The Willows Primary School

SCIENCE Curriculum

Subject Leader	Shona Mason

INTENT

At the Willows, it is our intention to stimulate and develop the children's' 'sense of excitement and curiosity about natural phenomena' regardless of ethnic origin, gender, class, aptitude or disability with a broad and balanced science curriculum. This will support a developing deep and lasting interest in the subject.

Our high quality teaching and science curriculum will enable the children to become enquiry based learners collaborating through researching, investigating and evaluating experiences. Thus embedding the skills to work scientifically. We ensure that the 'Working Scientifically' skills are built-on and developed throughout children's time at the school. Giving them the opportunity to become confident scientists and, most importantly, to continue to ask questions and be curious about their surroundings.

They will be given the opportunity, wherever possible, to learn through varied systematic investigations, leading to them being equipped for life to ask and answer scientific questions about the world around them.

We want our children to have a broad vocabulary. Scientific language is to be taught and built upon as topics are revisited in different year groups and across Key Stages.

It is our intention that throughout their time at Willows, they will achieve the following required aims:

To develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics

To develop understanding of the nature, processes and methods of science through different types of scientific enquiries that help pupils to answer scientific questions about the world

To equip pupils with the scientific knowledge required to understand the uses and implications of science, today and for the future.

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IMPLEMENTATION

Throughout Willows, we implement the Plymouth Science scheme of work which is a progressive science curriculum ensuring that the children continually develop their prior learning. We plan lessons in accordance with EYFS Statutory Guidance, Development Matters (through 'Understanding of the World ') and National Curriculum 2014.

The acquisition of key scientific knowledge, working scientifically and science enquiry skills are an integral part of our science lessons. Where possible, we teach Science through the current topic of learning and make cross curricular links. We plan for problem solving and real life opportunities that enable children to find out for themselves. Children are encouraged to ask their own questions and are given opportunities to use their scientific skills and research to discover the answers. Planning involves teachers creating practical, engaging lessons with opportunities for precise questioning in class to test conceptual knowledge and skills, and assess children regularly to identify those children with gaps in learning.

Linked knowledge organisers enable children to learn and retain the important, useful and powerful vocabulary and knowledge contained within each unit. We develop and challenge our children's science capital by linking their science learning to the real world and encourage wider opportunities of learning. Such as planned home learning activities, part taking in Science Week, providing engaging and enriching assemblies, providing opportunities to join science squad and after school science club.

'Over the course of an academic year, pupils should carry out several investigations which involve different types of enquiry.' These will be embedded throughout all of the topic areas, covered in Science. The children should be made aware of the skills and specific language associated with it through the natural process of teaching and learning. The children will learn about the 5 types of enquiry throughout the school and they will complete scientific enquiry based on these 5 areas. They will be familiar with the areas and be able to discuss them when conducting a scientific investigation.

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What is taught when?		
	F1	**F2**
Half Term 1	Keeping Healthy (plymouth)	All about me
Half Term 2	Seasons	Colour & Celebrations
Half Term 3	Night/Day/ Ice	Animals
Half Term 4	Colour	Minibeast and Growing (not hungry caterpillar)
Half Term 5	Plants and lifecycle (plymouth hungry caterpillar)	Materials and People Who Help us
Half Term 6	Traditional Tales (plymouth)	Under the Sea and Seasons

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What is taught when?						
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Half Term 1	Animals including humans & seasonall changes	Living Things and their Habitats	Rocks	Animals including Humans	Forces	Animals including humans
Half Term 2	Animals including humans (ext unit) & seasonall changes	Materials	Light	Sound	Properties of materials	Evolution and inheritance
Half Term 3	Materials/ Science Week & seasonall changes	Animals including humans	Forces and Magnets	State of matter	Space	Electricity
Half Term 4	Materials (Ex Unit)& seasonall changes	Animals including humans (ext Unit)	Science Week	Science Week	Science Week	Science Week
Half Term 5	Plants & seasonall changes	Plants	Animals including Humans	Electricity	Living Things and their habitats	Light
Half Term 6	Plants & seasonall changes	Plants (Ext Unit)	Plants	Living things	Animals including humans	Living things and habitats

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Knowledge and Skills Prior to KS1 - SCIENCE in EYFS

Children will ask questions about the environment including the weather outside. They will be able to suggest what they might wear. They will develop an understanding of growth, decay and changes over time and show care and concern for living things and the environment. They will use their senses when walking around and investigating. They will develop questioning and curiosity through play and understand the concept of forces and electricity through twisting, pushing, slotting and magnetic toys and seeing the effects of pushing different buttons to make sounds and movements. They can talk about similarities and differences between living things and materials and make simple observations about animals.

