



A member of
Bowes Cotherstone Federation



Science

Cotherstone Primary School

***'Do the research. Ask questions. Be curious' - Katherine Johnson,
Mathematician***

Rationale

Cotherstone Primary school's vision of science is to instil a life-long love of science and learning about our world and the universe in our pupils through high-quality science education that provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics.

We believe that it is essential to observe and question the world around us and this curiosity is modelled and encouraged continuously.

We provide the highest standard of scientific education built around scientific enquiry and working scientifically to enable children to acquire the skills, knowledge and concepts relevant to their future.

Where appropriate, links to local scientists, engineers and innovations are studied to further enhance children's pride and place in their community, local heritage and British values whilst looking outwards.

From EYFS to Year 6, pupils are encouraged to recognise the power of rational explanation and the importance of fair testing to ascertain proof of phenomena.

Children become excited about science and increasingly independent in devising, planning and carrying out investigations to test theories and hypotheses, to think scientifically and understand the applications and implications of science in the past, present and future.

At the end of our children's time in our school, children leave with the tools to identify the difference between fact and opinion and are able to make informed decisions about what they believe and know that they have the potential to change the world through scientific enquiry.

Rationale

By following the National Curriculum and beyond, relating science to various subjects and enhanced learning experiences, children are given a strong foundation of knowledge on which to build.

Science is taught on, at least, a weekly basis to all age groups in school. Learning is sequenced to build knowledge, skills and vocabulary. Scientific enquiry skills are embedded in all science topics and lessons are planned effectively which take children's prior learning and current assessment into account and are appropriately differentiated. Key concepts are revisited as children progress through the school enabling knowledge and skills to be built upon whilst giving time for the procedural knowledge required for scientific enquiry to be embedded into their long-term memory. A range of teaching styles, matched to children's needs means that all children develop and use a range of skills including: observing over time; pattern seeking; identifying, classifying and grouping; comparative and fair testing (controlled investigations); and researching using secondary sources to become independent learners. Children use specialist, scientific vocabulary which is modelled by well-informed staff across the curriculum – not just in science – to enable them to make links to other curriculum areas and the wider world. Effective monitoring of progress is used to extend children's scientific learning both within individual lessons and over time.

Rationale

Teachers plan interesting and exciting lessons that challenge all children to an appropriate level enabling all to access science and to make progress. We enrich our children's learning by organising relevant trips (such as meeting astronaut Michael Foale or trips to the Centre for Life), special events such as Space Camp and inviting visits from experts to enhance learning experiences and create memories and excitement around science for them to keep forever.

At Cotherstone we believe that outdoor learning provides a wide range of benefits to children's wellbeing and learning.

Outdoor learning is used throughout the school in science lessons to provide memorable learning experiences for our children whilst learning key mathematical topics. As research suggests [click here](#) children have increased motivation and happier whilst being outdoors. Outdoor learning in science lends itself to a wide range of activities to enhance the teaching and learning of our science topics. It also helps team work and resilience and lends itself to opportunities for cross-curricular learning and real-life maths.

Rationale

Children enjoy and are enthusiastic about science in our school. Through careful planning and delivery, children remember key facts and concepts while developing an ongoing interest in science. There is a clear progression of knowledge and skills in children's books and evidence of increased independence in science as they progress through the key stages. Children are inquisitive and ask their own questions about science and the world around them while at the same time questioning current thinking. They understand how the world has been shaped by scientific thought and actions throughout history and that fundamental ways of thinking about our world have changed and will continue to change with scientific progress. Children want to be a part of the process of shaping their world in the future.

By knowing our children well, children of all abilities are helped to achieve the very best of their potential and to:

- develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics
- develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them
- ensure they are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.

EYFS

Understanding the World: The Natural World

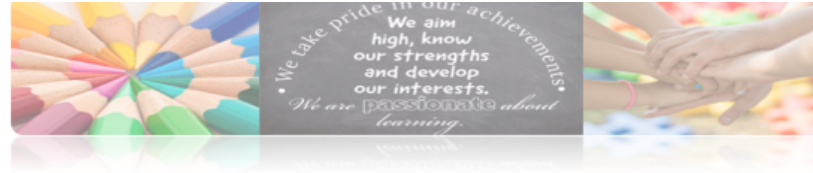
- Explore the natural world around them, making observations and drawing pictures of animals and plants
- Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class
- Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter

Communication and Language Listening, Attention and Understanding

- Make comments about what they have heard and ask questions to clarify their understanding

