Science Matrices Years 1 - 6

Fossebrook Primary School
Together we rise

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Fossebrook Science Curriculum

Our young scientists will acquire life-long enquiry science skills, in order to explore and understand the world they live in, alongside the vast knowledge of the disciplines of biology, physics and chemistry. They will also develop an understanding of the vital role that major scientific ideas and scientists have played in society. In doing so, our children, regardless of their starting points, will be fully prepared for their next stage of science education, and beyond. Science is taught within our topic and in some places, discretely, with a focus on substantive knowledge-rich content and the development of essential disciplinary knowledge. The National Curriculum programmes of study and Early Years Foundation Stage framework are fully adhered to and then supplemented with additional knowledge-rich content. This provides a coherent science curriculum that both prepares children well for future learning and gives them the tools to independently investigate and explore the world further. The science curriculum encourages children to be curious about natural events and to be excited by the process of understanding the world around them. We want our children to remember the concepts they learn. Therefore, the curriculum focuses on the sequential development of essential substantive knowledge underpinning biology, chemistry, and physics, as per the science progression map below. Over time, these building blocks of component learning link their understanding to the real world. Each year group deepens their understanding of key concepts, adding new generative knowledge to existing schema. For example, the biology strand of 'plants' is revisited multiple times throughout the year groups, with the component learning of basic plant structure in Year 1 transforming into the composite learning of water transportation within plants in Year 3. Procedures and concepts that underpin scientific methods are developed through the systematic focus on disciplinary knowledge. Each Topic has opportunities to develop the Working Scientifically skills of asking questions, planning enquiries, observing, measuring, recording, presenting and interpreting results, drawing conclusions, predicting and evaluating, according to the progression in these skills as per the science progression map. Thus, essential science concepts are developed whilst children investigate the world around them. The different approaches to science enquiry, such as fair testing, research and classifying are also systematically developed in the disciplinary knowledge section of the progression map.

Science Curriculum Intent

At Fossebrook Primary School, we recognise the importance of Science in every aspect of daily life. As one of the core subjects taught in Primary Schools, we give the teaching and learning of Science the prominence it requires. The National Curriculum will provide a structure and skill development for the science curriculum being taught throughout the school, which is now linked, where possible to the theme topics to provide a creative scheme of work, which reflects a balanced programme of study. Science teaching at Fossebrook Primary School aims to give all children a strong understanding of the world around them whilst acquiring specific skills and knowledge to help them to think scientifically, to gain an understanding of scientific processes and also an understanding of the uses and implications of Science, today and for the future. It will develop the natural curiosity of the child, encourage respect for living organisms and the physical environment and provide opportunities for critical evaluation of evidence.

At Fossebrook, scientific enquiry skills are embedded in each topic the children study and these topics are revisited and developed throughout their time at school. Topics, such as Animals (including humans), are taught at the beginning of Key Stage One and are revisited every year, building on and developing further during Key Stage Two. This model allows children to build upon their prior knowledge and increases their enthusiasm for the topics whilst embedding this procedural knowledge into the long-term memory. Children are supported to develop and use a range of skills including observations, planning and investigations, as well as being encouraged to question the world around them and become independent learners in exploring possible answers for their scientific based questions. Specialist vocabulary for topics is taught and built up, and effective questioning to communicate ideas is encouraged. Concepts taught should be reinforced by focusing on the key features of scientific enquiry, so that pupils learn to use a variety of approaches to answer relevant scientific questions.

Science Curriculum Implementation

In ensuring high standards of teaching and learning in science, we implement a curriculum that is progressive throughout the whole school. Planning for science is a process in which all teachers are involved to ensure that the school gives full coverage of The National Curriculum programmes of study for Science 2014' and, 'Understanding of the World' in the Early Years Foundation Stage. Science teaching at Fossebrook Primary School involves adapting and extending the curriculum to match all pupils' needs. Where possible, Science is linked to class topics however science is also taught as discrete units and lessons and our Science Curriculum Focus weeks to ensure full curriculum coverage.

Science Curriculum Impact

At Fossebrook, pupil voice shows that pupils are confident and able to talk about what they have learnt in Science using subject specific vocabulary. Pupil voice also demonstrates that pupils enjoy Science and are able to recall their learning over time. Pupils work demonstrates that Science is taught at an age-appropriate standard across each year group with opportunities planned in for pupils working at greater depth. Work is of good quality and demonstrates pupils are acquiring knowledge, skills and vocabulary in an appropriate sequence.

Substantive Knowledge

Substantive knowledge sets out the subject-specific content that is to be learned - i.e. the National Curriculum units that can be separated into the disciplines of biology, physics and chemistry. This is the knowledge of the products of science, such as concepts, laws, theories and models. The progression map below, separated into biology, chemistry and physics, sequences the substantive knowledge, from Reception to Year 6, drawing directly from the EYFS framework and National Curriculum.

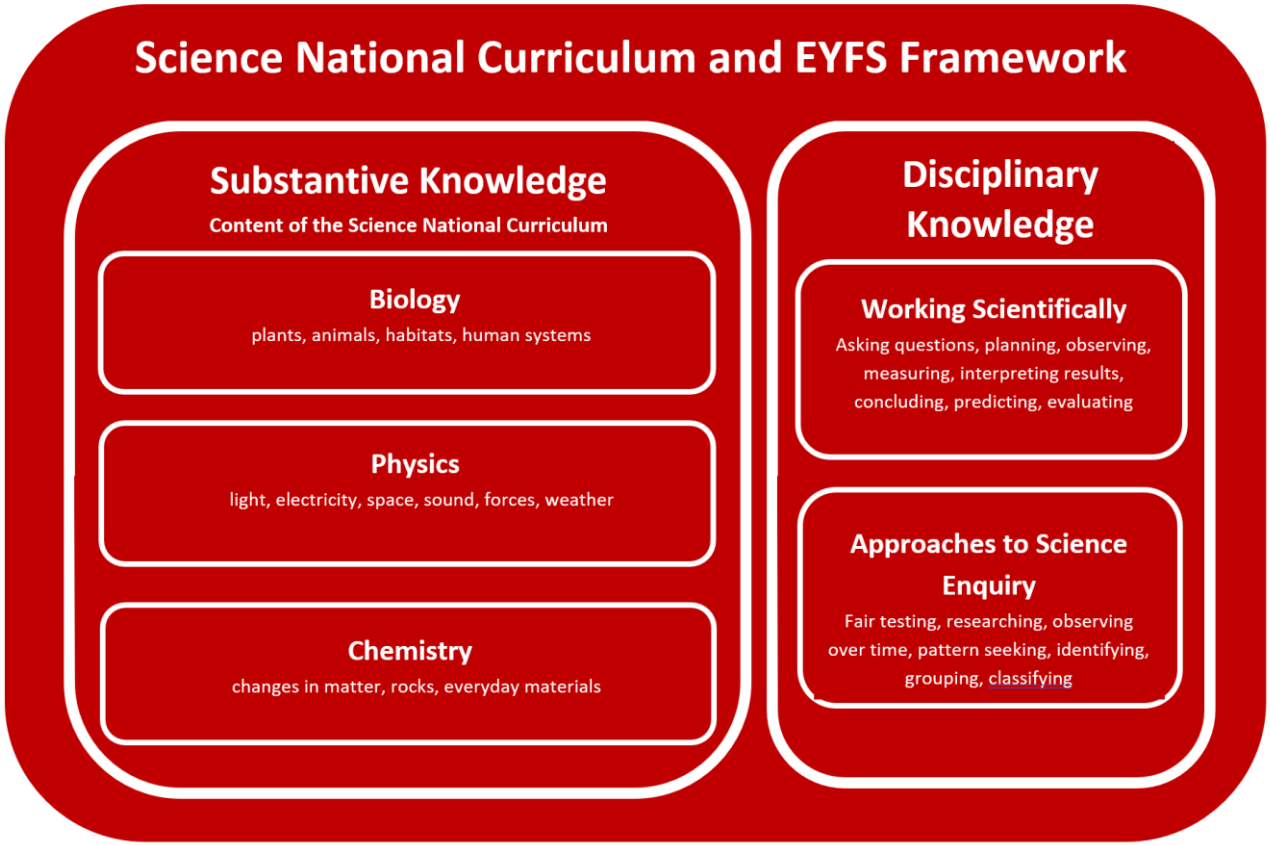
Disciplinary knowledge considers how substantive knowledge originates, is debated and is revised - i.e. how we create, contest and evaluate substantive knowledge over time. Disciplinary knowledge tells us how we know what we know; it is through disciplinary knowledge that pupils learn the enquiry practices of science. It gives an insight into the ways that scientists think - how they ask questions, plan an enquiry, observe, measure, interpret, conclude, predict and evaluate. Disciplinary knowledge enables one to 'think like a scientist'. Disciplinary knowledge in science includes the Working Scientifically strand of the National Curriculum, and the key features of scientific enquiry as detailed in the 'aims' of the National Curriculum. Essentially, Working Scientifically skills and knowledge of approaches to science enquiry are distinct yet connected, and a particular lesson or sequence of learning is likely to incorporate elements of both.

