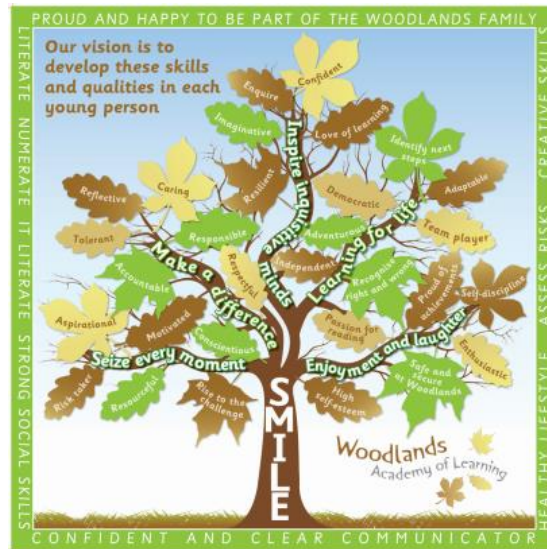




Science In Action at Woodlands Academy



Intent:

Our vision in Science at Woodlands Academy of Learning is to instil a lifelong love of Science for our pupils through a strong understanding of the world around them enabling them to have a natural curiosity into their learning.

Pupils will acquire scientific skills and knowledge to help them to think scientifically, to explain what is occurring, predict how things will behave, and analyse causes and effect through scientific enquiry. This will enable them to understand the uses and implications of Science today and in the future.

At Woodlands, scientific enquiry skills are embedded in each unit of study. These topics are revisited and developed during the pupil's time with us allowing children to build upon their prior knowledge and increase their enthusiasm and enjoyment allowing for long term memory and progression over time.

All children have the opportunity to develop and use a range of skills such as observations, planning and investigations. Pupils are encouraged to become independent learners by asking scientific questions about the world around us and explore possible answers. Subject specific vocabulary is taught and built upon from EYFS with children being taught correct terminology at the beginning of each unit, recalling prior understanding and building on new knowledge. Key concepts are taught using scientific enquiry allowing pupils to use a variety of approaches to answer scientific questions. Pupils are encouraged to ask their own questions, observe, predict, classify, compare and contrast results before drawing on conclusions using scientific evidence before repeating investigations through controlling variables.

We seize every moment allowing pupils' access to gain new experiences including the local Forest school which is within our locality. We make clear links with other topics in the curriculum at every opportunity including reading, maths and design technology.

Questioning links through the BAD approach and Blooms taxonomy through enquiry, analysis and evaluation.

KNOWLEDGE Recalling information • What information is given? • What are you being asked to find? • What does _____ mean? • List the • Name the • Where did...? • What is? • Who was/were...? • When did...?	COMPREHENSION Understanding meaning • What are you being asked to find? • Explain the concept... • Give me an example of ... • Describe in your own words what _____ means. • What science concepts does this problem connect to? • Draw a diagram of ... • Illustrate how _____ works • Explain how you calculate _____ results.	APPLICATION Using learning in new situations • What additional information is needed to solve the investigation? • Can you see other relationships that will help you find this information? • How can you put your data in graph form? • What occurs when...? • What would you change in your investigation to get better results? • What method would you use?
ANALYSIS Ability to see parts and relationships • Compare and contrast _____ to _____. • What was important about...? • Which errors most affected your results? • What were the sources of variability? • How does your conclusions support your hypothesis? • What prior research supports your conclusions? • How else could you account for...?	SYNTHESIS Parts of the information to create new whole • Design a lab to show.. • Predict what will happen to ... as ... is changed. • Using a principle of science, how can we find...? • Describe the events that might occur if...? • What would the world be like if ...?	EVALUATION Judgement based on criteria • How can you tell if your answer is reasonable? • What would happen to _____ if _____ (variable) were increased/decreased? • How would your repeated investigations affect your data? • What significance is this experiment to the subject you are learning? • Are your results biased?

Implementation:

The subject lead plans structured and challenging units of study following the progressive curriculum map to ensure progress. Each year group has a designated afternoon for science to be delivered weekly resulting in six sessions per half term.

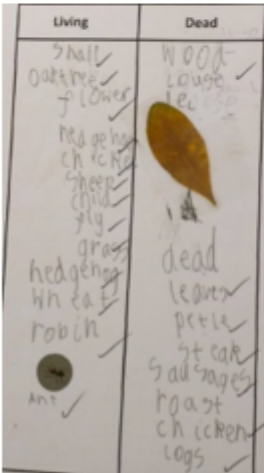
Lessons follow the schools BAD approach (basic, advanced and deep) allowing access to all abilities through supporting SEND with mild challenges plus differentiated tasks as well as adult support and enhancing higher attainers deeper thinking through spicy tasks. To further enhance their experiences, use of the Outdoor area including Forest School and access to visits to local secondary schools are included.

