

Whole-School Science Progression Map: FS1–Y6

Part 1: Substantive knowledge progression by strand

Each strand is shown from FS1 to Y6. A dash is avoided: where a strand is not a statutory focus in a year, the statement identifies purposeful revisiting, prerequisite knowledge or application evidenced by the wider curriculum sequence.

Animals including humans

Year	Knowledge progression	Key concepts	Core vocabulary
FS1	Explore body parts and senses; notice similarities and differences between people and animals; talk about basic needs and healthy routines.	body; senses; needs; similarity/difference	body, head, arm, leg, hand, foot, eyes, ears, nose, mouth, touch, smell, hear, see, taste, animal, food, water
FS2	Name main body parts and use senses to explore; name familiar animals; notice that young animals and people grow and change; talk about food, exercise and hygiene.	growth; change; health; senses	human, animal, baby, adult, grow, change, healthy, exercise, hygiene, sense, compare
Y1	Identify/name common fish, amphibians, reptiles, birds and mammals; identify carnivores, herbivores and omnivores; compare animal structures; identify, draw and label basic human body parts and link them to senses.	classification; structure; senses; similarity/difference	fish, amphibian, reptile, bird, mammal, carnivore, herbivore, omnivore, body, sense, sight, hearing, smell, taste, touch
Y2	Know that animals including humans have offspring that grow into adults; describe basic needs for survival; explain importance of exercise, suitable diet and hygiene.	growth; life cycle; survival; health	offspring, adult, reproduce, life cycle, survive, basic needs, water, food, air, diet, exercise, hygiene
Y3	Know that animals need the right types/amounts of nutrition and cannot make their own food; explain skeleton and muscles for support, protection and movement.	nutrition; structure/function; movement	nutrition, nutrients, skeleton, bone, skull, ribcage, spine, joint, muscle, contract, relax, support, protect
Y4	Describe basic functions of digestive-system parts; identify types/functions of teeth; construct and interpret food chains using producer, predator and prey.	digestion; structure/function; interdependence	digestive system, mouth, saliva, oesophagus, stomach, small intestine, large intestine, incisor, canine, premolar, molar, enamel, producer, predator, prey
Y5	Describe changes as humans develop to old age, including conception, foetal development, birth, puberty, adulthood and later life.	development; life cycle; change	conception, fertilisation, sperm, egg, foetus, womb, birth, puberty, adult, senior, development
Y6	Identify main parts/functions of circulatory system; explain roles of blood and blood vessels; describe transport of nutrients/water; recognise effects of diet, exercise, drugs and lifestyle.	systems; transport; cause/effect; health	circulatory system, heart, blood, artery, vein, vessel, lungs, oxygen, pulse, heart rate, nutrients, lifestyle

Plants

Year	Knowledge progression	Key concepts	Core vocabulary
FS1	Explore plants using the senses; notice that plants grow and change; care for seeds/plants.	living things; growth; change	plant, flower, tree, leaf, seed, grow, water, soil
FS2	Name familiar plants and simple parts; observe seeds/plants growing over time; notice seasonal changes in plants.	growth; life cycle; structure	plant, tree, flower, leaf, stem, root, seed, bulb, grow, change
Y1	Identify/name common wild and garden plants including deciduous/evergreen trees; identify and describe basic structure of flowering plants and trees.	classification; structure; similarity/difference	wild, garden, deciduous, evergreen, tree, flower, roots, stem, leaf, trunk, branch
Y2	Observe/describe how seeds and bulbs grow into mature plants; investigate and describe how plants need water, light and suitable temperature to grow and stay healthy.	growth; needs; cause/effect	seed, bulb, germinate, mature, healthy, water, light, temperature, growth
Y3	Identify functions of roots, stem/trunk, leaves and flowers; investigate requirements for life/growth and variation; investigate water transport; explore flowers in pollination, seed formation and dispersal.	structure/function; process; reproduction; transport	function, nutrients, transport, pollination, pollen, seed formation, dispersal, germination
Y4	Revisit plant structure and life processes through habitats/classification; compare flowering and non-flowering plants and how environmental change can affect plants.	classification; environment; interdependence	flowering, non-flowering, habitat, environment, classify, characteristics
Y5	Describe life process of reproduction in some plants; connect pollination/fertilisation with life cycles and compare methods of reproduction.	reproduction; life cycles	sexual reproduction, asexual reproduction, fertilisation, pollination, cutting, runner, bulb
Y6	Use plant adaptations and inherited variation to explain how plants are suited to environments and how adaptation may contribute to evolution.	adaptation; variation; evolution	adaptation, variation, inheritance, species, environment, evolution