The **Working Scientifically** strand of the National Curriculum includes:

I. Asking Questions that are the starting points for different types of science enquiry.
II. Planning Enquiries that systematically require more independent decision making.
III. Observing Closely and communicating these observations via increasingly more elaborate diagrams.
IV. Taking Measurements according to relevant age-related strands of the mathematics National Curriculum.
V. Recording Results appropriately, using a variety of tables, tally charts and pictures.
VI. Presenting Results in a range of ways, including age-appropriate charts and graphs.
VII. Interpreting Results by spotting patterns and describing relationships.
VIII. Drawing Conclusions and presenting them orally and in writing.
IX. Making Predictions about further results or investigations, by drawing on what has been learnt.
X. Evaluating Enquiries by suggesting improvements and discussing the degree of trust in secondary sources and their results

As well as the Working Scientifically skills as detailed in (I) to (X) above, disciplinary knowledge in science also consists of the different approaches that scientists employ in scientific enquiry, in order to answer relevant scientific questions. These are noted in the 'aims' of the National Curriculum, and include:
I. Observing over time, over a range of different spans of time - in the moment and over a longer period of days, weeks or months.
II. Pattern seeking, including the use of scatter graphs in UKS2.
III. Identifying, classifying and grouping, by working with Venn diagrams, Carrol diagrams and branching databases.
IV. Comparative and fair testing (controlled investigations), by controlling variables, presenting data in graphs and describing causal relationships.
V. Researching using secondary sources, presenting what is found and using it to answer enquiry questions.

Acquiring disciplinary knowledge is an important curriculum goal and occurs alongside substantive knowledge development. The science enquiries integrate both forms of knowledge. Disciplinary knowledge is introduced, developed and mastered alongside the substantive content of biology, physics and chemistry.



- Fingertip knowledge is the knowledge of the key facts and information which pupils need in their minds, or at their fingertips, whilst undertaking Scientific enquiries, without which they would be incapable of constructing answers. Without essential fingertip knowledge, working memory is overloaded when undertaking enquiries, and it is thus useful to have this fingertip knowledge in knowledge organisers. Fingertip knowledge must be taught, and pupils must retain it during their enquiry. However, gaining this type of knowledge is not the ultimate long-term aim of the primary classroom, and it may not be needed beyond the current topic.

Adapting the curriculum for pupils with SEND in Science

- Adaptive teaching takes place.
- For sensory or physically impaired pupils, Science learning may necessitate enlarging texts, using clear fonts, using visual overlays, or audio description of images.
- Dyslexic pupils may benefit from well-spaced print.
- Teachers identify and break down the components of the subject curriculum into manageable chunks for pupils who find learning more difficult, particularly those with cognition and learning needs. These may be smaller 'steps' than those taken by other pupils to avoid overloading the working memory.
- A variety of additional scaffolds may be used in lessons, such vocabulary banks, additional visual stimuli, or adult support.

National Curriculum Overview in line with Redlands' Curriculum

Term	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Working Scientifically	Working Scientifically	Working Scientifically	Working Scientifically	Working Scientifically	Working Scientifically
Autumn 1	**Animals, including humans** **Focusing on Humans**		**Light** The need for light to see. How shadows are formed and how they can change size.	**States of matter** Solids, Liquids, gases Changing state, Evaporation/condensation	**Earth and Space** Movement of Earth, planets &moon. Night and day	**Light** line of sight, Refraction, shadows and shapes
Autumn 2	**Animals, including humans** **Focusing on Animals**	**Uses of everyday materials** Uses of materials Changing the shape of materials	**Forces and magnets** Compare different surfaces. Magnets	**Living things and their habitats** Group living things using classification keys. Changes in the environment that can threaten life	**Living things and their habitats** Animal life cycles. Reproduction in plants and animals **Animals, including humans** How humans change with age	**Electricity** brightness of lamp, volume of buzzer. symbols circuit diagrams.
Spring 1	**Plants** Name basic parts of lants. identify common plants		**Rocks** Group different rocks, understand how they are formed Fossils **Animals, including humans** Skeletons and muscles	**Electricity** Simple circuits, Switches Conductors and insulators		**Evolution and inheritance** Fossils – link to evolution Offspring different to parents. Animal adaptation—Evolution
Spring 2	**Animals, including humans** **Focusing on Animals**	**Animals, including humans** Animals have offspring, basic needs for survival. Importance of exercise and food hygiene.			**Forces** Gravity, air/water resistance, friction. Levers, pulleys & gears	**Living things and their habitats** Classification including micro-organisms, plants and animals.
Summer 1	**Seasonal Changes** Observe weather and changes across seasons	**Living things and their habitats** Living and dead, describe habitats, basic food chains		**Animals, including humans** Basic function of the digestive system., including teeth. Food chains.	**Properties/ changes of materials** Dissolve, separating, reversible changes. Changes produce new materials.	**Animals, including humans** Human circulatory system. Exercise, drugs and lifestyle.
Summer 2	**Everyday materials** Name, describe and sort everyday materials	**Plants** What plants need to grow from seed/bulb into plants.	**Plants** Plant functions including how water is transported. The life cycle of plants **Animals, including humans** Need for right amount of nutrition. Skeletons and muscles	**Sound** How sound is made/ travels. Pitch and volume		

Year	Topic Title	Biology	Chemistry	Physics/ Earth Science
1	This is Me!	Animals, including humans: Name basic body parts and the senses		
	Secret Garden	Animals, including humans: Name common animals. Name carnivores, herbivores and omnivores. Plants: Name the basic parts of plants. Identify common plants		
	Whatever the Weather		Uses of Everyday materials: Name, describe and sort everyday materials	Seasonal Changes: Observe weather and changes across seasons
2	London's Burning!		Uses of Everyday materials: Uses of materials Changing the shape of materials	
	Location, Location, Location	Animals, including humans: Animals have offspring, basic needs for survival. Importance of exercise and food hygiene.		
	Rainforests	Living things and their habitats: Living and dead, describe habitats, basic food chains Plants: What plants need to grow from seed/bulb into plants.		
3	In My Element			Forces and magnets: Compare different surfaces. Magnets Light: The need for light to see. How shadows are formed and how they can change size.
	The Ground Beneath My Feet	Animals, including humans: Skeletons and muscles	Rocks: Group different rocks and understand how they are formed. Fossils	
	It's all Greek to Me!	Plants: Plant functions including how water is transported. Life cycle of plants Animals, including humans: Need for the right amount of nutrition.		