Science is taught through Biology, Chemistry and Physics. Through effective teaching of Science, we develop the knowledge, key skills and concepts during each topic throughout the years at Woodlands, which are revisited and developed as age appropriate. Working scientifically is taught through the 8 steps to being an excellent experimenter with learning posters in every learning room.

Pupils are encouraged to think like a scientist focusing on the scientific vocabulary needed to enable them to be curious about the science world and allow them to talk about the language of science. Reading has a high emphasis through high quality fiction and non-fiction texts within all units.

Science Learning Journey

Staff are provided with a learning journey for each topic created by the science leader which provides WALT's, key vocabulary, links to BBC Bitesize, examples of activities and ideas to teach the WALT including examples of working scientifically plus assessment opportunities. Teachers plan their lessons from the learning journey taking note of the prior learning and future learning for each topic allowing to assess for previous learning in another year group and informing pupils of the next steps in that topic.

Science Learning Journey Year 2 Spring 2: Living things and their habitats BIOLOGY VOCABULARY		
Living, dead, never been alive, suited, suitable, basic needs, food, food chain, shelter, move, feed Names of local habitats e.g. pond, woodland etc. Names of micro-habitats e.g. under logs, in bushes etc.		
	Knowledge	Skills
Lesson 1	<u>WALT – Explore and compare the differences between things that are living, dead, and things that have never been alive</u> https://www.bbc.co.uk/bitesize/topics/z6882hv/articles/zs73r82 	Prior learning mind map in pencil/pen Revisit what they know. Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. (Y1 - Plants) - Identify and describe the basic structure of a variety of common flowering plants, including trees. (Y1 - Plants) - Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. (Y1 - Animals including humans) - Identify and name a variety of common animals that are carnivores, herbivores and omnivores. (Y1 - Animals including humans) - Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). (Y1 - Animals, including humans) - Observe changes across the four seasons. (Y1 - Seasonal changes) Complete science assessment quiz at the start of the unit. Working Scientifically Explore the outside environment regularly to find objects that are living, dead and have never lived. - Sort and classify living and not living into sorting two hoops (cat, healthy plant, apple on a tree, newborn baby, older person, bird, fish, fire, plastic building block, doll, battery, moving toy, jack in box, fake spider, artificial flower, inflated balloon,

Lesson 3 **WALT – describe the importance for humans for exercise**

Exercise is important

Name of exercise	How many times a week should I do it for me to be healthy?	Which parts of my body will it strengthen?	How will I feel afterwards?
400 jumps	60	ankles, legs, feet, knees, hips	fit, energetic
swimming 10 min	10	arms, legs, back, neck	fit, energetic
100 push ups	10	chest, arms, back, neck	fit
skipping	10	legs and arms, chest, back, neck	fit
10 minutes	10	legs and arms, chest, back, neck	fit

Working Scientifically

- Explore the effect of exercise on our bodies
- Take part in superhero training school. Undertake fitness programme – circuit of simple exercise each day or skipping and hula hooping at play time.
- Use pedometer to calculate the number of steps taken each day.
- Keep a record of achievements to track improved progress over a time.
- Use the information to explain the importance of exercise for building strong muscles and bones to avoid being overweight.
- Make observations about the exercises they completed.

Complete mind map in green pen and RAG rate WALT on front cover

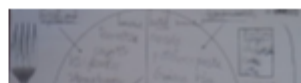
Lesson 4 **WALT – describe the importance for humans of eating the right amounts of different types of foods**



Sort in different ways

Working Scientifically

- Classify food in range of ways including using eatwell guide
- Keep a diary for a week of physical exercise including walking to school, riding bike, hobbies, the healthy food eaten and how often they have washed hands and cleaned teeth.
- Sort bag of shopping or shopping list healthy and unhealthy choices.
- Sort using venn diagram.
- Classify food into the five food groups. Re-sort the shopping bag using labels for the five food groups
- Evaluate if they are eating the right amount of food.



