



## Core Science Knowledge Overview

Below is an overview of all of the core science knowledge gained during Key Stage One and Two at Woodlands. For more detailed knowledge, please refer to the Knowledge Organisers for each class.

Year group	Core Knowledge (learning objectives for each lesson)	Substantive Concepts	Assessment Outcome
	<p><b>Working Scientifically</b></p> <p>To ask simple questions and recognise that they can be answered in different ways.</p> <p>To observe closely, using simple equipment.</p> <p>To perform simple tests.</p> <p>To identify and classify.</p> <p>To use their observations and ideas to suggest answers to questions.</p> <p>To gather and record data to help in answering questions.</p>	<p><b>Investigation</b></p> <p><b>Observe</b></p> <p><b>Test</b></p> <p><b>Data</b></p> <p><b>Enquiry</b></p> <p><b>Results</b></p> <p><b>Conclusion</b></p>	
<b>Year 1 &amp; 2 Cycle A</b>	<p><b>The Human Body- Links to all Year Groups</b></p> <p>To know that our bodies have five senses.</p> <p>To know that we use our eyes to see.</p> <p>To know that sounds travel through our ears to send messages to our brain.</p> <p>To know that our senses help us to understand the world around us.</p> <p>To understand that some people have problems with their senses, such as blindness or deafness.</p>	<p><b>Senses</b></p> <p><b>Sound</b></p>	To know my senses help me to be aware of the world around me.
	<p><b>Animals and their Needs- Links to all Year Groups</b></p> <p>To name and describe common animals.</p> <p>To know that scientists group animals according to their features.</p> <p>To understand that we can group animals according to what they eat.</p> <p>To describe the needs of a pet.</p> <p>To describe an animal using scientific words.</p>	<p><b>Senses</b></p> <p><b>Classification</b></p> <p><b>Carnivore</b></p> <p><b>Herbivore</b></p> <p><b>Omnivore</b></p> <p><b>Habitat</b></p>	To understand what an animal is and how animals can be grouped.
	<p><b>Seasons and Weather – Links to Year 3, 4 &amp; 5</b></p> <p>To name and describe the four seasons.</p> <p>To know that tools are used to gather information about the weather.</p> <p>To present data using a graph.</p> <p>To know there are different types of cloud.</p>	<p><b>Weather</b></p> <p><b>Seasons</b></p>	To understand and describe the four seasons, and how to gather data about weather.



	<p>To understand that weather forecasts help people to prepare for different kinds of weather.</p> <p>To understand that certain types of weather can be dangerous.</p>		
	<p><b>Taking Care of the Earth- Links to Year 2 &amp; 4</b></p> <p>To describe different ways we can take care of the Earth.</p> <p>To know that there are natural and manufactured resources that people on earth use.</p> <p>To identify logging as a way of harvesting the Earth's natural resources.</p> <p>To know that people create pollution which can harm the environment.</p> <p>To know that recycling means turning used things into something new.</p>	<p><b>Pollution</b></p> <p><b>Recycling</b></p>	<p>To describe different ways we can take care of the Earth.</p>
	<p><b>Plants- Links to all Year Groups</b></p> <p>To know what plants, need in order to grow.</p> <p>To name and describe the purpose of parts of a plant.</p> <p>To understand that plants spread their seeds to reproduce.</p> <p>To understand that some trees are evergreen, and some are deciduous.</p> <p>To understand that plants are grown for food and to recognise which parts of plants we eat.</p>	<p><b>Seed/Bulb</b></p> <p><b>Living Thing</b></p> <p><b>Cycle</b></p> <p><b>Reproduction</b></p>	<p>To describe some common plants, including trees.</p>
	<p><b>Materials and Magnets Links to Year 2, 3 4 &amp;5</b></p> <p>To recognise everyday materials.</p> <p>To identify the properties of materials.</p> <p>To explain why materials are chosen for specific tasks.</p> <p>To understand that materials can be sorted according to whether they are or are not attracted to magnets.</p> <p>To investigate which material would be most suitable for (insert purpose).</p>	<p><b>Solid</b></p> <p><b>Liquid</b></p> <p><b>Gas</b></p> <p><b>Magnet</b></p> <p><b>Properties</b></p>	<p>To know the properties of some materials and some facts about magnets.</p>
<p><b>Year 1 &amp; 2 Cycle B</b></p>	<p><b>The Human Body- Links to all Year Groups</b></p> <p>To know that animals including humans, need air, food and water to survive.</p> <p>To know that our skeleton and our muscles help us to move.</p> <p>To understand that our bodies digest our food.</p> <p>To know that our heart pumps blood around our body.</p> <p>To understand that scientists have found ways to keep us healthy.</p>	<p><b>Skeletal system</b></p> <p><b>Muscular system</b></p> <p><b>Digestive system</b></p> <p><b>Circulatory system</b></p> <p><b>Diet</b></p>	<p>To collect data to answer this question:</p> <p>Is Year 2 a healthy class?</p>



