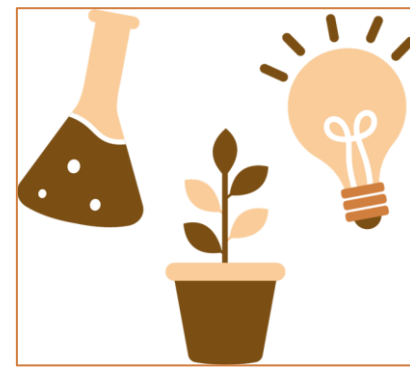


Science Long-term Plan



The United Curriculum for science provides all pupils, regardless of their background, with:

Substantive knowledge:

- Ensuring pupils **master** core content through the development of key concepts and **timely revisiting** of key knowledge
- Sequencing the curriculum and selecting knowledge to allow for gradual development of **vertical concepts** – the ‘big ideas’ in science – to provide firm foundations for KS3 and KS4
- **Preventing common misconceptions** that are often formed at an early age and prove problematic at the later stages of pupils’ science education
- Purposefully teaching appropriate knowledge that **goes beyond the KS1 and KS2 national curriculum**, to aid current and future understanding, and to smooth the transition to KS3
- Encouraging pupils to apply and **make connections** between the disciplines of science, the wider curriculum and the wider world

Disciplinary knowledge:

- Sequencing Working Scientifically elements so that they are **explicitly taught** and practised alongside the substantive knowledge, and regularly reviewed and built upon across the years and key stages
- Making deliberate and **explicit links to other curriculum areas** – particularly geography and mathematics – to ensure there is a consistent approach to teaching content, and that pupils are always **first taught content in the most relevant subject**. For example, pupils are taught how to construct bar charts or calculate the mean in mathematics before they are applied in science
- Planning practical tasks that have a **clear purpose**: to demonstrate or prove substantive concepts, or to allow pupils to deliberately practice working scientifically skills in a relevant context

Curiosity and excitement about science:

- Selecting examples and applications of science that **inspires pupils’ curiosity** about the world and natural phenomena
- Ensuring that all pupils **can see themselves reflected** in the science curriculum, by highlighting present-day role models and the contributions of scientists from a wide range of backgrounds; and considering social and cultural values around scientific ideas

	N3-4	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Autumn 1	It's getting cold outside / Bears Weather where we live, habitats where bears live		BIOLOGY Plants Identifying and naming common plants and describing basic structures	BIOLOGY Plant growth Plants grow from seeds, and require water, light and a suitable temperature	CHEMISTRY Rocks Comparisons of types of rocks and how fossils are formed	BIOLOGY Classifying organisms Introduction to classifying animals and their environment	CHEMISTRY Separating mixtures Identifying and separating mixtures; reversible and non-reversible changes	PHYSICS Electricity Investigating variations in series and parallel circuits, and how electricity is generated
Autumn 2	Polar express / Special days Melting and freezing; natural and artificial materials		BIOLOGY / PHYSICS Seasonal changes Observing changes across four seasons and describing associated weather	BIOLOGY Needs of animals Animals need water, food and air to survive and to have offspring	PHYSICS Light Relationship between light and how we see; the formation of shadows	BIOLOGY Food & digestion The human digestive system and simple food chains	BIO / CHEM / PHYSICS Energy Introducing the concept of energy stores and energy transfers; relate this to prior knowledge	BIOLOGY Evolution Fossils; introduction to the idea that adaptation may lead to evolution
Spring 1	On the Move / Toys Exploring pushes, pulls and magnets		CHEMISTRY Everyday materials Distinguishing objects from their material, and describing simple properties	CHEMISTRY Uses of materials Comparisons of an object's material with its use; impact of bending, twisting on solid objects	BIOLOGY Organisms The role of muscles and skeletons; the importance of nutrients	CHEMISTRY Particle model and states of matter States of matter in relation to particle arrangement	BIOLOGY Life cycles Life cycles of a mammal, amphibian, insect, bird, and some reproduction processes	PHYSICS Light How light travels and is reflected, and how this allows us to see
Spring 2	On the Farm / Food Glorious Food Life cycles of farm animals and plants	Spring in our step Wildlife and weather in spring and winter; habitats around our school	Consolidation and review	BIOLOGY Living things & habitats Introduction to habitats, micro-habitats, and simple food chains	BIOLOGY Plants Features of flowering plants and what they need to survive	PHYSICS Sounds Relationship between strength of vibrations and volume of sound	BIOLOGY Human development Human development to old age	BIOLOGY Further classification Further classification of organisms based on characteristics
Summer 1	Once upon a time 1 / 2 Properties of materials and exploring mixtures		BIOLOGY Animals Naming reptiles, fish, amphibians, birds and mammals; carnivores, herbivores, omnivores	CHEMISTRY Solids, liquids and gases How the same substances can exist as solids, liquids and gases	PHYSICS Forces & motion Introducing pushes and pulls; opposing forces, and balanced forces	PHYSICS Electricity Simple series circuits	PHYSICS Forces Gravity, air and water resistance and friction; introduction to pulleys	BIOLOGY Functions of the human body Human circulatory system; transport of nutrients within the body
Summer 2	All creatures great and small 1 / 2 Life cycles of animals in trop. rainforests, sea, and grasslands	Science detectives Properties of materials and habitats around the world	BIOLOGY Humans Human body parts and senses	Consolidation and review	PHYSICS Magnetism Contact and non-contact forces, including friction and magnetism	CHEMISTRY Properties of materials Considering physical and chemical properties	PHYSICS Earth and space Movements of planets and the Moon, and relationship to day and night	CHEMISTRY Physical and chemical changes Identifying physical and chemical changes