

WRENINGHAM VC PRIMARY - CURRICULUM KNOWLEDGE AND KEY SKILLS PROGRESSION



INTENT

At Wreningham we teach science following the 2014 national curriculum and we intend to

- Stimulate curiosity, awe and wonder of the scientific world.
- Encourage the children to ask WHY!
- Give the children the thinking and practical skills to be effective scientists.
- Develop scientific knowledge and conceptual understanding of the physical and natural world.
- Equip children with accurate scientific vocabulary and the ability to use it effectively.
- Develop critical thinking skills in relation to the physical and natural world around them.

IMPLEMENTATION

- The acquisition of key scientific knowledge is an integral part of our science lessons.
- Science will be taught in planned blocks by the class teacher.
- We teach specific scientific vocabulary for each science topic.
- Previous related topic vocabulary is recapped.
- We provide problem solving opportunities and give children the chance to ask their own questions and use their scientific skills and research to discover the answers.
- Teachers demonstrate how to use scientific equipment and working scientifically skills are embedded into lessons.
- Our curriculum is progressive. We build upon the learning and skills development of the previous years.
- Through enrichment days and LOtC, we promote the profile of science and create a culture of scientific enquiry.

IMPACT

- Children will have a love of science and be absorbed in their learning.
- Children will be able to demonstrate their scientific knowledge and skills with confidence.
- Most children will achieve at least age-related expectations.
- Children will be equipped with the skills and knowledge to progress confidently to KS3.
- Children will be confident in using scientific vocabulary.
- Children will be able to question scientific ideas and reflect on knowledge.

Early	Years Foundation Stage		Units
Year R	 <u>Three characteristics of effective learning</u> Playing and exploring – children investigate and experience things, and 'have a go'. Active Learning – Children concentrate and keep on trying if they encounter difficulties, enjoy achievements. Creating and thinking critically – children have and develop their own ideas, make links between ideas, and develop strategies for doing things. 	ELG: The Natural World Children at the expected level of development will: - Explore the natural world around them, making observations and drawing pictures of animals and plants; 15 - 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.	Minibeasts (insects) Animals Plants Ourselves Seasons and weather
Nati	onal Curriculum Statutory requirements		Units
Year 1	Pupils should be taught to: <u>Plants</u> -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 <u>Animals, including humans</u> -Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals -Identify and name a variety of common animals that are carnivores, herbivores and omnivores -Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) -Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.	Everyday materials -Distinguish between an object and the material from which it is made -Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock -Describe the simple physical properties of a variety of everyday materials -Compare and group together a variety of everyday materials on the basis of their simple physical properties <u>Seasonal changes</u> -Observe changes across the four seasons -Observe and describe weather associated with the seasons and how day length varies	Year 1/2 cycle 1 Animals including humans Living Things & their Habitats Everyday Materials Plants Animals including humans

	National Curriculum Statuto	ry requirements	Units
Year 2	Pupils should be taught to: Living things and their habitats Explore and compare the differences between things that are living, dead, and things that have never been alive Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other Identify and name a variety of plants and animals in their habitats, including 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 <u>Plants</u> -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 <u>Animals, including humans</u>	 -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 Uses of everyday materials -Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses -Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching 	Year 1/2 cycle 2 Seasonal Changes Use of Everyday Materials Animals including humans Living Things & their Habitats Plants

