



The Ribblesdale Federation of Schools

Science Curriculum Handbook

Year A Long Preston

Year Groups	Year A						Year B					
	1	2	3	4	5	6	1	2	3	4	5	6
Year 1	Animals including humans- All about me	Seasonal Changes	Exploring everyday Materials Unit 1	Exploring everyday materials – unit 2	Plants	Animals Including Humans - Animals	Animals including humans- All about me	Animals including humans - All about animals	Exploring everyday Materials Unit 1	Exploring everyday materials – unit 2	Plants	Seasonal Changes
Year 2, 3 and 4	Animals including humans – yr 3	Everyday Materials Yr2	Sound Yr4	Animals including humans – the digestive system – Yr4	Living things and their habitats Yr4	Plants – Yr3	Living things – Life Cycles Y2	Forces and magnetism Y3	Rocks – yr 3	Animals including humans – Yr3	Living things and their habitats Y2	Light Y3
Year 5 and 6	Living things and their habitats – yr5	Properties of materials	Looking after our environment	Animals including Humans – yr5	Forces – yr5	Evolution and inheritance – yr6	Animals including humans yr6	Earth and Space – yr5	Changes of materials	Living things and their habitat – yr6	Electricity – yr6	Light - yr6

Science

Intent

Science is vital to our future prosperity and it is important that our children are engaged with all aspects of science. All pupils across the Ribblesdale Federation of School will be provided with the foundations to understand the specific disciplines of biology, chemistry and physics and to develop an understanding of the world around them at an age-appropriate level.

We develop the natural excitement and curiosity of all children, including those with SEND, and inspire them to pursue scientific enquiry now and in further life. Throughout the primary years, children should learn to work scientifically by investigating, explaining and analysing phenomena, making predictions, questioning the world around them and solving problems.

Teachers nurture a love for the natural world, excitement for future possibilities in science and provide many opportunities for pupils to grow their own growth mindset and rational thinking.

Pupils with SEND

To support pupils with SEND to access a full science curriculum, we use a range of approaches which include, but are not limited to: pre-teaching scientific vocabulary; use of visual aids; scaffolding resources, such as experiment templates and writing frames; additional thinking time; additional adult support; use of technology; multi-sensory activities; alternative means to record responses; science concept cartoons; task breakdown plans; use of vocabulary mats, and; targeted questioning.

Implementation

The Curriculum –

- The National Curriculum statutory requirements are taught and assessed in each year as a basic minimum.
- Teachers are familiar with previous and subsequent year groups' content in order to link learning and build on previous knowledge.
- When planning, teachers refer to the progression document for their current topic and to the Developing Experts resources to ensure teaching is progressive throughout school.

Timetabling –

- Science is taught discretely once per week by the class teacher.
- When there is a natural link between a science topic and other curriculum areas, teachers should endeavour to work in a cross-curricular manner e.g. to link the teaching of evolution with the history topic of Stone Age.
- Science content being covered through a cross-curricular approach must include a learning objective taken from the year group's science curriculum and recorded in the science exercise book.

Teaching –

- Teachers follow children's interests and lines of inquiry.
- Each lesson includes a working scientifically element to ensure working scientifically skills are covered over a two- year period.
- Working scientifically skills are progressive.
- Time should be taken to identify and teach the specialist vocabulary associated with each topic.
- Teaching is differentiated either by resource, support or ability grouping
- Use of open ended enquires to allow all children to access learning at their level.
- More able learners are challenged to make connections within science and to apply their knowledge to real world situations
- Teachers help to develop open mindedness in relation to scientific theories.
- Teachers aim to close the gap for PP children
- Teachers support SEN children in line with support plans. This could include;
 - Pre-teaching
 - Use of Vocabulary lists
 - Scaffolding for scientific experiments
 - Providing additional equipment to meet individuals' needs
 - Alternative methods of recording work, including the use of ICT
- Outside visitors and trips should be utilised as much as possible.
- Challenging stereotypes where possible – encouraging girls into STEM careers

- Resources made readily available to staff to carry out all lessons.
- Science topics will encompass an element of both maths and English.
- Science should refer to SMSC concerns in the modern age e.g. climate change, genetic modifications.