Long Term Plan- Year 1 and 2

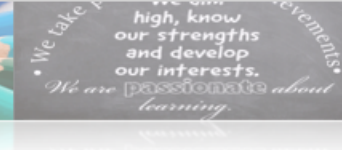
Science
Long Term Plan



	Autumn	Spring	Summer
Year 1 and 2 Cycle A	<p>Seasonal Changes Physics</p> <p>Why does the weather change during the different seasons? * 1/2 lessons per term Scientist: Dr Steve Lyons</p> <p>Everyday Materials Chemistry</p> <p>How are materials chosen in design? Scientist: Chester Greenwood-Earmuffs</p>	<p>Seasonal Changes Physics</p> <p>Why does the weather change during the different seasons? * 1/2 lessons per term Scientist: Holly Green (Meteorologist)</p> <p>Plants Biology</p> <p>How do seeds and bulbs grow into healthy plants? Scientist: Beatrix Potter Author & Botanist</p>	<p>Seasonal Changes Physics</p> <p>Why does the weather change during the different seasons? * 1/2 lessons per term</p> <p>Animals Including Humans Biology</p> <p>Why do we need to keep healthy? Scientist: Elizabeth Garrett Anderson - First British female physician and surgeon</p>
Year 1 and 2 Cycle B	<p>Seasonal Changes Physics</p> <p>Why does the weather change during the different seasons? * 1/2 lessons per term</p> <p>Uses of Everyday Materials Chemistry</p> <p>Why do we use different materials for different things? Scientist: Charles Macintosh-Waterproof material</p>	<p>Seasonal Changes Physics</p> <p>Why does the weather change during the different seasons? * 1/2 lessons per term</p> <p>Living Things and Their Habitats Biology</p> <p>How do we know something is alive?</p> <p>Plants Biology</p> <p>How can we identify different plants and trees?</p>	<p>Seasonal Changes Physics</p> <p>Why does the weather change during the different seasons? * 1/2 lessons per term</p> <p>Animals including humans Biology</p> <p>How can we group animals? Scientist: Chris Packham-Animal Conservationist</p>

Long Term Plan- Year 3 and 4

Science
Long Term Plan



<p>Year 3 and 4 Cycle A</p>	<p>Living Things and Their Habitats Biology</p> <p>How can the environment affect different groups of animals?</p> <p>Scientist: Cindy Looy Scientist: Jacques Cousteau</p>	<p>Sound Physics</p> <p>How does sound travel?</p> <p>Scientist: Alexander Graham Bell</p> <p>Animals Including Humans Biology</p> <p>How do the systems in our body work to make a healthy human?</p> <p>Scientist: Wilhelm Rontgen</p>	<p>States of Matter Chemistry</p> <p>How does temperature affect different materials?</p> <p>Scientist: Lord Kelvin - Absolute zero</p> <p>Electricity Physics</p> <p>How does electricity travel?</p> <p>Scientist: Michael Faraday</p>
<p>Year 3 and 4 Cycle B</p>	<p>Animals Including Humans Biology</p> <p>What happens to the food we eat?</p> <p>Scientist: Joseph Lister</p>	<p>Plants Biology</p> <p>How does each part of a plant fulfil its function?</p> <p>Scientist: Ahmed Mumin Warfa</p> <p>Rocks Chemistry</p> <p>How can we classify rocks?</p> <p>Scientist: Mary Anning</p>	<p>Magnets Physics</p> <p>How do magnets work?</p> <p>Scientist: Andre Marie Ampere</p> <p>Light Physics</p> <p>How does light travel?</p> <p>Scientist: Justus Von Liebig- Mirrors</p>

Long Term Plan- Year 5 and 6

Science
Long Term Plan



<p>Year 5 and 6 Cycle A</p>	<p>Living Things and Their Habitats (Biology) How can we classify living things into specific groups?</p> <p>Scientist: Carl Linnaeus</p> <p>Light (Physics) How do our eyes work?</p> <p>Scientist: Percy Shaw - The Cats Eye</p>	<p>Forces (Physics) How can we observe forces?</p> <p>Scientist: Isaac Newton Scientist: Galileo Galilei - Gravity and Acceleration</p>	<p>Properties and Changes of Materials (Chemistry) How do we separate materials?</p> <p>Scientist: Becky Schroeder - fluorescence material</p> <p>Animals Including Humans (Biology) How do an animal's living systems work together to maintain a healthy body?</p> <p>Scientist: Dr. Katherine Dobb - Expert in Cardiovascular Sciences</p>
<p>Year 5 and 6 Cycle B</p>	<p>Living Things and Their Habitats (Biology) How do different living things reproduce?</p> <p>Scientist: Dame Ann Maclaren</p> <p>Electricity (Physics) How can circuits vary?</p> <p>Scientist: Edith Clarke -Electrical engineer</p>	<p>Earth and Space (Physics) How does the Earth fit into our solar system?</p> <p>Scientists: Indigenous Australians Nicolaus Copernicus Galileo Galilei</p>	<p>Animals Including Humans (Biology) How do we change as we grow older?</p> <p>Evolution and Inheritance (Biology) How have living things evolved over time?</p> <p>Scientist: Professor Alice Roberts Charles Darwin</p>