	National Curriculum Statuto	ry requirements	Units
	Pupils should be taught to:	-Recognise that soils are made from rocks and organic	Year 3/4 cycle 1
	<u>Plants</u>	matter	States of Matter
	-Identify and describe the functions of different parts of flowering	Light	Electricity
	plants: roots,	-Recognise that they need light in order to see things and	Rocks
	stem/trunk, leaves and flowers	that dark is the absence of light	Holt Hall
m	-Explore the requirements of plants for life and growth (air, light,	-Notice that light is reflected from surfaces	Living Things & their Habitats
a,	water, nutrients from soil, and room to grow) and how they vary	-Recognise that light from the sun can be dangerous and	Animals including Humans
Ye	from plant to plant	that there are ways to protect their eyes	
2 -	Investigate the way in which water is transported within plants Recognise that shadows are formed when the light from a		
ge	Explore the part that flowers play in the life cycle of flowering light source is blocked by an opaque object		
tag	plants, including	-Find patterns in the way that the size of shadows change	
S ∧	pollination, seed formation and seed dispersal	Forces and Magnets	
ke	Animals, including humans	 compare how things move on different surfaces 	
ver	-Identify that animals, including humans, need the right types and	-Notice that some forces need contact between two objects,	
Ş	amount of nutrition, and that they cannot make their own food;	but magnetic forces can act at a distance	
_	they get nutrition from what they eat	-Observe how magnets attract or repel each other and	
	-Identify that humans and some other animals have skeletons and	attract some materials and not others	
	muscles for	-Compare and group together a variety of everyday	
	support, protection and movement	materials on the basis of whether they are attracted to a	
	Rocks	magnet, and identify some magnetic materials	
		-Describe magnets as having two poles	

-Compare and group together different kinds of rocks on the basis of	-Predict whether two magnets will attract or repel each	
-Describe in simple terms how fossils are formed when things that	poles are facing	
have lived are		
trapped within rock		

Natio	onal Curriculum Statutory requirements		Units
	Pupils should be taught to:	-Recognise that vibrations from sounds travel through a	Year 3/4 cycle 2
	Living things and their habitats	medium to the ear	States of Matter
	-Recognise that living things can be grouped in a variety of ways	-Fnd patterns between the pitch of a sound and features of	Animals including humans
	-Explore and use classification keys to help group, identify and name	the object that produced it	Sound
	a variety of living things in their local and wider environment	-Find patterns between the volume of a sound and the	Forces and Magnets
	-Recognise that environments can change and that this can	strength of the vibrations that produced it	How Hill
	sometimes pose dangers	-Recognise that sounds get fainter as the distance from the	Plants
	to living things	sound source increases	Animals including Humans
	Animals, including humans	Electricity	Light
r 4	-Describe the simple functions of the basic parts of the digestive	-Identify common appliances that run on electricity	Health and Well Being
ea'	system in humans	-Construct a simple series electrical circuit, identifying and	
~	-Identify the different types of teeth in humans and their simple	naming its basic parts,	
e 2	functions	including cells, wires, bulbs, switches and buzzers	
agi	-Construct and interpret a variety of food chains, identifying	-Identify whether or not a lamp will light in a simple series	
/ st	producers, predators and prey	circuit, based on whether or not the lamp is part of a	
ke)	States of matter	complete loop with a battery	
er	-Compare and group materials together, according to whether they	-Recognise that a switch opens and closes a circuit and	
Ň	are solids, liquids or gases	associate this with whether or not a lamp lights in a simple	
Ľ	-Observe that some materials change state when they are heated or	series circuit	
	cooled, and	-Recognise some common conductors and insulators, and	
	measure or research the temperature at which this happens in	associate metals with being good conductors	
	degrees Celsius (°C)		
	-Identify the part played by evaporation and condensation in the		
	water cycle and		
	associate the rate of evaporation with temperature.		
	Sound		
	-Identify how sounds are made, associating some of them with		
	something vibrating		

	National Curriculum Sta	tutory requirements	Units
Upper key stage 2 - Year 5 	National Curriculum Sta Pupils should be taught to: Living things and their habitats -Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird -Describe the life process of reproduction in some plants and animals Animals, including humans -Describe the changes as humans develop to old age Properties and changes of materials -Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets -Know that some materials will dissolve in liquid to form a solution, and describe how -Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating -Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic -Demonstrate that dissolving, mixing and changes of state are	 -Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda Earth and space -Describe the movement of the Earth, and other planets, relative to the Sun in the solar system -Describe the movement of the Moon relative to the Earth -Describe the Sun, Earth and Moon as approximately spherical bodies -Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky Forces -Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object -Identify the effects of air resistance, water resistance and friction, that act between moving surfaces -Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect 	Year 5/6 cycle 1 Light Electricity Animals incl. humans(y6) Properties and changes of materials Evolution and inheritance Living things and their habitats (y6)