Assessment –

- Children rate vocabulary knowledge at the beginning and end of a topic.
- Children given the opportunity to demonstrate prior knowledge and then add to this over time and new learning occurs.
- Knowledge quiz allows the teacher to clearly see and address any misconceptions.

Impact

- Impact measured through: low-stakes quizzes; vocabulary learning; responses to open ended questions and mini assessments carried out once the topic has been completed
- Children acquire appropriate age-related knowledge.
- Children are equipped with investigative and experimenting skills.
- Children develop on learning skills - concentration, imagination, self-improvement.
- Children develop curiosity and excitement for the world around them.
- Children have a rich vocabulary to help them in science and also to access the wider curriculum.
- Children have high aspirations.
- Children are inspired to continue science learning or pursue a STEM career.
- Children develop their questioning skills.
- Children develop a strong growth mind-set.
- Children can make connections throughout the years e.g. fossils in y3 linked to evolution in y6.
- Children can confidently report and explain outcomes, both written and orally.
- Children can record findings using a range of graphs and tables.
- Children can describe methodology and accurately to allow for retesting.
- Children are prepared for science in further education and able to understand the world around them.
- Children are able to work collaboratively with peers.
- Children are aware of the SMSC concerns surrounding science in the modern age.

Animals including humans – All about me

In Year 1 we...

N.C - Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense

1. Discover the basic parts of the human body

Identify the basic parts of the human body

Identify the different parts of the human body

Identify the different parts of the human body and explain what they are used for

2. Learn about your eyes and sight

Understand that our eyes allow us to see

Know the basic parts of the eye

Know the basic parts of the eye and their functions

3. Learn about your ears and hearing

Understand that our ears allow us to hear

Know that our ears help us tell the direction sound is coming from

Understand that sound is made up of vibrations

4. Explore the tongue and taste

Understand that our tongue allows us to taste

Describe a range of different flavours

Understand why our sense of taste is important

5. Explore your sense of touch

Understand that our skin helps us to feel

Know that our fingertips are sensitive to touch

Understand that our sense of touch can identify different textures

6. Discover how your nose smells

Know that our nose allows us to smell

Understand that we can smell many different flavours

Know that our sense of smell helps to keep us safe

Working Scientifically

- Identifying and classifying

- Performing simple tests
- Gathering and recording data to help in answering questions
- Using their observations and ideas to suggest answers to questions

Enquiry Approach

- Identifying, grouping & classifying - Using observations, data and findings to name, label and organise items in a variety of ways.
- Pattern-seeking - Identifying patterns and looking for relationships to make links between scientific concepts.
- Research - Using information from a variety of sources to answer scientific questions.

Enquiry Skill

- Observing and measuring - Using the senses and taking measurements, using a range of equipment, to make observations about a scientific enquiry.
Recording data, results and findings - Using tables, a variety of graphs, labelled diagrams and models to record observations, measurements, results and findings.
- Setting up tests - Carefully following a method and using equipment accurately to carry out a scientific enquiry. The method may be designed by teachers or children themselves.

Key Vocabulary-

Head, body, brain, pupil, ear, sound, tongue, taste,

Animals including Humans – year 2

Year 1 National Curriculum –

Pupils should be taught to:

