Townlands Primary School Science Progression Document (EYFS – Year 6)

Vision for Science

Science is taught through Kapow Primary Science, which is built on three strands: scientific knowledge and understanding, working scientifically, and science in action.

Intent

Develop curious, knowledgeable scientists who can question, investigate, analyse and communicate findings.

Implementation

Progression is organised through National Curriculum strands and Kapow units.

Impact

Pupils retain scientific knowledge, apply enquiry skills and use scientific vocabulary accurately.

Whole School Progression Overview

Year Group	Knowledge Focus	Working Scientifically	Topics Covered
EYFS	Explore the world around them and observe changes over time	Observe closely and ask simple questions	Animals including Humans; Plants; Materials; Seasonal Change
Year 1	Name and identify common living things, materials and seasonal features	Observe carefully and record what they notice	Animals including Humans; Plants; Everyday Materials; Seasonal Change
Year 2	Understand simple processes and relationships, such as growth and habitats	Carry out simple comparative tests	Animals including Humans; Plants; Living Things and Their Habitats; Uses of Materials
Year 3	Explain scientific phenomena, such as light and forces	Set up and carry out fair tests	Animals including Humans; Plants; Rocks; Light; Forces and Magnets
Year 4	Make links between scientific ideas and across topics	Classify, group and interpret findings	Animals including Humans; Living Things and Their Habitats; States of Matter; Sound; Electricity
Year 5	Understand systems and interactions, such as Earth and space and forces	Plan enquiries to answer scientific questions	Animals including Humans; Living Things and Their Habitats; Properties and Changes of Materials; Earth and Space; Forces
Year 6	Evaluate evidence and justify scientific ideas	Carry out independent investigations	Animals including Humans; Living Things and Their Habitats; Evolution and Inheritance; Light; Electricity

Working Scientifically Skills by Phase

Phase	Questioning	Testing	Recording	Concluding
EYFS	Ask questions	Explore	Talk and draw	Share ideas
KS1	Ask simple questions and recognise that they can be answered in different ways; make predictions	Observe closely using simple equipment; carry out simple tests; identify and classify	Gather and record data in tables and pictures to help answer questions	Use observations and ideas to suggest answers to questions
LKS2	Ask relevant questions; use different types of enquiry, including comparative and fair tests	Make systematic, careful observations and accurate measurements in standard units, using equipment such as thermometers and data loggers	Gather, classify and present data using labelled diagrams, keys, bar charts and tables; report findings orally and in writing	Identify patterns, similarities and differences; draw simple conclusions, predict new values, suggest improvements and raise further questions; use evidence to support findings
UKS2	Plan different types of enquiry independently; use test results to make predictions and set up further tests	Recognise and control variables; measure with increasing accuracy and precision, taking repeat readings when appropriate	Record data using scientific diagrams and labels, classification keys, tables, scatter graphs, and bar and line graphs	Report conclusions, causal relationships and the degree of trust in results; identify evidence that supports or refutes ideas

Working Scientifically Enquiry Progression

EYFS	KS1	LKS2	UKS2
Ask questions, observe closely and discuss findings. Record through talk, drawings and photographs.	Ask simple questions, recognising that they can be answered in different ways, and make predictions. Observe closely using simple equipment, carry out simple tests, and identify and classify. Gather and record data in tables and pictures, and use observations and ideas to suggest answers.	Ask relevant questions and use different types of enquiry, including comparative and fair tests. Measure accurately in standard units using equipment such as thermometers and data loggers. Collect, classify and present data in labelled diagrams, keys, bar charts and tables. Identify patterns, draw simple conclusions, suggest improvements and raise further questions, reporting findings orally and in writing.	Plan independent enquiries of different types, recognising and controlling variables. Measure with increasing accuracy and precision, taking repeat readings. Record data in scientific diagrams, scatter graphs, and bar and line graphs. Evaluate methods, use results to plan further tests, and justify conclusions using evidence, explaining how far results can be trusted and whether evidence supports or refutes ideas.