	National Curriculum Statuto	ry requirements	Units
	Living things and their habitats -Describe how living things are classified into broad groups	vary and are not identical to their parents -Identify how animals and plants are adapted to suit their	Year 5/6 cycle 2 Earth and Space
Upper key stage 2 - Year 6	National Curriculum Statuto Living things and their habitats -Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals -Give reasons for classifying plants and animals -Give reasons for classifying plants and animals based on specific characteristics Animals, including humans -Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood -Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function -Describe the ways in which nutrients and water are transported within animals, including humans Evolution and inheritance -Recognise that living things have changed over time and that fossils provide	ry requirements 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 <u>Light</u> -Recognise that light appears to travel in straight lines -Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye -Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes -Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them <u>Electricity</u> -Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit -Compare and give reasons for variations in how	<u>Year 5/6 cycle 2</u> Earth and Space Forces Living things and habitats (y5) Animals including humans (y5)
	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	components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches -Use recognised symbols when representing a simple circuit in a diagram	

Science

SUBSTANTIVE KNOWLEDGE

	Knowledge & Understanding					
Year R	Animals including human -identify humans and other animals -name parts of the body -learn the senses -Similarities and differences -Animals and their young	Collection of different objects made of different materials- observe, describe, sorting, label Introduce, discuss related vocab- hard, soft, stretchy, etc. Material hunt around the school. Fair testing- Which materials are waterproof? Which materials keep things warm?	Plants -identify and name a variety of wild and garden plants including deciduous and evergreen trees Identify and describe the structure of a variety of common flowering plants and trees.	Name common animals including fish, mammals, amphibians, birds and reptiles -Identify that most living things live in habitats to which they are suited. -Describe how different habitats provide the basic needs of different kinds of animals and plants and how they depend on each other.		

	Seasonal Changes -identify changes in seasons using senses (go on walks) -Watch videos, paint etc signs of each season. - learn about harvest -names of the months and the seasons. -Different weather and what would you wear.	Habitats -(Based on the book we're going on a bear hunt) Talk about where brown bears live. Begin to name and identify different bears from around the world Begin to identify the different habitats that bears live in.	Forces Pushes and pulls -Explore how we move (ourselves, each other, toys, Victorian toys etc) -Use words such as push, pull, forward, backwardsmake toys to learn about wind power, pushing, pullingto know that pushing and pulling will effect movement -explore magnets Every day materials -Know how shapes of materials can be changed by stretching, bending, twisting and stretching	Plants -find out what plants need to survive -plant and grow plants from seeds -Look at similarities and differences between plants. Flowers, seeds etc	Animals including humans -Look at animals from a variety of habitat (rainforest, hot and cold deserts etc) -Find out about what they eat, how they look after their young etc -learn about the threats to the animals -lifecycle of animals NC Unit: Living Things & their Habitats
Year 1/2	NC Unit: Animals including humans -Identify and name different animals including humans. -identify name, draw and label the basic parts of the human body -Say which parts is associated with the senses Notice that animals including humans have offspring that grow into adults -Find out about and describe the basic needs of animals including humans for survival -Describe how to be healthy and live a healthy lifestyle. (exercise, food, hygiene)		BI: Materials are used in different ways according to their properties KQ: How do you know a material is fit for purpose? Everyday Materials -identify and name different materials according to properties (sorting games/activities) -Group materials depending on their properties -begin to talk about how materials are used -give reasons why materials are used.	NC Unit: Plants Big Idea: There is a relationship between structure and function - every flower part has a job to do. KQ: How do you identify trees and plants? -Identify and describe the structure of a variety of common flowering plants and trees. -Know there are different varieties of plants, but they all have common features -identify and name a variety of wild and garden plants including deciduous and evergreen trees	NC Unit: Living Things & their Habitats BI: Organisms including plants and animals have characteristics that make it possible for them to survive in their habitat KQ: How have animals adapted to their habitats? -Name common animals including fish, mammals, amphibians, birds and reptiles -Identify that most living things live in habitats to which they are suited. -Describe how different habitats provide the basic needs of different kinds of animals and plants and how they depend on each other.