- 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

Year 2 - Animals, including humans 1 - Growth

Lesson Intention	National Curriculum Reference	Scientific Enquiry Covered	Rocket Words Covered	Resources Needed
Describe the needs of animals for survival	Find out about and describe the basic needs of animals, including humans, for survival (water, food and air)	Using their observations and ideas to suggest answers to questions	survival shelter nutrition oxygen essential	Class presentation, pen, pencil.
Describe the needs of humans, for survival	Find out about and describe the basic needs of animals, including humans, for survival (water, food and air)	Using their observations and ideas to suggest answers to questions	vital non-essential survive grow healthy	Class presentation, pen, pencil, scissors, glue.
Explore the importance of eating the right food	Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene	Identifying and classifying	protein carbohydrate dairy vitamins calcium fat	Class presentation, pen, pencil, glue.
Describe what a healthy, balanced diet looks like	Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene	Using their observations and ideas to suggest answers to questions	balanced diet nutrients fresh food pre-cooked processed food	Class presentation, pen, pencil, glue, paper plates craft materials for making food, e.g. tissue paper, card, coloured paper, pipe cleaners, playdoh.
Investigate the impact of exercise on our bodies	Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene	Performing simple tests Using their observations and ideas to suggest answers to questions	exercise strength flexibility balance coordination	Class presentation, pen, pencil, stopwatch, bean bags, small sized balls, medium sized balls, large balls.
Investigate the importance of hygiene	Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene	Performing simple tests	hygiene prevent germs bacteria virus	Class presentation, pen, pencil, shallow bowl or plate, water, pepper, dish soap.

Living things and their habitats – Year 2

Year 1 - Not a topic covered by year 1 children – they can take part in activities but no formal assessment is required.

Year 2 - Living things and their habitats				
Lesson Intention	National Curriculum Reference	Scientific Enquiry Covered	Rocket Words Covered	Resources Needed
Explore and compare the differences between things that are living, dead, and things that have never been alive	Explore and compare the differences between things that are living, dead, and things that have never been alive	Identifying and classifying	senses nutrition reproduce excrete respire	Equipment for a classification walk: clipboards, pencils.
Identify and name a variety of plants and animals in a microhabitat	Identify and name a variety of plants and animals in their habitats, including microhabitats	Observing closely, using simple equipment	habitat microhabitat fungi survive shelter	Equipment for a nature hunt: clipboards, pencils. Photographs from the handout if not using the outdoors.
Design a suitable microhabitat where living things could survive	Identify and name a variety of plants and animals in their habitats, including microhabitats	Using their observations and ideas to suggest answers to questions	antennae suitable condition colony insect	If creating a real microhabitat outdoors, a selection of natural materials for children to create a 'bug hotel', or modelling resources if creating a model microhabitat.
Find out what animals eat to survive in their habitats	Describe how animals obtain their food from plants and other animals	Asking simple questions and recognising that they can be answered in different ways Gathering and recording data to help in answering questions	producer consumer herbivore carnivore omnivore	Research tools, e.g. internet and books.
Understand a food chain	Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain	Using their observations and ideas to suggest answers to questions	food chain life cycle nutrients rot caterpillar	Card/paper, scissors, sticky tape, coloured pens/pencils, glue stick. You may prefer to provide the learners with animal pictures to cut out instead.
Understand the journey food makes from the farm to the supermarket	Identify and name different sources of food	Using their observations and ideas to suggest answers to questions	automated frozen food forklift truck refrigerated lorry canned	Scissors, glue, colouring pens/pencils.

Everyday Materials – unit 1 – Year 1

Year 1 - Everyday materials - Exploring everyday materials

Lesson Intention	National Curriculum Reference	Scientific Enquiry Covered	Rocket Words Covered	Resources Needed
Identify and name a variety of everyday materials	Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock	Identifying and classifying	material fabric wood plastic metal	wooden item, metal item, plastic item and a piece of fabric, blanket or feely bag
Distinguish between an object and the material it is made from	Distinguish between an object and the material it is made from	Use observations and ideas to suggest answers to questions	object glass rock brick material	Everyday objects from the classroom.
Describe the properties of everyday materials	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.	Perform simple tests Using their observations and ideas to suggest answers to questions Gather and record data to help in answering questions	property opaque transparent dull stiff	Handouts, wooden chair, sponge, colouring pencils, a window, plastic bottle, rubber bands, tin can, a book and scissors.
Identify objects that are natural and those that are man-made	Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock Compare and group together a variety of everyday materials on the basis of their simple physical properties	Identify and classify Using their observations and ideas to suggest answers to questions	natural man-made factory rubber polyester	Man-made and natural resources
Predict and identify if an object will float or sink	Compare and group together a variety of everyday materials on the basis of their simple physical properties	Perform simple tests Identifying and classifying Using their observations and ideas to suggest answers to questions	predict float sink submerged heavy	Bowls of water. A selection of objects to investigate.
Explore which materials are best for different objects	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	Perform simple tests Identify and classify Use observations and ideas to suggest answers to questions Gather and record data to help in answering questions	absorbent properties waterproof bendy materials	Sponges, paper towels, paper, cloth, tin foil, cut up plastic bag, tray and water.