Living things and their habitats

Year	Knowledge progression	Key concepts	Core vocabulary
FS1	Explore living things outdoors; notice where familiar plants/animals are found; care for living things.	living; place; needs	living, animal, plant, home, garden, minibeast
FS2	Explore the natural world; describe familiar habitats and changes; group living things using obvious features.	habitat; classification; change	living, dead, habitat, pond, woodland, garden, same, different, group
Y1	Build animal/plant identification knowledge that supports later habitat work; sort living things by observable features.	classification; similarity/difference	living, plant, animal, classify, group, feature

Year	Knowledge progression	Key concepts	Core vocabulary
Y2	Compare living, dead and never alive; explain habitats/microhabitats and basic needs; identify plants/animals in habitats; use simple food chains and food sources.	habitat; interdependence; food chains	alive, dead, habitat, microhabitat, adapted, food chain, food source, herbivore, carnivore, omnivore
Y3	Apply knowledge of plants/animals to local habitats; observe and group organisms and consider how structures/needs relate to where they live.	classification; habitat; structure/function	organism, habitat, environment, characteristic, classify
Y4	Recognise living things can be grouped in different ways; use classification keys; recognise that environments can change and may pose dangers.	classification; environment; change	classification key, vertebrate, invertebrate, environment, human impact, danger
Y5	Describe differences in life cycles of mammal, amphibian, insect and bird; describe reproduction in some plants and animals.	life cycles; reproduction; comparison	life cycle, reproduction, mammal, amphibian, insect, bird, metamorphosis, sexual, asexual
Y6	Classify living things into broad groups by observable characteristics, including microorganisms, plants and animals; give reasons for classifications.	taxonomy; classification; evidence	classify, taxonomy, vertebrate, invertebrate, exoskeleton, vascular, non-vascular, microorganism, bacteria, virus, fungi, protozoa, algae

Materials and states of matter

Year	Knowledge progression	Key concepts	Core vocabulary
FS1	Explore natural/everyday materials with senses; notice simple properties and what happens when materials are manipulated.	properties; change	hard, soft, rough, smooth, wet, dry, bend, squash
FS2	Compare materials and choose them for simple purposes; explore melting/freezing and reversible changes in play.	properties; suitability; change	material, wood, metal, plastic, glass, fabric, paper, melt, freeze
Y1	Distinguish object from material; identify/name everyday materials; describe simple physical properties; compare/group materials by properties.	properties; classification	object, material, wood, plastic, glass, metal, water, rock, hard, soft, transparent, waterproof
Y2	Compare suitability of materials for uses; find how shapes of some solids change by squashing, bending, twisting and stretching.	suitability; properties; change	suitable, property, flexible, rigid, absorbent, squash, bend, twist, stretch
Y3	Connect material properties with rocks/soils; compare/group rocks by appearance and simple physical properties.	properties; classification	rock, soil, permeable, impermeable, durable, grain, crystal
Y4	Compare/group solids, liquids and gases; observe state changes; identify evaporation/condensation in water cycle and associate evaporation rate with temperature.	states; process; change	solid, liquid, gas, particle, melt, freeze, evaporate, condense, temperature, water cycle
Y5	Compare/group materials by properties; understand dissolving and solutions; separate mixtures by filtering, sieving and evaporating; explain reversible/irreversible changes and formation of new materials.	properties; mixtures; reversible/irreversible change	solution, soluble, insoluble, dissolve, filter, sieve, evaporate, reversible, irreversible, reaction, mixture
Y6	Apply knowledge of material properties and changes when planning investigations; research development/use of new materials and justify choices using evidence.	application; evidence; process	property, variable, accuracy, precision, evidence, new material, reaction