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	NC Unit - Seasonal Changes	Use of Everyday	NC Uni - Animals	NC Unit - Living Things & their	NC Unit Plants	
	Big Idea: The Earth is one of eight planets that orbit	Materials	including humans	Habitats	KQ: What is alive, dead or	
	the sun. The Earth is tilted and spins on its axis	The arrangement,	Big Idea: The different	Big Idea: The different kinds of	was never alive?	
	leading to day and night, the seasons and the climate.	movement and type of	kinds of life, animals,	life, animals, plants and	-Observe and describe how	
		the building blocks of	plants and	microorganisms, have evolved	seeds and bulbs grow into	
	-identify changes across the 4 seasons (observations)	matter and the forces	microorganisms, have	over millions of generations	mature plants	
	-Observe and describe the weather linked with the	that hold them	evolved over millions of	into different forms in order to	-plant and grow flowers and	
	seasons and how the length of the day changes	together or push them	generations into	survive in the environments in	plants from seeds	
	-identify suitable clothes for each season	apart explain all the	different forms in order	which they live.	-Find out about and describe	
		properties of matter.	to survive in the	KQ: Can living things stay	what a plant needs to grow	
	Animals including humans	(hot/cold, soft/hard,	environments in which	healthy and live forever?	and stay healthy.	
	-identify and name a variety of common animals that	light/heavy etc)	they live.	Explore and compare the		
	are carnivores, herbivores, and omnivores.	-Know how shapes of	KQ What other types of	differences between things that		
	- Begin to separate animals based on their structure	materials can be	living things are there?	are living, dead and never been		
	(has wings does not have wings, has 0 legs, 2 legs 4	changed by stretching,	-identify and name a	alive		
	legs or more than 4 legs)	bending, twisting and	variety of common	Identify that most living things		
	Use names reptile, insect, amphibian, birds, mammals.	stretching	animals that are	live in habitats to which they		
			carnivores, herbivores,	are suited.		
			and omnivores.	Describe how different habitats		
			- Begin to separate	provide the basic needs of		
			animals based on their	different kinds of animals and		
			structure (has wings does	plants and how they depend on		
			not have wings, has 0	each other.		
			legs, 2 legs 4 legs or more	Identify and name a variety of		
			than 4 legs)	plants and animals in their		
			Use names reptile, insect,	habitats including micro		
			amphibian, birds,	habitats.		
			mammals.	Describe how animals get their		
				food from plants and other		
				animals- explore food chains.		
	NC Unit - States of	NC Unit- Electricity	NC Unit - Rocks	NC Unit - Animals including	NC Unit - Living Things &	
	Matter	KQ: what pieces of	KQ: Are rocks all the	Humans	their Habitats	
	Big Idea: All matter in	equipment might you	same?	Big Idea: Food is a source of	Big idea: recognise that living	
	the Universe is made of	use to make an	Big idea: Through	energy. All animals need food	things can be grouped in a	
	very small particles.	electrical circuit?	observing and	to provide energy.	variety of ways	
_	-Compare and group	Big idea: you need	investigating properties	KQ: What do our bodies do		
3/4	solids, liquids and gases	electricity to make	we create scientific	with the food we eat?	-Big Idea: Classifying and	
ar	-Pupils observe changes	electrical circuits work	groups.	-The digestive system is the	grouping things can help	
Ϋ́e	of state when materials	and this impacts on our	-Classification of rocks by	system for digestion in the	support our scientific	
	are heated or cooled	everyday lives.	comparing and grouping	human body, it describes how	understanding	
	and investigate what	-Identify appliances that	together different types	we break down our food		
	happens to the	run on electricity	-The purpose of different	-Teeth	KQ: How can living things be	
	temperature in degree	-Construct simple	types of rocks	-Digestive system- mouth,	grouped?	
	Celcius	circuits	-Fossils: how are they	tongue, teeth, oesophagus,		
	-Water Cycle	-Switches	formed,		-Grouping living things.	

