beginning to make suggestions about how different questions could be answered.	Raising questions throughout the enquiry process. Identifying testable questions. Selecting the most appropriate enquiry method to answer questions and give justification.
Planning	Beginning to share ideas and suggestions about what to do, when working practically.	Beginning to recognise whether a test is fair. With support, deciding if suggested observations are suitable.	Beginning to select from options which variables will be changed, measured and controlled. Beginning to suggest what observations to make and how long to make them for.	Suggesting which variables will be changed, measured and controlled. Making and explaining decisions about what observations to make and how long to make them for.

		Ordering a simple method.	Planning a simple method, verbally and in writing. Beginning to write a simple method in numbered steps. Selecting and beginning to decide what simple equipment might be used to aid observations and measurements.	Writing a method including detail about how to ensure control variables are kept the same. Writing a method that considers reliability by planning repeated readings. Suggesting the most appropriate equipment to make observations and measurements and justifying their choices.
Predicting	Beginning to make guesses about what might happen.	Suggesting what might happen, often justifying with personal experience.	Making predictions about what they think will happen by: • Using scientific knowledge and/or personal experience to explain their prediction (because…) • Beginning to consider cause and effect when making predictions, where appropriate. Predicting a trend by considering how the changing variable will affect the measured variable. (The smoother the surface, the longer the distance the car will travel)	Making increasingly scientific predictions by: • Using previous scientific knowledge and evidence to inform their predictions. • Using scientific language to describe a potential outcome or explain why they think something will happen. Making links between topics to evidence a prediction.
Observing	Commenting on what they see and hear in the natural world.	Using their senses to describe, in simple terms, what they notice or what has changed.	Using their senses to describe, in more detail and with simple scientific vocabulary, what they notice or what has changed.	Using their senses to describe, in detail and with a broader range of scientific vocabulary, what they notice or what has changed.
Measuring		Using non-standard units to measure and compare.	Using standard units to measure and compare. Using measuring equipment with increasing accuracy.	Using standard units to measure and compare with increasing precision (decimals).

		Beginning to use standard units and read simple scales to measure and compare. Beginning to use simple measuring equipment to make approximate measurements.	Reading scales with unmarked intervals between numbers.	Reading a wider variety of scales with unmarked intervals between numbers.
Researching	Recognising that information can be found online and in books.	Gathering specific information from one simplified, specified source.	Gathering specific information from a variety of sources.	Gathering answers to open-ended questions from a variety of sources.
Recording – diagrams	Drawing and labelling pictures of plants and animals.	Drawing and labelling simple diagrams.	Beginning to draw more scientific diagrams by: • Using some standard symbols. • Drawing in 2D to produce simple line diagrams. Labelling with more scientific vocabulary.	Drawing scientific diagrams by: • Using a wider range of standard symbols. • Drawing with increasing accuracy. • Labelling with a broader range of scientific vocabulary. Annotating diagrams to explain concepts and convey opinions.
Recording - tables	Recognising that tables can be used to record numbers.	Using a prepared table to record results including: • Numbers. • Simple observations. Tally frequency.	Using a prepared table to record results including more detailed observations. Using tables with more than two columns. Identifying and adding headings to tables. Beginning to design simple results tables.	Using tables with columns that allow for repeat readings. Suggesting headings to tables, including units. Designing results tables with increasing independence with consideration of variables where applicable. Calculating the mean average.

Grouping and classifying	With support, grouping objects, plants and animals.	Grouping based on visible characteristics. Organising questions to create a simple classification key.	Grouping based on visible characteristics and measurable properties. Populating a pre-prepared branching and number key. Choosing appropriate questions for classification keys.	Grouping in a broader range of contexts. Organising the layout of number and branching keys. Formulating appropriate questions for classification keys.
Graphing		Representing data using pictograms and block graphs.	Representing data using bar charts. Drawing bars with greater accuracy. Reading the value of bars with greater accuracy.	Representing data by using line graphs and scatter graphs. Plotting points with greater accuracy. Reading the value of plotted points with greater accuracy.
Analysing and drawing conclusions	Describing their discoveries when working practically.	Using their results to answer simple questions. Beginning to recognise when results or observations do not match their predictions.	Writing a conclusion to summarise findings using simple scientific vocabulary. Beginning to suggest how one variable may have affected another. Beginning to quote results as evidence of relationships. Identifying data that does not fit a pattern (anomalous data). Recognising when results or observations do not match their predictions. Beginning to use identified patterns to predict new values or trends.	Writing a conclusion to summarise findings using increasingly complex scientific vocabulary. Suggesting with increasing independence how one variable may have affected another. Quoting relevant data as evidence of relationships. Identifying anomalies in repeat data and excluding results where appropriate. Comparing individual, class and/or model data to the prediction and recognising when they do not match. Using identified patterns to predict new values or trends.