Year 2 National Curriculum –
Children should be taught to:

- 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

Everyday Materials - unit 2 – Year 1

Year 1 - Everyday materials - Building (based on the Three Little Pigs)				
Lesson Intention	National Curriculum Reference	Scientific Enquiry Covered	Rocket Words Covered	Resources Needed
Build a structure strong enough to withstand wind	Describe the simple physical properties of everyday materials	Perform simple tests	solid strong brick clay wind	Hairdryer/fan, a selection of materials for children to explore and select to build their house and adhesives.
Build a waterproof structure	Compare and group together a variety of everyday materials on the basis of their simple physical properties	Perform simple tests	waterproof absorbent non-absorbent roof slate	A selection of materials for children to test if they are waterproof (as a class), a selection of materials for children to build their roofs, adhesives, a sponge and a small bowl of water.
Understand the properties of glass and its uses	Describe the simple physical properties of everyday materials	Use observations and ideas to suggest answers to questions	transparent opaque suitable window pane window frame	Clear plastic or acetate, card and sticky tape.
Understand that materials are used to create a variety of furniture	Describe the simple physical properties of everyday materials	Use observations and ideas to suggest answers to questions	fabric furniture cotton mattress soft	Class presentation, pen and pencils, craft materials and fabrics.
Explore a variety of fabrics and understand their different properties	Compare and group together a variety of everyday materials on the basis of their simple physical properties	Identify and classify	wool weather jumper suitable waterproof	Class presentation and clothing.
Explain the uses of materials and why they are suitable	Describe the simple physical properties of everyday material	Use observations and ideas to suggest answers to questions	evaluate material properties tile garden	Class presentation, pen and pencil.

Year 2 National Curriculum – Children should be taught to:

- 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

Living Things and their habitats around the world – Year 2

Year 1 - Not a topic covered by year 1 children – they can take part in activities but no formal assessment is required.

Year 2 – Living Things and their habitats – Habitats from around the world				
Lesson Intention	National Curriculum Reference	Scientific Enquiry Covered	Rocket Words Covered	Resources Needed
Learn about habitats	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	Identifying and classifying Using their observations and ideas to suggest answers to questions	habitat microhabitat organism environment mate	Glue, scissors.
Appreciate that environments are constantly changing	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	Gathering and recording data to help in answering questions	rainforest moisture extinct climate endangered	Clipboard, pen/pencil, *May require permissions if choosing to walk outside school premises
Explore the rainforest and its problems	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 microhabitats	Using their observations and ideas to suggest answers to questions	biodiversity deforestation poaching pollution rainforest	Books/access to the internet for research, colouring pens/pencils, coloured paper, iPads to film videos (optional)
Describe life in the ocean	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 microhabitats	Asking simple questions and recognising that they can be answered in different ways	plankton ocean ecosystem coral reef trench	Materials to create a collage, paper, paints, corrugated card, coloured card, glue, scissors, sticky tack, pens, pencils
Discover the Arctic and Antarctic habitat	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 microhabitats	Identifying and classifying	Antarctic Arctic caribou narwhal tundra	Books/access to the internet for research
Create a model of a habitat	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 microhabitats	Using their observations and ideas to suggest answers to questions	earthworm desert lizard cactus pond	Shoebox/ or cardboard box, craft materials, toy animals,