		-Conductors/insulators (ex: what could we make to keep this ice cube an ice cube for as long as possible?)	-Soils: know it is made from rocks and organic matter Person: Mary Anning	stomach, and small and large intestine -Food Chains (producers, predators & prey) -Herbivore, Omnivore, Carnivore	 A classification key is a tool that is used to group living things to help us identify them. Recognise that environments can change. Habitats can change throughout the year and this can have an effect on the plants and animals that live there. Humans can have positive and negative effects on the environment.
NC Unit - States of Matter Big Idea: All matter in the Universe is made of very small particles. KQ: Is water always wet? -Identifying solids, liquids and gases. -Solids hold their shape; liquids form a pool not a pile; gases escape from an unsealed container. -Explore water in each of the three states; how you know which one is which -On a molecular scale, what is the difference between the three states of matter -Practical experiment: what happens when we heat solids and liquids (eg. crayon shavings, honey, etc.) -Polymers	NC UnitAnimals Including Humans Healthy Eating Big Idea: Food is a source of energy. All animals need food to provide energy. KQ: How do living things work? - Animals cannot make their own food; they get nutrition from what they eat. to understand that humans get the nutrition they need from the food they eat and the importance of a balanced diet <i>Skeletons and muscles</i> -humans and animals -to investigate how the skeleton supports and protects the body -to find out what muscles are and how skeletal muscles help us move	NC Unit - Forces and Magnets Big Idea: Matter is all the stuff, or mass, in the universe. Forces are different kinds of pushes and pulls that act on all the matter that is in the universe. KQ: What can magnets do? -Compare how things move on different surfaces -Magnets -Newton: what is it and how do we measure it	NC Unit -Sound Big Idea: Both light and sound are forms of energy that move in waves. Understanding waves helps us to communicate, explore the universe, and transfer energy to where we want it. KQ: How do we hear different sounds? -Identify how sounds are made -Sound as vibrations that travel to the ear -Pitch/volume -The pitch and volume of sounds can be changed in a variety of ways.	NC Unit – Plants Big Idea: There is a relationship between structure and function - every flower part has a job to do. KQ: What do living things need to survive? -Functions of different parts of flowering plants -How water is transported within plants -Life cycles of flowering plants -Requirements of plants for life and growth	NC Unit - Light Big Idea: Dark is the absence of light. KQ: What is the dark? -Sources of light -Shadows and reflections -light is reflected from surfaces. -To understand the sun can be dangerous and how best to protect ourselves. -If there is no light from a light source, it will be dark.