KS1







Scientific Knowledge and Conceptual Understanding Progression

Progression of Knowledge and Skills - Biology

Biology Content

Y1 / 2

Animals including humans	Plants	Living things and their habitats	Evolution
<p>I can identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals.</p> <p>I can compare a variety of common animals including fish, amphibians, reptiles, birds and mammals.</p> <p>I can identify and name a variety of common animals that are carnivores, omnivores and herbivores.</p> <p>I can identify, name, draw and label the basic parts of the human body.</p> <p>I can identify which part of the body is associated with each sense.</p> <p>I can compare humans.</p>	<p>I can identify different plants.</p> <p>I can identify and describe the basic structure of plants.</p> <p>I understand that plants can grow.</p> <p>I can name a variety of common wild plants.</p> <p>I can sort a variety of plants.</p> <p>I can name a variety of common plants that we can eat.</p> <p>I can identify, name and describe the basic structure of deciduous and evergreen trees.</p>		

Progression of Knowledge and Skills – Biology

Y1 / 2

Animals including humans	Plants	Living things and their habitats	Evolution
<p>I can find out about and describe the basic needs of animals, including humans, for survival.</p> <p>I notice that animals, including humans have o spring which grow into adults.</p> <p>I can describe the importance for humans to exercise.</p> <p>I can describe the importance for humans to eat the right amounts of different types of food.</p> <p>I can describe the importance for humans to have good hygiene.</p> <p>I can describe the importance for humans to look after themselves.</p>	<p>I can identify that fruit, vegetables and herbs are types of plant that we eat.</p> <p>I can observe and describe how seeds grow into mature plants.</p> <p>I know what plants need to grow and stay healthy.</p> <p>I can explain the life cycle of plants.</p>	<p>I can explore and compare the differences between things that are living, dead, and things that have never been alive.</p> <p>I can identify and name a variety of plants and animals in their habitats, including microhabitats.</p> <p>I can identify and name a variety of plants and animals in their habitats.</p> <p>I can identify that most living things live in a habitat to which they are suited.</p> <p>I can construct a simple food chain.</p>	

Progression of Knowledge and Skills – Biology

Y3/4

Animals including humans	Plants	Living things and their habitats	Evolution
<p>I can identify that humans have bones for support, protection and movement.</p> <p>I can identify that some other animals have bones for support, protection and movement.</p> <p>I understand that animals, including humans, need the right type of nutrition.</p>	<p>I can explore the requirements of plants for life and growth.</p> <p>I can identify, locate and describe the function of different parts of flowering plants.</p> <p>I can identify, locate and describe the function of the roots in plants.</p> <p>I can investigate the way in which water is transported within plants.</p> <p>I can explore the part that flowers play in the life cycle of flowering plants, including pollination.</p> <p>I can explore the part that flowers play in the life cycle of flowering plants, including seed formation and seed dispersal.</p>		

Progression of Knowledge and Skills - Biology

Y3/4

Animals including humans	Plants	Living things and their habitats	Evolution
<p>I can name the basic parts of the digestive system and describe their functions.</p> <p>I can identify the different teeth and describe their functions.</p> <p>I can construct and interpret a variety of food chains.</p> <p>I understand what producers, predators and prey are.</p>		<p>I can recognise that living things can be grouped in a variety of ways.</p> <p>I can explore and use classification keys to help group, identify and name a variety of living things in my local environment.</p> <p>I can recognise that environments can change and that this can sometimes pose dangers to living things.</p>	

Progression of Knowledge and Skills – Biology

Y5/6

Animals including humans	Plants	Living things and their habitats	Evolution
<p>I can describe the human life cycle.</p> <p>I understand how a foetus develops in the womb.</p> <p>I can describe what happens when I am a teenager.</p> <p>I can describe what happens when I am a senior.</p>		<p>I can discuss the seven life processes.</p> <p>I can explain how mammals reproduce.</p> <p>I can explain how animals reproduce.</p> <p>I understand reproduction in plants.</p> <p>I can describe the differences in the life cycles of mammals, amphibians, reptiles, insects and birds.</p> <p>I can explain the life cycle of plants.</p>	