	<p><b>Living Things in their Environments- Links to all Year Groups</b>          To know the differences between living, dead and never been alive.          To make a map of our local area and its habitat.          To identify a variety of animals in their microhabitats.          To research different habitats and the animals that live in them.          To identify how an animal is suited to its habitat.          To name and describe animals who live in underground habitats.          To create different food chains.</p>	<p><b>Habitat</b>  <b>Food chain</b>  <b>Carnivore</b>  <b>Herbivore</b>  <b>Omnivore</b></p>	<p>To know what a habitat is, and give examples of different habitats and how animals and plants are adapted to living in them.</p>
	<p><b>Oceans and under the sea</b>          To locate oceans around the world.          To know that the oceans are diverse and many species may not been discovered yet.          To understand high and low tides.          To understand the impact of humans on marine life.          To understand that there are currents of water in the oceans.</p> <p><b>Electricity- Links to Year 4 &amp; 6</b>          To understand what electricity is and how to keep safe around it.          To construct an electrical circuit.          To identify materials that conduct electricity.</p>	<p><b>Conductor</b>  <b>Insulator</b>  <b>Materials</b>  <b>Circuit</b>  <b>Properties</b></p> <p><b>Habitat</b>  <b>Food chains</b></p>	<p>To identify electrical appliances, explain how to ensure we are using electricity safely, how to make a simple circuit.</p> <p>To draw a habitat diagram of the marine world.</p>
	<p><b>Animals including Humans- Links to Year 1, 4 &amp; 6</b>          To explore the basic needs of animals, including humans.          To describe animals and their offspring.          To sort food into food groups.          To understand what eating healthily means.          To know we need to exercise to be healthy.</p>	<p><b>Offspring</b>  <b>Dairy</b>  <b>Carbohydrate</b>  <b>Protein</b>  <b>Fruit</b>  <b>Vegetables</b></p>	<p>To describe the importance of exercise for humans.</p>
	<p><b>Materials and Matter- Links to Year 1, 3, 4 &amp; 5</b>          To know that materials have specific uses based on their properties.          To know that inventors think carefully about materials and their properties.          To know that scientists use microscopes to see very small things around us.          To know that the shapes of solid objects made from some materials can be changed          To understand that water can be a solid and can also be a liquid.</p>	<p><b>Solid</b>  <b>Liquid</b>  <b>Gas</b>  <b>Properties</b></p>	<p>To be able to describe different materials and their properties.</p>
	<p><b>Astronomy- Links to Year 5</b>          To know there are eight planets in our solar system.</p>	<p><b>Solar system</b>  <b>Sun</b></p>	<p>To show understanding of our Solar System.</p>