Types of Scientific Enquiry

Type of enquiry	What pupils do	Examples in our curriculum
Observing over time	Observe and record how things change over minutes, days, months or seasons.	Year 1 seasonal weather and day length; Year 2 seed and bulb growth diaries; Year 5 Moon phase diaries.
Pattern seeking	Collect data and look for relationships where variables cannot easily be controlled.	Year 3 shadow size; Year 4 pitch and volume; Year 6 pulse rate and exercise.
Identifying, classifying and grouping	Name, sort and group living things, materials and objects using observable features and keys.	Year 1 animal and material sorting; Year 3 grouping rocks; Years 4 and 6 classification keys.
Comparative and fair testing	Change one variable and observe or measure its effect, keeping other variables the same.	Year 2 material suitability; Year 3 friction on different surfaces; Year 5 parachutes and dissolving.
Research using secondary sources	Use books, websites and experts to answer questions that cannot be investigated first-hand.	Year 3 Mary Anning and fossils; Year 5 Jane Goodall and David Attenborough; Year 6 Charles Darwin and Carl Linnaeus.

Science Strand Progression Summary

Strand	EYFS	KS1	LKS2	UKS2
Animals including Humans	Body parts and senses	Body parts and needs	Nutrition and digestion	Circulatory system
Plants	Planting and growing	Identify plants	Functions and reproduction	Life cycles
Materials	Exploring materials	Properties	Rocks and states	Material changes
Physics	Seasons, weather, pushes and pulls	Seasons	Light, sound, forces	Space, light, electricity
Living Things and Their Habitats	Local environment	Habitats	Classification	Linnaean systems

Science Knowledge Progression by Strand

Animals including Humans

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Name body parts and use senses. Observe similarities and differences between animals.	Identify common mammals, birds, fish, reptiles and amphibians. Identify body parts linked to senses.	Understand offspring, life cycles and basic needs for survival. Understand exercise, food and hygiene.	Understand nutrition, balanced diets, skeletons and muscles.	Describe the digestive system, teeth and simple food chains.	Describe changes as humans develop from birth to old age.	Understand the circulatory system and the impact of diet, exercise, drugs and lifestyle.

Plants

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Observe plants growing and changing throughout the year.	Identify common wild plants, garden plants and trees.	Understand seed germination and conditions for growth.	Understand functions of roots, stems, leaves and flowers. Investigate pollination and seed dispersal.	Apply plant knowledge through habitats and classification (no discrete Plants unit – revisited through Living Things and Their Habitats).	Understand plant reproduction and life cycles (taught within Living Things and Their Habitats).	Apply knowledge of life cycles when studying ecosystems and inheritance (taught within Evolution and Inheritance).

Living Things and Their Habitats

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Explore animals and environments. Observe living things in the local area.	Observe local habitats through seasonal changes (no discrete unit – revisited through Seasonal Change and Plants).	Identify living, dead and never alive. Explore habitats and food chains.	Compare environments and organisms (no discrete unit – revisited through Plants).	Use classification keys and understand environmental change.	Study life cycles and reproduction.	Study classification systems, microorganisms and Carl Linnaeus.

Materials

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Explore natural and man-made materials using senses.	Identify and describe everyday materials and their properties.	Compare materials and understand suitability for different purposes.	Compare and group rocks. Explore fossils and soils.	Understand solids, liquids and gases and changes of state.	Investigate reversible and irreversible changes and separation techniques.	Apply understanding of materials through scientific enquiry and problem solving (no discrete unit – applied through Electricity).

Forces, Energy, Earth and Space

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Explore pushes, pulls and movement through play. Observe seasonal weather.	Observe seasonal changes and weather patterns.	Investigate movement and simple forces through practical exploration (no discrete unit – explored through Uses of Materials: squashing, bending, twisting and stretching).	Learn about forces and magnets. Explore pushes, pulls and friction. Explore light, reflection and shadows.	Understand sound as vibrations and introduce electricity.	Study gravity, air resistance, water resistance and mechanisms. Describe the movement of the Earth, Moon and planets.	Apply understanding of light and electricity to explain increasingly complex phenomena.

Making Connections

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
No discrete Making connections unit – links are made through play, stories and continuous provision.	Investigating science through stories – Using familiar stories to explore plants and animals through practical investigations.	Plant-based materials – Testing the suitability of plant-based materials and using the results to make a plant pot for growing seeds.	Does hand span affect grip strength? – Exploring the relationship between hand span and grip strength through scientific enquiry.	How does the flow of liquids compare? – Applying knowledge of states of matter to investigate whether viscosity affects how quickly liquids flow.	Does the size of an asteroid affect its impact crater? – Applying knowledge of gravity, air resistance and Earth and space to investigate asteroid impacts.	Are some sunglasses safer than others? – Investigating light transmission and UV protection to evaluate the safety of different sunglasses.