Progression of Knowledge and Skills - Biology

Y5/6

Animals including humans	Plants	Living things and their habitats	Evolution
<p>I can identify and name the main parts of the human circulatory system.</p> <p>I can identify and name the main parts of the heart.</p> <p>I can describe how water and nutrients are transported in humans.</p> <p>I can identify how humans can live a healthy lifestyle.</p>		<p>I can describe how living things can be classified into broad groups.</p> <p>I understand how I can use classification keys to help group, identify and name a variety of living things.</p> <p>I can describe how living things can be classified into broad groups.</p> <p>I understand that microorganisms are also living things.</p> <p>I can describe how living things can be classified into broad groups.</p> <p>I know that scientists have developed different ways to classify living things.</p>	<p>I can identify how plants are adapted to their environment.</p> <p>I can identify how animals are adapted to their environment.</p> <p>I can explain natural selection and how it may lead to evolution.</p> <p>I can explain how adaptations may lead to evolution.</p> <p>I can recognise that living things produce o spring of the same kind, but normally o spring vary and are not identical to their parents.</p> <p>I can recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.</p>

Progression of Knowledge and Skills - Chemistry

Chemistry Content

Y1/2

Materials	Rocks	States of matter
<p>I can identify a variety of everyday materials.</p> <p>I can describe the physical properties of a variety of everyday materials.</p> <p>I can distinguish between an object and the material from which it is made.</p> <p>I can compare and group together a variety of everyday materials on the basis of their simple physical properties.</p>		

Y1/2

Materials	Rocks	States of matter
<p>I can identify a variety of everyday materials.</p> <p>I can distinguish between an object and the material it is made from.</p> <p>I can investigate the properties of different materials.</p>		

Progression of Knowledge and Skills – Chemistry

Y3/4

Materials	Rocks	States of matter
	<p>I can compare and group together different kinds of rocks on the basis of their appearance.</p> <p>I can compare and group together different kinds of rocks on the basis of their physical properties.</p> <p>I can explain how some rocks are formed.</p> <p>I can explain how the Earth is made up of different layers of rocks and soils</p> <p>I can describe how fossils are formed when things that have lived are trapped within rock.</p>	

Progression of Knowledge and Skills - Chemistry

Y 3/4

Materials	Rocks	States of matter
		<p>I can identify solids, liquids and gases.</p> <p>I can take accurate measurements using thermometers.</p> <p>I can observe that some materials change state when they are heated or cooled.</p> <p>I can identify the part played by evaporation and condensation in the water cycle.</p> <p>I can associate the rate of evaporation with temperature.</p>

Progression of Knowledge and Skills – Chemistry

Y5/6

Materials	Rocks	States of matter
<p>I can compare and group materials according to whether they are solids, liquids or gases and name their properties.</p> <p>I can describe the properties of materials using scientific vocabulary.</p> <p>I can investigate the thermal insulation of different materials.</p> <p>I can compare and group materials based on their response to magnets.</p> <p>I know that some materials dissolve in a liquid to make a solution.</p> <p>I can predict how I could separate mixtures.</p> <p>I can explain why some changes are irreversible.</p>		

Progression of Knowledge and Skills - Physics

Physics Content

Y1/2

Forces and magnets	Seasonal change	Earth and space	Electricity	Sound	Light
	<p>I can observe and describe changes across the four seasons.</p> <p>I can observe how day length varies.</p> <p>I can describe weather associated with the seasons.</p>				

Progression of Knowledge and Skills - Physics

Y3/4

Forces and magnets	Seasonal change	Earth and space	Electricity	Sound	Light
<p>I can compare how different</p> <p>I can explore how magnetic forces act at a distance.</p> <p>I can compare and group various everyday materials based on whether they are attracted to a magnet.</p> <p>I can predict whether two magnets will attract or repel each other, depending on which poles are facing.</p> <p>I can record my findings using simple scientific vocabulary.</p>					<p>I can recognise that there needs to be light in order to see things and that darkness is the absence of light</p> <p>I can notice that light is reflected from surfaces.</p> <p>I can recognise that light from the Sun can be dangerous and that there are ways to protect your eyes and skin from the Sun.</p> <p>I can recognise that shadows are formed when light from a light source is blocked by an opaque object.</p> <p>I know that shadows take on the shape of the opaque object.</p> <p>I can predict where a shadow will form in relation to an opaque object and a light source.</p> <p>I can find patterns in the way that the length of shadows <u>change</u>.</p>

