Science

WHINGATE'S CURRICULUM AIMS

Communicate
Live Healthily
Accept and Respect
Understand the Wider World
Dream Big
Explore

EYFS Progression Overview

Skills

1. **Ask questions**
   Demonstrate curiosity about the world around them.
2. **Make predictions**
   With support or prompting, talk about what they think might happen based on their own experiences.
3. **Decide how to carry out an enquiry**
   Respond to prompts to say what happened to objects, living things or events.
4. **Take measurements**
   Use senses and simple equipment to explore the world around them, e.g. binoculars and magnifying glasses.
5. **Record data**
   Talk to an adult about what has been found/found out.
6. **Present data**
   Talk to an adult about what has been found/found out.
7. **Answer questions using data**

Knowledge

Children know about similarities and differences in relation to:

- Places
  - Different animal habitats.
  - Seaside and Ashton
- Objects
  - Fruits and vegetables.
  - Dough and cooked bread
  - Making bigger/smaller shadows.
  - Floating and sinking
- Materials
  - Waterproof and not waterproof.
  - Strong and weak.
  - Recyclable and not recyclable.
  - Which materials melt in the Sun and which do not.
- Living things
  - Body parts of familiar animals.
  - What owls and other birds eat.
  - Nocturnal and diurnal animals.
  - Adult and baby animals.
  - Pet shop animals.
  - How animals move.
  - Sounds animals make.
  - How plants grow without light, water, soil and air.

Vocabulary

General

- Natural, wild, wildlife, native.

Places

- Habitats
  - Woodland, desert, ocean, jungle, Arctic.
- Microhabitats:
  - Log, stone, tree, dead leaves, soil.
- Seaside.

Objects

- British Autumn fruits and vegetables (e.g. apples, pears, beetroot, carrots, potatoes, butternut squash, sweetcorn, cauliflower).
- Bread:
  - Mix, knead, prove, rise.

Materials

- Object, material, properties, suitable, pipette, recycling.
- Properties
  - Waterproof, strong/weak, dense/less dense, hard/soft.
- Materials

Arriving in Year 1 able to...

Skills

With support	Independently
• Make simple predictions about what they think might happen. • Carry out simple investigations in a small group. • Explain why something happened. • Use this to predict what might happen next/change.	• Talk about what has happened.

Knowledge

- Identify, compare, classify and group a variety of places, objects, materials and living things.
- Talk about changes, including the seasons.
- Talk about their immediate environment and compare it to other environments.

With support, explain why some things occur. **8. Draw conclusions** With support, talk about what they have found out or what they think might happen next/ change based on their own experiences.	**Features of their own immediate environment and how environments might vary from one another.** • Playground, valley and Ashton. • Comparison to seaside (e.g. Weymouth). **Changes** • Rainfall in Winter and Summer.	– Bubble wrap, foil, plastic, fabric, paper, straw, sticks, bricks, metal, glass. **Living things – plants** • Grow • Lifecycle: – Roots, shoots, stem, leaves, buds, flower • Water, light, warmth, temperature, soil, compost **Living things – animals** • Body parts. • Backbone, skeleton, soft body, shell. • Adapted, hibernate, migrate. • Predator, prey. • Nocturnal. • Adult/parent, baby. • Lifecycle: – Egg, caterpillar, chrysalis, butterfly. • Birds (owl, duck), insects/bugs/ minibeasts (lacewing, ladybird, woodlouse, bee, wasp, spider, tarantula, earthworm, snail, locust, cricket, millipede, butterfly, caterpillar), fish, reptiles (snake, tortoise, gecko), amphibians, mammals (mouse, shrew, vole, hare, fox).	

		• What animals give us
		  – Meat, roast chicken, bacon/ham, milk/cheese/ butter, wool, hair, eggs, honeycomb, honey.
		Environments
		• Environment
		• Woodland, valley.
		• Playground.
		• Recycling, compost.
		Changes
		• Seasons:
		  – Spring (growth, baby animals)
		  – Summer
		  – Autumn (Harvest)
		  – Winter
		• Weather:
		  – Sun, rain, wind, snow, ice, frost, sleet, hail.
		  – Cold/warm/hot
		• Day length, day light.	