Reading texts linked to Science

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Nursery	All About Families- Felicity Brooks	Animals- Camilla De La Bedoyere (link to all about me)You Choose- Nick Sharratt	—	Hey, Water! Antoinette Portis	Animalphabet- Julia Donaldson	A book of Bears at home- with bears around the world- Katie Viggers
Reception	A book of bears- Katie Viggers	Amazing Dinosaur Detectives Paper World: Planet Earth (David Attenborough)	100 steps for Science, why it works and how it happened- Lisa Jane Gillespie	The Big Green Book- Fred Pearce (about keeping the planet green)	—	—
Year 1	Nature Trail, Jen Green The Squirrels' Busy year, Martin Jenkins	First Animal Encyclopaedia, Dorling Kingsley	A First Book of Nature, Nicola Davies	A First Book of Nature, Nicola Davies	Actual Size, Steve Jenkins My Amazing Body, Ruth Martin & Allan Sanders	A First Book of Nature, Nicola Davies
Year 2	Our Garden Diary, Heather Hammonds Ready, Steady, Grow! DK The Royal Horticultural Society	Women in Science, Rachel Ignatofsky	The African Grasslands, Alan Trussell- Cullen	Little Lost Hedgehog, Jill Hucklesby	Germs, Julia Wall	Straight Forward with Science: Lifecycles
Year 3	Rocks and Minerals: A gem of a read!- Dan Green and Simon Basher	Plantopedia- Adrienne Barman Jack and the beanstalk	Horrible Science: Frightening Light, Nick Arnold	Forces and Magnets (Moving up with Science), Peter Riley	Humans and other Life on Earth, Ava Sawyer	Plantopedia- Adrienne Barman A Big Garden- Giles Clement
Year 4	A Year in Nature: A Carousel Book of the Seasons, Hazel Maskell & Eleanor Taylor Electricity- Louise Spilsbury (non-fiction) Electrical Wizard- How Nikola Tesla Lit Up The World! (Biography)	Science in a Flash, Electricity, Georgia Amson- Bradshaw Electricity (Moving up with Science), Peter Riley	Disappearing Acts: A Search-and-Find Book, Isabella Bunnell National Geographic Book Of Nature Poetry – Patrick Lewis	Ultimate Predator- Pedia, Christina Wilsdon	Let's Investigate Plastic Pollution, On land and sea, Ruth Own	What's Eating You? Nicola Davies
Year 5	Forces & Motion, Dorling Kingsley	Seasons of Splendour: Tales, Myths & Legends	Materials and Their Properties, CPG	So You Think You've Got It Bad: A	Health Lifestyle, DK	

		of India, Madhur Jaffrey. Asha & the Spirit Bird, Jasbinder Bilan		Kid's Life in Ancient Egypt, Chae Strathie & Marisa Morea		
Year 6	The Story of the Second World War for Children, IWM	Plants & Living Things, DK Animals & Habitats, DK Fact Finders: Humans and Other Life on Earth – Sharing the Planet, Ava Sawyer	Secret Science: The Amazing World Beyond Your Eyes, Dara O Briain	Letts Revision Scholastic Revision	The Mindup Curriculum, Scholastic	Dr Christian's Guide to Growing UP, Dr Christian Jessen GO BIG: The Secondary School Survival Guide, Matthew Burton

Cross-curricular links with Science

There are many opportunities across all year groups for children to further develop their **English** skills through their science learning. Speaking and listening is an integral part of the way that science is taught at Woodlands and children are encouraged to ask and answer questions and discuss observations made. Writing opportunities are planned to enable children to apply their skills for a range of purposes through an extended write such as writing non chronological reports about the topic studied, writing explanations of phenomena observed, recording findings using scientific vocabulary with accuracy or writing a diary to record the growth of a plant.

Maths naturally has clear scientific links, and through their learning, children are using and applying mathematical knowledge in examples such as creating tally charts to collect data, presenting data through block graphs and bar charts, using Venn diagrams to sort and classify objects/animals/materials, measure and reading scales when using scientific equipment, understanding temperatures and negative numbers, producing line graphs from the collection of continuous data.

Sex and relationships education is taught mainly through Jigsaw at Woodlands but we also use 'Help me I'm Hairy'. Changing me, a Jigsaw focus, is taught weekly in every year group during the summer term. We also use the 'Pants are private' from the NSPCC throughout school and is revisited every year linked to our staying safe policy. Every learning room has a pants are private poster.

Assessment for learning in Science

At the beginning of a topic each child will complete a mind map to assess what they know about the unit of work to be studied. Pupils will add to this after each lesson in green pen to assess their learning and build up their knowledge over the half term with a date showing when learning was taught.

Each child will complete an assessment of the topic to be taught at the start of the unit and then again at the end. This will allow planning to address any misconceptions and also to teach new learning. Pupils will colour in the correct answer in one colour and then repeat the quiz assessment at the end of the topic in a different colour.

End of year Science assessments will be undertaken in the Summer term using Headstart assessment to track progress and long term memory.