Progression of Knowledge and Skills - Physics

Y3/4

Forces and magnets	Seasonal change	Earth and space	Electricity	Sound	Light
			<p>I can identify common appliances that use electricity. I can construct a simple circuit and name the parts of the circuit.</p> <p>I can identify if a bulb will light up in a circuit.</p> <p>I can recognise common conductors and insulators.</p> <p>I can investigate switches.</p>	<p>I can identify how sounds are made, associating some of them with something vibrating.</p> <p>I can recognise that vibrations from sounds travel through a medium to the ear.</p> <p>I can find patterns between the pitch of a sound and features of the object that produced it.</p> <p>I can find patterns between the volume of a sound and the strength of the vibrations that produced it.</p>	

Progression of Knowledge and Skills – Physics

Y5/6

Forces and magnets	Seasonal change	Earth and space	Electricity	Sound	Light
<p>I can explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and falling objects.</p> <p>I can identify the effect of friction between moving surfaces.</p> <p>I can identify the effect of air resistance.</p> <p>I can identify the effect of water resistance.</p> <p>I can recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect.</p>		<p>I can describe the planets in the solar system.</p> <p>I can describe the Sun, Earth and Moon as approximately spherical bodies.</p> <p>I can describe the movement of the Earth, and other planets, relative to the Sun in the solar system.</p> <p>I can describe the movement of the Moon relative to the Earth.</p> <p>I can use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.</p> <p>I can describe the movement of the Moon relative to the Earth.</p>			

Progression of Knowledge and Skills - Physics

Y5/6

Forces and magnets	Seasonal change	Earth and space	Electricity	Sound	Light
			<p>I can use symbols when drawing a simple circuit diagram.</p> <p>I can associate the brightness of a lamp with the number and voltage of cells used in the circuit.</p> <p>I can investigate variations in how components function.</p> <p>I can name renewable and non-renewable sources of energy.</p>		<p>I can recognise that light appears to travel in straight lines.</p> <p>I can 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.</p> <p>I can explain how the eye works.</p> <p>I can use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.</p> <p>I can explain how shadows change during the day.</p>

Working Scientifically Progression

KS1

Y1

asking simple questions and recognising that they can be answered in different ways;	observing closely , using simple equipment ;	performing simple tests ;	identifying and classifying ;	using their observations and ideas to suggest answers to questions;	gathering and recording data to help in answering questions.
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Y2

asking simple questions and recognising that they can be answered in different ways;	observing closely , using simple equipment ;	performing simple tests ;	identifying and classifying ;	using their observations and ideas to suggest answers to questions;	gathering and recording data to help in answering questions.
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LKS2

Y3

asking relevant questions and using different types of scientific enquiries to answer them;	setting up simple practical enquiries, comparative and fair tests ;	making systematic and careful observations and, where appropriate, taking accurate measurements using standard units , using a range of equipment , including thermometers and data loggers ;	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 ;	reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions;	using results to draw simple conclusions , make predictions for new values, suggest improvements and raise further questions ;	identifying differences, similarities or changes related to simple scientific ideas and processes;	using straightforward scientific evidence to answer questions or to support their findings.
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Y4

asking relevant questions and using different types of scientific enquiries to answer them;	setting up simple practical enquiries, comparative and fair tests ;	making systematic and careful observations and, where appropriate, taking accurate measurements using standard units , using a range of equipment , including thermometers and data loggers ;	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 ;	reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions;	using results to draw simple conclusions , make predictions for new values, suggest improvements and raise further questions ;	identifying differences, similarities or changes related to simple scientific ideas and processes;	using straightforward scientific evidence to answer questions or to support their findings.
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UKS2

Y5

planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary;	taking measurements , using a range of scientific equipment , with increasing accuracy and precision, taking repeat readings when appropriate;	recording data and results of increasing complexity using scientific diagrams and labels , classification keys , tables , scatter graphs , bar and line graphs ;	using test results to make predictions to set up further comparative and fair tests;	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;	identifying scientific evidence that has been used to support or refute ideas or arguments.
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Y6

planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary;	taking measurements , using a range of scientific equipment , with increasing accuracy and precision, taking repeat readings when appropriate;	recording data and results of increasing complexity using scientific diagrams and labels , classification keys , tables , scatter graphs , bar and line graphs ;	using test results to make predictions to set up further comparative and fair tests;	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;	identifying scientific evidence that has been used to support or refute ideas or arguments.
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Vocabulary Progression