EYFS

In EYFS, science is taught through the Understanding the World area of learning and assessed against the Early Learning Goal: The Natural World, as set out in the EYFS statutory framework.

Topic	Key knowledge progression	Expected vocabulary	Evidence	Understanding the World link
Animals including Humans	Name main parts of the body and use their senses to explore; talk about similarities and differences between themselves and others, and between familiar animals; understand how to care for pets and that animals grow and change.	head, body, arms, legs, eyes, ears, nose, mouth, see, hear, smell, taste, touch, animal, pet, baby, grow	Floorbook entries, photographs of sensory exploration, labelled self-portraits and adult-scribed comments.	ELG The Natural World: explore the natural world around them, making observations and drawing pictures of animals and plants; know some similarities and differences between the natural world around them and contrasting environments.
Plants	Plant seeds and care for growing plants; observe and talk about how plants grow and change over time; begin to name simple parts of a plant.	seed, plant, grow, water, sun, soil, flower, leaf, stem, root	Photographs of planting and growth, observational drawings, simple growth sequences and floorbook records.	ELG The Natural World: explore the natural world around them, making observations and drawing pictures of animals and plants; understand some important processes and changes in the natural world around them.
Materials	Explore natural and man-made materials using their senses; describe what they notice; explore simple changes such as melting ice, mixing and cooking; investigate floating and sinking.	hard, soft, rough, smooth, bendy, shiny, wet, dry, melt, float, sink	Photographs of exploration, sorting activities, recorded talk and simple prediction pictures.	ELG The Natural World: understand some important processes and changes in the natural world around them, including changing states of matter.
Seasonal Change	Observe and talk about changes in the natural world across the seasons; describe daily weather; notice how clothing and activities change with the seasons.	spring, summer, autumn, winter, weather, hot, cold, rain, sun, wind, snow	Class weather charts, seasonal walk photographs, drawings and floorbook entries across the year.	ELG The Natural World: understand some important processes and changes in the natural world around them, including the seasons.

Year 1

Topic	Key knowledge progression	Expected vocabulary	Evidence
Animals including Humans	Identify and name common fish, amphibians, reptiles, birds and mammals; sort animals into carnivores, herbivores and omnivores; describe and compare the structure of a variety of common animals, including pets; name, draw and label parts of the human body and link them to the senses.	mammal, bird, fish, reptile, amphibian, carnivore, herbivore, omnivore, senses, sight, hearing, touch, taste, smell	Labelled body diagrams, animal sorting activities, senses investigation records and photographs.
Plants	Identify and name common wild and garden plants, including deciduous and evergreen trees; describe the basic structure of flowering plants and trees.	root, stem, leaf, petal, flower, trunk, branch, deciduous, evergreen, seed, bulb	Labelled plant and tree diagrams, plant hunt records, observational drawings and seasonal tree photographs.
Everyday Materials	Distinguish between an object and the material it is made from; identify wood, plastic, glass, metal, water and rock; describe and compare simple physical properties.	object, material, wood, plastic, glass, metal, rock, hard, soft, bendy, rough, smooth, waterproof, transparent	Material sorting tables, property word mats, simple test results (e.g. waterproof testing) and predictions.
Seasonal Change	Observe changes across the four seasons; describe weather associated with each season and how day length varies.	spring, summer, autumn, winter, season, weather, temperature, day length, sunny, rainy, cloudy	Weather charts, seasonal observation diaries, day length records and photographs across the year.

Year 2

Topic	Key knowledge progression	Expected vocabulary	Evidence
Animals including Humans	Notice that animals have offspring which grow into adults; describe basic needs for survival (water, food and air); explain the importance of exercise, a balanced diet and hygiene.	offspring, adult, life cycle, survival, nutrition, exercise, hygiene, germs, healthy, balanced diet	Life cycle diagrams, healthy plate designs, hygiene investigation records and growth timelines.
Plants	Observe and describe how seeds and bulbs grow into mature plants; find out how plants need water, light and a suitable temperature to grow and stay healthy.	seed, bulb, germination, seedling, growth, water, light, temperature, healthy, mature	Growth diaries, bean plant measurements, comparative test results and labelled growth sequences.
Living Things and Their Habitats	Compare things that are living, dead and never alive; identify how habitats, including microhabitats, provide for the basic needs of plants and animals and how they depend on each other; identify and name plants and animals in their habitats; describe how animals obtain their food from plants and other animals using simple food chains, and name different sources of food.	living, dead, never alive, habitat, microhabitat, food chain, producer, consumer, predator, prey	Sorting activities, habitat surveys, microhabitat maps and food chains drawn with arrows.
Uses of Materials	Identify and compare the suitability of everyday materials for particular uses; explore how solid objects can be changed by squashing, bending, twisting and stretching.	suitable, property, flexible, rigid, absorbent, durable, squash, bend, twist, stretch	Comparative test results, material suitability tables, predictions and photographs of practical work.