Year 2 PLANTS

Biology

Question 1: Which three living processes do plants do?	Start of unit:	End of unit:
move		
grow		
walk		
reproduce		

Question 2: Which three things does a plant need to grow well?	Start of unit:	End of unit:
water, exercise, wind		
soil, water, wind		
soil, sunlight, water		
water, darkness, soil		

Question 3: What is happening in this picture?	Start of unit:	End of unit:
		
the plant has fallen over		
the plant is growing towards the light		
the roots are not strong enough to keep the plant straight		
the flower is trying to look out of the window		

Question 4: Four identical seeds have been planted at the same time. Which of them will produce the tallest and healthiest seedling?	Start of unit:	End of unit:
The seed that has been watered and kept in the cupboard.		
The seed that has been watered and kept in a fridge.		
The seed that has been placed on a wet cotton ball.		
The seed that has been watered and placed on a windowsill.		

Question 5: Match these vegetables to the part of the plant they come from:	Start of unit:	End of unit:
root stem leaf flower	cauliflower carrot cabbage celery	

Each topic of Science every half term will have a big picture with the name of the unit e.g. plants, the area of science being taught e.g. biology, a list of key objectives (WALT's) for each lesson and the key vocabulary to be taught, used and understood. At the end of each lesson pupils will be asked to self-assess (RAG rate) using the traffic light system on the front cover next to the key objective (WALT).

Plants



Biology

- Name and understand the main parts of a flowering plant.
- Investigate and predict the conditions a plant needs to grow.
- Order the life cycle of a sunflower.
- Interpret the results of an investigation.
- Dissect fruit and locate their seeds.
- Investigate our classes favourite fruit and vegetables and create a pictogram.

Vocabulary to be discussed

Branches, bulb, common, crop, deciduous, evergreen, flower, flowering, fruit, garden, herb, leaf, leaves, nutrients, petal, plant, reproduce, roots, seed, stem, tree, trunk, vegetable, vegetation, weed, wild.

Science displays

Each learning room has a Science learning wall where the eight steps to being an excellent experimenter should be displayed. Each learning room will have a labelled 2D skeleton, key vocabulary and texts relating to the topic being taught and changed half termly.



In EYFS, children learn about science through knowledge and understanding of the world. Through half termly themes, pupils have the opportunity to use their observations using senses, through discussions and asking questions. They know the similarities and differences in relation to places, objects, materials and living things. They use the outdoor area to find out what the seasons look like, how seeds grow and change and find out about the local environment by exploring and observing animals and plants around them and how environments may vary from one to another. They learn about how chicks hatch from an egg and how they change and grow over time. They have the opportunity to find out why things happen and ask questions. They learn about the importance of good health through physical exercise, a healthy diet and discuss ways to keep healthy and safe.

In Year one, children learn about animal habitats, materials and the growth of plants. They use the outdoor area to identify and track changes in the local environment as they learn and understand about seasonal changes.

In Year two, children continue their journey from Year one and develop their knowledge through carrying out investigations. They learn about Living things and their habitats, exploring different habitats including constructing simple food chains. They learn how plants and animals depend on each other and develop further their understanding of plant growth and the survival of humans. The children further develop their learning about the uses of everyday

materials. Year two pupils are encouraged to explain their answers and evaluate their findings.

In Years three and four, children will be encouraged to ask questions about scientific concepts and then carry out experiments to find out the answers. In doing this they will learn what a 'fair test' is, take measurements from a range of equipment, gather and record data and finally report their findings orally and in writing.

As they move to upper key stage two pupils in Years five and six will continue to practise the above skills, but with more depth and precision. When carrying out experiments they will understand what variables are and how to control them. They will take measurements from a range of equipment, understanding the need for repeated measures to increase accuracy. Then gather and record data using labels, classification keys, tables, scatter graphs, bar and line graphs. Finally they will use test results to make further predictions to set up further comparative and fair tests and make conclusions on the test carried out, orally and in writing.

Key Concepts

- Working Scientifically
- Biology, the study of Life
- Chemistry, the study of Changing Materials
- Physics, the study of Forces

Core Learning in skills and knowledge

Aspect:	Working Scientifically
EYFS	To make basic predictions about what they think might happen next. To observe changes over time and talk about what happened.
Y1	To suggest what might happen and then make observations using their appropriate senses and simple comparisons with results. To collect evidence and communicate findings in a simple way.
Y2	To suggest ideas and questions with help. To use first hand experiences to make observations and comparisons using simple equipment.
Y3	To make predictions then plan and carry out a fair test with help. To measure using simple measuring equipment and use information sources to answer questions.
Y4	To put forward ideas about testing and suggest questions to be tested. To recognise and explain why a test is fair.

Y5	To make predictions based on scientific knowledge. Suggest methods of testing and how to collect the evidence. To understand why observations and measurements need to be repeated.
Y6	To make predictions based on scientific knowledge and understanding and suggest methods of testing. To carry out a fair test identifying key factors that needs to be considered.