Animals including Humans – Year 4

Lower Key Stage 2

Upper Key Stage 2

Year 4 – Animals, including humans

Lesson Intention	National Curriculum Reference	Scientific Enquiry Covered	Rocket Words Covered	Resources Needed
Identify the organs in the digestive system	Describe the simple functions of the basic parts of the digestive system in humans	Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables	digestive system oesophagus stomach small intestine large intestine	Glue, scissors, handout, pen and pencils, craft materials and whiteboards
Describe the functions of the main organs in the digestive system	Describe the simple functions of the basic parts of the digestive system in humans	Making systematic and careful observations Reporting on findings from enquiries, including oral and written explanations	saliva peristalsis absorb liver gall bladder	Pen, pencils and a digestive system model
Identify the types of human teeth and their functions	Identify the different types of teeth in humans and their simple functions	Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables	incisors canines molars jaw gum	A mirror and coloured pencils
Investigate the effects of different liquids on the teeth	Identify the different types of teeth in humans and their simple functions	Setting up simple practical enquiries, comparative and fair tests Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions	enamel plaque tooth decay cavity fluoride	Beverages: sugary - soda, energy drink (e.g. Red Bull), sports drink (Gatorade), juice; acidic - vinegar, orange juice, water (control), milk (control), clear cups or glasses (one for each drink) with covers or pieces of foil or plastic wrap and rubber bands to cover, eggs, an extra toothbrush and toothpaste
Understand food chains	Construct and interpret a variety of food chains, identifying producers, predators and prey	Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables	ecosystem producer consumer prey predator	Coloured card, string and coloured pencils
Explore food webs	Construct and interpret a variety of food chains, identifying producers, predators and prey	Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables	food web tundra hide interdependence threatened	Pens and pencils, books and access to the internet

Pupils should be taught to:

Year 5 -

describe the changes as humans develop to old age.

Year 6 –

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

Living things and their habitats – Year 5

Lower Key Stage 2

Pupils should be taught to:

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

Upper key stage 2

Year 5 - Living things and their habitats

Lesson Intention	National Curriculum Reference	Scientific	Rocket Words	Resources
Understand the life process of a plant	Describe the life process of reproduction in some plants and animals	Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary	reproduction asexual fertilisation tuber genes	<i>Class presentation, rooting powder, pots, a healthy plant (strawberry, tomato, basil or chilli) and soil</i>
Understand the life cycles of mammals	Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird	Reporting and presenting findings from enquiries - including conclusions, causal relationships and explanations of and a degree of trust in results - in oral and written forms such as displays and other presentations	pouch mammary glands placental mammal monotreme mammal marsupial	<i>Class presentation and mammal types sorting cards</i>
Compare the life cycles of insects and amphibians	Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird	Reporting and presenting findings from enquiries - including conclusions, causal relationships and explanations of and a degree of trust in results - in oral and written forms such as displays and other presentations	metamorphosis caterpillar amphibian larva pupa	<i>Class presentation and split pins</i>
Understand the life cycle of birds and reptiles	Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird	Reporting and presenting findings from enquiries - including conclusions, causal relationships and explanations of and a degree of trust in results - in oral and written forms such as displays and other presentations	egg fledgling egg tooth hatch embryo	<i>Class presentation, eggs and toothpicks</i>
Know about the life and work of Jane Goodall and David Attenborough	Describe the life process of reproduction in some plants and animals	Reporting and presenting findings from enquiries - including conclusions, causal relationships and explanations of and a degree of trust in results - in oral and written forms such as displays and other presentations	documentary naturalist primatologist endangered natural sciences	<i>Class presentation and research devices (laptops/ipads)</i>
Research and present the life cycle of a creature	Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird	Identifying scientific evidence that has been used to support or refute ideas or arguments	living organism reproduction life cycle vertebrate warm-blooded	<i>Class presentation and research devices (laptops/ipads)</i>

Changes of Materials – Year 5

Lower Key Stage 2

Not a topic covered in years 3 or 4. Children to recap key one learning in starters and take part in activities where appropriate but no formal assessment is required.