Year	Topic Title	Biology	Chemistry	Physics/ Earth Science
4	World of Water	Living things and their habitats: Group living things using classification keys. Changes in the environment that can threaten life	States of matter: Solids, Liquids, gases. Changing state, Evaporation/condensation	Electricity: Simple circuits, Switches. Conductors and insulators
	What did the Romans do for Leicester?			
	Insides Out!	Animals, including humans: Basic function of the digestive system., including teeth. Food chains.		Sound: How sound is made/ travels. Pitch and volume
5	Planet Earth	Living things and their habitats: Animal life cycles. Reproduction in plants and animals		Earth and Space Movement of Earth, planets & moon. Night & day Forces: Gravity, air water resistance, friction.
	Home from Home			Forces: water resistance, levers, pulleys & gears
	Egyptians	Animals, including humans: How humans change with age (linked to PSHE)	Properties/ changes of materials: Dissolve, separating, reversible changes. Changes produce new materials.	
6	A Child's War			Light: Refraction, line of sight, shadows and shapes Electricity: brightness of lamp, volume of buzzer. symbols circuit diagrams.
	Discovery and Exploration	Living things and their habitats: Classification including micro-organisms, plants and animals. Evolution and inheritance: Fossils – link to evolution. Offspring different to parents. Animal adaptation.		
	My Heart in Mexico	Animals, including humans: Human circulatory system. Exercise, drugs and lifestyle.		

Science Disciplinary Knowledge Progression

Year 1	Year 2	Year3	Year 4	Year 5	Year 6
Working scientifically	**Working scientifically**	**Working scientifically**	**Working Scientifically**	**Working scientifically**	**Working scientifically**
	Living things and their habitats Living and dead, describe habitats, basic food chains		**Living things and their habitats** Group living things using classification keys. Changes in the environment that can threaten life	**Living things and their habitats** Animal life cycles. Reproduction in plants and animals	**Living things and their habitats** Classification including micro-organisms, plants and animals.
Plants Name basic parts of plants. identify common plants	**Plants** What plants need to grow from seed/bulb into plants.	**Plants** Plant functions including how water is transported. The life cycle of plants			
Animals, including humans Name common animals Name carnivores, herbivores and omnivores Name parts of body and senses	**Animals, including humans** Animals have offspring, basic needs for survival. Importance of exercise and food hygiene.	**Animals, including humans** Need for right amount of nutrition. Skeletons and muscles	**Animals, including humans** Basic function of the digestive system., including teeth. Food chains.	**Animals, including humans** How humans change with age	**Animals, including humans** Human circulatory system. Exercise, drugs and lifestyle.
		Rocks Group different rocks, understand how they are formed Fossils			**Evolution and inheritance** Fossils – link to evolution Offspring different to parents. Animal adaptation—Evolution
Everyday materials Name, describe and sort everyday materials	**Uses of everyday materials** Uses of materials Changing the shape of materials		**States of matter** Solids, Liquids, gases Changing state, Evaporation/condensation	**Properties/ changes of materials** Dissolve, separating, reversible changes. Changes produce new materials.	
		Light The need for light to see. How shadows are formed and how they can change size.	**Sound** How sound is made/ travels. Pitch and volume		**Light** Refraction, line of sight, shadows and shapes
		Forces and magnets Compare different surfaces. Magnets		**Forces** Gravity, air/water resistance, friction. Levers, pulleys & gears	
Seasonal Changes Observe weather and changes across seasons				**Earth and Space** Movement of Earth, planets & moon. Night and day	
			Electricity Simple circuits, Switches Conductors and insulators		**Electricity** brightness of lamp, volume of buzzer. symbols circuit diagrams.

Science Overview of Substantive Concepts

	Topic Title	Animals inc humans	Evolution & Inheritance	Habitats	Living things	Plants	Materials	States of matter	Rocks	Light	Electricity	Forces	Earth & Space	Sound	Seasonal changes
EYFS	**Ongoing**	■				■	■			■		■			■
Year 1	**Secret Garden**	■				■	■								■
	This is me	■													
Year 2	**Rainforests**	■		■	■										
	London's Burning						■								
Year 3	***It's all Greek to me!***					■									
	In my element									■		■			
	The ground beneath my feet								■						
Year 4	**Insides out**	■													
	World of water			■	■			■				■		■	
Year 5	**Planet Earth**	■		■	■							■	■		
	Home from home											■			
	Egyptians						■								
Year 6	**Discovery and evolution**	■													
	My Heart in Mexico		■	■	■										
	A Child's war									■	■				

EYFS Substantive Knowledge	
EYFS	**Ongoing**
Substantive Concepts	Animals including humans, living things, plants,
Substantive Knowledge	<u>Living things & seasonal changes</u> • Recognise and discuss similarities and differences in environment, animals and living things. • Name some environments, animals and plants. • Show care and concern for all living things. • Make observations of animals and plants and explain why some things happen <u>Humans</u> • Name parts of their body • Ow which foods are healthy • Describe my environment through my senses • Talk about how to stay healthy through physical exercise and healthy eating • Talk about and show some ways of keeping my body safe

Year 1 Science Substantive Knowledge			
Year 1	**This is me!**	**Secret Garden**	**Weather**
Substantive Concepts	Animals inc humans	Animals inc humans, plants, materials	Seasonal changes
Substantive Knowledge	• Naming body parts that we can see • The human body has 5 senses that help us see, touch, smell, hear and taste • Different body parts control the different sense • Know there is a difference between living and non-living things	• Name a variety of common and garden plants • Evergreen trees stay green all year round but deciduous trees change with the season • Name different types of deciduous trees • The structure of a plant: roots, stem, leaves and flower • The structure of a tree: roots, trunk, branches and leaves • Animals can be grouped into species: fish, amphibians, reptiles, birds and mammals • Animals can be carnivores, omnivores or herbivores • Understand that animals can be compared • Objects are made of materials • There are a wide variety of different materials like wood, plastic, metal, water, glass, rock etc • Materials have physical properties • Materials can be grouped on the basis of their properties	• Understand what weather is • Weather changes in each season • There are four seasons: Winter, Spring, Summer and Autumn • Seasons in the UK follow a cycle

Year 2 Science Substantive Knowledge			
Year 2	**London's burning**	**Location, Location, Location**	**Rainforests**
Substantive Concepts	materials	Animals inc humans,	Living things and their habitats & Plants
Substantive Knowledge	• Identify and name different materials and explore their properties. Opportunity for new vocabulary to be introduced. • Sort everyday materials and their properties – children used a Venn diagram to sort the objects according to their properties. • Explore the different materials used to make certain objects and the properties that make them suitable. • Explain why materials might or might not be used for a specific job. • Focused on difference between absorbent and waterproof – finding appropriate materials for a firefighters uniform. • Explore how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching – children carried out an investigation about changing shape of different objects using their knowledge of materials and their properties. • Using their knowledge of materials and their properties (making links with our topic) designing a safe and sturdy building from the fire.	• Order the basic stages in a life cycle for animals, including humans. Choose an animal to show their lifecycle. • using their knowledge of the benefits of exercise. • Explain what consists of a balance diet and create a healthy meal including the different food groups. • Explain good hygiene and the different ways to maintain hygiene. • Describe the importance of exercise for humans – children to create their own workout routine using their knowledge of a healthy lifestyle. • Describe what animals and humans need to survive (basic needs).	<u>Living things and their habitats</u> • Identify and name plants and animals found in the rainforest. • Match plants and animals to their habitats. • Living, dead or never lived – sort into correct category. • Food sources – name different sources of food for animals. • Have a good understanding of the word habitats and describe how a specific habitat provides for the basic needs of plants and animals. • Create a simple food chain and describe how animals find their food. <u>Plants</u> • Describe the structure of a plant. • Describe what they need to grow and stay healthy. • Describe how seeds and bulbs grow into plants.