Aspect:	Biology, the study of Life
EYFS	To know what a plant is and how it needs water, light and soil to survive. To recognise different animals in their habitats e.g. farmland. To identify different coverings of a variety of animals including humans.
Y1	To identify and name common plants and the basic structure of a flowering plant. To identify and name common animals and those that are herbivore, carnivores and omnivores. To identify, name, draw and label the basic parts of the human body and link to its sense.
Y2	To identify and name a variety of plants and animals in their habitats, including micro-habitats and describe how different habitats provide for their basic needs. To use a simple food chain and describe how animals obtain their food. To describe how plants need water, light and a suitable temperature to grow and stay healthy To recognise that animals, including humans, have offspring which grow into adults. To describe the importance for humans of a healthy lifestyle.
Y3	To explore the requirements of plants for life and growth and how they vary from plant to plant. To identify and describe the functions of different parts of flowering plants and explore the life cycle of flowering plants. To identify that humans and some other animals have skeletons and muscles for support, protection and movement. To identify the different types of teeth in humans and their simple functions.
Y4	To explore and use classification keys to help group, identify and name living things in their local and wider environment. To recognise the dangers environments pose to living things. To describe the simple functions of the digestive system in humans. To construct and interpret food chains, identifying producers, predators and prey.

Y5	To describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. To describe the changes as humans develop to old age. To describe the life process of reproduction in some plants and animals
Y6	To describe how living things are classified into groups based on similarities and differences. To recognise that living things have changed over time including information about fossils. To recognise that living things produce offspring of the same kind, but they vary and are not identical to their parents. To identify how animals and plants are adapted to suit their environment and may lead to evolution. To identify and name the main parts of the human circulatory system. To recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.

Aspect:	Chemistry, the study of Changing Materials
EYFS	To identify and name a variety of everyday materials using touch and recognise their suitability. To explore and test materials that sinks or floats.
Y1	To identify and name a variety of everyday materials, describe their properties then compare and group them together.
Y2	To find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. To identify and compare the suitability of a variety of everyday materials.
Y3	To describe in simple terms how fossils are formed when things that have lived are trapped within rock. To compare and group rocks on the basis of their appearance and physical properties. To recognise that soils are made from rocks and organic matter.
Y4	To compare and group solids, liquids or gases. To identify evaporation and condensation in the water cycle. To observe that some materials change state when they are heated or cooled.
Y5	To compare and group materials by their hardness, solubility, transparency, conductivity (electrical and thermal) and response to magnets. To decide how mixtures might be separated, including through filtering, sieving and evaporating
Y6	N/A

Aspect:	Physics, the study of Forces
EYFS	To observe changes in Autumn linked to weather patterns. To recognise hibernation of some animals during the seasons.
Y1	To observe changes across the four seasons by describing the weather and how day length varies.
Y2	N/A
Y3	To compare how things move on different surfaces linked to forces. To observe how magnets attract or repel each other using everyday materials. To recognise the need for light and the dangers of the sun. To recognise how shadows are formed.
Y4	To identify how sounds are made, including vibrations to the ear. Recognise that sounds get fainter as the distance from the sound source increases To find patterns between the pitch and volume of a sound. To construct a simple series electrical circuit using cells, wires, bulbs, switches and buzzers.
Y5	To explain the force of gravity. To identify the effects of air resistance, water resistance and friction, that act between moving surfaces. To describe the movement of the Earth and the Moon. To use the idea of the Earth's rotation to explain day and night.
Y6	To 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 To explain that we see things because light travels from light sources to our eyes. To associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in a circuit To use recognised symbols when representing a simple circuit in a diagram.

Curriculum Map Overview

FOREST SCHOOL highlighted in green. Each year group goes once a half term at least during the year. Some year groups get the opportunity to return later in the year.

	Autumn		Spring		Summer	
Nursery	Ourselves – all about me Parts of body Link to healthy eating Family history	Dear Zoo Hibernation – hedgehog and migration Understand the key features of the life cycle of a plant and an animal.	People who help us Big bird watch – bird feeders	Water in our World Plant seeds and care for growing plants. • Understand the key features of the life cycle of a plant Water comes from (Geography link – oceans and conservation)	Marvellous Minibeasts Life cycle of animals. Bug hotel Begin to understand the need to respect and care for the natural environment and all living things.	Traditional Tales Weave materials Use all their senses in hands-on exploration of natural materials. • Explore collections of materials with similar and/or different properties. • Talk about the differences between materials and changes they notice.
Reception	Living things and habitats Explore the natural world around them. • Recognise some environments that are different to the one in which they live.	Everyday materials Identify materials and consider suitability for purpose Sinking and floating Mary Anning & David Attenborough (fossils and environment)	Healthy eating Name and describe people who are familiar to them. (Reception - Humans)	Plants Plants grow from a seed Observe and describe Identify four parts of a plant	Seasonal Changes Explore the natural world around them. • Describe what they see, hear and feel whilst outside. • Understand the effect of changing seasons on the natural world around them.	Keeping healthy and hygiene
Year 1	Seasonal changes Autumn seasonal walk FOREST SCHOOL Everyday materials Identify common materials Identify what materials are made from	Seasonal changes Winter seasonal walk Humans Name and label parts of the human body Explore the senses	Animals and humans Name common animals Understand mammals and birds Understand carnivores, herbivores and omnivores (teeth link) Understand what alive means	Seasonal changes Spring seasonal walk Plants Identify and name plants and trees, including deciduous and evergreen Understand what alive means Plant seeds and investigate	Seasonal changes Summer seasonal walk Length of the day Power of the sun FOREST SCHOOL	