<table>
<tr><th colspan="4">Year 1 Progression Overview</th></tr>
<tr><th>Skills</th><th>Knowledge</th><th>Vocabulary</th><th>Arriving in Year 2 able to…</th></tr>
<tr>
<td rowspan="2">1. Ask questions
Ask simple questions stimulated by their exploration of their world.
2. Make predictions
Respond to suggestions to connect what has been observed with possible further actions or observations.
3. Decide how to carry out an enquiry
Perform simple tests to explore a question or idea suggested to them, with support.
4. Take measurements
Observe objects, living things, events and the world around them closely, using their senses and simple equipment. Make measurements using non-standard units of measure.
5. Record data
Present evidence they have collected in simple templates provided for them to help in answering questions. Draw or photograph evidence and label with support.</td>
<td>Animals, including humans
Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals
Identify and name a variety of common animals that are carnivores, herbivores and omnivores
Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets)
Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.</td>
<td>Animals, including humans
Examples of mammals, fish, reptiles, birds and amphibians.
Carnivore, herbivore, omnivore.
Leg, arm, elbow, head, ear, nose, back, wings, beak.</td>
<td rowspan="2">Skills<table><tr><th>With support</th><th>Independently</th></tr><tr><td>Record and present data.
Explain why something has happened.</td><td>Make simple predictions.
Take measurements using non-standard units.
Talk about what has happened.
Use their results to answer questions.
Carry out simple investigations in a small group.</td></tr></table>Knowledge
Identify and name a variety of animals, plants and everyday materials (including rocks).
Identify and describe the basic structure of the human body and mature plants.</td>
</tr>
<tr>
<td>Plants
Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees
Identify and describe the basic structure of a variety of common flowering plants, including trees.</td>
<td>Plants
Deciduous and evergreen trees and examples of these common to Britain (e.g. oak, ash, sycamore, horse chestnut, elder, pine, hawthorn, holly, yew, lime, cherry, birch, beech, willow).
Examples of common British plants, e.g. daffodil, primrose, bluebell, tulip, snowdrop, dandelion, crocus, rose, wild</td>
</tr>
</table>

6. Present data Present findings in simple templates provided for them or orally. Draw or photograph evidence and label with support **7. Answer questions using data** Respond to suggestions to connect what has been observed with possible further actions or observations. **8. Draw conclusions** Use their ideas to suggest answers to questions. Say what has changed when observing objects, living things or events.		garlic, cow parsley, foxglove, ivy, buttercup, poppy, lavender. • Bulb, roots, stem, leaves, flower (blossom), petals, fruit, seeds, trunk, branches, twigs, crown. • Tally • Species	
	Everyday materials • Distinguish between an object and the material from which it is made • Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock • Describe the simple physical properties of a variety of everyday materials • Compare and group together a variety of everyday materials on the basis of their simple physical properties.	**Everyday materials** • Object, material, properties • Wood, plastic, glass, paper, water, metal, rock, brick, fabric, elastic, foil, rubber, wool, clay • Hard/soft, bendy/not bendy, rough/bumpy/smooth, stretchy/ squashy/brittle/stiff/rigid, shiny/ dull, waterproof/not waterproof, absorbent/not absorbent, opaque/transparent, absorbent	
	Seasonal changes (covered in Geography) • Observe changes across the four seasons • Observe and describe weather associated with the seasons and how day length varies.	**Seasonal changes** • Spring – Spring equinox, baby animals • Summer • Autumn – fungi, migration, hibernation, deer, squirrel, swallow, osprey, woodmouse, dormouse, worm, salmon,	

		goose, starlings, murmurate, hedgehog, bat • Winter – adapt, Winter equinox • Sun, sunrise, day, light • Moon, sunset, night, dark • Weather, wet, dry, wind • Temperature, hot, cold, thermometer, degrees Celsius	