Upper Key Stage 2

Year 5 – Changes of materials

Lesson Intention	National Curriculum Reference	Scientific Enquiry	Rocket Words	Resources
Use evaporation to recover the solute from a solution	Describe how to recover a substance from a solution	Reporting and presenting findings from enquiries, including conclusions	pure substance solute solvent solution evaporate	<i>1 large clear bottle filled with pure water labelled "A", 1 large clear bottle filled with salt water labelled "B" (30g of table salt in 150 ml of water), teaspoons, small containers such as foil cake cases to place liquid in, labels, access to an oven (200 °C for 20 minutes will evaporate 3 teaspoons of water and leave salt) or warm place.</i>
Recognise and describe reversible changes	Demonstrate that dissolving, mixing and changes of state are reversible changes	Reporting and presenting findings from enquiries, including conclusions, in oral and written forms	reversible mixture physical change melting evaporate	<i>Some chocolate that has been melted into a different shape, small toys frozen in some ice, sugar dissolved in water in a bottle, rice and sugar mixed together in a jar. Optional- to reverse changes: heat source and mould to re- melt chocolate and ice and evaporate water, sieve.</i>
Observe chemical reactions and describe how we know new materials are made	Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible	Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations	irreversible chemical change compare effervescence product	<i>Water, fizzing tablet (such as berroca or alka seltzer), vinegar, bicarbonate of soda, candle, matches, red cabbage indicator*, soapy water, water, milk, small bottles for liquids, small containers (small aluminium pie cases work well)</i>
Investigate rusting reactions	Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible	Planning different types of scientific enquiry to answer questions, including recognising and controlling variables where necessary	fair test variable control variable corrosion rusting	<i>Small iron nails, test tubes or other small containers, water, salty water, other liquids (lemon juice, cola etc) oil, paint or petroleum jelly</i>
Investigate burning reactions	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.	Identifying scientific evidence that has been used to support or refute ideas or arguments	combustion fuel oxygen extinguish smother	<i>Tea light, matches, beaker, vinegar, bicarbonate of soda</i>
Investigate chemical reactions - acids and bicarbonate of soda	Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated the action of acid on bicarbonate of soda	Using test results to make predictions to set up further comparative and fair tests	reaction predict acid bicarbonate of soda carbon dioxide	<i>Bicarbonate of soda, container with lid such as plastic egg or film canister, small containers to test substances in (test tubes or small foil containers), liquids (water, vinegar, cola, lemon juice), plastic spoons, pipettes</i>

Animals including Humans – Year 5

Lower Key Stage 2	Upper Key Stage 2																																								
Pupils should be taught to: Year 3 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 Year 4 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	<table><tr><th colspan="5">Year 5 – Animals, including humans</th></tr><tr><th>Lesson Intention</th><th>National Curriculum Reference</th><th>Scientific Enquiry</th><th>Rocket Words</th><th>Resources</th></tr><tr><td>Identify the key stages of a mammal's life cycle</td><td>Describe the changes as humans develop to old age</td><td>Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</td><td>foetus dependent adolescent puberty reproduce</td><td><i>Scissors, handout (on thin card), pen and pencils, split pins</i></td></tr><tr><td>Explore the gestation periods of mammals</td><td>Describe the changes as humans develop to old age</td><td>Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations</td><td>gestation pregnant duration extreme breeding</td><td><i>Sticky notes, scissors, pens/pencils, computers/tablets for research</i></td></tr><tr><td>Learn about foetal development</td><td>Describe the changes as humans develop to old age</td><td>Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</td><td>womb umbilical chord embryo trimester midwife</td><td><i>Pencil, graph paper, ruler, coloured pencils</i></td></tr><tr><td>Investigate the hand span of different aged children</td><td>Describe the changes as humans develop to old age</td><td>Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</td><td>growth spurt childhood motor skills milk teeth constant</td><td><i>Ruler, tape measure, pens/pencils, paper</i></td></tr><tr><td>Learn about the changes experienced during puberty</td><td>Describe the changes as humans develop to old age</td><td>Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations</td><td>adolescence puberty hormones mood swing develop</td><td><i>Large paper/wallpaper, sticky tape, pens/pencils</i></td></tr><tr><td>Describe the changes humans may experience during adulthood and old age</td><td>Describe the changes as humans develop to old age</td><td>Identifying scientific evidence that has been used to support or refute ideas or arguments</td><td>lifestyle keratin elasticity cataracts neurodegenerative</td><td><i>Pens, pencils, computers/tablets</i></td></tr></table>	Year 5 – Animals, including humans					Lesson Intention	National Curriculum Reference	Scientific Enquiry	Rocket Words	Resources	Identify the key stages of a mammal's life cycle	Describe the changes as humans develop to old age	Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs	foetus dependent adolescent puberty reproduce	<i>Scissors, handout (on thin card), pen and pencils, split pins</i>	Explore the gestation periods of mammals	Describe the changes as humans develop to old age	Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations	gestation pregnant duration extreme breeding	<i>Sticky notes, scissors, pens/pencils, computers/tablets for research</i>	Learn about foetal development	Describe the changes as humans develop to old age	Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs	womb umbilical chord embryo trimester midwife	<i>Pencil, graph paper, ruler, coloured pencils</i>	Investigate the hand span of different aged children	Describe the changes as humans develop to old age	Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate	growth spurt childhood motor skills milk teeth constant	<i>Ruler, tape measure, pens/pencils, paper</i>	Learn about the changes experienced during puberty	Describe the changes as humans 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Plants – Year 3