	Physical properties of materials					
Year 2	Plants Parts of a plant and their functions Conditions needed for a plant to grow Foods and plants Life Cycle of a sunflower	Uses of Everyday Materials Identify and compare suitability of a variety of everyday materials Explore shape changing Research C Macintosh, J Dunlop, J Macadam (developed new materials) Recycling	Animals, including humans Growing, healthy eating and hygiene Basic needs of animals for survival Five food groups – food pyramid Impact of exercise Hygiene	Living thing & their habitats (nocturnal) Understand living, dead and never alive Identify habitats and how they are suited to needs Explore microhabitats, habitats and their animals Simple 3 step food chains - consumer	Animals – how they grow and change Animals have offspring that grow	Plants – similarities and differences Germination, growth and survival Investigate growing Link to habitats Plant similarities and differences SRE through JIGSAW
Year 3	Rocks and soils Compare and group, appearance and properties How are fossils formed – link to Mary Anning Exploring soil	Plants and living things.	Forces and magnets Investigate movement Investigate magnets, attract, repel, poles	Light and shadows Light sources Reflection Investigate shadows	Animals including humans. Nutrition – food groups Teeth Skeleton Muscles	Plants Identify and understand the functions of a plant, compare in differing plants nutrition, reproduction, pollination, seed formation and dispersal Investigate roots and stems SRE through Jigsaw
Year 4	Electricity Which appliances use electricity? Safety around electricity Construct simple circuits and series circuits Explore conductors and insulators Renewable and non-renewable energy Link to climate change	Sound How is sound made? How does sound travel? Investigate patterns in sound, pitch, distance, vibration	Living things and habitats – conservation Group living things, vertebrate, invertebrates, fish, amphibians, reptiles, birds, mammals, insects Simple classification keys (Yes, no, few branches) Environments change linked to human impact, conservation, rainforest	Animals, including humans Food chains Identify producers, prey and consumer	States of matter Solids, liquids, gasses Compare, group Investigate changing state of materials when heated or cooled Evaporation, condensation linked to the water cycle	Animals, including humans Digestive system in humans SRE through Jigsaw

Year 5	Everyday materials Forces	Earth and Space Movement of the Earth, planets and the moon, relative to the sun and each other Explore night and day Gravity, I Newton, Galloway Time Zones Effects of friction, air resistance and water resistance, Levers, pulleys and gears in DT	Properties and changes of materials Compare and group based on properties, link to everyday uses Understand reversible and irreversible changes Explore solutions, Separating and filtering Formation of new materials	Living things and their habitats Differences in life cycles of an amphibian, insect, bird, plants Metamorphosis Naturalist D Attenborough – link to habitats and persuasion, rainforests	Animals inc humans	Animals, including humans Seven life processes, stages of human development Reproduction in humans, fertilisation, growth of the foetus Gestation periods Link to Jigsaw and puberty, physical and emotional impact
Year 6	Light Travels in straight lines link to how we see and the operation and components of the eye Refraction The colour spectrum	Electricity Know and draw the components of a circuit Understand voltage	Living things & their habitats Classification of plants and animals, common characteristics using Carl Linnaeus system. Venn, Carroll diagrams Classification of micro-organisms – mould, virus, bacteria	Animals, including humans Circulatory system, heart, blood, diet, exercise, drugs, lifestyle	Human physiology evolution and inheritance Fossils, link to Mary Anning – evidence of evolution, change over Darwin and Wallace Animals adapt to environment	Transition – Forest school skills- team building. Problem solving