Year 2 Progression Overview

Skills

1. **Ask questions**
   Ask simple questions about their experiences and observations and with support use these observations to suggest ways to discover an answer or solve a problem, recognising that some can be answered in a variety of ways.
2. **Make predictions**
   Use their observations and ideas to make predictions. Use understanding of what has been observed or own experience to predict outcomes of further actions or observations.
3. **Decide how to carry out an enquiry**
   Identify things to measure or observe that are relevant to the questions or ideas they are investigating using a simple test. Suggest a practical way of how to find things out, or collect data to answer a question or idea they are investigating

Knowledge

Animals, including humans

- Notice that animals, including humans, have offspring which grow into adults
- Find out about and describe the basic needs of animals, including humans, for survival (water, food and air)
- Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.

Plants

- Observe and describe how seeds and bulbs grow into mature plants
- Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.

Everyday materials and their uses

- Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses
- Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.

Vocabulary

Animals, including humans

- Survival, water, air, food
- Reproduction, growth, adult, baby, offspring, kitten, calf, puppy
- Exercise, hygiene

Plants

- Water, light, temperature, growth
- Germination, reproduction

Everyday materials and their uses

- Translucent
- Squashing, bending, twisting

Arriving in Year 3 able to…

Skills

With support	Independently
• Ask their own questions and suggest ways to answer them. • Decide what to observe or measure. • Present data. • Explain why something has happened.	• Make simple predictions. • Take measurements using non-standard and standard units. • Record data. • Talk about what has happened. • Use their results to answer questions.

Knowledge

- Understand what animals need to stay healthy and survive and the consequences of an unhealthy diet.
- Understand what plants need to grow and survive.
- Understand why rocks, metals, wood and plastic are suited to particular uses.
- Identify shiny, dull, transparent, translucent and opaque materials.

4. Take measurements Observe closely and use equipment provided for observation and measuring correctly. Make measurements using non-standard and standard units of measure. **5. Record data** Gather and record data in appropriate ways with increasing independence to help in answering questions. **6. Present data** Report on and record findings as drawings, photographs, labelled diagrams, orally, as displays or in simple prepared tables or charts. **7. Answer questions using data** Use understanding of what has been observed or own experience/ideas to answer questions. **8. Draw conclusions** Respond to suggestions to identify some evidence needed to answer a question.	**Living things and their habitats** • Explore and compare the differences between things that are living, dead, and things that have never been alive • Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other • Identify and name a variety of plants and animals in their habitats, including micro-habitats • Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.	**Living things and their habitats** • Living, dead • Habitat, microhabitat, woodland, seashore, ocean, pond, desert, rainforest • Energy, food chain, predator, prey	

Year 3 Progression Overview

Skills

1. **Ask questions**
   Within a group, suggest relevant questions that can be explored further using different types of scientific enquiry.
2. **Make predictions**
   Use straightforward scientific evidence to make predictions. With support, use results, observations or own experience to prompt new questions and predictions for a further test.
3. **Decide how to carry out an enquiry**
   Plan and carry out simple practical enquires, comparative and fair tests relevant to the questions or ideas they are investigating, with support.
4. **Take measurements**
   Use a range of equipment for measuring and observing, including thermometers and data loggers. Take simple, accurate measurements and/or careful observations using whole number standard units

Knowledge

Animals, including humans

- Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat
- Identify that humans and some other animals have skeletons and muscles for support, protection and movement.

Plants

- Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers
- Explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant
- Investigate the way in which water is transported within plants
- Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.