Natural world
Explore the world around them making observations and drawings of plants.

Natural world
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.

Communication and language- express their ideas and feelings about their experiences using full sentences.

The Natural World
Explore the natural world around them, making observations and drawing pictures of animals.

Begin to make sense of their own life-story and family's history.

Begin to understand the key features of the lifecycle of a plant and animal.

People, culture and communities
Describe their immediate environment using knowledge from observation, discussion, stories and non-fiction texts and maps.

Personal, social and emotional development

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Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices.

People, culture and communities
Explain some similarities and differences between life in this country and life in other countries, drawing on knowledge from stories, non-fiction texts and maps.

Understanding the world
Begin to understand the need to respect and care for the natural environment and all living things.

Explore the natural world around them

The Natural World
Understand some important processes and changes in the natural world around them, including changing states of matter.

Speaking
Offer explanations for why things happen, making use of recently introduced vocabulary from stories, non-fiction, rhymes and poems where appropriate.

Understanding of the world
Use all their senses in hands on exploration of natural materials.
Explore collections of materials with similar and/or different properties.
Talk about what they see using a wide vocabulary.
Explore how things work.
Talk about the difference between materials and changes they notice.

The Natural World
Understand some important processes and changes in the natural world around them, including seasons.

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Understanding of the world
Explore materials with different properties.
Talk about what they see, using a wide vocabulary.

Expressive arts and design
Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture form and function.

Explore colour and colour-mixing.

Understanding the World.
Explore and talk about different forces they can feel.
Can talk about the differences between materials and changes they notice.

Shows skills in making toys work by pressing parts or lifting flaps to achieve effects such as sound, movement or new images.

The characteristics of effective learning are the foundations on which working scientifically skills are build in KS1. While children are playing and exploring, teachers should be modelling, encourahomg amd supporting them to do the following:

- Show curiosity and ask questions
- Make observations using their senses and simple equipment
- Make direct comparisons
- Use equipment to measure
- Record their observations by drawing, taking photographs, using sorting rings or boxes and in reception on simple tick sheets
- Use their obsvertions to help them to answer their questions
- Talk about what they are doing and have found out
- Identify, sort and group

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Skills and Knowledge Progression			
	Year 1 & 2	**Year 3 & 4**	**Year 5 & 6**
Working Scientifically			
Asking Questions	**Asking simple questions and recognising that they can be answered in different ways** - While exploring the world, the children develop their ability to ask questions (such as what something is, how things are similar and different, the ways things work, which alternative is better, how things change and how they happen). Where appropriate, they answer these questions. - The children answer questions developed with the teacher often through a scenario - The children are involved in planning how to use resources provided to answer the questions using different types of enquiry, helping them to recognise that there are different way	**Asking relevant questions and using different types of scientific enquiries to answer them** - The children consider their prior knowledge when asking questions. They independently use a range of question stems. Where appropriate, they answer these questions. - The children answer questions posed by the teacher. - Given a range of resources, the children decide for themselves how to gather evidence to answer the question. They recognise when secondary sources can be used to answer questions that cannot be answered through practical work. They identify the	**Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary** - Children independently ask scientific questions. This may be stimulated by a scientific experience or involve asking further questions based on their developed understanding following an enquiry. - Given a wide range of resources the children decide for themselves how to gather evidence to answer a scientific question. They choose a type of enquiry to carry out and justify their choice. They recognise how secondary sources can be used to answer questions that cannot be answered through practical

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		type of enquiry that they have chosen to answer their question.	work.
Making observations and taking measurements	**Observing closely, using simple equipment** - Children explore the world around them. They make careful observations to support identification, comparison and noticing change. They use appropriate senses, aided by equipment such as magnifying glasses or digital microscopes, to make their observations. - They begin to take measurements, initially by comparisons, then using non-standard units.	**Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers** - The children make systematic and careful observations. - They use a range of equipment for measuring length, time, temperature and capacity. They use standard units for their measurements.	**Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate** - The children select measuring equipment to give the most precise results e.g. ruler, tape measure or trundle wheel, force meter with a suitable scale. - During an enquiry, they make decisions e.g. whether they need to: take repeat readings (fair testing); increase the sample size (pattern seeking); adjust the observation period and frequency (observing over time); or check further secondary sources (researching); in order to get accurate data (closer to the true value).
Engaging in practical enquiry to answer questions	**Performing simple tests** - The children use practical resources provided to gather evidence to answer questions generated by themselves or the teacher. They carry out: tests to classify; comparative tests; pattern seeking enquiries; and make observations over time. **Identifying and classifying** . - Children use their observations and testing to compare objects, materials and	**Setting up simple practical enquiries, comparative and fair tests** - The children select from a range of practical resources to gather evidence to answer questions generated by themselves or the teacher. - - They follow their plan to carry out: observations and tests to classify; comparative and simple fair tests; observations over time; and pattern seeking. **Explanatory note**	**Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary** - The children select from a range of practical resources to gather evidence to answer their questions. They carry out fair tests, recognising and controlling variables. They decide what observations or measurements to make over time and for how long. They look for patterns and relationships using a suitable sample.