Year 3 Science Substantive Knowledge			
Year 3	**In my element**	**The ground beneath my feet**	**It's all Greek to me**
Substantive Concepts	Light, forces and magnets	Rocks	Plants
Substantive Knowledge	• light is needed in order to see things and dark is the absence of light • light is reflected from surfaces • light from the sun can be dangerous and ways to protect their eyes • shadows are formed when the light from a light source is blocked by an opaque object • the size of shadows change • compare how things move on different surfaces • contact and non-contact forces • magnets attract or repel each other and attract some materials and not others • identify some magnetic materials • magnets have two poles • two magnets will attract or repel each other, depending on which poles are facing.	• 3 types of rocks • compare and group together different kinds of rocks • soils are made from rocks and organic matter • properties of rocks and soils • how fossils are formed	• parts of a flowering plant • functions of different parts of flowering plants • requirements of plants for life and growth • water transport in plants • life cycle of flowering plants, including pollination, seed formation and seed dispersal.

Year 4 Science Substantive Knowledge		
Year 4	**World of water**	**Insides out**
Substantive Concepts	Living things, Habitats, states of matter, electricity	Animals inc humans, sound
Substantive Knowledge	• 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 • construct and interpret a variety of food chains, identifying producers, predators and prey • Group living things in different ways • Use classification keys to group, identify and name living things • Create classification keys to group, identify and name living things (for others to use) • Construct food chains to identify producers, predators and prey • Use food chains to identify producers, predators and prey • Describe how changes to an environment could endanger living things	• Explain how the muscular and skeletal systems works • Classify living things and non-living things by a number of characteristics • Explain how people, weather and the environment can affect living things • Explain how certain living things depend on one another to survive • Explain s for how they have classified animals and plants, using their characteristics and how they are suited to their environment • Identify and name the parts of the human digestive system • Describe the functions of the organs in the human digestive system • Identify and describe the different types of teeth in humans • Understand the functions of different human teeth • Explain the skeletal system of a human • Describe and explain the muscular system of a human • I can describe the purpose of the skeleton in humans and animals • Explain the importance of a nutritious, balanced diet • Explain how nutrients, water and oxygen are transported within animals and humans

Year 5 Science Substantive Knowledge			
Year 5	**Planet Earth**	**Home from home**	**Egyptians**
Substantive Concepts	Living things, habitats, Animals inc humans, Earth & space, Forces	Forces	Properties/ changes of Materials
Substantive Knowledge	In our exploration of space, we have acquired knowledge on various aspects. We are able to identify the planets and understand their movements in relation to the Sun. Additionally, we can elucidate the Moon's orbit around the Earth and comprehend the mechanisms behind night and day. Our awareness extends to the vastness of the universe, encompassing all matter and space. We recognise celestial bodies as significant entities within the universe, such as stars like our very own Sun. Furthermore, we grasp the concept of planetary orbits around stars, including Earth's, and acknowledge the scientific advancements that led to our current understanding of celestial motion. We will be well-versed in the principles of forces and motion, acknowledging that a force is quantified in Newtons, honouring Sir Isaac Newton's contributions to understanding gravity. I utilise force meters to gauge pull forces and recognise an object's mass as its material content. Gravity, a universal force, varies based on mass and proximity, drawing unsupported objects towards Earth. Unbalanced forces provoke acceleration, with air resistance opposing motion by colliding with gas particles. Objects accelerate until air resistance balances gravitational force, sustaining terminal velocity. Parachute design increases air resistance, lowering terminal velocity substantially. We will understand the reproduction processes in plants and animals. They can compare local and global life cycles, recognising the stages from fertilisation to maturity in various species such as mammals, amphibians, insects, birds, and humans.We can identify and describe the distinctions between life cycle variations.	In understanding forces, it is recognised that water resistance occurs when an object moves through water due to collisions with water particles. The shape of an object influences its air or water resistance, with streamlined shapes experiencing minimal resistance. Additionally, levers pivot around a fulcrum, pulleys involve a wheel supporting moving cables, and gears operate by meshing teeth to transfer force efficiently. These simple machines enable smaller forces to produce significant effects by converting them over longer distances into larger forces over shorter distances.	Children will understand reversible and irreversible changes, grouping materials by properties, dissolving substances to form solutions, recovering substances, separating materials, demonstrating separation techniques like filtering and evaporating, discussing material usage, and recognising the formation of new materials through changes. Students also learn to test materials for specific properties like magnetism, thermal conductivity, and electrical conductivity to determine their suitability for different functions.

Year 6 Science Substantive Knowledge			
Year 6	**A child's war**	**Discovery & Evolution**	**My Heart in Mexico**
Substantive Concepts	Light; Electricity	Evolution and Inheritance; Living Things; Habitats	Animals including humans
Substantive Knowledge	• How light moves from its source to objects and then to our eyes. • How we perceive objects through light. • Why shadows resemble the shapes of the objects casting them. • The different parts of an electric circuit. • Understand how basic optical instruments, like periscopes, telescopes and mirrors, function. • How the number and voltage of cells affect the brightness of a lamp or the volume of a buzzer in a circuit. • How to draw circuit diagrams using correct symbols. • How to compare and explain why components do or don't function in a circuit.	• How has the Earth and living things changed over time. • The connection between adaptation and evolution. • What evolution is and how it works. • How animals and plants are suited to their environment through adaptation. • How living things are grouped based on observable characteristics. • Reasons behind classifying plants and animals in specific ways. • How to categorise animals into groups of vertebrates and invertebrates. • The importance of classification in understand the natural world.	• Identify main parts of the human circulatory system. • Describe function of heart, blood vessels, and blood. • How diet, exercise, drugs, and lifestyle choices affect health. • How nutrients and water are carried around the body in animals, including humans.

This document shows the Science learning progression journey for pupils from EYFS to Year 6. The colour coding shows in which term these topics are covered within each year group.

Progression Statements Mapping EYFS – Year 6

	National Curriculum – Early Learning Goals	Granular Knowledge	Greater Depth	Vocabulary
EYFS	ELG- People, culture and communities -Describe their immediate environment using knowledge from observation, discussion, stories, non-fiction texts and maps. ELG- The natural world -Explore the natural world around them making observations and drawing pictures of animals and plants. ELG- managing self • Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices.	• I can recognise and discuss similarities and differences in environment, animals and living things. • I can name some environments, animals and plants. • I can name some parts of my body • I can show care and concern for all living things. • I can make observations of animals and plants and explain why some things occur and talk about changes. • I can eat a range of food and identify healthy foodstuff. • I can explore and describe my environment through my senses • I can talk about how to stay healthy through physical exercise and healthy eating • I can talk about and show some ways of keeping my body safe • I can care for plants and animals in my environment and know how to keep them healthy	• I can identify that the environment and living things are influenced by human activity. • I can sort animals by their features and make links to their habitat	
Year 1	**Animals Inc Humans** **Pupils should be taught to:** • identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.	**Animals Inc Humans** • I can name the parts of the human body that I can see • I know that feet, legs, arms, hands, torso, head, skin, ears, eyes, nose, mouth and tongue are parts of the body and identify them • I can discuss what I can see, touch, smell, hear or taste • I know that eyes are associated with sight, ears with sound, nose with smell, tongue with taste and skin with touch • I can sort living and non-living things • I know that Ibn Sina (known also as Avicenna) was a scientific genius during early Islamic civilisation • I know that he wrote books about medicine and healing people • I know that he helped guide the modern world towards the idea of using evidence in medicine • I know that he also made major contributions to other areas of science, mathematics and philosophy	**Animals Inc Humans** • I can name some parts of the human body that cannot be seen • I can think about what would happen is I lost one of my senses • I can think about how modern medicine has helped us - Covid Vaccine	head, body, eyes, ears, mouth, teeth, leg, sight, hearing, touch,taste, smell, head, neck, ear, mouth, shoulder, hand, fingers, leg, foot, thumb, eye, nose, knee, toes, teeth, elbow