Vocabulary

Animals, including humans

- Nutrition/nutrients
- Carbohydrates, including sugars, protein, vitamins, minerals, fibre, fat, water
- Support, protection, movement
- Skeleton, endoskeleton, exoskeleton, vertebrate, invertebrate, bones, skull, joints
- Muscles, contract, relax, antagonistic

Plants

- Air, light, water, nutrients, soil
- Reproduction
- Transportation – nutrients, minerals, xylem vessels, transpiration
- Lifecycle – flower, germination, growing and flowering, pollination, pollen, anther, stamen, stigma, fertilisation, style, ovary, seed formation, seed dispersal
- Function
- Adapted – cacti, snowdrop, air plant, water lily

Arriving in Year 4 able to…

Skills

With support	Independently
• Make predictions using scientific evidence. • Decide what to observe or measure. • Record data, including keys and bar charts. • Present data. • Explain why something has happened. • Use their results to state whether their prediction was correct and prompt new questions and predictions for a further test.	• Within a group, ask relevant questions and suggest ways to answer them. • Take measurements using whole number standard units. • Talk about what has happened and whether this was expected or not. • Use their results to answer questions.

Knowledge

- Understand the meaning of vertebrate and invertebrate.
- Identify the types and amounts of nutrition that animals, including humans, need.

<table>
<tr>
<td>relevant to questions or ideas under investigation.
5. Record data
Gather and present evidence and data using simple scientific language and vocabulary as writing, drawings, labelled diagrams and displays and through computing, keys, bar charts or tables (using ranges and intervals chosen for them), to help in answering questions.
6. Present data
Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions with support/as a group. Record findings using simple scientific language, drawings, labelled diagrams, bar charts and tables with support/as a group.
7. Answer questions using data
Use straightforward scientific evidence and results of enquiries to answer questions.
8. Draw conclusions</td>
<td>Rocks
• Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties
• Describe in simple terms how fossils are formed when things that have lived are trapped within rock
• Recognise that soils are made from rocks and organic matter.

Light
• Recognise that they need light in order to see things and that dark is the absence of light
• Notice that light is reflected from surfaces
• Recognise that light from the sun can be dangerous and that there are ways to protect their eyes
• Recognise that shadows are formed when the light from a light source is blocked by an opaque object</td>
<td>Rocks
• Geologists
• Natural, man-made
• Sedimentary – sandstone, limestone, chalk
• Igneous – granite, marble
• Metamorphic – slate
• Crystals
• Permeable/absorbent, impermeable
• Soils – organic matter, clay, sandy, stony
• Fossils – trace/body/ replacement sediment, decay, mould, minerals, cast, weathering, erosion, palaeontologist

Light
• Light, source, dark, shadows
• Mirror, reflect, reflective, reflection
• Absorb
• Block
• Shiny/dull, smooth/rough, transparent/translucent/opaque</td>
<td>• Recognise the impact of diet on how their bodies function.
• Identify the structure and functions of the human skeletal and muscular systems.
• Identify examples of antagonistic muscles.
• Understand that plants gain nutrients and water from the soil via their roots.
• Understand how sedimentary, igneous and metamorphic rocks are formed.
• Recognise that fossils provide information about living things that inhabited the Earth millions of years ago.
• Understand that we see things because of light.
• Understand that shadows have the same shape as the objects that cast them.
• Understand that forces are pushes or pulls.
• Recognise that magnetism is a non-contact force which acts at a distance.
• Identify magnetic poles and how this creates attraction or repulsion.</td>
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</table>

Say whether what happened was what they expected, acknowledging any unexpected outcomes. **9. Evaluate their enquiry** Use results of enquiries to consider whether they meet predictions and explain why.	• Find patterns in the way that the size of shadows change.		
	Forces and magnets • Compare how things move on different surfaces • Notice that some forces need contact between two objects, but magnetic forces can act at a distance • Observe how magnets attract or repel each other and attract some materials and not others • Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials • Describe magnets as having two poles • Predict whether two magnets will attract or repel each other, depending on which poles are facing.	**Forces and magnets** • Force, action, interaction, push, pull • Motion • Contact, non-contact • Magnetic, poles, attract, repel • Friction	