Biology- Animals Including Humans

KS1

animal – a living thing

herbivore – an animal that just eats plants

carnivore – an animal that just eats meat

omnivore – an animal that eats both plants and animals

mammal – a type of animal that has hair on its body and drinks milk

bird – a type of animal with feathers, wings and a beak

fish – a type of animal with scales, fins and lives in water

reptile – a type of animal with scales that lives on land

amphibian – a type of animal that is born in water but then develops lungs and lives on land

basic needs – the things humans need to survive

diet – the food we eat

exercise – moving our bodies

hygiene - keeping clean

illness – when we do not feel well/ feel sick/ have a disease

medicine – something we might take to feel better

offspring – the babies of an animal

seven basic needs – movement, respiration, sensitivity, growth, reproduction, excretion and nutrition

survive – to live

LKS2

nutrition – food or nourishment

skeleton – the framework of bones that supports the body of an animal

muscles – a bundle of tissue in the body of an animal that can contract enabling movement

healthy – good for your health

unhealthy – not good for your health

diet – the food that an animal eats

bones – a solid part of the skeleton

vertebrate – an animal with a backbone (spine)

invertebrate - an animal without a backbone (spine)

Canines – ripping teeth

Carnivore – animals that only eat other animals

Digestion – the process of breaking down food into simple chemicals for the body to absorb

Herbivore – animals that only eat plants

Incisor – cutting teeth

Large intestines – where water is absorbed into the blood

Molars – grinding teeth

Oesophagus – food and water pipe

Omnivore – animals that eat both plants and animals

Peristalsis – muscular action to move food along the digestive tubes

Predator – an animal that hunts, kills and eats other animals for food
Prey – a term used to describe organisms that predators kill for food
Producer – a plant in a food chain

Saliva – a lubricating digestive juice produced in the mouth

Small intestines – where food is broken down and nutrients are absorbed into the blood

Stomach – a rounded vessel in the body where acid and digestive juices break down food

UKS2

birth – when your life starts as a physically separate being

conception/fertilisation – when the egg and the sperm meet to begin the development of a foetus

death – when the life cycle ends

develop – to grow to become more mature or advanced

egg – the female sex cell

foetus – a baby that is still developing in the womb

puberty – a time in the human life cycle when the body goes through changes to become an adult

sperm – the male sex cell

womb – an organ in which the foetus grows and develops

heart – a muscle that pumps blood around the body

lungs – spongy air filled organs that provide oxygen to the blood

blood – a liquid that carries oxygen, water and nutrients around the body

veins – carry deoxygenated blood to the heart

arteries – carry oxygenated blood away from the heart

heart rate – the number of times our heart beats per minute

Vocabulary Progression

Biology- Plants

KS1

plant – a living organism

tree – a woody plant

deciduous – a tree that loses its leaves annually

evergreen – a tree the does not lose its leaves

flower – the seed bearing part of a plant that is usually surrounded by brightly coloured petals

roots – the part of the plant that attaches into the ground for support and nutrient collection

stem – the main stalk of a plant

leaf – part of a plant that is typically flat and hangs o the stem

seed – a small part of a plant that can grow another plant

bulb – a fleshy base of a plant that can grow another plant

LKS2

plant – a living organism

tree – a woody plant

flower – the seed bearing part of a plant that is usually surrounded by brightly coloured petals

roots – the part of the plant that attaches into the ground for support and nutrient collection

stem – the main stalk of a plant

leaf – part of a plant that is typically flat and hangs o the stem

seed – a small part of a plant that can grow another plant

bulb – a fleshy base of a plant that can grow another plant

nutrients – something that provides nourishment to a living thing

pollination – the transfer of pollen to allow fertilisation

formation – to create

dispersal – to distribute or spread over a wide area

UKS2

N/A

Vocabulary Progression

Biology- Living things and their Habitats

KS1

alive – something that is living

dead – something that was living but is not anymore

living – something that is alive

habitat – the place in which a living thing lives

microhabitat – a small habitat

conditions – the state of something

adapted – how something is adjusted

food chain – a series of living things that feed from each other

omnivore – an animal that eats both plants and meat

herbivore – an animal that just eats plants

carnivore – an animal that just eats meat

LKS2

environment – the conditions (both living and non-living) that surround an organism

classify – to arrange a group of people or things in classes or categories according to shared qualities or characteristics

vertebrate – an animal that has a backbone

invertebrate – an animal without a backbone

exoskeleton – a rigid external covering for the body in some invertebrate animals

key – a questioning device that allows the progressive narrowing down of the classification of an unknown living thing based on observable or testable features

adaptation – the way in which an organism is particularly suited to its environment

pollution – the introduction into the environment of a substance which has harmful effects