	Animals Inc Humans **Pupils should be taught to:** • identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals Autumn Term • 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)	**Animals Inc Humans** • I can name a variety of animals including fish, amphibians, reptiles birds and mammals • I know that a trout is an example of a fish; a frog is an example of an amphibian; a lizard is an example of a reptile; a robin is an example of a bird; a rabbit and a human are examples of a mammal and explore further examples of each animal type Autumn Term • I can identify and name a variety of common animals that are carnivores, herbivores and omnivores • I can classify animals by what they eat (carnivore, herbivore and omnivore) • I know that herbivorous animals eat plants; carnivorous animals eat other animals; omnivorous animals eat both animals and plants • I know that a cat is an example of a carnivore; that a rabbit is an example of a herbivore; know that many humans are examples of omnivores (though not vegetarians) • I can name and compare the bodies of different animals • I know that reptiles are different to other animals in that they breathe air and have scaly skin. • I know that birds are different to other animals in that they have feathers and wings • I know that mammals are different to other animals in that they have fur/hair and they feed milk to their young • I know that fish, amphibians, reptiles, birds and mammals are similar in that they have internal skeletons and organs; these are known as vertebrates, which means they are animals that have a backbone • I know that fish are different to other animals in having gills so that they can breathe underwater and scaly skin • I know that amphibians are different to other animals in that they begin their lives with gills but then develop lungs and breathe on land • I can sort animals into categories (including fish, amphibians, reptiles, birds and mammals)	**Animals Inc Humans** • I can say why certain animals have certain characteristics • I can name a range of wild animals • I can convince someone that the following statement “only birds lay eggs” is false using scientific examples	energy, growth, habitat, fish, amphibian, reptile, bird, mammal, offspring, carnivore, herbivore, omnivore, vertebrate, skeleton, organ

		• I know that communicator scientists help the world to understand about science • I know that David Attenborough is a famous communicator scientist who has created and presented some of the most famous television programmes ever made about plants and animals		
	Plants **Pupils should be taught to:** • 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.	**Plants** • I can name a variety of common wild and garden plants - know a rose bush, a sunflower and a dandelion by sight • I know an oak tree, a birch tree and a horse chestnut tree by sight • I know that evergreen trees maintain their leaves throughout the year and that deciduous trees shed their leaves in autumn • I know that flowering plants consist of roots, stem, leaves and flowers and that a tree's stem is called a trunk • I can name the petals, stem, leaf and root of a plant • I can name the roots, trunk, branches and leaves of a tree	**Plants** • I can begin to classify animals according to a number of given criteria • I can begin to describe what each part of a plant does (e g roots, stem, leaves, petals, pollen) on a range of plants • I can point out differences between living things and non-living things	component, energy, growth, deciduous, evergreen, flower, plant, tree, structure, roots, stem, leaf, trunk, flower, blossom, petal, fruit, berry, root, seed, branch, , bark, stalk, bud
Year 2	**Animals Inc Humans:** **Pupils should be taught to:** • 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.	**Animals Inc Humans:** • I can order the basic stages in a life cycle for animals, including humans • I can explain the basic stages in a life cycle for animals, including humans • I can describe what animals and humans need to survive • I know what a balanced diet is • I know that animals, including humans, need food, water and air to survive • I know the basic food groups: fruit and vegetables, carbohydrates, protein, dairy, fat and sugary foods • I know that more than half of our diet should be made up of carbohydrates, fruit and vegetables (see diagram below) • I know that fats and sugary foods should be eaten rarely and in small amounts • I know that people need to exercise often to help their body stay strong and fit • I can describe the importance of exercise for humans • I can explain what good hygiene is	**Animals Inc Humans:** • I can explain that animals reproduce in different ways • I know that proteins are good for growth, carbohydrates for energy and fruit and vegetables provide vitamins and minerals which help keep us healthy (e.g. calcium for healthy bones and teeth)	offspring, adult, survival, temperature, hygiene, exercise, reproduction, growth, heartbeat, breathing, germs, disease, food types

		• I know that keeping clean, including washing and brushing teeth, is an important part of staying healthy • I can describe why exercise, a balanced diet and good hygiene are important for humans		
	Animals Inc Humans **Pupils should be taught to:** • 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 microhabitats • 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.	**Animals Inc Humans** • I can identify and name plants and animals in a range of habitats • I can match living things to their habitat • I know what the word habitat means • I can describe how a specific habitat provides for the basic needs of things living there (plants and animals) • I can identify things that are living, dead and never lived • I know that living things move, grow, consume nutrients and reproduce; that dead things used to do these things, but no longer do; and that things that never lived have never done these things. • I can name some different sources of food for animals • I know that plants absorb energy from the Sun; that this energy is consumed by herbivorous animals; and that carnivorous animals eat other animals • I can describe how animals find their food • I can explain a simple food chain • I know that the arrows on a food chain show the direction that the energy travels • I know that polar bears are an example of an animal adapted to its environment – thick fur for warmth and oily paw pads to ensure that they don't freeze to the ice • I know that cacti are an example of a plant adapted to its environment – thick skin keeps a store of water safe; sharp spikes keep animals from stealing the water • I know that woodlice live under logs – an example of a microhabitat - as they need somewhere dark and damp so that they do not dry out • I know that frogs can live in ponds – an example of a microhabitat - as they water in which to lay their eggs (frogspawn)	**Animals Inc Humans** • I can name some characteristics of an animal that help it to live in a particular habitat • I can describe what animals need to survive and link this to their habitats • I can describe what plants need to survive and link it to where they are found	birth, decay, energy, reproduction, microhabitat, dead, life cycle, food chain, source, nutrients, consumption, environment, producer, prey, predator, suited, suitable, basic needs, rainforest canopy, forest floor, shrub

	Plants - Pupils should be taught to: • 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.	**Plants** • I can describe what plants need in order to grow and stay healthy (water, light & suitable temperature) • I can describe how seeds and bulbs grow into plants • I know that light is a form of energy • I know that seeds and bulbs need to be buried underground in soil and that they will grow into adult plants under the right conditions (water, warmth) • I know that plants that are deprived of light, food or air will not grow and will die. • I know that plants and animals produce offspring that grow into adults.	**Plants** • I can explain that plants grow and reproduce in different ways	offspring, adult, bulb, seed, survival, temperature, hygiene, exercise, light, shade, sun, warm, cool, water, grow, healthy