Evaluating			Beginning to identify steps in the method that need changing and suggest improvements. Beginning to identify which variables were difficult to control and suggesting how to better control them. Commenting on the degree of trust by reflecting on: • Results that do not fit a pattern (anomalies). • The quality of results (accurate measurements and maintaining control variables). Beginning to identify new questions that would further the enquiry.	Identifying steps in the method that need changing and suggesting improvements. Identifying which variables were difficult to control and suggesting how to control them better. Commenting on the degree of trust by also reflecting on: • Accuracy (human error with equipment). • Reliability (repeating results). • Sources of information (e.g. websites, books). Posing new questions in response to the data that would extend the enquiry. Deciding what data to collect to further test direct relationships.

	Science in Action			
	EYFS	**Year 1/2**	**Year 3/4**	**Year 5/6**
	To know some different job roles.	To know about famous scientists throughout history. To know about a range of jobs and careers that use scientific knowledge and methods. To know about the work of modern-day scientists.	To know about the methods and equipment used by scientists throughout history and how these have led to modern methods. To know how scientific knowledge has changed over time, leading to the current understanding of Science.	To know how scientific evidence is used to support or refute ideas or arguments. To know how scientific knowledge has changed over time, leading to the current understanding of Science.

		To know about science in the news and recent discoveries. To know there are spiritual, moral, social and cultural links with Science	To know about a range of jobs and careers that use scientific knowledge and methods. To know about current scientific research and what it aims to achieve in the future. To know that collaboration and peer reviewing is essential for effective scientific progress.	To know about a range of jobs and careers that use scientific knowledge and methods. To know that mistakes can lead to new discoveries.

Vocabulary progression – based on the Kapow Progression

Working scientifically				
	EYFS	**Year 1/2**	**Year 3/4**	**Year 5/6**
Question, Plan and predict	Question Will happen	plan (1) predict	fair (1) investigate investigation method variable control variable rate	hazard model safety (1) testable fair test

Observe, test and measure, Record	Look Observe See Hear Read Describe Similar Different World	diagram group (1) measure observe sort (1) table (1) research test (1)	bar chart record results table stopwatch classify classification key degrees Celsius (3) temperature thermometer (3)	anomaly (3) data estimate line of best fit (3) line graph relationship mean average scale secondary data/source units
Conclude, Evaluate	Change Understand	compare difference (1) pattern (1) similarity results (1)	conclusion trustworthy proof/prove	evidence evaluate reliable

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Science in action			
EYFS	**Year 1/2**	**Year 3/4**	**Year 5/6**
science scientist	science scientist invention	ethics	discovery (1) theory

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Scientific knowledge and understanding				
	EYFS	**Year 1/2**	**Year 3/4**	**Year 5/6**
Sensitive bodies	Feel Smell Look Parts of the body	hearing (1) senses (1) sight (1) smell (1) taste (1) touch (1) tongue (1)	—	—

Comparing animals	Wild Animal Bird Fish	amphibian bird (1) carnivore diet fish (1) herbivore mammal omnivore reptile	—	—
Habitats and Microhabitats	Life Alive Living things Garden Outside Home	alive (1) dead (1) Living (2) depend (2) energy (2) food chain (2) habitat (2) life processes microhabitat minibeast predator (2) prey (2) shelter shelter (1)	—	—

Life cycles and health	Life cycle Repeats Egg Seed Change	basic needs egg (1) health (1) hygiene (1) life cycle (2) live young pupa spawn survive teenager (1) toddler (1) tadpole	–	–

