Oldswinford CE Primary Overview of Science content

	Science Topics	Subject Knowledge	Working Scientifically
Year 1	Seasonal Changes	• observe changes across the 4 seasons • observe and describe weather associated with the seasons and how day length varies	• **Asking simple questions and recognising that they can be answered in different ways: How does ….. Affect ……? What happens if ….? Why does … ?** • **Observing closely, using simple equipment e.g. Torches, magnifiers, pooters, egg timers** • **Performing simple tests: noticing when a test is unfair, suggest how the test could be changed.** • **Identifying and classifying- naming living things and materials using correct vocabulary, physically sort objects or picture cards into 2 circles or into columns in a table, begin to choose own reasons for sorting into a group.** • **Using their observations and ideas to suggest answers to questions: write a simple explanation of what happened or complete a partly written sentence, use comparative language to describe patterns, relationships and changes, say whether their guess was right or whether the answer is expected or unexpected.** • **Gathering and recording data to help in answering questions: using physical grouping (hoops), tick lists, tally chart, Venn diagram, pre-drawn table, pictogram (could include physical items like leaves), size charts (e.g. Drawn footprints in order of size), simple bar chart (colour in squares on template)**
	Everyday materials	• distinguish between an object and the material from which it is made • identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock • describe the simple physical properties of a variety of everyday materials • compare and group together a variety of everyday materials on the basis of their simple physical properties	
	Animals	• 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)	
	Humans	• identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense	
	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 flowering plants, including trees	

Year 2	Living things and their habitats	• explore and compare the differences between things that are living, dead, and things that have never been alive • identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other • identify and name a variety of plants and animals in their habitats, including microhabitats • describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food	• **Asking simple questions and recognising that they can be answered in different ways: How does ….. Affect ……? What happens if ….? Why does … ?** • **Observing closely, using simple equipment e.g. Torches, magnifiers, pooters, egg timers** • **Performing simple tests: noticing when a test is unfair, suggest how the test could be changed.** • **Identifying and classifying- naming living things and materials using correct vocabulary, physically sort objects or picture cards into 2/3 circles or into columns in a table, deciding own criteria for sorting.** • **Using their observations and ideas to suggest answers to questions: write a simple explanation of what happened or complete a partly written sentence, use comparative language to describe patterns, relationships and changes, say whether their prediction was right or whether the answer is expected or unexpected.** • **Gathering and recording data to help in answering questions using physical grouping (hoops), tick lists, tally chart, Venn diagram, pre-drawn table, pictogram (could include physical items like leaves), size charts (e.g. Drawn footprints in order of size), bar chart (*pre-drawn axes)**
	Plants	• observe and describe how seeds and bulbs grow into mature plants • find out and describe how plants need water, light and a suitable temperature to grow and stay healthy	
	Animals including humans	• notice that animals, including humans, have offspring which grow into adults	
	Uses of everyday materials	• identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses • find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching	
	Animals including humans	• 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	

Year 3	Plants	• identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers • explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant • investigate the way in which water is transported within plants • explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal	• **Asking relevant questions and using different types of scientific enquiries to answer them: use an identification key, use internet, books, experiments, observations** • **Setting up simple practical enquiries, comparative and fair tests: can suggest what could be changed and what/ how they need to measure, understand that some things need to be kept the same in order to make a test fair, chooses appropriate equipment from a range provided, write a simple plan on a writing frame.** • **Making systematic and careful observations and taking accurate measurements using standard units, using a range of equipment, including torch, thermometer, rulers, metre stick, stopwatches, egg timers. Uses units correctly (cm, m, ml, c etc)** • **Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions: venn diagrams, carroll diagrams, bar charts (axes drawn but children label them) pictograms, tally charts and tables (draw own tables with guidance)** • **Recording findings using simple scientific language, drawings: use and spell vocabulary from topic correctly, draw accurate labelled diagrams.** • Reporting on findings from enquiries: use writing frame to write an experimental report, oral presentation to the class, poster, drawings/ photos of results, write what they learned. • Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions: write a sentence to say what they found out, **suggest what could be investigated next, say how the experiment could have been done better** • **Identifying differences, similarities or changes related to simple scientific ideas and processes: naming using correct vocabulary, sort objects, pictures, words into venn/ carroll diagram or into columns in a table, deciding and explaining own criteria for sorting, finding**
	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	
	States 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	
	Light	• recognise that they need light in order to see things and that 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 an opaque object • find patterns in the way that the size of shadows change	

	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	**different ways of sorting, describing all the common properties of a particular group.** • Using straightforward scientific evidence to answer questions or to support their findings: use research (internet, books and pictures or data provided by the teacher)
	Humans	• identify that humans and some other animals have skeletons and muscles for support, protection and movement	