Key Subject Specific Vocabulary

Nursery and Reception	Working Scientifically Question, identify, compare, classify, group, predict, observe, equipment, sort, describe Animals including humans Natural, wildlife, habitats, woodland, desert, ocean, jungle, Arctic, log, stone, tree, dead, leaves, soil, egg, caterpillar, chrysalis, butterfly, birds, insects/bugs/minibeasts, fish, reptiles, amphibians, mammals Body parts, backbone, skeleton, soft body, shell, adapted, hibernate, predator, prey, nocturnal, adult/parent, baby. Plants Grow, lifecycle, roots, shoots, stem, leaves, buds, flower, water, light, warmth, temperature, soil, compost Everyday materials Object, material, properties, suitable, recycling, waterproof, strong/weak, dense/less dense, hard/soft. Seasonal Changes Spring, summer, autumn, winter, weather, day, night
Y1	Working Scientifically Question, questioning, observe, record, identify, group, classify, sort, predict, diagram, chart, bar chart, table, data, answer, equipment, map, compare, contrast, describe, biology, chemistry, physics. . Animals including humans Amphibians, backbone, carnivores, cold-blooded, environment, farm, gills, herbivore, invertebrate, mammals, omnivore, pet, reptiles, senses, temperature, vertebrate, warm-blooded, wild. Plants Branches, bulb, common, deciduous, evergreen, flower, flowering, fruit, garden, herb, leaf, leaves, petal, plant, roots, seed, stem, tree, trunk, vegetable, vegetation, weed, wild Everyday materials Absorbent, brick, dull, elastic, fabrics, foil, glass, man-made, metal, natural, opaque, plastic, rock, rough, shiny, smooth, soft, stiff, stretchy, transparent, waterproof, wood Seasonal Changes Autumn, spring, summer, winter
Y2	Working Scientifically Question, questioning, observe, record, identify, group, classify, sort, predict, diagram, chart, bar chart, table, data, answer, equipment, map, compare, contrast, describe, biology, chemistry, physics. Animals including humans (growing, healthy eating and hygiene) Backbone, balanced, diet, bar chart, bones, disease, exercise, farm, healthy, hygiene, life cycle, medicine, muscles, offspring, pet, pictogram, skeleton, survive. Plants, living things and their habitats Branches, bulb, common, crop, deciduous, evergreen, flower, flowering, fruit, garden, herb, leaf, leaves, nutrients, petal, plant, reproduce, roots, seed, stem, tree, trunk, vegetable, vegetation, weed, wild. Biomes, carnivore, depend, food chain, habitat, herbivore, invertebrate, microhabitat, mini beast, offspring, omnivore, source, vertebrate. Use of everyday materials Absorbent, bendy, brick, dull, elastic, fabrics, foil, force, glass, man-made, metal, natural, opaque, plastic, pull, position, process, properties, purpose, push, recyclable, rock, rough, shiny, smooth, soft, squash, stiff, stretchy, suitable, transparent, twist, unsuitable, waterproof, wood.
Y3	Working Scientifically

	Questions, prediction, plan observations, record, research, enquiry, comparative, fair, accurate, measurements, thermometer, data logger, classify, keys, diagrams, charts, graph, tables, conclusions, explanation, variable. Humans - Healthy eating, nutrition, teeth, bones and muscles Backbone, bones, contract, elbow, endoskeleton, exoskeleton, joints, muscles, organs, protect, relax, skeleton, support, tendons, vertebrate Teeth – canine, carnivore, decay, enamel, herbivore, incisor, molar, nutrition, omnivore, plaque, premolar. Plants and living things Absorb, anther, branches, bulb, carbon dioxide, climate zone, common, deciduous, dispersed, dissect, evergreen, fertilisation, fertiliser, flower, flowering, fruit, function, garden, germination, healthy, leaf, leaves, life cycle, mature, nutrients, ovule, petal, plant, pollen, pollination, roots, seeds, stem, stigma, structure, temperature, transported, tree, trunk, vegetation. Rocks Absorb, bedrock, decaying, grain, igneous, imprint, leaf litter, magma, man-made, metamorphic, mineral, molten, natural, nutrients, palaeontology, permeable, porous, prehistoric, preserve, pressure, properties, rock, sediment, soil, surface, surrounding, volcano Forces and magnets Attract, bendy, friction, force, gravity, magnet, magnetic, field, metal, motion, non-magnetic, opposite, position, pull, push, resistance, squash, stretchy, surface, twist. Seasonal Changes – Light Angle, bright, chemical, reactions, dark, dim, electricity, emits, light, mirror, opaque, product, reflects, shadows, source, sunglasses, surface, torches, translucent, transparent.
Y4	Working Scientifically Questions, prediction, plan observations, record, research, enquiry, comparative, fair, accurate, measurements, thermometer, data logger, classify, keys, diagrams, charts, graph, tables, conclusions, explanation, variable. Digestion in humans Absorb, digestion, excretion, faeces, ingested, intestines, muscles, nutrition, oesophagus, organ, process, saliva, stomach. Food chains Biomes, carnivore, classification, key criteria, deciduous, environment, evergreen, excretion, food chain, habitat, herbivore, invertebrate, life processes, microhabitat, mini-beast, nutrition, omnivore, organism, reproduction, respiration, sensitivity, urban, vegetation, vertebrate. Electricity Appliances, battery, bulb, buzzer, cell, circuit, component, conductor, current, device, electricity, energy, fuel, generate, insulator, mains, motor, power, source, switch, wires. States of Matter Condensation, cooling, evaporation, freezing, freezing point, gas, heating, liquid, melting, melting point, particles, precipitation, process, properties, solid, temperature, vibrations, water cycle, water vapour, Sound Amplitude, decibel, electricity, energy, frequency, medium, pitch, power, sound waves, source, transmit, travel, vibrations, volume
Y5	Working Scientifically Prediction, plan, variables, observations, record, repeat, identify, comparative, fair, accurate, precise, quantitative measurements, scientific diagrams, classification keys, present, systematic, graphs (scatter, line, bar), patterns, interpret, conclusion, explanation, relationship, evidence, refute, validity. Animals including humans Adolescence, adulthood, development, foetus, genitals, gestation, growth, hormones, independent, infancy, life cycle, life processes, mature, menopause, menstruation, offspring, organ, puberty, rapid, reproduction, toddler, vertebrate