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	living things. They sort and group these things, identifying their own criteria for sorting. - They use simple secondary sources (such as identification sheets) to name living things. They describe the characteristics they used to identify a living thing.	A comparative test is performed by changing a variable that is qualitative e.g. the type of material, shape of the parachute. This leads to a ranked outcome. A fair test is performed by changing a variable that is quantitative e.g. the thickness of the material or the area of the canopy. This leads to establishing a causative relationship.	
Recording and presenting evidence	**Gathering and recording data to help in answering questions** - The children record their observations e.g. using photographs, videos, drawings, labelled diagrams or in writing. - They record their measurements e.g. using prepared tables, pictograms, tally charts and block graphs. - They classify using simple prepared tables and sorting rings.	**Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions** **Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables** - The children sometimes decide how to record and present evidence. They record their observation e.g. using photographs, videos, pictures, labelled diagrams or writing. They record their measurements e.g. using tables, tally charts and bar charts (given templates, if required, to which they can add headings). They record classifications e.g. using tables, Venn diagrams, Carroll diagrams. - Children are supported to present the same data in different ways in order	**Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs** - The children decide how to record and present evidence. They record observations e.g. using annotated photographs, videos, labelled diagrams, observational drawings, labelled scientific diagrams or writing. They record measurements e.g. using tables, tally charts, bar charts, line graphs and scatter graphs. They record classifications e.g. using tables, Venn diagrams, Carroll diagrams and classification keys. - Children present the same data in different ways in order to help with answering the question.
Answering questions and concluding	**Using their observations and ideas to suggest answers to questions** - Children use their experiences of the world around them to suggest appropriate	**Using straightforward scientific evidence to answer questions or to support their findings** - Children answer their own and others' questions based on observations they	**Identifying scientific evidence that has been used to support or refute ideas or arguments** - Children answer their own and others' questions based on observations they

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	answers to questions. They are supported to relate these to their evidence e.g. observations they have made, measurements they have taken or information they have gained from secondary sources.	have made, measurements they have taken or information they have gained from secondary sources. The answers are consistent with the evidence.	have made, measurements they have taken or information they have gained from secondary sources. When doing this, they discuss whether other evidence e.g. from other groups, secondary sources and their scientific understanding, supports or refutes their answer. - They talk about how their scientific ideas change due to new evidence that they have gathered. - They talk about how new discoveries change scientific understanding.
Evaluating and raising further questions and predictions	**Using their observations and ideas to suggest answers to questions** - The children recognise 'biggest and smallest', 'best and worst' etc. from their data.	**Identifying differences, similarities or changes related to simple scientific ideas and processes** - Children interpret their data to generate simple comparative statements based on their evidence. They begin to identify naturally occurring patterns and causal relationships. **Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions** - They draw conclusions based on their evidence and current subject knowledge. **Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions** - Children use their evidence to suggest	**Reporting and presenting 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** - In their conclusions, children: identify causal relationships and patterns in the natural world from their evidence; identify results that do not fit the overall pattern; and explain their findings using their subject knowledge. **Reporting and presenting 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** - They evaluate, for example, the choice of method used, the control of variables, the precision and accuracy of

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		values for different items tested using the same method e.g. the distance travelled by a car on an additional surface. - Following a scientific experience, the children ask further questions which can be answered by extending the same enquiry	measurements and the credibility of secondary sources used. - They identify any limitations that reduce the trust they have in their data. **Using test results to make predictions to set up further comparative and fair tests** - Children use the scientific knowledge gained from enquiry work to make predictions they can investig
Communicating their findings		**Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions** - They communicate their findings to an audience both orally and in writing, using appropriate scientific vocabulary.	**Reporting and presenting 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** - They communicate their findings to an audience using relevant scientific language and illustrations.