Seasonal changes

Year	Knowledge progression	Key concepts	Core vocabulary
FS1	Notice daily weather and changes outdoors across the year.	change; observation	sun, rain, wind, cloud, hot, cold, weather
FS2	Describe what is seen/heard/felt outside and talk about effects of changing seasons on the natural world.	seasonal change; pattern	spring, summer, autumn, winter, season, weather, change
Y1	Observe changes across four seasons; observe/describe seasonal weather and how day length varies.	change; pattern over time	season, spring, summer, autumn, winter, weather, daylight, temperature, rainfall
Y2	Deepen through repeated measurement/recording: rainfall, wind direction, temperature and shadows; identify patterns across time.	measurement; pattern	precipitation, data, predict, measure, record, wind direction, thermometer, shadow
Y3	Apply long-term observation skills to environmental and plant investigations.	change over time	observe, record, pattern, temperature
Y4	Connect seasonal/environmental change with habitats and the water cycle.	environmental change; cycles	environment, evaporation, condensation, water cycle
Y5	Connect Earth's movement with day/night and seasonal observations where relevant.	cycles; Earth/space	Earth, Sun, rotation, orbit, day, night
Y6	Use long-term datasets and patterns where appropriate; explain observations using established scientific models.	evidence; pattern	data, trend, evidence, explanation

Rocks and soils

Year	Knowledge progression	Key concepts	Core vocabulary
FS1	Handle stones, soil and natural materials; describe what they look/feel like.	properties; comparison	stone, rock, soil, sand, hard, smooth, rough
FS2	Compare natural materials and notice similarities/differences.	classification; properties	rock, soil, pebble, compare, same, different
Y1	Experience rock as an everyday material and describe simple properties.	materials; properties	rock, hard, rough, smooth
Y2	Choose materials for uses and compare properties, including rock where relevant.	suitability; properties	material, property, suitable
Y3	Compare/group rocks by appearance and physical properties; describe fossil formation simply; recognise soils are made from rocks and organic matter.	classification; formation; change over time	igneous, sedimentary, metamorphic, fossil, soil, organic matter, permeable, erosion
Y4	Apply rock/soil knowledge in environmental contexts and classification.	environment; evidence	rock, soil, habitat, environment
Y5	Use fossil evidence as prior knowledge for evolution and Earth history.	evidence; deep time	fossil, evidence, millions of years
Y6	Explain fossils as evidence for living things in the past within evolution.	evidence; evolution	fossil record, evolution, adaptation, species

Light

Year	Knowledge progression	Key concepts	Core vocabulary
FS1	Explore light/dark and shadows in play.	light; dark; shadow	light, dark, bright, shadow, sun
FS2	Notice that light helps us see and shadows change; explore safe use of light sources.	seeing; shadow; change	light source, shadow, see, dark, bright
Y1	Use senses to describe seeing; observe light/shadow phenomena in everyday contexts.	observation	see, eye, light, shadow
Y2	Observe shadows over time and notice simple patterns, linking to weather/seasons work.	pattern over time	shadow, sunlight, position, measure, record
Y3	Recognise need for light to see; dark is absence of light; light reflects from surfaces; sunlight can be dangerous; investigate shadow formation/size.	light; reflection; shadows	light source, dark, reflect, reflection, shadow, opaque, transparent, translucent
Y4	Consolidate through fair/comparative testing of shadows/reflection and careful measurement.	cause/effect; fair testing	variable, distance, measure, pattern, conclusion
Y5	Revisit reflection/shadows as prior knowledge and develop precise enquiry/measurement.	evidence; model	ray, reflection, angle, measurement
Y6	Recognise light travels in straight lines; explain seeing as light travelling from sources to objects then eyes; explain shadows using straight-line travel.	model; cause/effect	light ray, straight line, reflect, incident, shadow, opaque, source, eye