	Plants and Living things Anther, bulb, cell, dispersed, dissect, embryo, fertilisation, flower, flowering, function, gamete, germination, life cycle, mature, metamorphosis, ovary, ovule, petal, plant, pollen, pollination, reproduction, seed, stigma Everyday materials Circuit, condensation, conductor, dissolves, disappears, electricity, evaporation, filtering, flexible, gas, insoluble., insulator, irreversible, liquid, magnetic, melting, particles, permeable, process, rate, resistance, reversible, solid, soluble, solution, state, temperature, thermal, transparent, variable, water cycle Seasonal Changes Asteroid, axis, comet, galaxy, gravity, leap year, meteorite, orbit, planet shadow, Solar System, sphere, spin, star, time zones
Y6	Working Scientifically Prediction, plan, variables, observations, record, repeat, identify, comparative, fair, accurate, precise, quantitative measurements, scientific diagrams, classification keys, present, systematic, graphs (scatter, line, bar), patterns, interpret, conclusion, explanation, relationship, evidence, refute, validity. Animals including humans Aorta, arteries, atrium, blood vessels, capillaries, carbon dioxide, circulatory system, deoxygenated, heart, lungs, nutrients, organ, oxygen, oxygenated, pulse, respiration, veins, vena cava, ventricle, via Evolution and Inheritance adaptation , ancestor , biodiversity, biome, breeding, characteristics, environment, evolution, extinct, fossil, generation, inherit, maladaptation, mutation, natural selection, offspring, palaeontology, reproduction, species, survive, theory Everyday materials Ammeter, appliances, battery, bulb, buzzer, cell, circuit, component, conductor, current, device, electricity, energy, fuel, generate, insulator, mains, motor, power, resistance, resistor, source, switch, voltage Seasonal Changes Angle, dark, dim, electricity, emits, light, mirror, opaque, reflects, shadows, source, surface, torches, translucent

Impact:

Children enjoy and are enthusiastic about Science at Woodlands.

Our Science curriculum is high quality, well thought out and is planned to demonstrate progression in skills, knowledge and vocabulary. If children are keeping up with the curriculum, through revisiting learning, they are deemed to be making good or better progress.

In EYFS pupils are assessed against the Early Learning Goals through the 'Understanding of the World' curriculum.

In Key Stage One and Two attainment of skills and knowledge is assessed against the core learning statements at three points of the year by identifying which children are at greater depth and working towards. Those children who are not listed are working at expected. This enables staff to have an

understanding of the strengths and areas for development at different starting points which will inform future learning. The percentage of children working at ARE and at GD in each aspect of the subject is calculated which allows for teachers and leader of Science to recognise the strengths and areas for development.

Pupils are assessed on their prior learning during the end of the term before a new topic is being taught. This allows the teacher to plan for areas which pupils have misconceptions or misunderstandings. This form of assessment is then revisited at the end of the unit to show the progress and understanding the pupils have made from the start of the unit compared to the end. This will allow learning to stick and encourage pupils to know more in their long term memory.

Verbal and written feedback from teachers has impact on our pupils by questioning their understanding.

We measure the impact of our science curriculum through science book trawls by the leader of science and SMT.

Appendix

- Curriculum Map for your subject
- Progress In Science including assessment linked to Classroom monitor
- Knowledge progression for Biology, Chemistry and Physics
- Knowledge organisers
- Start and end of unit assessment
- SRE curriculum