UKS2

fertilisation – the point at which the sperm from the pollen meets the egg in the ovary

pollination – the process by which the pollen reaches the stigma

pollen – granule that delivers the male genetic material to the female seed

stamen – the male part of the flower, comprising of the anther and filament

pistil – the female part of the flower consisting of the stigma, style and ovary

seed dispersal – the method used by a plant to spread out its seeds (usually by wind, water or animals)

reproduction – the combining of genetic material from two individuals to produce new life

classify – to arrange a group of people or things in classes or categories according to shared qualities or characteristics

vertebrate – an animal that has a backbone

invertebrate – an animal without a backbone

exoskeleton – a rigid external covering for the body in some invertebrate animals

vascular – plants that use roots and stems to take in water and nutrients

non-vascular – plants that do not use roots and stems to take in water and nutrients

taxonomy – the scientific process of grouping or classifying living organisms

Also explain the terms; herbivore, carnivore, omnivore; the five main animal classification groups (mammals, birds, fish, reptiles and amphibians) and the five main microorganism groups (bacteria, viruses, protozoa, algae and fungi).

Vocabulary Progression

Biology- Evolution

KS1
N/A

LKS2
N/A

UKS2

Adaptation: When a plant or animal has changed in some way, usually over a long period of time, to be better suited to the environment in which they live.

Environment: the conditions that surround an organism.

Evolution: the process by which different kinds of living organisms are believed to have developed from earlier forms during the history of the Earth.

Gene: A unit of heredity which is transferred from a parent to offspring and is held to determine some characteristics of the offspring.

Natural selection: When the fittest, most adapted organisms survive and multiply whilst the least adapted die out.

Inheritance: the reception of genetic qualities by transmission from parent to offspring.

Organism: an individual animal, plant or single-celled life form.

Species: a group of similar organisms that are able to reproduce

Vocabulary Progression

Chemistry- Materials

KS1

Types of material such as: wood, metal, plastic, glass, rubber, rock, fabric, paper and brick

Words to describe materials such as: hard, soft, rough, bumpy, smooth, fragile, strong, heavy, light

LKS2

N/A

UKS2

soluble - a substance that will dissolve in water

insoluble - a substance that will not dissolve in water

saturation - the point at which no more solute can be dissolved

solution - a soluble solid is dissolved in liquid to form a solution

filtration - the collection of larger particles in a mixture

boiling - the process by which molecules of a liquid change to vapour (much faster change than evaporation)

condensing - the change of vapour into a liquid

evaporation - change from a liquid to a vapour

freezing - the change of a liquid to a solid

melting point - the point at which a solid substance liquefies

chemical change - one where the molecular structures of the combined substances are broken down and recombined to make a new substance

physical change - where the molecular structures of the combined substance stay separate, allowing separation to occur

reversible change - a physical change that we can undo

irreversible change - a physical change that we cannot undo

Vocabulary Progression

Chemistry- Rocks

KS1
N/A

LKS2

rock – a solid material that makes up the surface of the Earth
soil – a black or dark brown material on the upper layer of the Earth where plants grow
fossil – the remains of a prehistoric animal embedded in rock
appearance – what something looks like
physical properties – a characteristic of an object

UKS2

Vocabulary Progression

Chemistry- States of Matter

KS1
N/A

LKS2

change - to make different

collection - when water flows back into rivers, streams and lakes and gets carried back to sea

condensation - when water vapour cools and turns back into water

evaporation - when water is heated and turns into water vapour

freeze - when something is put at a very low temperature

gas - a state of matter that has no defined shape or volume

heat - when something is put at a hot temperature

liquid - a state of matter that flows freely but keeps the same volume

precipitation - when water falls from the clouds in the sky

property - a characteristic

solid - a state of matter that is firm and stable

temperature - how hot or cold something is

thermometer - an instrument used for measuring temperature

UKS2

soluble - a substance that will dissolve in water

insoluble - a substance that will not dissolve in water

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Vocabulary Progression

Physics – Seasonal Changes

KS1

spring – the season in which plants begin to grow

summer – the warmest season of the year

autumn – the season in which some trees lose their leaves

winter – the coldest season of the year

rain – when water falls from the clouds

sun – the bright sphere in the sky that provides light and warmth

change – when something is different

LKS2

N/A

UKS2

N/A

Vocabulary Progression

Physics – Electricity

KS1
N/A

LKS2

appliance – a device or piece of equipment that has been made to perform a specific task