	<p>To know that Earth travels around the sun.          To know that the moon orbits the earth.          To know that groups of stars are called constellations.          Scientists, including astronomers, learn from each other to make new discoveries about space.</p>	<p><b>Moon</b>  <b>Constellations</b></p>	
	<p><b>Working Scientifically at Lower Key Stage Two</b>          To ask relevant questions and use different types of scientific enquiries to answer them          To be able to set up simple practical enquiries, comparative and fair tests          To make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers          To gather, record, classify and present data in a variety of ways to help in answering questions          To record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables          To report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions          To use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</p>	<p><b>Investigation</b>  <b>Observe</b>  <b>Test</b>  <b>Data</b>  <b>Enquiry</b>  <b>Results</b>  <b>Conclusion</b></p>	
<p><b>Year 3 &amp; 4 Cycle A</b></p>	<p><b>The Human Body- Links to all Year Groups</b>          To know that we can control our voluntary muscles, but we do not control our involuntary muscles.          To know that our bones help us to move and protect some parts of our bodies.          To know that the brain is the centre of the nervous system.          To understand how the brain and mouth start the digestive process.          To describe the simple functions of the basic parts digestive system in humans.</p>	<p><b>Skeletal system</b>  <b>Muscular system</b>  <b>Digestive system</b>  <b>Circulatory system</b>  <b>Diet</b></p>	<p>To be able to describe one of the many systems in our body.</p>
	<p><b>Cycles in Nature- Links to all Year Groups</b>          To know that our natural environment changes as the seasons change.          To understand how plants can change through the seasons.          To know that plants grow, live and reproduce.          To know that some animals migrate.          To recognise the different stages in the life cycle of a frog.</p>	<p><b>Habitat</b>  <b>Reproduction</b>  <b>Cycle</b></p>	<p>To understand that there are cycles in nature.</p>



	<p><b>Light- Links to Year 6</b>          To understand that we need light in order to see things.          To know that transparent materials let light through and opaque materials block light from passing through.          To know mirrors can reflect light in different ways depending on their shape.          To understand our shadows change size throughout the day.</p>	<p><b>Shadow Speed Materials</b></p>	<p>To know that light is essential for life on earth.</p>
	<p><b>Plants- Links to years 1, 2, 5</b>          To know flowering plants all have roots, a stem or trunk, leaves and flowers but not all flowering plants look the same.          To know that different plants need different things in order to thrive.          To know that water moves from the roots of a plant, upwards via the stem.          To know that pollination is needed for flowering plants to reproduce.          To understand that plants spread their seeds in many different ways to reproduce.</p>	<p><b>Living Thing Seed/Bulb Reproduction</b></p>	<p>To know that flowering plants are living things that reproduce.</p>
	<p><b>Rocks – Links to Year 6</b>          To know there are many different types of rocks.          To know that geologists sort rocks into three main groups.          To understand that some rocks allow water to pass through, but others do not.          To know that some rocks contain fossils which can tell us about life millions of years ago.</p>	<p><b>Fossils Properties</b></p>	
	<p><b>Forces and Magnets- Links to Year 1 &amp; 5</b>          To know a force is a push or a pull.          To know that friction is the force between two surfaces.          To understand that magnets have an invisible push or pull force.          To know that magnets have poles and a magnetic field.          To know that magnetic forces are not all the same strength.</p>	<p><b>Magnet Force Properties</b></p>	<p>To be able to explain that we cannot see forces, but we can see the impact they have, using examples of gravity, friction and magnetism.</p>
<p><b>Year 3 &amp; 4 Cycle B</b></p>	<p><b>The Human Body- Links to all Year Groups</b>          To know that cells are the building blocks of the human body and we need nutrition to keep our bodies working as they should.          To identify the different types of teeth in humans and their simple functions.          To know how food is digested and excreted.          To know a healthy diet keeps our bodies healthy.          To understand the essential vitamins and minerals needed in our body.</p>	<p><b>Skeletal system Nervous system Digestive system Diet</b></p>	<p>To design a balanced meal or explain digestion</p>
	<p><b>Classification of Plants and Animals- Links to all Year Groups</b>          To understand that we can classify animals and plants.          To know that fish and amphibians are vertebrates.</p>	<p><b>Classification Living Thing</b></p>	<p>To understand that plants and animals can be</p>