Lower Key Stage 2

Upper Key Stage 2

Year 3 – Plants

Lesson Intention	National Curriculum Reference	Scientific Enquiry Covered	Rocket Words Covered	Resources Needed
Compare the effect of different factors on plant growth	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	Asking relevant questions and using different types of scientific enquiries to answer them Setting up simple practical enquiries, comparative and fair tests	thrive investigation prediction fertiliser nutrients	Several small flowering plants, such as bedding plants (pansies, nasturtiums, marigolds). Planting equipment, such as pots, a glass or plastic jar, water, soil and fertiliser.
Describe the functions of different parts of a flowering plant	Identify and describe the functions of different parts of a flowering plant	Making systematic and careful observations Reporting on findings from enquiries, including oral and written explanations	energy oxygen function photosynthesis carbon dioxide	Colouring pencils, onions and a glass of water.
Investigate the way in which water is transported within plants	Investigate the way in which water is transported within plants	Making systematic and careful observations	anchor tube absorb root hairs transpiration	Onion in a jar of water from the previous lesson. Celery in dyed water (prepared 2 days before), chopping boards and knives, magnifying glasses, pencils and the handout. Cut white flowers, a vase, water and dye.
Explore the part that flowers play in the life cycle of flowering plants	Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal	Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions	anther stigma stamen ovary reproduce	Plasticine and a white board. Optional: flowers for dissection (flowers such as lilies recommended).
Understand the pollination process and the ways in which seeds are dispersed	Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal	Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions	pollination pollen nectar seed dispersal pollinator	Equipment so pupils can create a class display.
Compare the effect of different factors on plant growth	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	Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions	conclusion observe diagram comparison vary	Plants from the experiment.

Topic not covered in upper key stage 2 – objective to be recapped and any holes or misconceptions rectified. Formally assess at the end of the unit.

Evolution and Inheritance – Year 6

Lower Key Stage 2	Upper Key Stage 2																																								
Topic only covered in year 6. Younger children to access activities where they can. No formal assessment for any year group but 6.	<table><tr><th colspan="5">Year 6 – Evolution and inheritance</th></tr><tr><th>Lesson Intention</th><th>National Curriculum Reference</th><th>Scientific Enquiry</th><th>Rocket Words</th><th>Resources</th></tr><tr><td>Understand how offspring vary and are not identical to their parents</td><td>Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents</td><td>Reporting and presenting findings from enquiries - including conclusions, causal relationships and explanations of and a degree of trust in results - in oral and written forms such as displays and other presentations</td><td>offspring characteristic inherit variation environmental</td><td><i>Class presentation, handout, pen</i></td></tr><tr><td>Learn about animal adaptations</td><td>Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution</td><td>Identifying scientific evidence that has been used to support or refute ideas or arguments</td><td>adaptation climate nutrition camouflage arid</td><td><i>Class presentation, handout and research tools such as books or the internet</i></td></tr><tr><td>Learn about plant adaptations</td><td>Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution</td><td>Reporting and presenting findings from enquiries - 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