Science						
 NC Unit Light Big Idea: We can use evidence found in practical experiments to support an idea in science KQ: Are there rules which govern how ligh works? Prove light travels in straight lines using pinhole camera design Show how shadows ar created, Find out how light is reflected using mirrors and periscopes and prove this with an experiment. Show how light travels from light sources to our eyes. Find out how light cam be bent and split – find out how a rainbow is made and design an experiment to show light is made up of different colours. 	NC Unit ElectricityBig Idea: Planning and carrying out an enquiry by changing a variable can answer a scientific questionMC: How does changing a circuit affect what is observed?Learn what electricity is and how is it related to electronsWhat is voltage and current and how do batteries work. Investigate brightness of a lamp and how it's affected by voltage of cells Find out how a bulb worksUse recognised symbols when representing a simple circuit in a diagram and create circuits made.	NC Unit Animals incl. humans(y6) Big Idea: Recording data and results in different ways can help explain our findings in a scientific enquiry KQ: How does exercise affect how the human body operates - circ. system/health Learn about circulatory system/blood and put together and label a pop-up heart. Design an experiment to test how heart rate changes with exercise and represent the results using a spreadsheet and graphs. Learn about the impact of diet/ drugs on health.	NC Unit Properties and changes of materials(y5) Big Idea: Carrying out a fair test ensures that results are more accurate KQ: How do different materials react and change when subjected to different processes Compare and group materials based on properties (including solubility, hardness, conductivity, magnetic properties) Dissolving/solutions – predict and test soluble materials – which dissolves quickest Filtering/sieving – investigate which material make the best filter and record results graphically Everyday materials	 NC Unit Evolution and inheritance Big Idea: Time can affect how living things can change in more, or less significant ways. KQ: Why may the offspring of living things be different from their parents Recognise that living things have changed over time – look at fossils and learn how they are made Recognise that living things produce offspring Identify how animals /plants are adapted to their environment Investigating variation in the classroom – height, hair colour, shoe size etc. Data collection and graph drawing to analyse. Predicting how humans might adapt over years to come based on new technologies and changes to the environment in which we live. 	NC Unit Living things and their habitats (y6) Big Idea: Classifying and grouping things can help support our scientific understanding KQ: Why are certain characteristics significant in creating classification groups Learn how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro- organisms, plants and animals Learn about Linnaeus's classification system. Give reasons for classifying plants and animals based on specific characteristics – justify reasons for classifying unusual animals such as the duck-billed platypus.	
NC Unit Earth and Space KQ: How are our watches and calendar related to the movements of earth i space? Big Idea: The movement of our planet is key to our experience of time.	NC Unit Forces KQ: How can we measure the forces we experience on earth? Big Idea: Forces influence our everyday life Explain that unsupported objects fall towards the Earth – gravity. Learn about Newton's laws of gravity	The Science of a Trip to N KQ: How can scientists so to Mars? Big Idea: A successful trip understanding of how for How do the ideas we have space help us understand Mars?	Mars olve the problems of a trip o to Mars requires an rces work. e learnt above forces and the problems of a trip to	NC Unit Living Things and Their habitats (y5) KQ: How do environmental conditions affect growth? Big Idea: There are differences and similarities in the lifecycles of mammals, amphibians, insects and birds Learn about the life cycles of a mammal, an amphibian, an	NC Unit Animals including humans-changes KQ: How does time affect the development of different animals from infancy to old age? Big Idea: Living things use different mechanisms to reproduce Describe the changes as humans develop to old age	

Year 5/6

Science

Investigating our own solar system.Air resistance – design and testing of parachutesinsect and a bird and identify the differences and similarities.and give reasons why the changes occur.Learn about the mechanisms which and testing of ramp vehicle result in earth having day and night and leap year every 4 years.Investigate friction – design and testing of ramp vehicle levers, pulleys and gears, allow a smaller force to Investigate how theInvestigate friction – design and testing of ramp vehicle its growth.Compare the reproduction plants with reproduction animals (including SRE)	
solar system.testing of parachutesthe differences and similarities.changes occur.Learn about theInvestigate friction – designInvestigate how a bean growsInvestigate how a bean growsmechanisms whichand testing of ramp vehicleand the factors which influenceCompare the reproductionresult in earth havingRecognise mechanisms, e.g.its growth.plants with reproductionday and night and leaplevers, pulleys and gears,allow a smaller force toanimals (including SRE)year every 4 years.allow a greater effect.have a greater effect.its growth.	and give reasons why these
Learn about the mechanisms which result in earth having day and night and leap year every 4 years.Investigate friction – design and testing of ramp vehicle Recognise mechanisms, e.g.Investigate how a bean grows and the factors which influence its growth.Compare the reproduction plants with reproduction animals (including SRE)year every 4 years. Investigate how theallow a smaller force to have a greater effect.allow a greater effect.and the factors which influence its growth.investigate how a bean grows and the factors which influence its growth.animals (including SRE) its growth.	changes occur.
mechanisms which result in earth having day and night and leap year every 4 years.and testing of ramp vehicle Recognise mechanisms, e.g.and the factors which influence its growth.Compare the reproduction plants with reproduction animals (including SRE)Investigate how thehave a greater effect.have a greater effect.have a greater effect.have a greater effect.	
result in earth having day and night and leap year every 4 years.Recognise mechanisms, e.g.its growth.plants with reproduction animals (including SRE)year every 4 years.allow a smaller force toanimals (including SRE)Investigate how thehave a greater effect.animals (including SRE)	Compare the reproduction in
day and night and leap year every 4 years.levers, pulleys and gears, allow a smaller force toanimals (including SRE)Investigate how thehave a greater effect	plants with reproduction in
year every 4 years.allow a smaller force toInvestigate how thehave a greater effect.	animals (including SRE)
Investigate how the have a greater effect.	
moon interacts with the	
earth.	
Investigate why we	
have seasons and what	
would happen if the	
earth wasn't on a tilt.	