Forces and magnets

Year	Knowledge progression	Key concepts	Core vocabulary
FS1	Explore pushes and pulls through play; notice objects move differently on surfaces.	movement; cause/effect	push, pull, move, stop, fast, slow
FS2	Compare pushes/pulls and explore magnets informally.	force; magnetism	force, push, pull, magnet, stick, attract
Y1	Use simple language to describe movement and changes caused by actions.	cause/effect	push, pull, move, direction
Y2	Know shapes of solid objects can change by squashing, bending, twisting and stretching.	force; change	squash, bend, twist, stretch
Y3	Compare movement on surfaces; distinguish contact and magnetic forces; investigate attraction/repulsion; group magnetic materials; know magnet poles and predict attraction/repulsion.	forces; magnetism; cause/effect	force, friction, surface, contact, magnetic, attract, repel, pole, north, south
Y4	Deepen through comparative/fair tests, systematic observations and accurate measurement.	fair testing; variables	fair test, comparative test, variable, measure, result
Y5	Explain gravity; identify effects of air resistance, water resistance and friction; recognise mechanisms including levers, pulleys and gears can give mechanical advantage.	forces; resistance; mechanisms	gravity, air resistance, water resistance, friction, lever, pulley, gear, mechanism
Y6	Apply force knowledge to more independent enquiry, controlling variables and using precise/repeat measurements.	evidence; variables	variable, control, accuracy, precision, repeat reading, causal relationship

Sound

Year	Knowledge progression	Key concepts	Core vocabulary
FS1	Listen to and describe sounds; explore making sounds with objects/instruments.	sound; vibration	sound, loud, quiet, listen, shake, tap
FS2	Compare sounds and notice changes in loudness/pitch in practical play.	comparison; change	loud, quiet, high, low, pitch, sound
Y1	Use hearing as a sense and describe sounds heard in the environment.	senses	hearing, ear, sound, loud, quiet
Y2	Observe and compare sounds; gather simple data where appropriate.	comparison; pattern	sound, compare, record
Y3	Prepare through forces/materials work: observe vibration and changes systematically.	cause/effect	vibration, material, observe
Y4	Identify how sounds are made by vibrations; understand travel through a medium to ear; find patterns between pitch and object features, and volume and vibration strength; know sound weakens with distance.	vibration; waves; pattern	vibration, sound wave, medium, pitch, volume, distance, ear
Y5	Apply pattern-seeking and measurement skills to sound contexts where revisited.	pattern; evidence	frequency, volume, data, pattern
Y6	Use sound as a context for explaining causal relationships/evaluating evidence where appropriate.	cause/effect; evidence	evidence, relationship, conclusion

Electricity

Year	Knowledge progression	Key concepts	Core vocabulary
FS1	Explore battery-operated toys safely and notice switches make things happen.	cause/effect	battery, switch, on, off
FS2	Talk about familiar electrical devices and safe use; explore simple cause/effect with switches.	systems; safety	electricity, battery, switch, device, safe
Y1	Identify familiar objects that use electricity in everyday life.	use; safety	electricity, electrical, battery, mains
Y2	Compare materials and their uses, supporting later conductor/insulator ideas.	properties	material, metal, plastic
Y3	Prepare through magnet/material classification and fair testing.	classification; testing	test, material, predict
Y4	Identify appliances using electricity; construct simple series circuits; identify cells, wires, bulbs, switches and buzzers; determine whether lamp lights; recognise switch function; identify common conductors/insulators, including metals.	circuits; cause/effect; conductivity	circuit, cell, battery, wire, bulb, buzzer, switch, conductor, insulator, complete, break
Y5	Consolidate circuit construction and use diagrams/measurements to prepare for voltage investigations.	systems; measurement	circuit, component, symbol, current, voltage