Plants	Plant Leaf Tree Petals Fruit Branch Roots Leaves Bulb Flowers Seed Stem Grow Water Care for Wild Pot Soil	bulb deciduous evergreen flower (1) fruit (1) garden plants growth (1) leaf (1) roots (1) seed (1) stem (1) trunk (1) wild plants germinate energy (2) nutrient (2) life cycle (2) shoot	female (1) flowering plant male (1) pollen pollination reproduction seed dispersal transport (2)	N/A

Forces, Earth and Space	Seasons Weather Nature Change Day Night Spring Summer Autumn Winter Sun Dark Warmer Colder Harvest Light Moon Environment Push Pull Float Sink Magnetic Magnet Repel Attract Earth,	deciduous tree evergreen tree season (1) weather (1)	attract (2) contact force force (2) friction (2) magnet (2) magnetic material magnetism (2) non-contact force north pole repel (2) south pole	celestial bodies day (daytime) gravity (2) moon (1) night (nighttime) orbit (2) phase (2) planet (1) spherical star (1) year Solar System Mercury Venus Earth Mars Jupiter Saturn Uranus Neptune Pluto air resistance balanced (2) gear gravity lever pivot

	Planet Space Star			pulley surface area unbalanced (2) water resistance

Energy	Sound Music Instrument Noise Loud Quiet Soft Volume	N/A	cast (a shadow) light source luminous mirror non-luminous opaque reflect reflection reflective (shadow) shadow (1) the Sun translucent transparent air (1) eardrum insulator pitch (2) sound vibration volume (2) appliance battery/cell bulb buzzer circuit (2) electrical conductor electrical insulator	light ray pupil ray diagram reflective cell circuit diagram current resistance voltage

			electricity (1) mains motor power source property switch (2) wire (1)	

Materials	Hard	absorbent	crystal	dissolve
	Soft	fabric	fossil	filtering (2)
	Texture	glass (1)	grain	insoluble
	Bumpy	metal (1)	hard	mixture
	Rough	material	hardness	sieving
	Smooth	object	rock	soluble
	Material	plastic (1)	sediment	solution
	Wood	rock (1)	sedimentary rock	burning
	Metal	tough	sedimentation	conductor
	Plastic	waterproof (1)	soft	electrical conductivity
	Paper	wood (1)	soil	insulator
	Fabric	elastic	boiling	irreversible change
	Glass	flexible (2)	condensing	reversible change
	Cardboard	property	evaporating	rust
	Waterproof	suitable (1)	evaporation rate	rusting
	Ice		freezing	thermal conductivity
	Melt		gas	transparency
	Freeze		liquid	
	Rock		melting	
	Heavy		precipitation	
	Light		solid	
			steam	
			the water cycle	

Movement and nutrition		—	balanced (diet) (2) bone (1) carbohydrate fat fibre invertebrate joint mineral movement muscle (1) nutrient protection protein skeleton support vertebrate vitamin	—

Classification and changing habitats	Rubbish Tidy	–	conservation (2) deforestation (2) endangered (2) flowering plants insect nature reserve non-flowering plants pollution (2) slug snail spider worm	–
Digestion and food	Healthy Eat Teeth Clean Food Fruit Vegetable	–	canine digest (2) digestive system faeces incisor large intestine molar mouth (1) oesophagus premolar producer saliva small intestine stomach (1)	–

Life cycles and reproduction		–	–	adolescence (2) asexual reproduction characteristic (2) fertilisation germination gestation gills incubation lungs mating metamorphosis offspring ovule pollen polliation reproduction (2) sexual reproduction pollination
Human timeline	Grow Change Baby Young Old	–	–	foetus gestation period hormones period (menustruation) puberty period (menustration)

Classifying big and small	Sort Group Size	—	—	cold-blooded conifer exoskeleton fern life processes microorganism moss organism warm-blooded
Circulation and health	Healthy Body	—	—	blood (1) bloodstream blood vessels carbon dioxide circulatory system drug heart (1) heart rate oxygen pulse

Evolution and inheritance	Parent Mummy Daddy Family Baby	–	–	adaptation (2) competition (2) environment (2) environmental (2) evolution (2) extinct (2) fossil gene inherit inheritance (2) natural selection parent (biological) (1) population (2) selective breeding survival of the fittest (2) variation (2)

		basic needs egg (1) health (1) hygiene (1) life cycle (2) live young pupa spawn survive teenager (1) toddler (1) tadpole	—	—

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