Year 3	**Plants - pupils should be taught to:** • 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.	**Plants** • I know the parts of a flowering plant • I can describe the function of different parts of flowering plants and trees • I know that different parts of plants have one or more functions (jobs) • I know that the roots collect water and minerals from the soil, and hold the plant firmly in the ground • I can explore and describe how water is transported within plants • I know that the stem holds up the leaves so that they can gather light to make food and holds up the flowers so that they can receive pollen and disperse their fruits; know that the stem also transports water and minerals from the roots to the other parts of the plant • I know that the leaves make food by absorbing light and using its energy to turn carbon dioxide and water into carbohydrates • I can remember what a life cycle is • I can describe the plant life cycle, especially the importance of flowers • I know that the function of a flower is reproduction, where flowers of the same kind exchange pollen – made by an anther – in a process called fertilisation, and a structure in the flower's ovary called an ovule becomes a seed; the ovary then becomes a fruit which helps the seed leave the plant in a process called dispersal • I can explore and describe the needs of different plants for survival	**Plants** • I can classify living things and non-living things by several characteristics that they have thought of • I can explain how people, weather and the environment can affect living things • I can explain how certain living things depend on one another to survive • I can classify a range of common plants according to many criteria (environment found, size, climate required, etc)	extinction, fruit, nectar, anther, ovary, ovule, petal, pollen, stigma, style, stamen, function, exchange, dispersal, fertilization, Photosynthesis, support, anchor, reproduction, transportation
	Animals Inc Humans **Pupils should be taught to:** • *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 (covered in PSHE)*	**Animals Inc Humans** • I know that animals, including humans, have a skeleton made up of solid objects • I know that some animals (such as insects) have an exoskeleton – a solid covering on the outside of their body • I know that many invertebrates (such as earthworms and slugs) have water held inside by muscles which acts like a skeleton	**Animals Inc Humans** • I can explain how our skeleton can change overtime and the effect this can have on our body and mobility	skeleton, bones, muscles, joints, support, protect, move, skull, ribs, spine

	• identify that humans and some other animals have skeletons and muscles for support, protection and movement	• I know that skeletons provide support for muscles and protect the body; for example, the rib cage protects the vital organs in the human body • I know that human skeletons are made up of bones and cartilage • I know that muscles can only contract, so they must be arranged in pairs in the body so that as one contracts the other loosens		
Year 4	**Living Things & Their Habitats** **Living things and their habitats - 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 • construct and interpret a variety of food chains, identifying producers, predators and prey • recognise that environments can change and that this can sometimes pose dangers to living things	**Living Things & Their Habitats** **Living things and their habitats - Pupils should be taught to:** • I can group living things in different ways • I can use classification keys to group, identify and name living things • I can create classification keys to group, identify and name living things (for others to use) • I know what a food chain is • I can construct food chains to identify producers, predators and prey • I can use food chains to identify producers, predators and prey • I can describe how changes to an environment could endanger living things • I know that animals can be grouped based on their physical characteristics (e.g. vertebrates and invertebrates) and based on their behavior (e.g. herbivores, carnivores and omnivores) • I know that living things are divided into kingdoms: the animal kingdom, plants, fungi, bacteria, and single-celled organisms • I know that a species is a group of living things have many similarities that can reproduce together produce offspring	**Living Things & Their Habitats** **Living things and their habitats - Pupils should be taught to:** • I can classify living things and non-living things by a number of characteristics that they have thought of • I can explain how people, weather and the environment can affect living things • I can explain how certain living things depend on one another to survive • I can give reasons for how they have classified animals and plants, using their characteristics and how they are suited to their environment • I can name and group a variety of living things based on feeding patterns (producer, consumer, predator, prey, herbivore, carnivore, omnivore)	kingdom, classification key, species, fungi, bacteria, climate change, characteristics, offspring, extinction, pollution, human impact, nature reserves, deforestation
	Animals, including humans - Pupils should be taught to: • 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	**Animals, including humans** • I know that food passes through the body with the nutrients being extracted and the waste products excreted, and that this process is called digestion • I know that the process of digestion involves breaking complex foodstuffs into simpler building blocks that can be absorbed by the body • I know that the process of digestion begins with food being chewed in the mouth by the teeth and saliva added	**Animals, including humans** • I can explain how the muscular and skeletal systems work together to create movement • I can classify living things and non-living things by a number of characteristics that they have thought of • I can explain how people, weather and the environment can affect living things	digestion, excretion, peristalsis, anus, duodenum, small intestine, large intestine, stomach, rectum, oesophagus, tongue, saliva, acid, bile, enzymes,

		• I know that a human has three types of teeth – incisors, canines and molars – and that these each perform different functions • I know that incisors slice food, canines tear food (especially meat) and that molars grind food • I know that children develop an initial set of teeth which are gradually replaced between the ages of 6 and 12 • I know that food is squeezed down the oesphagus towards the stomach in a wave-like action called peristalsis (see diagram below) • I know that the stomach releases acid and enzymes to continue breaking down the food; the stomach is an organ; an organ is a part of living thing that is self-contained and has a specific important job • I know that further enzymes and bile break down the food further as it moves through the duodenum towards the small intestine • I know that the small intestine adds more enzymes and then absorbs the nutrients • I know that the large intestine absorbs water from the undigested food • I know that undigested food is stored in the rectum before being excreted through a muscle called the anus • Remember that a food chain traces the path of energy through a habitat • Remember that the arrows in a food chain show the direction that energy is travelling through a habitat • Remember that all energy for a food chain initially comes from the Sun which is absorbed and turned into energy by plants which are called producers • I know that consumers take in energy by eating • I know that an animal that is eaten by another is called prey, and that an animal that eats other animals is called a predator • I know that the first consumer in a food chain is called a primary consumer, the second is called a secondary consumer and above it is called a tertiary consumer	• I can explain how certain living things depend on one another to survive • I can give reasons for how they have classified animals and plants, using their characteristics and how they are suited to their environment • I can name and group a variety of living things based on feeding patterns (producer, consumer, predator, prey, herbivore, carnivore, omnivore)	incisors, canines, molars, predator, prey, producer, consumer, primary, secondary, tertiary, Nutrition, nutrients, carbohydrates, sugars, protein, vitamins, minerals, fibre, fat, water,

		• I know that excess of a food group can cause ill health, such as tooth decay due to excess sugar • NB – some food groups are difficult to afford for some families so sensitivity is required in teaching this area • I know that excess fat from fatty foods such as butter and cheese - and created in the body from excess calories – builds up in the body and can cause obesity • I know that excess body fat can lead to heart disease and increases the strain on joints and growing bones • I know that lack of a nutrient can cause ill health; for example, a lack of vitamin D leads to a disease called rickets		
Year 5	**Living things and their habitats - Pupils should be taught to:** • 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	**Living things and their habitats** • I can remember the process of reproduction in plants • I can describe the process of reproduction in animals • I can compare the life cycles of plants and animals in their local environment with the life cycles of those around the world, for example comparing a rainforest with a desert • I know that the life cycle of a living thing is a series of stages of development starting with a fertilized egg in animals or a seed in many plants • I know that in most mammals (e.g. dogs) a fertilized egg develops in the womb into an embryo and is then born and fed on milk before it is weaned onto the food that is adapted to eat; it then develops to maturity in a period called adolescence after which it can reproduce and the cycle can begin again • I know that in amphibians (e.g. frogs) a fertilized egg develops into an embryo and then hatches into a tadpole; the tadpole develops adult characteristics, metamorphoses into the adult form after which it can reproduce and the cycle can begin again • I know that in many insects (e.g. butterflies) a fertilized egg develops into wingless feeding form called a larva (caterpillar); the larva feeds then later becomes a pupa (chrysalis) with a protective cocoon; inside this cocoon, the pupa metamorphoses into the adult butterfly after which it can reproduce and the cycle can begin again	**Living things and their habitats** • I can create a timeline to indicate stages of growth in certain animals, such as frogs and butterflies • When pond dipping, I can identify different species and suggest which stage of the life cycle they are in (e.g. frogspawn)	life cycle, life span, weaned, adolescence, metamorphosis, pupa, larva, chrysalis, caterpillar, tadpole, hatchling, fledgling, insect, sperm, fertilises, egg, live young, metamorphosis, asexual, plantlets, runners, bulbs, gestation,