	<p>To know some of the key features of reptiles, birds and mammals.          To understand and describe some key features of insects, arachnids and molluscs.          To know that plants can be classified into two main groups: flowering and non-flowering plants.</p>		classified according to characteristics.
	<p><b>Ecology- Links to all Year Groups</b>          To understand that living things are linked within a food chain.          To know that living things depend on each other in an ecosystem.          To understand that air pollution is a human threat to the environment.          To know how humans have changed the environment in our local area.</p>	<p><b>Habitat</b>  <b>Living Thing</b>  <b>Pollution</b></p>	To show my knowledge and understanding of ecology.
	<p><b>Sound- Links to Year 1</b>          To identify how sound is produced.          To know sound travels through the air.          To know the difference between pitch and volume.          To understand how the human voice makes different sounds.          Vibrations in sound waves travel through the different parts of the ear</p>	<p><b>Sound</b>  <b>Speed</b></p>	To show my knowledge and understanding of sound.
	<p><b>States of Matter and the Water Cycle- Links to Year 2</b>          To know that there are three main states of matter: solid, liquid and gas.          To know that evaporation occurs when water turns into gas.          To know that condensation occurs when water vapour turns into liquid water. (gas into water)          To know that precipitation returns water to the surface of the Earth.          To know how water changes state within the water cycle.</p>	<p><b>Solid</b>  <b>Liquid</b>  <b>Gas</b>  <b>Properties</b></p>	To know that water changes state within the water cycle.
	<p><b>Electricity- Links to Year 2 &amp; 6</b>          To know that electricity is useful, but it can also be very dangerous.          To construct an electrical circuit and use switches to open and close a circuit.          To know that the lightbulb was a very important invention.          To identify materials that conduct electricity.</p>	<p><b>Conductor</b>  <b>Insulator</b>  <b>Materials</b>  <b>Circuit</b>  <b>Properties</b></p>	To know that electricity flows around a circuit and can make components, such as a light bulb, work
	<p><b>Working Scientifically at Upper Key Stage Two</b>          To plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.          To take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.          To record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.          To use test results to make predictions to set up further comparative and fair tests.</p>	<p><b>Investigation</b>  <b>Observe</b>  <b>Test</b>  <b>Data</b>  <b>Enquiry</b>  <b>Results</b>  <b>Conclusion</b></p>	



	<p>To 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.</p> <p>To identify scientific evidence that has been used to support or refute ideas or arguments.</p>		
<b>Year 5 &amp; 6 Cycle A</b>	<p><b>The Human Body- Links to all Year Groups</b></p> <p>To know the stages of human growth.</p> <p>To know that the human body changes as it goes through puberty.</p> <p>To identify physical and mental changes to the human body that happen from adulthood to old age.</p> <p>To know that humans reproduce.</p> <p>To know what the endocrine system is and the role of some of the glands in the body.</p>	<p><b>Reproductive system</b></p> <p><b>Endocrine system</b></p> <p><b>Reproduce</b></p>	<p>To show my understanding of the human reproductive and endocrine system and their role in human development.</p>
	<p><b>Materials- Links to all Year Groups</b></p> <p>To understand that materials can be grouped according to their properties and to know the definitions of some properties.</p> <p>To know that thermal conductivity means heat can be transferred through a material.</p> <p>To understand that a solution is a mixture of a solid in a liquid where the solid has broken into parts too small to see.</p> <p>To know methods for separating mixtures including solutions.</p> <p>To understand that all changes are either reversible or irreversible and be able to distinguish between them.</p>	<p><b>Properties</b></p> <p><b>Conductor</b></p> <p><b>Insulator</b></p> <p><b>Solid</b></p> <p><b>Liquid</b></p> <p><b>Gas</b></p>	<p>To understand that materials have properties that include solubility. To know how to separate mixtures and that changes are reversible or irreversible.</p>
	<p><b>Living Things- Links to all Year Groups</b></p> <p>To recognise how plants and animals in our local area change throughout the year.</p> <p>To recognise that mammals and amphibians have different life cycles.</p> <p>To recognise that insects and birds have different life cycles.</p> <p>To know that flowering plants need pollen to reproduce.</p> <p>To know that Jane Goodall and David Attenborough have dedicated their lives to studying the natural world and communicating their findings.</p>	<p><b>Living Thing</b></p> <p><b>Cycle</b></p> <p><b>Reproduction</b></p> <p><b>Habitat</b></p> <p><b>Classification</b></p>	<p>To understand that living things grow and reproduce in a continuing cycle of life.</p>
	<p><b>Forces- Links to Year 1 &amp; 3</b></p> <p>To know a force is either a push or a pull.</p> <p>To know that friction occurs when two objects move against each other.</p> <p>To understand that objects with a large surface area will have greater air resistance than objects with a small surface area.</p>	<p><b>Materials</b></p> <p><b>Magnet Force</b></p> <p><b>Properties</b></p>	<p>To explain how forces work using diagrams to show understanding.</p>