DISCIPLINARY KNOWLEDGE

	Year R	Year 1/2	Year 3/4	Year 5/6
	Engage in open-ended activity Playing & Exploring	-Ask simple questions and recognise that they can be answered in different ways -Use simple secondary sources to find	-Ask relevant questions and use different types of scientific enquiries to answer them	-Use their science experiences to explore ideas and raise different kinds of questions
Asking Questions		answers	-Start to make their own decisions about the most appropriate type of scientific enquiry they might use to answer questions -Recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations	-Recognise which secondary sources will be most useful to research their ideas and begin to separate opinion from fact

	Year R	Year 1/2	Year 3/4	Year 5/6
	Find ways to solve problems, find new	-Perform simple tests	-Set up simple practical enquiries,	-Plan different types of scientific enquiries
	ways to do things and test their ideas		comparative and fair tests	to answer questions, including recognising
		-Suggest some ideas and questions based on		and controlling variables where necessary
		simple knowledge and say how they might	-Suggest questions that can be tested and	
		find out about them	make predictions about what will happen,	-Use test results to make predictions and
sts			some of which are based on scientific	identify when further observations,
Te			knowledge	comparative and fair tests might be
, B				needed (and explain which variables need
nir			-Design a fair test or plan how to collect	to be controlled and why in a fair test)
an			sufficient evidence	
P				-Decide how to turn ideas into a form that
			-Recognise when a simple fair test is	can be tested and,
			necessary and help to decide how to set it	where appropriate, to make
			up	predictions of what will happen based on
				scientific
				knowledge and understanding

	Year R	Year 1/2	Year 3/4	Year 5/6
Gathering & Recording	-Develop ideas of grouping, sequences, cause and effect	 -Identify and classify -Use simple features to compare objects, materials and living things and with help decide how to sort and group them (identifying and classifying) -Record simple data With help, record and communicate their findings in a range of ways and begin to use simple scientific language 	 -Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables -Gather, record, classify and present data in a variety of ways to help in answering questions 	-Decide how to record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs

	Year R	Year 1/2	Year 3/4	Year 5/6
Observing & Measuring	Year R Know about similarities and differences in relation to objects, materials and living things Make observations of animals and plants and explain why some things occur, and talk about changes	Year 1/2 -Observe closely, using simple equipment (e.g. hand lenses, egg timers to gather data) -use their observations and ideas to suggest answers to questions	Year 3/4 -Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers -Begin to look for naturally occurring patterns and relationships and decide what data to collect to identify them	Year 5/6 -Choose the most appropriate equipment to take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate -Make their own decisions about what observations to make what measurements to use and how long to make them for

	Year R	Year 1/2	Year 3/4	Year 5/6
Recording/ Presenting/ Reporting	Create simple representations of events, people and objects	-Gather and record data to help in answering questions - Talk about what they have found out and how they found it out -Begin to use simple scientific language -Record simple data	 -Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions -Talk about criteria for grouping, sorting and classifying; and use simple keys 	 -Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations -Use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places (Maths)

	Year R	Year 1/2	Year 3/4	Year 5/6
		-Using their observations and ideas to	-Use results to draw simple conclusions,	-Identify scientific
		suggest answers to questions	make predictions for new values, suggest	evidence that has been
g			improvements and raise further questions	used to support or refute
tii				ideas or arguments.
luŝ			-Identify differences, similarities or	
va			changes related to simple scientific ideas	-Solve problems involving the calculation
Ú.			and processes	and conversion of units of measure, using
∞ ∞				decimal notation up to three decimal
in			-Use straightforward scientific evidence to	places where appropriate (Maths)
γs			answer questions or to support their	
nal			findings	
Ā				

