



Hillside Primary School

Science Curriculum Intent

At Hillside Primary School, our Science curriculum is designed to place the needs and aspirations of our pupils at the heart of their learning. Our bespoke curriculum is ambitious and inclusive, empowering every child to be a scientist and fostering a deep curiosity about the natural world to help them **"Be the BEST they can be."**

Our Science curriculum intent is underpinned by four key attitudes for learning, which ensure our pupils develop the character and resilience needed to thrive in a scientific and technological world:

- **Believe**
- **Engage**
- **Succeed**
- **Try**

We deliver a high-quality Science curriculum that equips pupils with the Substantive Knowledge (the "Big Ideas" of Biology, Chemistry, and Physics) and Disciplinary Knowledge (the "Working Scientifically" skills) essential for achieving and exceeding the expected standard. Our 'Big Ideas' link learning across all year groups. By revisiting these themes, pupils build on what they already know—moving from simple hands-on activities to a deeper understanding of scientific concepts.

BELIEVE: Building Confidence & Belonging

- **Biology & The Self (Big Idea):** We foster an environment where children believe in their unique potential by exploring their own body. From identifying body parts in EYFS to mastering the complexities of the circulatory system in Year 6, pupils develop a sense of identity and an understanding of how to keep their bodies healthy.
- **Vocabulary for Success:** We believe that vocabulary is the key to high achievement. Pupils move from simple language in EYFS to mastering tier-3 terminology such as 'Germination', 'Solubility', 'Photosynthesis', and 'Refraction'.
- **Inclusive Achievement:** Through pre-teaching, scaffolding, and SEND adaptations, we ensure all pupils—regardless of background—believe they can access Age Related Expectations (ARE) and beyond.

ENGAGE: Curiosity & Connection

- **Physics & The Natural World (Big Idea):** We spark curiosity by tracking how the physical world works. Investigating how sounds are produced by vibrations or exploring the movement of the Earth and Moon, pupils engage with the "how" and "why" of their environment.
- **Scientific Enquiry (Disciplinary):** Pupils engage as active researchers. They move from asking simple "Yes/No" questions in Key Stage 1 to independently identifying

variables and using secondary sources to research unfamiliar concepts in Key Stage 2.

- Local Identity: Our curriculum draws on our locality. By studying local animals and how they are adapted to the Gloucester environment, children see themselves within the curriculum and connect their school to the wider natural world.

SUCCEED: Precision & Mastery

- Chemistry & States of Matter (Big Idea): Success is rooted in observation. Pupils move from simple sorting of materials in EYFS to mastering an understanding of solids, liquids, and gases, and the mechanics of the water cycle.
- Observing & Measuring (Disciplinary): Mastery is shown when pupils can move from non-standard measures to taking measurements with increasing accuracy and precision, using scientific equipment.
- Substantive Mastery: Pupils succeed when they can explain the "causal relationships" in science—such as how the number and voltage of cells in a circuit influence the brightness of a bulb.

TRY: Resilience & Hard Thinking

- Evolution & Inheritance (Big Idea): Pupils embrace "hard thinking" to understand complex concepts such as how living things have changed over millions of years and how offspring inherit characteristics while remaining unique.
- Evidence & Argument (Disciplinary): We cultivate a culture where children are not afraid to "try" new hypotheses. In Key Stage 2, pupils use evidence to challenge statements and evaluate the "degree of trust" they have in their own results, understanding that scientific ideas are refined through trial and error.
- Resilience in Testing: Children develop resilience by setting up fair tests, identifying irregularities, and being prepared to change their opinions based on data.

Through this vocabulary-rich, sequential curriculum, Hillside pupils do not just "learn" science; they think like scientists, building the character and cultural capital needed to thrive in the modern world.

Hillside Science 'Big Ideas': Substantive Concepts & Vocabulary

Big Idea	Essential Knowledge	Vocabulary Examples
Animals & Humans (Biology)	Life cycles, nutrition, skeletal/muscular systems, and the circulatory system. Understanding how exercise and lifestyle affect the body.	Omnivore, Skeleton, Digestion, Circulatory, Nutrients.
Living Things & Habitats (Biology)	Classification of living/non-living things. Understanding microhabitats, classification keys, and how environments change.	Habitat, Organism, Classification, Biome, Invertebrate.
Plants (Biology)	Structure of flowering plants and trees. Requirements for life (air, light, water) and the role of pollination and seed dispersal.	Germination, Photosynthesis, Pollination, Deciduous, Evergreen.
Evolution & Inheritance (Biology)	Recognising that living things change over time, the role of fossils, and how offspring inherit traits while showing variation.	Adaptation, Inheritance, Evolution, Fossil, Offspring.
Materials & Matter (Chemistry)	Physical properties and suitability of materials. Reversible/irreversible changes, dissolving, and the states of matter.	Solubility, Conductivity, Evaporation, Condensation, Transparent.
Rocks & Soils (Chemistry)	Comparing and classifying rocks based on appearance and properties. Understanding fossil formation and soil composition.	Igneous, Sedimentary, Metamorphic, Organic matter, Erosion.
Electricity (Physics)	Constructing series circuits and understanding cells, switches, and buzzers. Using standard symbols to represent circuits.	Voltage, Conductor, Insulator, Component, Series circuit.
Forces & Magnets (Physics)	Exploring contact and magnetic forces, friction, and gravity. Understanding how levers, pulleys, and gears amplify force.	Friction, Magnetic attraction, Gravity, Resistance, Mechanism.
Light & Sound (Physics)	Understanding how light travels and shadows form. Exploring how vibrations create sound and how pitch and volume relate.	Reflection, Refraction, Vibration, Amplitude, Opaque.
Earth & Space (Physics)	Observing seasonal changes and the movement of the Earth and Moon. Understanding the spherical nature of planets and day/night.	Orbit, Axis, Spherical, Rotation, Celestial.

Working as a Scientist: Disciplinary Progression

Strand	Key Stage 1	Lower Key Stage 2 (Y3/4)	Upper Key Stage 2 (Y5/6)
Asking Questions	Ask simple questions and use simple secondary sources.	Write a range of questions; identify which can be answered via practical science.	Raise questions about complex phenomena to further an enquiry.
Making Predictions	Make basic predictions based on observations or ideas.	Use subject knowledge to make predictions; predict for new values.	Use test results to set up further comparative and fair tests.
Setting Up Tests	Carry out simple comparative tests and suggest resources.	Identify variables; use data loggers and thermometers.	Independently control variables; decide on sample size for validity.
Observing & Measuring	Observe changes over time; use simple equipment and units.	Make systematic observations; take accurate measurements.	Use scientific equipment with precision (up to 3 decimal places).
Recording Data	Use simple labels, prepared tables, and block graphs.	Create own tables with headings; use Venn/Carroll diagrams and line graphs.	Record data with complexity; use multiple data sets and pie charts.
Interpreting	Talk about findings; identify "biggest/smallest" from data.	Look for causal relationships; adjust opinions based on results.	Use scientific reasons for patterns; use secondary sources to justify.
Evaluating	Suggest simple improvements; use success ladders.	Evaluate equipment and suggest points for development.	Evaluate choice of method, precision, and credibility of sources.