	<p>Pupils carry out an appropriate scientific enquiry as planned last lesson to answer this question: <i>How does surface area affect speed of fall in air (or water)?</i></p> <p>To understand that simple machines help us to increase the force we apply to an object to help us move it.</p>		
	<p><b>Astronomy- Links to Year 2</b></p> <p>To know that astronomers believe the universe began with the Big Bang, and that it is still expanding today.</p> <p>To understand that gravity is a force that holds objects together.</p> <p>To know the planets of our Solar System.</p> <p>To understand the Moon's phases.</p> <p>To understand that the Solar System is just a small part of our universe</p>	<p><b>Solar system</b> <b>Force</b> <b>Moon</b></p>	
	<p><b>Meteorology- Links to Year 1, 3 &amp; 4</b></p> <p>To know the atmosphere protects Earth and enables life.</p> <p>To know that human actions can impact the Earth's atmosphere.</p> <p>To know that the UK experiences six air masses affecting the weather.</p> <p>To know a weather front is a boundary where warm and cold air meet.</p> <p>To know thunder and lightning is caused by electrical charge moving through the air.</p>	<p><b>Earth</b> <b>Pollution</b> <b>Weather</b></p>	<p>To write a detailed weather report.</p>
<p><b>Year 5 &amp; 6</b> <b>Cycle B</b></p>	<p><b>The Human Body- Links to all Year Groups</b></p> <p>To understand that the heart is formed of two sets of chambers.</p> <p>To understand that blood vessels transport blood around the body.</p> <p>To understand that blood is made up of different components.</p> <p>To understand that the respiratory system is all the organs that work together to enable a person to breathe.</p> <p>To understand that nutrients and water are transported in the blood to the rest of the body.</p> <p>To understand how the heart rate can speed up or slow down depending upon what the body is doing.</p>	<p><b>Circulatory system</b></p>	<p>To understand that the blood circulates throughout the body, gaining oxygen in the lungs and that it is the heart that pumps the blood around.</p>
	<p><b>Classification of Living Things- Links to all Year Groups</b></p> <p>To know there are five kingdoms of organisms.</p> <p>To know that a plant and animal cells are different.</p> <p>To know that taxonomy is used to show organisms are related to each other.</p> <p>To know that vertebrates are classified into five groups: fish, amphibians, reptiles, mammals and birds.</p>	<p><b>Habitat</b> <b>Living Thing</b> <b>Classification</b></p>	<p>To be able to classify animals based on specific characteristics and give reasons.</p>





	To understand that scientists divide invertebrates into groups including insects, arachnids and molluscs.		
	<b>Electricity- Links to Year 2 &amp; 4</b> To know that static electricity is when two objects are rubbed together and electrons are transferred from one object to the other. To know that current electricity is the flow of electrons around a circuit. To investigate how lamp brightness, and motor speed, changes with different voltages. To understand that when an electric current flows in a wire, it creates a magnetic field around the wire.	<b>Series Circuit</b> <b>Static</b> <b>Current</b> <b>Electron</b> <b>Voltage</b> <b>Electromagnet</b>	To make a leaflet about electricity for a younger audience.
	<b>Light- Links to Year 3</b> To know that light appears to travel in straight lines. To understand that when a mirror reflects a light beam, the light changes direction and creates a clear mirror image. To understand that refraction changes the direction in which light travels. To understand that shadows are the shape of the object that creates them because light travels in a straight line. To understand that white light can be split into a spectrum of seven colours. To understand that we see things when light enters our eyes.	<b>Reflect</b> <b>Refract</b> <b>Shadow</b> <b>Speed</b> <b>Spectrum</b> <b>Prism</b>	To understand how light behaves.
	<b>Reproduction- Links to Year 5</b> To understand the changes that take place during puberty.	<b>Reproduction</b> <b>Puberty</b>	
	<b>Evolution- Links to Year 3</b> To know fossils are physical evidence of life from long ago. To know offspring are usually similar to, but not identical to their parents. To know living things can adapt to suit their environment. To know who Charles Darwin was and what natural selection is. To know who Alfred Wallace was and understand his contribution to the theory of evolution.	<b>Fossils</b> <b>Adaptation</b> <b>Offspring</b> <b>Evolution</b>	To write a biography about the life and work of Charles Darwin.