Year	Knowledge progression	Key concepts	Core vocabulary
Y6	Associate bulb brightness/buzzer volume with number and voltage of cells; compare component functions; use recognised symbols in circuit diagrams.	variables; systems; representation	voltage, cell, component, circuit diagram, symbol, brightness, volume, switch

Earth and space

Year	Knowledge progression	Key concepts	Core vocabulary
FS1	Notice day/night, Sun, Moon and sky through everyday experience.	cycles; observation	day, night, sun, moon, sky
FS2	Talk about day/night and observable sky changes; notice simple repeating patterns.	pattern; change	day, night, sun, moon, star, Earth
Y1	Observe day length changing across seasons.	cycles; change	daylight, season, day, night
Y2	Track shadows over time and record patterns.	pattern over time	shadow, position, time, record
Y3	Use light/shadow understanding as foundation for explaining Sun-related observations.	light; shadow	Sun, light, shadow
Y4	Use patterns and measurements to support explanations of recurring natural phenomena.	pattern; evidence	pattern, data, explanation
Y5	Describe movement of Earth and planets relative to Sun; Moon relative to Earth; describe Sun/Earth/Moon as approximately spherical; use Earth rotation to explain day/night and apparent movement of Sun.	solar system; orbit; rotation; model	Sun, Earth, Moon, planet, solar system, orbit, rotate, axis, spherical, day, night
Y6	Apply models/evidence and communicate explanations precisely, linking light and Earth/space ideas where useful.	model; evidence	model, evidence, explanation, light ray

Evolution and inheritance

Year	Knowledge progression	Key concepts	Core vocabulary
FS1	Notice that living things can be similar and different; notice young animals/people change as they grow.	similarity/difference; change	same, different, baby, adult, grow
FS2	Compare offspring/adults and talk about features of living things and how they suit where they live.	variation; environment	offspring, parent, feature, environment, change
Y1	Compare structures of common animals and group by observable features.	variation; classification	similar, different, feature, animal group
Y2	Know offspring grow into adults; understand habitats meet needs and living things depend on each other.	growth; habitat; interdependence	offspring, adult, habitat, needs
Y3	Use fossils and plant reproduction as foundations; compare structures/functions in organisms.	evidence; reproduction	fossil, reproduction, structure, function
Y4	Recognise environmental change can pose dangers; use classification to compare characteristics.	environment; variation	environment, characteristic, classify, change
Y5	Use life cycles/reproduction and fossil knowledge to prepare for inheritance and evolution.	reproduction; life cycles; evidence	reproduction, life cycle, fossil, variation
Y6	Recognise living things have changed over time and fossils provide evidence; offspring are same kind but vary; explain adaptation to environments and that adaptation may lead to evolution.	inheritance; variation; adaptation; evolution	adaptation, environment, evolution, gene, natural selection, inheritance, organism, species, variation

Part 2: Working Scientifically progression

Year	Working Scientifically – expected progression
FS1	Explore using senses; notice and talk about what happens; ask simple “what?” and “why?” questions with adult support; compare objects/events; communicate through talk, drawing and play.
FS2	Ask questions about the natural world; make simple predictions; observe carefully; compare and group; use simple equipment with support; record through pictures, marks, simple counts/tallies; talk about what was found.
Y1	Ask simple questions and recognise they can be answered in different ways; observe closely using simple equipment; perform simple tests; identify/classify; use observations/ideas to suggest answers; gather and record data.
Y2	Develop independence in simple enquiries; observe change over time; use simple standard measures; make predictions; record in simple tables/charts; identify patterns and use results to answer questions.
Y3	Ask relevant questions; use different enquiry types; set up simple practical enquiries/comparative/fair tests; make systematic observations and accurate measurements in standard units; gather, record, classify and present data; report findings and draw simple conclusions.
Y4	Choose appropriate enquiry approaches with increasing independence; identify what to change/measure/keep the same in fair tests; use a range of equipment; record using tables/charts/diagrams; use results to conclude, predict, suggest improvements and raise further questions.
Y5	Plan different types of scientific enquiry; recognise variables; take increasingly accurate/precise measurements and repeat readings where appropriate; record complex data using scientific diagrams, labels, classification keys, tables and graphs; use results to make predictions and set up further tests.
Y6	Independently select and justify enquiry approaches; control variables where necessary; evaluate accuracy, precision and repeatability; report conclusions, causal relationships and degree of trust; identify evidence used to support/refute ideas and arguments.