Year 4	Forces	• compare how things move on different surfaces	• **Asking relevant questions and using different types of scientific enquiries to answer them: use an identification key, use internet, books, experiments, observations** • **Setting up simple practical enquiries, comparative and fair tests: can suggest what could be changed and what/ how they need to measure, can suggest which things need to be kept the same in order to make a test fair, chooses appropriate equipment from a range provided, write a simple plan on a writing frame.** • **Making systematic and careful observations and, taking accurate measurements using standard units, using a range of equipment, including thermometers, rulers, metre sticks, force meter, stopwatch, weighing scales. Uses units correctly (cm, m, ml, c, newtons etc)** • **Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions: labelled diagrams, keys, venn diagrams, carroll diagrams, bar charts (axes drawn but children label them/ different scales on y axis e.g. 2s, 5s) pictograms, tally charts and tables (draw own table)** • **Recording findings using simple scientific language: use and spell vocabulary from topic correctly, draw accurate labelled diagrams.** • **Reporting on findings from enquiries: independently (or using writing frame) write an experimental report, oral presentation to the class, poster, drawings/ photos of results, write what they learned.** • **Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions write a sentence to say what they found out, suggest what could be investigated next, say how the experiment could have been done better** • **Identifying differences, similarities or changes: sort objects, items into venn diagram or into columns in a table, deciding and explaining own criteria for sorting, finding different ways of sorting, describing all the**
	Electricity	• identify common appliances that run on electricity • construct a simple series electrical circuit, identifying and naming its basic parts, 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	
	Magnets	• notice that some forces need contact between 2 objects, but magnetic forces can act at a distance • observe how magnets attract or repel each other and attract some materials and not others • compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials • describe magnets as having 2 poles • predict whether 2 magnets will attract or repel each other, depending on which poles are facing	
	Living things and their habitats	• 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 • construct and interpret a variety of food chains, identifying producers, predators and prey	
	Animals and humans	• 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 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 • 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	**common properties of a particular group and explaining differences using correct vocabulary.** • **Using straightforward scientific evidence to answer questions or to support their findings. Use research (internet, books and pictures or data provided by the teacher)**

Year 5	Forces 1	• explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object • identify the effects of air resistance, water resistance and friction, that act between moving surfaces	• **Planning different types of scientific enquiries to answer questions: carry out research, comparative tests and fair tests. Understand the variable which they will change, which they will measure and which they need to keep the same. Fill in a planning sheet or write own plan.** • **Taking measurements with increasing accuracy: rulers, microscopes, metre sticks, balances, tape measure, force meters, take repeat readings to check accuracy of results.** • **Recording data and results using scientific diagrams and labels, classification keys, tables, venn diagrams, carroll diagrams, pictograms, tally charts, bar charts (draw own axes) and line graphs (pre-drawn axes)** • **Using test results to make predictions to follow up an test with a further experiment to answer a related question or improve upon first experiment with more measurements/ accuracy/ way of collecting results** • **Write a conclusion after interpreting their results, orally present their findings to the class, make a poster, try to explain using scientific language what they found out and why they think this happened. Suggest how their experiment could have been improved and identify difficulties they experienced.**
	Forces 2	• recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect	
	Living things and their habitats	• describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals • give reasons for classifying plants and animals based on specific characteristics • describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird	
	Earth and Space	• describe the movement of the Earth and other planets relative to the sun in the solar system • describe the movement of the moon relative to the Earth • describe the sun, Earth and moon as approximately spherical bodies • use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky	

	Properties and changes of materials 1	• compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets • give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic • explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda	• **Identifying scientific evidence that has been used to support or refute ideas or arguments: learn about famous scientists and how they came up with their theories.**
	Properties and changes of materials 2	• use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating • know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution • demonstrate that dissolving, mixing and changes of state are reversible changes	

Year 6	Electricity	• associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. • compare and give reasons for variations in how 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.	• **Planning different types of scientific enquiries to answer questions: carry out comparative tests and fair tests. Explain the variable which they will change, which they will measure and which they need to keep the same and why. Fill in a planning sheet or write own plan.** • **Taking measurements, with increasing accuracy using microscope, ruler, tape measure, timer, balance, metre stick, pulse meter, stopwatch with increasing accuracy and precision, take repeat readings when appropriate and find the mean of the results (calculator can be used)** • **Recording data and results using scientific diagrams and labels, tables, scatter graphs, bar and line graphs, venn diagrams** • **Using test results to make predictions to follow up an test with a further experiment to answer a related question or improve upon first experiment with more measurements/ accuracy/ way of collecting results** • **Write a conclusion after interpreting their results, orally present their findings to the class, make a poster, try to explain using scientific language what they found out and why they think this happened, identify how accurate their results are and if there are any anomalies. Suggest how the experiment could be improved.** • **Identifying scientific evidence that has been used to support or refute ideas or arguments: research scientific theories and hypotheses and give their opinion on the validity of theories after looking at the evidence.**
	Light	• 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	
	The Circulatory System	• 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	
	Plant Lifecycles and reproduction	• describe the life process of reproduction in some plants	
	Human lifecycles and reproduction	• describe the changes as humans develop to old age describe the life processes of reproduction in animals.	
	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	