		• I know that in birds (e.g. robins) a fertilized egg hatches in a nest (a hatchling) and is fed by its parents until it is ready to fly (i.e. becomes a fledgling); it then leaves the nest and grows into an adult after which it can reproduce and the cycle can begin again • I can describe the differences between different life cycles		
	Animals, including humans - Pupils should be taught to: • describe the changes as humans develop to old age • Pupils should draw a timeline to indicate stages in the growth and development of humans • They should learn about the changes experienced in puberty	• **Animals, including humans** I know that humans go through stages of development; they begin as fertilized eggs and then develop into embryos before developing into babies; once they are born, these new born babies become infants (roughly 2 months to 2 years) then into young children (roughly 2-12 years old); children develop into adults during adolescence (roughly 12-16 years old) at which age they become physically capable of reproduction; as adults develop into old age (roughly 55+ years old) they experience changes in their body which require them to move more carefully and rest more frequently	**Animals Inc Humans** • I can describe the changes experienced in puberty	Foetus, Embryo, Womb, Gestation, Baby, Toddler, Teenager, Elderly, Growth, Development, Puberty, Hormone, Physical, Emotional
Year 6	**Evolution and inheritance - Pupils should be taught to:** • 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 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.	**Evolution and inheritance** • I can describe how the earth and living things have changed over time • I can explain how fossils can be used to find out about the past • I can link adaptation over time to evolution • I can explain evolution • I can explain about reproduction and offspring (recognising that offspring usually vary and are not identical to their parents) • I can explain how animals and plants are adapted to their environment • I know that all life on Earth began from a single point around 4.5 thousand million years ago • I know that living things change over time and that this gradual change is called evolution • I know that natural selection is the cause of this change; natural selection works as there is natural variation within a species; there is also competition to survive and reproduce and that members of a species with advantageous characteristics survive and reproduce - these characteristics are passed down to their offspring; members of a species with less advantageous	**Evolution and inheritance** • I can research and discuss the work of famous scientists, such as Charles Darwin, Mary Anning and Alfred Wallace	evolution, natural selection, variation, advantageous

		characteristics do not survive and reproduce – these characteristics are not passed down to offspring (see diagram below) • I know that offspring that result from sexual reproduction (i.e. two parents) vary and are not identical to their parents • Remember that the gradual change of species over millions of years can be observed by looking at examples of fossils		
	Living things and their habitats - Pupils should be taught to: • describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals • give reasons for classifying plants and animals based on specific characteristics.	**Living things and their habitats** • Living things and their habitats I can classify living things into broad groups according to observable characteristics and based on similarities & differences • I can describe how living things have been classified • I can give reasons for classifying plants and animals in a specific way • I can readily group animals into reptiles, fish, amphibians, birds and mammals • I can explain why classification is important • I can explain about reproduction and offspring (recognising that offspring normally vary and are not identical to their parents) • I can explain how animals and plants are adapted to suit their environment • I know that there are three types of micro-organism: viruses, fungi and bacteria; of these three, viruses are often not really considered to be alive by many scientists mainly because they don't have the 'machinery' to reproduce inside them • I know that germs are disease-causing micro-organisms • I know that an arthropod is an invertebrate with a hard, external skeleton and jointed limbs • I know that insects are a type of arthropod; their bodies consist of six legs, a head, a thorax and an abdomen; most insects also have a pair of antennae and a pair of wings (e.g. wasp) • I know that an arachnid (e.g. spider) is a type of arthropod with eight legs and no antennae or wings	**Living things and their habitats** • I can sub divide their original groupings and explain their divisions, such as vertebrates and invertebrates • I can explain how some living things adapt to survive extreme conditions and analyse the advantages/disadvantages of specific adaptations, e.g. being on 2 rather than 4 feet	micro-organism, virus, thorax, arthropod, abdomen, arachnid, antenna, jointed limbs, Variation Organisms Populations
	Animals, including humans - Pupils should be taught to:	**Animals, including humans** • I know and can name the main parts of the human circulatory system	**Animals, including humans** • I can explore the work of medical pioneers, for example, William Harvey	artery, aorta, atrium, blood vessels capillary,

	• 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.	• I know the names of key bones in the body, including the rib cage, cranium, mandible, sternum, vertebrae, femur, tibia, fibula, patella, humerus, radius and ulna; know how to label these on a diagram of the human body • I know that an adult human body has 206 bones, the longest of which is the femur • I know that the heart and lungs are organs protected by the ribcage and understand this as a part of the skeleton • I know that the heart beats, pumping blood around the body and that blood vessels carry the blood; arteries carry blood away from the heart; veins carry blood towards the heart; capillaries are tiny blood vessels that connect arteries and veins • I know that the heart is composed of four chambers: two atria and two ventricles; the aorta is the largest artery in the body and most major arteries branch off from it (see diagram below) • I know that blood travels around the body transporting nutrients that have been absorbed into the bloodstream from digestion; blood also absorbs oxygen from the lungs and carries it around the body which is used to power the body; this use of oxygen to create energy is called respiration • I know that when we exercise, our heart beats more frequently so that the oxygen that is used around the body can be replenished; it returns to a resting heart rate afterwards; fitter people tend to have lower resting heart rates	and Galen and recognise how much we have learnt about our bodies • I can compare the organ systems of humans to other animals • I can name and locate the major organs in the human body and make a diagram of the human body and explain how different parts work and depend on one another	oxygenated, deoxygenated, valve, respiration, circulatory system, vein, pulse, ventricle, replenished, resting heart rate, body, cranium, mandible, sternum, vertebrae, femur, tibia, fibula, patella, humerus, radius, ulna, alcohol, drugs, tobacco

Specifically Taught Vocabulary Mapping Document

The specific vocabulary has been mapped by the Trust's Science Matrices. However, the vocabulary in red indicates that these words have not been highlighted previously within the specifically taught vocabulary and therefore these could cause some gaps in technical vocabulary – therefore, teachers should make specific connections to these words.

Retrieval /New Vocab	Biology Yr 1	Biology Yr 2	Biology Yr 3	Biology Yr 4	Biology Yr 5	Biology Yr 6
Retrieval	energy, habitat	habitat, growth, absorption, deciduous, evergreen, flower, plant, tree, structure, roots, stem, leaf, trunk, flower, herbivore, carnivore, omnivore, reproduction, nutrients, consumption, energy	component, energy, growth, habitat, reproduction, decay, offspring, adult, bulb, seed, survival, temperature, nutrients, consumption, deciduous, evergreen, flower, plant, tree, structure, roots, stem, leaf, trunk, flower, vertebrate, skeleton, (also Chemistry: *decay, matter, melting, material, hard, soft, texture, absorb)*	absorption, component, dissolving, energy, nutrients, consumption, hygiene, herbivore, carnivore, organ, decay, energy, habitat, freezing plant, structure, herbivore, carnivore, omnivore, microhabitat, environment, reproduction, vertebrate, plants, animals, fish, amphibians, reptiles, mammals		component, habitat, plant, structure, fish, bird, amphibian, reptile, mammal, kingdom, classification key, species, fungi, bacteria, characteristics, offspring, vertebrate, invertebrate, insect, energy, growth, survival, nutrients, consumption, skeleton, ribcage, protein, carbohydrate, fat, digestion, skeleton, organ, digestion, excretion, peristalsis, anus, duodenum, small intestine, large intestine, stomach, rectum, oesophagus, tongue, saliva, acid, bile, enzymes, incisors, canines, molars, birth, decay, energy, habitat, irreversible, extinction, microhabitat, dead, life cycle, food chain, source, nutrients, reproduction, consumption, environment, extinction, species, characteristic, adaptation
New Vocabulary	head, body, eyes, ears, mouth, teeth, leg, sight,	birth, decay, energy, reproduction, microhabitat,	extinction, fruit, nectar, anther, ovary, ovule, petal,	digestion, excretion, peristalsis, anus,	PUBERTY/SEXUAL CHARACTERISTICS: Foetus,	micro-organism, virus, thorax, arthropod,