Curriculum Content

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
PLANTS	Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. Identify and describe the basic structure of a variety of common	Observe and describe how seeds and bulbs grow into mature plants. Find out and describe how plants need water, light and a suitable	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,			

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	flowering plants, including trees.	temperature to grow and stay healthy.	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			
ANIMALS INCLUDING HUMANS	Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. Identify and name a variety of common animals that are carnivores, herbivores and omnivores. Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets).	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.	Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat. Identify that humans and some other animals have skeletons and muscles for support, protection and movement.	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.	Describe the changes as humans develop to old age.	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.

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	Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.					
LIVING THINGS AND THEIR HABITATS		Explore and compare the difference 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 the basic needs of different kinds of animals and plants, and how they depend on each other. Identify and name a variety of plants and animals in their habitats, including micro-habitats. Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.		Recognise that living things can be grouped in a variety of ways. Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. Recognise that environments can change and that this can sometimes pose dangers to living things.	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.	Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals Give reasons for classifying plants and animals based on specific characteristics

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LIGHT			Recognise that they need light in order to see things and that the dark is the absence of light. Notice that light is reflected from surfaces. Recognise that light from the sun can be dangerous and that there are ways to protect their eyes Recognise that shadows are formed when the light from a light source is blocked by a solid object. Find patterns in the way that the size of shadows changes.			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.
FORCES AND MAGNETS			Compare how things move on different surfaces. Notice that some forces need contact between two objects, but magnetic forces can act at a distance. Observe how magnets attract or repel each		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	

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			other and attract some materials and not others. Compare and group together a variety of everyday materials on the basis on whether they are attracted to a magnet, and identify some magnetic materials. Describe magnets as having two poles. Predict whether two magnets will attract or repel each other, depending on which poles are facing.		moving surfaces. Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.	
SEASONAL CHANGE	Observe changes across the four seasons. Observe and describe weather associated with the seasons and how day length varies.					
EVERYDAY MATERIALS	Distinguish between an object and the material from which it is made. Identify and name a variety of everyday	Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular			.	

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	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.	uses. Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.				
ROCKS			Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. Describe in simple terms how fossils are formed when things that have lived are trapped within rock. Recognise that soils are made from rocks and organic matter.			
PROPERTIES & CHANGES OF					Compare and group together everyday materials on the basis of their properties, including their	

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MATERIALS					hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution. Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. Demonstrate that dissolving, mixing and changes of state are reversible changes. Explain that some	

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					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	
STATE OF MATTER				Compare and group materials together, according to whether they are solids, liquids or gases. Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C). Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.		
EVOLUTION AND INHERITANCE						Recognise that living things have changed over time and that fossils provide information about

						living things that inhabited the Earth millions of years ago. Recognise that living things produce offspring of the same kind, but 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.
EARTH AND SPACE					Describe the movement of the Earth, and other planets, relative to the Sun. 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	

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					movement of the sun across the sky.	
SOUND				Identify how sounds are made, associating some of them with something vibrating. Recognise that vibrations from sounds travel through a medium to the ear. Find patterns between the pitch of a sound and features of the object that produced it. Find patterns between the volume of a sound and the strength of the vibrations that produced it. Recognise that sounds get fainter as the distance from the sound source increases.		
ELECTRICITY				Identify common appliances that run on electricity. Construct a simple series electrical circuit, identifying and naming its basic parts,		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

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				including cells, wires, bulbs, switches and buzzers. Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery. Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. Recognise some common conductors and insulators, and associate metals with being good conductors.		reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches. Use recognised symbols when representing a simple circuit in a diagram

Key Vocabulary Progression						
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
WORKING SCIENTIFICALLY						

