



Science Curriculum Progression

Purpose of this Document

This document outlines the progression of scientific knowledge, vocabulary and enquiry skills from the Early Years Foundation Stage through to Year 6 at Gaddesden Row JMI School. It is designed to ensure full coverage of the National Curriculum for Science, using the White Rose Science framework as a key driver for sequencing, consistency and depth.

Because Gaddesden Row is a small, mixed-age school, our science curriculum is delivered through rolling two- and three-year cycles. This document therefore maps learning by *class phase* (R/Y1, Y2/3 and Y4/5/6) rather than individual year group. Each topic strand shows how substantive and disciplinary knowledge builds progressively, while blank cells indicate where a topic is not covered within that class's curriculum cycle.

The purpose of this progression is to:

- Ensure that all pupils develop secure, connected scientific understanding over time;
- Support teachers in planning and sequencing lessons that build on prior knowledge;
- Provide clarity on vocabulary development and Working Scientifically expectations at each phase; and
- Demonstrate how full National Curriculum coverage is achieved through a mixed-age structure.



1. Plants

Class	Knowledge Progression	Working Scientifically Focus	Vocabulary
R/Y1	Explore and describe plants and flowers in the natural world. Identify and name common plants and trees. Observe growth and describe what plants need (light, water, warmth).	Observe changes over time; describe what is seen; draw and label.	plant, flower, tree, leaf, grow, seed, bulb, water, sunlight
Y2/3	Observe and describe how seeds and bulbs grow into mature plants. Identify and explain functions of roots, stems, leaves and flowers. Explore pollination, fertilisation and seed dispersal.	Compare conditions for growth; measure and record results.	germination, pollination, fertilisation, nutrients, dispersal
Y4/5/6	Describe and compare life cycles of flowering and non-flowering plants. Explain reproduction in plants and how environments affect growth.	Observe life cycles; interpret data; identify patterns.	life cycle, reproduction, adaptation, habitat



2. Animals Including Humans

Class	Knowledge Progression	Working Scientifically Focus	Vocabulary
R/Y1	Name parts of the body and link them to the five senses. Identify and name common animals. Recognise that animals need food, water and care.	Ask questions; use senses; make simple observations.	body, head, eyes, nose, mouth, sense, pet, wild
Y2/3	Notice offspring grow into adults; basic survival needs (air, water, food); importance of hygiene and exercise. Identify skeleton and muscles for support and movement.	Compare data (e.g., pulse before/after); use diagrams.	offspring, survival, skeleton, muscle, nutrition, growth
Y4/5/6	Describe digestive and circulatory systems and how they keep humans alive. Explain diet, exercise, drugs and lifestyle effects. Describe life cycles and reproduction in animals.	Plan and measure (e.g., pulse, exercise tests); record and evaluate.	heart, vein, artery, digestion, nutrients, circulation, reproduction, puberty



3. Living Things and Their Habitats

Class	Knowledge Progression	Working Scientifically Focus	Vocabulary
R/Y1	Observe and describe living and non-living things; recognise animals and plants in different environments.	Sort and classify; describe habitats.	living, non-living, habitat, home
Y2/3	Explore habitats and microhabitats; identify how living things depend on each other; simple food chains; group living things using simple keys.	Fieldwork; classify; record with tables and diagrams.	habitat, microhabitat, predator, prey, consumer, classification
Y4/5/6	Use classification keys; describe lifecycles and reproduction; understand environmental change and adaptation.	Research; use classification systems; analyse evidence.	classify, vertebrate, invertebrate, adaptation, evolution, environment



4. Rocks

Class	Knowledge Progression	Working Scientifically Focus	Vocabulary
R/Y1	Explore natural materials such as rocks, sand and soil; describe appearance and texture.	Observe closely; group by texture.	rock, stone, sand, soil
Y2/3	Compare and group rocks; describe fossil formation; recognise that soils are made from rock and organic matter.	Sort samples; use hand lenses; simple classification.	igneous, sedimentary, metamorphic, fossil, grain, soil
Y4/5/6			



5. Electricity

Class	Knowledge Progression	Working Scientifically Focus	Vocabulary
R/Y1	Explore battery-operated toys and light sources.	Observe what happens when switches or bulbs are turned on/off.	light, switch, battery, bulb
Y2/3			
Y4/5/6	Identify electrical appliances; build series circuits with switches, bulbs, buzzers and motors; recognise complete/incomplete circuits. Associate brightness or volume with number/voltage of cells; use circuit symbols.	Build and test circuits; record diagrams with symbols; test materials for conductivity.	circuit, cell, battery, current, voltage, component, conductor, insulator