Year 3

Topic	Key knowledge progression	Expected vocabulary	Evidence
Animals including Humans	Understand that animals, including humans, need the right types and amounts of nutrition and cannot make their own food; identify that humans and some animals have skeletons and muscles for support, protection and movement.	nutrition, nutrients, carbohydrate, protein, fat, fibre, vitamins, skeleton, muscle, joint, vertebrate, invertebrate	Food label analysis, balanced meal plans, labelled skeleton diagrams and investigation write-ups.
Plants	Identify the functions of roots, stem/trunk, leaves and flowers; explore what plants need to grow and how this varies from plant to plant; investigate how water is transported; explain the role of flowers in pollination, seed formation and seed dispersal.	function, transport, nutrients, pollination, pollen, stamen, stigma, fertilisation, seed dispersal	Water transport investigation (e.g. celery), labelled flower diagrams, life cycle sequences and fair test tables.
Rocks	Compare and group rocks by appearance and physical properties; describe how fossils are formed; recognise that soils are made from rocks and organic matter.	igneous, sedimentary, metamorphic, permeable, fossil, sediment, soil, organic matter, Mary Anning	Rock property tests, fossil formation sequences, soil investigation results and classification tables.
Light	Recognise that light is needed to see and that dark is the absence of light; notice that light is reflected from surfaces; understand the dangers of sunlight and ways to protect their eyes; explain how shadows form when light is blocked by an opaque object and find patterns in how shadows change size.	light source, reflect, reflection, mirror, shadow, opaque, translucent, transparent, absorb	Shadow investigation data, reflective materials tests, simple light diagrams and conclusions.
Forces and Magnets	Compare how things move on different surfaces; recognise that some forces need contact but magnetic forces act at a distance; observe how magnets attract or repel each other and attract some materials and not others; group materials as magnetic or non-magnetic; describe magnets as having two poles and predict whether two magnets will attract or repel depending on which poles are facing.	force, push, pull, friction, surface, magnet, magnetic, attract, repel, north pole, south pole	Friction fair test tables, magnetic sorting results, predictions and labelled force arrows.

Year 4

Topic	Key knowledge progression	Expected vocabulary	Evidence
Animals including Humans	Describe the simple functions of the basic parts of the digestive system; identify the different types of teeth and their functions; construct and interpret food chains, identifying producers, predators and prey.	digestion, oesophagus, stomach, small intestine, large intestine, incisor, canine, premolar, molar, producer, predator, prey	Labelled digestive system diagrams, teeth investigation results (e.g. eggs in different liquids), food chain diagrams and results tables.
Living Things and Their Habitats	Recognise that living things can be grouped in a variety of ways; use classification keys to identify living things; recognise that environments can change and that this can pose dangers to living things.	classify, classification key, vertebrate, invertebrate, environment, habitat, deforestation, pollution, conservation	Completed and pupil-made classification keys, local habitat surveys and written discussion of environmental change.
States of Matter	Compare and group materials as solids, liquids or gases; observe changes of state when materials are heated or cooled and measure the temperature at which this happens in degrees Celsius; identify evaporation and condensation in the water cycle and link the rate of evaporation to temperature.	solid, liquid, gas, melting, freezing, evaporation, condensation, temperature, degrees Celsius, water cycle	Temperature data tables, line graphs, water cycle diagrams and evaporation investigation conclusions.
Sound	Identify how sounds are made by vibrations; recognise that vibrations travel through a medium to the ear; find patterns between pitch and volume and the object making the sound; know that sounds get fainter with distance.	vibration, sound wave, medium, pitch, volume, ear drum, insulation, distance, fainter	Pitch and volume investigation results, sound insulation tests, labelled ear diagrams and pattern statements.
Electricity	Identify common appliances that run on electricity; construct simple series circuits; identify whether a lamp will light in a circuit; recognise that a switch opens and closes a circuit; recognise common conductors and insulators and associate metals with being good conductors.	circuit, series circuit, cell, battery, bulb, wire, switch, buzzer, conductor, insulator, complete circuit	Circuit drawings, conductor and insulator test tables, predictions and photographs of constructed circuits.