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ANIMALS INCLUDING HUMANS	Head, body, eyes, ears, mouth, teeth, leg, tail, wing, claw, fin, scales, feathers, fur, beak, paws, hooves, reptile, amphibian, mammal, omnivore, carnivore, herbivore, all senses,	Offspring, grow, adults, nutrition, reproduce, survival, water, food, air, exercise, hygiene, life cycle,heartbeat, germs, disease,growth, nutrition	Nutrition, nutrients, carbohydrates, sugars, protein, vitamins, minerals, fibre, fat, water, skeleton, bones, muscles, support, protect, skull, ribs, spine, muscles, joints.	Digestive system, digestion, mouth, teeth (e.g. molar, incisor) saliva, gum, tongue, food chain, oesophagus, stomach, small intestine, nutrients, large intestine, rectum, anus, incisor, canine, herbivore, omnivore.	Puberty, vocabulary linked to describe a range of sexual characteristics.	Heart, pulse, rate, pumps, blood, blood vessel, transported, veins, arteries, lungs, oxygen, carbon dioxide, nutrients, water, muscles, cycle, circulatory system, diet, exercise, drugs, lifestyle, body functions, healthy,
MATERIALS	Living, non-living, material, Object, material, wood, plastic, glass, metal, water, rock, brick, paper, fabric, elastic, 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.	Names of materials: wood, plastic, glass, metal, water, rock, brick, paper, fabric, card, rubber, suitable/unsuitable, use/useful, hard/soft, stretchy/stiff. Rigid/flexible, waterproof/absorbent, strong/weak, rough/smooth, transparent/opaque, shape, push/pushing, pull/pulling, twist/twisting, squash/squashing, bend/bending, stretch/stretching.		Solid, liquid, gas, state change, melting, freezing, melting point, boiling point, evaporation, temperature, water cycle	Thermal/electrical insulator/conductor, change of state, mixture, dissolve, solution, soluble, insoluble, filter, sieve, reversible/not reversible, change, burning, rusting, new material	
LIVING THINGS AND THEIR HABITATS		Living, dead, never been alive, suited, suitable, basic need, food, food chain, shelter, move, feed, names of local habitats e.g. pond, woodland, names of micro habitats e.g. under logs, in bushes etc.		Classification, classification keys, environment, habitat, human impact, positive, negative, migrate, hibernate	Lifecycle, mammal, amphibian, germination, seed formation, insect, bird, pollination, life processes, plants, animals, reproduction, environment, dispersal, growth, living, eggs, and seeds. Can dissect and label parts of flowering plant including male and female structures. Record finding as an annotated illustration of a flowering plant. Research and explain	Vertebrates, fish, amphibians, reptiles, birds, mammals, invertebrates, insects, spiders, snails, worms, flowering and non-flowering.

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					the life cycle and reproduction of a plant using scientific language.	
PLANTS	Leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud. Names of trees in local area, garden and wild flowering plants.	As year 1+ light, shade, sun, warn, cool, water, grow, healthy.	Photosynthesis, pollen, insect/wind pollination, seed formation, seed dispersal-wind dispersal, animal dispersal, water dispersal, pollen, roots, stem, trunk, leaves, absorb, nutrients, reproduce, germination, stamen, style.			
LIGHT			Light, light source, dark, absence of light, transparent, translucent, opaque, shiny, matt, surface, shadow, reflect, mirror, sunlight, dangerous			Year 3 vocabulary + Light, light source, dark, absence of light, transparent, translucent, opaque, shiny, matt, surface, shadow, reflect, mirror, sunlight, dangerous
FORCES AND MAGNETS			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.		Force, Gravity, Earth, air resistance, water resistance, friction, mechanisms, simple machines, levers, pulleys, gears.	
ELECTRICITY				Electrical, appliance, mains, plug, circuit, component, cell, battery, positive, negative, connect/connectors, loose connection, short circuit, crocodile clip, bulb, switch,		Circuit, complete circuit, circuit diagram, circuit symbol, cell, battery, bulb, buzzer, motor, switch, voltage NB Children do not need to understand what voltage is

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	[redacted]			buzzer, motor, conductor, insulator, metal, non-metal, symbol.	[redacted]	but will use volts and voltage to describe different batteries. The words cells and batteries are now used interchangeably
ONE YEAR GROUP ONLY	SEASONAL CHANGE Weather (sunny, rainy, windy, snowy etc) Seasons (winter, summer, spring, autumn) sun, sunrise, sunset, Day length			SOUND Sound, source, vibrate, vibration, travel, pitch, volume, faint, loud, insulation.	EARTH AND SPACE Earth, sun, moon, Mercury, Jupiter, Saturn, Venus, Mars, Uranus, Neptune, Pluto (dwarf planet), spherical, solar system, rotates, star, orbit, planets, axis, night, day, season, galaxy, meteorite, gravity	EVOLUTION AND INHERITANCE Offspring, sexual reproduction, vary, characteristics, suited, adapted, environment, inherited, species, fossils.

IMPACT

The successful approach to the teaching of science at the Willows results in a fun, engaging, high quality science education. The high levels of engagement, involvement and **challenge** will mean that children will make good progress from their starting points. They will develop a richer vocabulary which will enable them develop a **confidence** to articulate their understanding of taught concepts. The children will understand the importance of science in wider life and will recognise why we need to have a good level of scientific knowledge and skills. This will provide the children with the foundations for **understanding the world** which will see them through to further study, work and a successful adult life.