<table>
<tr><th colspan="5">Year 4 Progression Overview</th></tr>
<tr><th>Skills</th><th>Knowledge</th><th>Vocabulary</th><th colspan="2">Arriving in Year 5 able to…</th></tr>
<tr><td rowspan="3">1. Ask questions
Ask relevant questions that can be answered by the appropriate scientific enquiry, research or experiment.
2. Make predictions
Use straightforward scientific evidence to make further predictions. Use results to make predictions for new values and raise further questions.
3. Decide how to carry out an enquiry
Plan and carry out simple practical enquires, comparative and fair tests relevant to the questions or ideas they are investigating. Identify one or more control variables from those provided when conducting a fair test.
4. Take measurements
Make systematic and careful observations of objects, living things and events. Choose from a range of provided, appropriate equipment for measuring and observing,</td><td>Animals, including humans
• Describe the simple functions of the basic parts of the digestive system in humans
• Identify the different types of teeth in humans and their simple functions
• Construct and interpret a variety of food chains, identifying producers, predators and prey.</td><td>Animals, including humans
• Mouth, tongue, teeth, oesophagus, stomach, small intestine, large intestine
• Carnivore, herbivore, omnivore
• Canine, incisor, pre-molar, molar</td><td colspan="2" rowspan="3">Skills
<table><tr><th>With support</th><th>Independently</th></tr><tr><td>• Identify control variables from those provided.
• Evaluate an investigation by suggesting improvements.</td><td>• Ask relevant questions and suggest ways to answer them.
• Make predictions using scientific evidence.
• Take measurements using more complex standard units and parts of units.
• Record data, including keys and bar charts, where intervals and ranges are agreed through as a class.
• Present data.
• Talk about what has happened and explain why.
• Use their results to answer questions, state whether their prediction was correct and prompt</td></tr></table></td></tr>
<tr><td>Living things and their habitats
• Recognise that living things can be grouped in a variety of ways
• Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment
• Recognise that environments can change and that this can sometimes pose dangers to living things.</td><td>Living things and their habitats
• Vertebrates (mammals, fish, reptiles, birds, amphibians)
• Invertebrates (snails, slugs, worms, spiders, insects)
• Environment, habitats</td></tr>
<tr><td>States of matter
• Compare and group materials together, according to whether they are solids, liquids or gases
• Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees celsius (°c)</td><td>States of matter
• Solid, liquid, gas
• Particles
• Evaporation
• Condensation
• Freezing
• Melting/heating
• Temperature</td></tr>
</table>

including thermometers and data loggers. Take accurate measurements using more complex standard units and parts of units. **5. Record data** Gather and present simple scientific data in a variety of ways as Year 3, including tables and bar charts where intervals and ranges are agreed through discussion, to help in answering questions. **6. Present data** Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables. **7. Answer questions using data** Use results to answer questions. **8. Draw conclusions** Identify and use straightforward scientific	• Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.		new questions and predictions for a further test.
	Sound • Identify how sounds are made, associating some of them with something vibrating • Recognise that vibrations from sounds travel through a medium to the ear • Find patterns between the pitch of a sound and features of the object that produced it • Find patterns between the volume of a sound and the strength of the vibrations that produced it • Recognise that sounds get fainter as the distance from the sound source increases.	**Sound** • Vibration, sound wave, sound source • Pitch • Volume, decibels • Sound meter	**Knowledge** • Identify the organs of the human digestive system and how it digests food. • Understand the interdependence of organisms in an ecosystem, including food chains and webs. • Identify and name a variety of mammals, amphibians, insects and birds. • Understand that living things are classified into broad groups according to common observable characteristics. • Identify the properties of solids, liquids and gases. • Explain how materials change state. • Understand that sound travels differently through solids, liquids and gases. • Understand that sound is produced by the vibration of objects. • Identify and name the basic parts of a series electrical circuit. • Recognise some common conductors and insulators.
	Electricity • Identify common appliances that run on electricity • Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers • Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery	**Electricity** • Cell, battery, bulb, switch, buzzer • Circuit, series • Conductors, insulators	

evidence to support and explain their findings. **9. Evaluate their enquiry** Use results to suggest improvements.	• Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit • Recognise some common conductors and insulators, and associate metals with being good conductors.		