battery – a small item used to power small appliances

circuit – a route through which electricity flows

components – the parts of a circuit

conductor – allows electricity to flow through it

current – the rate of flow of electricity measured in amps

electrical – something that uses electricity to work

insulator – doesn't allow electricity to flow through it

mains power – electricity provided by power stations

portable – can be easily carried around

pylon – a tower used for keeping electrical wires above the ground

switch – a device for controlling the flow of electricity in a circuit

UKS2

appliance – a device or piece of equipment that has been made to perform a specific task

battery – a small item used to power small appliances

circuit – a route through which electricity flows

components – the parts of a circuit

conductor – allows electricity to flow through it

electrical – something that uses electricity to work

insulator – doesn't allow electricity to flow through it

mains power – electricity provided by power stations

pylon – a tower used for keeping electrical wires above the ground

renewable energy – energy from a source that is not depleted when used, such as wind or solar power

non-renewable energy – energy from a source that is depleted when used, such as coal, gas and oil

Vocabulary Progression

Physics - Light

KS1
N/A

LKS2

light source - something that emits light

dark - the absence of light

reflect - a surface (or body) that throws back light without absorbing it

shadow - an area where direct light from a light source cannot reach due to obstruction by an object

opaque - opaque materials do not let any light pass through them. They block the light

translucent - translucent materials let some light through, but scatter the light in all directions so that they cannot see clearly through them

transparent - transparent materials let light pass through them in straight lines so that you can see clearly through them

luminous - giving off light, bright or shining

UKS2

dark – the absence of light

reflect – a surface (or body) that throws back light without absorbing it

shadow – an area where direct light from a light source cannot reach due to obstruction by an object

opaque – opaque materials do not let any light pass through them. They block the light.

translucent – translucent materials let some light through, but scatter the light in all directions so that they cannot see clearly through them

transparent – transparent materials let light pass through them in straight lines so that you can see clearly through them

luminous – giving off light, bright or shining

scattering – when light is returned from a surface

absorption – when light strikes a surface and is retained within it.

refraction – the “bending” of light when it passes from one transparent material to another.

Vocabulary Progression

Physics - Sound

KS1
N/A

LKS2

vibrate/vibrations - forward and backward movement of an object (usually rapidly).

volume - how loud or quiet a sound is.

pitch - how high or low a sound is.

pinna - the outer portion of the ear (ear flap).

cochlea - the sound reception part of the inner ear.

ear drum - the membrane which collects sound from the pinna and passes it to the inner ear.

UKS2
N/A

Vocabulary Progression

Physics – Earth and Space

KS1
N/A

LKS2
N/A

UKS2

Orbit – the rotation that one body in space takes around another when under gravitational influence.

Axis – an imaginary line going through a central body. Most bodies in space rotate around the axis.

Day – length of time the Earth takes to rotate on its axis once.

Month – the length of time the Moon takes to complete one orbit around the Earth (not exactly equal to a calendar month).

Planet – a non-luminous body that orbits a star

Solar system – the name given to the Sun and all the bodies orbiting around it.

Year – the period the Earth takes to complete one orbit of the Sun.

Gravity – the force of attraction between two masses.

Vocabulary Progression

Physics – Forces and Magnets

KS1
N/A

LKS2

force – a push, pull, twist or turn caused when two objects interact with each other

magnet – an object or device that attracts iron or another magnetic material

contact – touching

non-contact – not touching

attract – pull towards

repel – push away

magnetic – attracted to a magnet

non-magnetic – not attracted to a magnet

iron – a metal that can be made into a magnet

UKS2

Force – a push or pull that acts upon an object that can cause it to move, change shape or change direction.

Friction – the force that acts upon one surface when it moves against another.

Gravity – a pull force that acts at a distance.

Pull – to move something towards .

Push – to move something away.

Repel – to push away.

Resistance – an opposing or slowing force.

Drag – the frictional force experienced by an object moving through a fluid or air.

Streamlined – a shape which minimises the profile presented by an object in order to minimise the resistance it encounters when moving through a liquid or gas.

Upthrust or buoyancy – the upward force exerted on a body by a fluid that surrounds it, equal and opposite to the weight of the water displaced.

Newton (N) – the unit used to measure force.

Gear – two wheels with serrated or notched rims that mesh together to transfer movement.

Lever – usually a rigid bar with a pivot point close to one end, allowing movement at one end of the lever to be converted into a smaller movement at the other, which effectively magnifies the force applied.

Pulley – a wheel with a grooved rim that allows the transfer of movement via a belt or band.