Part 3: Progression through the five enquiry types

Observing over time

FS1	FS2	Y1	Y2	Y3	Y4	Y5	Y6
Explore and notice changes during familiar routines/nature.	Return to the same object/place and talk about what changed.	Make repeated observations, e.g. plants/seasons.	Measure/record changes over time, e.g. growth, weather, shadows.	Make systematic observations at suitable intervals and use standard measures.	Choose what/when to observe and record patterns accurately.	Plan longer-term observations; select appropriate measures and graphical recording.	Analyse trends over time, consider reliability and explain using scientific knowledge.

Pattern seeking

FS1	FS2	Y1	Y2	Y3	Y4	Y5	Y6
Notice “same/different” and repeated events.	Spot simple patterns and say what they notice.	Look for simple links in observations.	Collect data and identify simple patterns/relationships.	Collect systematic data to identify relationships where variables are not controlled.	Represent data to reveal patterns and suggest explanations.	Choose suitable data/graphs and identify relationships, including anomalies.	Analyse patterns/causal relationships cautiously and evaluate strength of evidence.

Identifying, grouping & classifying

FS1	FS2	Y1	Y2	Y3	Y4	Y5	Y6
Match and sort by one obvious feature.	Group objects/living things and explain a simple reason.	Identify/name and sort using observable properties/features.	Classify into given groups and begin to choose own criteria.	Use several observable features and simple keys/tables.	Construct/use classification keys and justify grouping choices.	Use increasingly complex keys and compare alternative classification criteria.	Classify broad groups, including microorganisms, and give evidence-based reasons using specific characteristics.

Comparative & fair testing

FS1	FS2	Y1	Y2	Y3	Y4	Y5	Y6
Try things out and compare what happens.	Compare two situations with adult support and notice what changed.	Perform simple comparative tests.	Make simple tests more consistent and record outcomes.	Set up comparative/fair tests; recognise what should be kept the same.	Identify change/measure/control variables with increasing independence.	Plan fair tests, recognise/control variables and take accurate/repeat measurements.	Justify variable control, precision and repeats; evaluate trust and use results for further testing.

Research using secondary sources

FS1	FS2	Y1	Y2	Y3	Y4	Y5	Y6
Look at books/pictures and listen to adults to find out about the world.	Use books, images and simple digital sources with adult guidance; retell a fact.	Use simple secondary sources to answer a question with support.	Find information from age-appropriate sources and distinguish it from own observations.	Use books/web/resources to research named scientists, organisms or phenomena; record relevant facts.	Select relevant information from more than one source and present findings.	Research independently; distinguish fact/opinion and combine sources into a presentation.	Evaluate relevance/reliability of sources and use scientific evidence to support/refute explanations.

Part 4: Vocabulary progression for Working Scientifically

Year	Core disciplinary vocabulary
FS1	look, listen, touch, smell, notice, same, different, change, sort, group, try
FS2	observe, compare, group, predict, change, count, measure, record, because, find out
Y1	question, observe, identify, classify, test, equipment, data, record, answer, pattern
Y2	predict, measure, standard unit, results, table, chart, pattern, compare, change over time
Y3	enquiry, comparative test, fair test, systematic, accurate, measurement, evidence, findings, conclusion, relationship
Y4	variable, control, method, results, conclusion, prediction, improvement, further question, classification key
Y5	independent variable, dependent variable, control variable, accuracy, precision, repeat reading, scatter graph, line graph, causal relationship
Y6	reliability, degree of trust, anomaly, evidence, support, refute, justify, evaluate, causal relationship, scientific argument