<table>
<tr><th colspan="4">Year 5 Progression Overview</th></tr>
<tr><th>Skills</th><th>Knowledge</th><th>Vocabulary</th><th>Arriving in Year 6 able to…</th></tr>
<tr>
<td rowspan="2">1. Ask questions
Refine a scientific question so that it can be investigated, choosing an appropriate type of scientific enquiry to provide the best evidence.
2. Make predictions
Recognise when scientific evidence supports an idea or not and use this to support predictions. Use test results to prompt new questions and make predictions for setting up further tests.
3. Decide how to carry out an enquiry
Plan enquiries, deciding when it is appropriate to carry out a fair test or another type of practical enquiry from a range suggested. Identify one or more control variables in investigations when conducting a fair test.
4. Take measurements
Take measurements using a range of scientific equipment with increasing accuracy and</td>
<td>Animals, including humans
• Describe the changes as humans develop to old age.</td>
<td>Animals, including humans
• Growth, development, puberty, ageing
• Womb, gestation, embryo, foetus, baby, toddler, teenager, adult, elderly</td>
<td rowspan="2">Skills
<table>
<tr><th>With support</th><th>Independently</th></tr>
<tr>
<td>• Refine a scientific question so that it can be investigated and choose an appropriate type of enquiry to provide the best evidence.
• Recognise when scientific evidence supports an idea or not and use this to support predictions.
• Identify control variables.
• Record data, including keys, bar charts, line graphs and symbols, and identify the ranges and intervals used.
• Understand when to take repeat readings.
• Identify casual relationships.</td>
<td>• Present data.
• Use their results to answer questions.
• Evaluate an investigation by suggesting improvements.</td>
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<tr>
<td>Properties and changes of materials
• Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets
• Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution
• Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating
• Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic
• Demonstrate that dissolving, mixing and changes of state are reversible changes</td>
<td>Properties and changes of materials
• Hardness
• Solubility, dissolving
• Transparency
• Conductivity
• Magnetic
• Filter
• Evaporation
• Mixing</td>
</tr>
</table>

precision, identifying the ranges and intervals used. With support, recognise that some measurements and observations may need to be repeated. **5. Record data** Select appropriate ways of gathering and presenting scientific data through models, writing, drawings, displays, computing, tables or graphs (choosing appropriate ranges and intervals). Use correct scientific symbols where appropriate in recording. **6. Present data** Present findings in written form, displays and other presentations including orally, explaining results and conclusions drawn from results. Identify causal relationships in reporting outcomes where appropriate. **7. Answer questions using data** Use results to answer questions. **8. Draw conclusions**	• Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda. **Living things and their habitats** • Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird • Describe the life process of reproduction in some plants and animals. **Forces** • Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object • Identify the effects of air resistance, water resistance and friction, that act between moving surfaces • Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. **Earth and space** • Describe the movement of the Earth, and other planets, relative to the Sun in the solar system	**Living things and their habitats** • Mammal, insect, amphibian, bird • Sexual and asexual reproduction, sperm, egg, fertilisation, offspring, development **Forces** • Newtons • Gravity • Air resistance • Water resistance • Friction • Levers, pulleys, gears **Earth and space** • Earth, Sun, Moon • Axis, rotation, day, night, phases of the Moon	• Recognise when scientific evidence is for or against an argument. **Knowledge** • Identify some thermal insulators and conductors. • Describe how mixtures are created by dissolving. • Identify some simple techniques for separating mixtures, e.g. filtration and evaporation. • Understand that melting, freezing, evaporation, condensation and dissolving are reversible changes. • Recognise that sexual reproduction leads to offspring of the same kind which are not identical to their parents, whereas asexual reproduction leads to identical offspring. • Describe the process of reproduction in plants, including flower structure, wind and insect pollination, fertilisation, seed and fruit formation and dispersal. • Recognise that some forces are caused by rubbing and friction between surfaces or with resistance to the motion of air and water. • Recognise that gravity is a non-contact force which acts at a distance. • Know that forces are measured in Newtons. • Recognise that forces are needed to cause objects to stop or start moving, or to change their speed or direction of motion.