	hearing, touch, taste, smell, head, neck, ear, mouth, shoulder, hand, fingers, leg, foot, thumb, eye, nose, knee, toes, teeth, elbow, energy, growth, habitat, fish, amphibian, reptile, bird, mammal, offspring, carnivore, herbivore, omnivore, vertebrate, skeleton, organ, component, energy, growth, deciduous, evergreen, flower, plant, tree, structure, roots, stem, leaf, trunk, flower, blossom, petal, fruit, berry, root, seed, branch, , bark, stalk, bud	dead, life cycle, food chain, source, nutrients, consumption, environment, producer, prey, predator, suited, suitable, basic needs, rainforest canopy, forest floor, shrub, offspring, adult, bulb, survival, temperature, hygiene, exercise, light, shade, sun, warm, cool, water, grow, healthy, growth, heartbeat, breathing, germs, disease, food types	pollen, stigma, style, stamen, function, exchange, dispersal, fertilization, Photosynthesis, support, anchor, reproduction, , transportation, (*Also Chemistry: extinction, particle, igneous, metamorphic, sedimentary, palaeontologist, weathering, molten rock, crust, tectonic plates, scavengers, fossil, permeable, impermeable, organic matter, marble, chalk, granite, sandstone, slate, soil, peat)*	duodenum, small intestine, large intestine, stomach, rectum, oesophagus, tongue, saliva, acid, bile, enzymes, incisors, canines, molars, predator, prey, producer, consumer, primary, secondary, tertiary, Nutrition, nutrients, carbohydrates, sugars, protein, vitamins, minerals, fibre, fat, water, skeleton, bones, muscles, joints, support, protect, move, skull, ribs, spine, kingdom, classification key, species, fungi, bacteria, climate change, characteristics, offspring, extinction, pollution, human impact, nature reserves, deforestation	Embryo, Womb, Gestation, Baby, Toddler, Teenager, Elderly, Growth, Development, Puberty, Hormone, Physical, Emotional	abdomen, arachnid, antenna, jointed limbs, Variation Organisms Populations, artery, aorta, atrium, blood vessels capillary, oxygenated, deoxygenated, valve, respiration, circulatory system, vein, pulse, ventricle, replenished, resting heart rate, body, cranium, mandible, sternum, vertebrae, femur, tibia, fibula, patella, humerus, radius, ulna, alcohol, drugs, tobacco, evolution, natural selection, variation, advantageous

Retrieval /New Vocab	Chemistry Yr 1	Chemistry Yr 2	Chemistry Yr 3	Chemistry Yr 4	Chemistry Yr 5	Chemistry Yr 6
Retrieval		absorption, matter, property	*(Also Biology: decay, matter, melting, material, hard, soft, texture, absorb)*	absorption, dissolving, energy, freezing, matter, melting, particle, temperature, ice, water, solid	absorption, bond, condensation, conductor, evaporation, matter, melting, particle, property, reversible, freezing, wood, plastic, glass, metal, water, rock, suitability, surface, waterproof, flexible, rigid, boiling point, melting point, solid, liquid, gas, magnetic	absorption, energy, particle, property, reflection, wave, mirror, incident ray, image, beam, photons, solid, opaque, transparent, object, source, vibration, percussion instrument, wind string instrument, frequency, volume, pitch, transverse wave, longitudinal wave, medium, vacuum
New Vocabulary	matter, property, wood, plastic, glass, metal, water, rock, object, material, brick, paper, fabric, elastic,	conductor, brick, paper, cardboard, friction, movement, suitability, surface, force, stretch,	(*Also Biology: extinction, particle, igneous, metamorphic, sedimentary, palaeontologist,*	bond, condensation, evaporation, reversible, boiling point, melting point, liquid, gas, thermometer,	irreversible, dissolve, soluble, insoluble, solvent, solute, solution, filter, sieve, saturation,	angle of incidence, angle of reflection, refraction, spectrum, translucent, medium, periscope

	foil, card/cardboard, rubber, wool, clay, hard, soft, stretchy, stiff, bendy, floppy, waterproof, absorbent, breaks/tears, rough, smooth, shiny, dull, see-through, not see-through	twist, waterproof, deformation, flexible, rigid, opaque, transparent and translucent, reflective, non-reflective	*weathering, molten rock, crust, tectonic plates, scavengers, fossil, permeable, impermeable, organic matter, marble, chalk, granite, sandstone, slate, soil, peat)*	water cycle, continuous precipitation, transpiration, surface runoff process, water vapour	crystallization, thermal, permeable	

Retrieval /New Vocab	Physics Yr 1	Physics Yr 2	Physics Yr 3	Physics Yr 4	Physics Yr 5	Physics Yr 6
Retrieval			absorption, energy, property, reflection, source	absorption, conductor, energy, insulator, particle, wave	absorption, energy, freezing, melting, orbit, reflection, wave, Sun, spring, summer, autumn, winter, energy, matter, particle, surface, friction, force, stretch, squash, rotation, rough, smooth, sliding friction, static friction, energy, matter, particle, surface, friction, force, stretch,	circuit, component, conductor, energy, insulator, particle, property, material, appliance, charge, electron, battery, cell, bulb, buzzer, switch, wire, current electricity, static electricity, negative, terminal, positive terminal, voltage, chemical reaction, emit
New Vocabulary	energy, freezing, melting, reflection, Sun, clouds, wind, snow, ice, rain, seasons, spring, overcast, temperature, spring, summer, autumn, winter, Sun, sunrise, sunset, day length		wave, mirror, visible, incident ray, travel, image, beam, photons, solid, opaque, transparent, translucent, object, source, data logger, Force, push, pull, twist, contact force, non-contact force, magnetic force, magnet, strength, bar magnet, ring magnet, button magnet, horseshoe magnet, attract, repel, magnetic material, metal, iron, steel, poles, north pole, south pole, friction, surface, magnetic, magnetic field, compass	vibration, percussion instrument, wind instrument, string instrument, frequency, volume, pitch, transverse wave, longitudinal wave, medium, vacuum, Electricity, electrical appliance/device, mains, plug, electrical circuit, complete circuit, component, cell, battery, positive, negative, connect/connections, loose connection, crocodile clip, bulb, switch, buzzer, motor, conductor, insulator, metal, non-metal, symbol, electric current, appliances, mains, crocodile clips, wires, bulb,	planet, satellite, sphere, solar system, eclipse, star, universe, constellation, axis, celestial body, Moon, rotating, lunar, solar, telescope, rotation, acceleration, air resistance, effort, force meter, gravity, load, mass, mesh, Newton, streamlined, terminal velocity, unsupported, weight, acceleration, buoyancy, effort, force meter, fulcrum, gravity, load, mass, pivot, rigid, streamlined, water resistance	series circuit, parallel circuit, resistance, voltage, short circuit, insulator

				battery cell, battery holder, motor, buzzer, switch		