SUBJECT SPECIFIC VOCABULARY - SCIENCE

PLANTS/ LIVING THINGS

Year R

grow, leaf, plant, soil, sunlight, water, petal, root, stem, seed

Year 1/2

wild plants, garden plants, deciduous, evergreen, germination, sprout, shoo seedling, seed dispersal, fruit, temperature, nutrition

Year 3/4

flowering plants, roots, stem, trunk, leaves, flowers, growth/grow, nutrients, soil, transported, pollination, pollen, seed formation, seed dispersal, life cycle, energy, minerals, pores, stigma, pollen, seeds

Year 5/6

life cycle, pollination, fertilisation, germination, photosynthesis, chlorophyll, stamen, anther, filament, stigma, style, carpel, ovary, ovule

SOUND

Year 3/4

eardrum, vibration, pitch, volume, soundproof, soundwave

ELECTRICITY

Year 3/4

electricity, series, electrical circuit, cells, wires, bulbs, switch, buzzer, conductor, insulator

Year 5/6

renewable, non-renewable, electrons





EVERYDAY MATERIALS, STATES OF MATTER, PROPERTIES AND CHANGES OF MATERIALS

Year R

hard, soft, float, sink

Year 1/2

Rough, smooth, stretchy, dull, shiny, plastic, metal, wooden, brick, fabric, glass, water, paper, bendy, stiff, waterproof, leaky, absorbent, nonabsorbent, transparent, properties, squash, twist, stretch

Year 3/4

solid, liquid, gas, changing state, molecule, vibrate

Year 5/6

solubility, transparency, conductivity, insulation, dissolve, solution, mixture, insoluble, evaporation, evaporate, condense, melt, reversible changes, irreversible changes, filter, sieving, separate

Light

Year 3/4

shadow, dark, reflection, opaque,

Year 5/6

retina, pupil, translucent, transparent, light source, visible spectrum, prism, ray

Earth and Space

Year 5/6

Earth, solar system, Sun, Moon, rotation, day & night, star, planet, sphere, orbit,

axis, Mercury, Venus, Mars, Jupiter, Saturn, Uranus, Neptune, Plu







ANIMALS INCLUDING HUMANS

Year R

senses, sight, hearing, touch, smell, taste, eyes, nose, tongue, ears, head, food, water

Year 1/2

Amphibians, mammals, reptiles, carnivores, herbivores, omnivores, shoulder, elbow, baby, toddler, teenager, live, life cycle, offspring, reproduce, dehydrate, diet, disease, live young, energy, exercise, germs, heart rate, hygiene, pulse

Year 3/4

nutrition, skeletons, muscles, support, protection, movement, digestive system, human teeth, food chains, producers, predators, carnivores, herbivores

Year 5/6

heart, blood vessels, circulatory system, lifestyle, aorta, vein, artery, carbon dioxide, oxygen





Rocks

Year 3/4

fossil, grains, crystals, sedimentary rock, soil, permeable, impermeable, erosion

Evolution and Inheritance

Year 5/6

Charles Darwin, adaptation, evolution, offspring, inheritance, variations, habitat, environment, characteristics





LIVING THINGS AND THEIR HABITATS

Year 1/2

living, dead, never alive, habitat, coastal, urban,

woodland, pond

Year 3/4

living things, classification keys, local environment, wider environment, habitat, seashore, woodland

Year 5/6

reproduction, life cycle, photosynthesis, pollination, germination, fertilization, insect, mammal, classification, microorganisms

FORCES AND MAGNETS

Year 3/4

repel, attract, magnetic, pole

Year 5/6

gravity, resistance (air and water), lever, pulley, friction

inertia, Isaac Newton

SEASONAL CHANGES

Year R

day, night, light, dark, weather, rain, sunshine, snow

Year 1/2

summer, winter, autumn, spring, season, months of the year