Recognise when scientific evidence is for or against anargument. ***9. Evaluate their enquiry*** *Recognise that the test may need improvements to improve reliability.*	• *Describe the movement of the Moonrelative to the Earth* • *Describe the Sun, Earth and Moon asapproximately spherical bodies* • *Use the idea of the Earth's rotation toexplain day and night and the apparent movement of the sun across the sky.*	• *Star, constellation*	• *Recognise that some mechanisms, allow a smaller force to have a greater effect.*

Year 6 Progression Overview			
Skills	**Knowledge**	**Vocabulary**	**End of KS2 able to…**
1. Ask questions Recognise scientific questions which do not yet have definitive answers and use a range of scientific enquiries to explore possible answers. **2. Make predictions** Identify scientific evidence that has been used to support or refute ideas or arguments and use this to support predictions. Use test results to make predictions for setting up further comparative and fair tests. **3. Decide how to carry out an enquiry** Recognise significant variables in investigations, selecting the most suitable to investigate. Controlling variables where appropriate. Recognise which type of practical enquiry is most appropriate to the question or idea being investigated, before planning and carrying out the enquiry. **4. Take measurements**	**Animals, including humans** • Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood • Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function • Describe the ways in which nutrients and water are transported within animals, including humans.	**Animals, including humans** • Circulatory, heart, blood, vessels, veins, arteries, oxygenated, deoxygenated, valve • Exercise • Respiration	**Skills** With support: • Recognise scientific questions which do not yet have definitive answers and explore possible answers. • Decide the most appropriate format to present sets of scientific data, e.g. line graphs for continuous variables. Independently: • Recognise when scientific evidence supports an idea or not and use this to support predictions. • Recognise (and control where necessary) significant variables in investigations, selecting the most suitable to investigate. • Understand when to take repeat readings and how this impacts on data collection. • Record data, including keys, scatter, bar and line graphs and symbols, and identify the ranges and intervals used. • Present data.
	Living things and their habitats • Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals • Give reasons for classifying plants and animals based on specific characteristics.	**Living things and their habitats** • Classification • Vertebrates, invertebrates • Microorganisms • Mammals, birds, fish, amphibians, reptiles, insects.	
	Light • Recognise that light appears to travel in straight lines • Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye	**Light** • Refraction, reflection • Spectrum, rainbow, colour	

Correctly choose and use appropriate equipment to support observation and data collection with increasing accuracy. Decide whether it is appropriate to repeat observations or measurements and explain how this impacts on data collection. **5. Record data** Decide on the most appropriate formats to present sets of scientific data, such as using line graphs for continuous variables. Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. **6. Present data** Report and present findings from enquiries, including conclusions, causal relationships and explanations of results in oral and written form, such as displays and other presentations. **7. Answer questions using data**	• Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes • Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.			• Identify casual relationships. • Explain differences in repeated measurements or observations. • Evaluate an investigation by comparing their results with others and giving reasons for variations.
	Electricity • Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit • Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches • Use recognised symbols when representing a simple circuit in a diagram.	**Electricity** • Cell, battery, bulb, switch, buzzer • Circuit, series • Conductors, insulators • Amps, volts		**Knowledge** • Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. • Understand that batteries have different ratings based on their voltage. • Understand that variation means some organisms compete more successfully, which can drive natural selection. • Understand that changes in the environment may leave individuals within a species, and some entire species, less well adapted to compete successfully and reproduce, which in turn may lead to extinction.
	Evolution and inheritance • Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago • Recognise that living things produce offspring of the same kind, but	**Evolution and inheritance** • Adaptation, habitat, environment, species, dominant, extinct, natural selection • Sexual and asexual reproduction, offspring • Characteristics • Creation		

Use results to answer questions. **8. Draw conclusions** Provide straightforward explanations for differences in repeated measurements or observations. **9. Evaluate their enquiry** Compare their results with others and give reasons why they may be different.	normally offspring vary and are not identical to their parents • Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.	• Hominids • Fossils	