Year 5

Topic	Key knowledge progression	Expected vocabulary	Evidence
Animals including Humans	Describe the changes as humans develop to old age, including the main stages of growth from birth through childhood and adolescence to adulthood.	foetus, infancy, childhood, adolescence, puberty, adulthood, old age, gestation, life expectancy	Human life timelines, gestation period comparisons, graphs and written explanations.
Living Things and Their Habitats	Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird; describe sexual and asexual reproduction in plants and animals; learn about naturalists such as Jane Goodall and David Attenborough.	life cycle, metamorphosis, sexual reproduction, asexual reproduction, pollination, fertilisation, gestation, naturalist	Comparative life cycle diagrams, plant propagation records, research on scientists and Venn diagrams.
Properties and Changes of Materials	Compare and group materials by hardness, solubility, transparency, conductivity and response to magnets; know that some materials dissolve to form a solution and describe how to recover a substance from a solution; use filtering, sieving and evaporating to separate mixtures; give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic; explain reversible and irreversible changes, including changes that form new materials, such as burning and the action of acid on bicarbonate of soda.	solubility, dissolve, solution, mixture, filter, sieve, evaporate, reversible, irreversible, thermal conductor, electrical conductor	Fair test plans, results tables, separation investigations, reversible and irreversible change sorting and conclusions.
Earth and Space	Describe the movement of the Earth and other planets relative to the Sun; describe the movement of the Moon relative to the Earth; describe the Sun, Earth and Moon as approximately spherical; use the Earth's rotation to explain day and night.	solar system, Sun, planet, orbit, rotation, axis, Moon, phases of the Moon, spherical, heliocentric, geocentric	Solar system models, Moon phase diaries, shadow stick data, labelled diagrams and explanations.
Forces	Explain that unsupported objects fall towards the Earth because of gravity; identify the effects of air resistance, water resistance and friction; recognise that levers, pulleys and gears allow a smaller force to have a greater effect.	gravity, Isaac Newton, air resistance, water resistance, friction, newtons, force meter, lever, pulley, gear, mechanism	Parachute and streamlining investigation plans, force meter readings, graphs and mechanism diagrams.

Year 6

Topic	Key knowledge progression	Expected vocabulary	Evidence
Animals including Humans	Identify and name the main parts of the circulatory system and describe the functions of the heart, blood vessels and blood; recognise the impact of diet, exercise, drugs and lifestyle; describe how nutrients and water are transported in the body.	circulatory system, heart, blood vessels, arteries, veins, capillaries, oxygen, carbon dioxide, pulse, lifestyle	Labelled circulatory system diagrams, pulse rate investigation data and line graphs, and lifestyle evaluation writing.
Living Things and Their Habitats	Describe how living things are classified into broad groups based on common observable characteristics; give reasons for classifying plants and animals; learn about Carl Linnaeus and microorganisms.	classification, kingdom, vertebrate, invertebrate, microorganism, bacteria, fungi, characteristics, Carl Linnaeus	Classification keys, microorganism investigations (e.g. yeast), research on Carl Linnaeus and written justifications.
Evolution and Inheritance	Recognise that living things have changed over time and that fossils provide evidence of this; recognise that offspring vary and are not identical to their parents; identify how plants and animals are adapted to their environment and that adaptation may lead to evolution.	evolution, inheritance, adaptation, variation, natural selection, fossil, offspring, Charles Darwin, Mary Anning	Adaptation explanations, fossil evidence timelines, variation data and evidence-based arguments.
Light	Recognise that light travels in straight lines; explain that objects are seen because they give out or reflect light into the eye; explain why shadows have the same shape as the objects that cast them.	light ray, straight line, reflect, refract, spectrum, periscope, shadow, retina, pupil, lens	Ray diagrams, periscope designs, shadow investigations and written explanations supported by evidence.
Electricity	Associate the brightness of a lamp or volume of a buzzer with the number and voltage of cells; compare and give reasons for variations in how components function; use recognised symbols to draw circuit diagrams.	voltage, cell, component, circuit symbol, circuit diagram, series circuit, current, brightness, volume	Circuit diagrams using standard symbols, investigation plans controlling variables, results tables and evaluations.