6. Sound

Class Knowledge Progression

Working Scientifically Focus

Vocabulary

R/Y1	Explore environmental sounds; describe loud and quiet.	Listen carefully; describe and compare.	loud, quiet, sound, noise
Y2/3			
Y4/5/6	Identify how sounds are made through vibration; sound travel; patterns between pitch, volume and distance.	Measure sound level using data loggers; compare results.	vibration, pitch, volume, amplitude



7. States of Matter

Class	Knowledge Progression	Working Scientifically Focus	Vocabulary
R/Y1			
Y2/3			
Y4/5/6	Compare materials as solids, liquids or gases; observe changes of state; explain evaporation and condensation in water cycle.	Measure and record temperature changes; diagram processes.	solid, liquid, gas, evaporate, condense, melt, freeze



8. Earth and Space

Class Knowledge Progression

Working Scientifically Focus

Vocabulary

R/Y1	Observe the Sun, Moon and stars; notice day and night.	Observe patterns over time.	day, night, sun, moon, star
Y2/3			
Y4/5/6	Describe movement of planets relative to the Sun; Earth's rotation causes day and night; Sun, Earth and Moon are spherical.	Create models and diagrams; research using secondary sources.	orbit, rotation, axis, solar system, planet



9. Forces

Class Knowledge Progression

Working Scientifically Focus

Vocabulary

R/Y1	Explore push and pull; describe how movement changes.	Observe motion and describe effects.	push, pull, move
Y2/3	Observe magnets attract/repel; describe magnetic materials; explore friction and surfaces.	Measure movement; test magnetic strength.	magnet, attract, repel, friction, surface, pole
Y4/5/6	Explain gravity, air and water resistance, friction, levers, pulleys and gears.	Measure forces using Newton meters; design and evaluate fair tests.	gravity, resistance, lever, pulley, gear, force



10. Properties and Changes of Materials

Class	Knowledge Progression	Working Scientifically Focus	Vocabulary
R/Y1	Identify materials and describe simple properties.	Sort and test materials.	wood, metal, plastic, glass, soft, hard
Y2/3	Identify and compare materials for specific uses; test flexibility, waterproofing and strength.	Plan and carry out simple tests; record data.	absorbent, waterproof, flexible, rigid, property
Y4/5/6	Compare materials by properties (hardness, conductivity, solubility); reversible and irreversible changes.	Observe and record changes; use data to draw conclusions.	dissolve, reversible, irreversible, conductor, insulator, solution, reaction



11. Light

Class	Knowledge Progression	Working Scientifically Focus	Vocabulary
R/Y1	Notice light and dark; identify sources of light.	Observe and describe patterns.	light, dark, sun, day, night
Y2/3	Recognise need for light to see; darkness is absence of light; reflection and shadows.	Measure and record shadow length; explore reflection.	shadow, reflect, opaque, translucent, transparent
Y4/5/6	Light travels in straight lines; reflection/refraction explain how we see; light and shadow relationships.	Measure angles; diagram light paths.	reflection, refraction, prism, ray, spectrum



12. Evolution and Inheritance

Class	Knowledge Progression	Working Scientifically Focus	Vocabulary
R/Y1	Notice similarities and differences between parents and offspring.	Observe and discuss.	same, different, parent, baby
Y2/3			
Y4/5/6	Recognise that living things change over time; fossils provide evidence; offspring inherit characteristics; adaptation leads to evolution.	Examine fossil evidence; discuss adaptation examples.	evolution, inheritance, adaptation, variation, species



13. Seasonal Changes

Class Knowledge Progression

Working Scientifically Focus

Vocabulary

R/Y1	Observe changes across the seasons and weather patterns.	Observe over time; record seasonal differences.	season, weather, change, spring, summer, autumn, winter
Y2/3			
Y4/5/6			



14. Sustainability and Environmental Science (*Optional*)

Class Knowledge Progression

Working Scientifically Vocabulary Focus

R/Y1	Care for the local environment; understand recycling and reusing.	Observe and discuss human impact.	recycle, environment, care
Y2/3	Understand how humans affect habitats; suggest simple actions to reduce waste.	Collect and present simple data; suggest improvements.	pollution, litter, recycle, waste
Y4/5/6	Recognise global impact of human activity (climate change, renewable energy).	Analyse and interpret secondary data; evaluate evidence.	climate, renewable, carbon footprint, conservation, sustainability