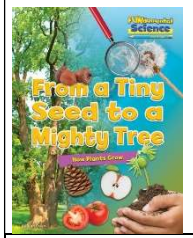
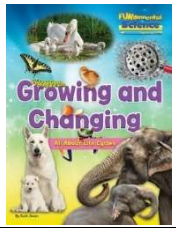
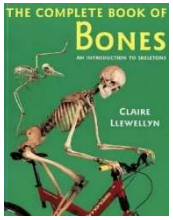
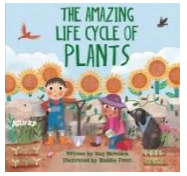
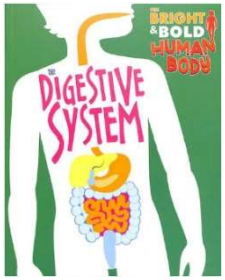
Summer Science -Medium Term Plan

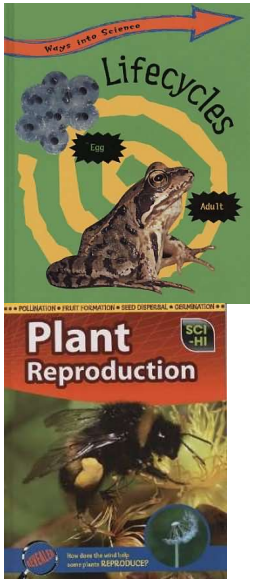
	Substantive knowledge – the stuff of science	Disciplinary/procedural knowledge – how Science is studied.	Vocabulary	Big Question and linked texts
EYFS Working Scientifically Plants and lifecycles	**I know:** what a plant is what an animal is the difference between a plant and an animal that some plants grow inside that some plants grow outside the names of some familiar plants the names of some familiar animals that some plants have flowers and some do not that plants grow from seeds that there are different environments that there are different seasons the names of the seasons that the weather changes the names of different types of weather	**I know:** some simple words to describe what I can see: soft, hard, see through, bendy, rough, smooth, wet dry question help me find out more about something **I know how to:** how to explore materials using my senses ask questions to find out more and to check what has been said to them. articulate ideas and thoughts in well formed sentences use talk to work out problems and organise thinking and activities. explain how things work and why they might happen. use new vocabulary in different contexts observe animals and plants explain how some plants and animals are the same and how they are different. plant seeds and watch them grow observe the weather and the seasons describe the weather	question answer equipment plant grow water healthy seeds shoot rain sun pollen vegetable fruit healthy, unhealthy Summer Winter Autumn Spring day Daytime Wind rain sleet hail fog cold sun hot	What are plants and animals? What grows and lives near me? How do plants grow? How do animals and plants change over time? What is the weather doing? How does the weather change throughout the day/month/year? <u>Resources/staff subject knowledge:</u> Refer to the geography MTP for books and resources

Year 1 – Working Scientifically Plants	**I know:** that observation is watching closely that prediction is making a guess based on facts. that investigating is testing that results are what we find out from testing. that data is results that comparing is looking at what is the same and what is different that classifying is sorting into groups what a plant is that plants are important and why what a plant looks like how to identify flowering plants the names of some common flowering plants the difference between wild and garden plants that plants are living things that living things need food, water and air to live and grow that deciduous lose their leaves in autumn that evergreen plants do not lose their leaves that flowering plants can be deciduous or evergreen what the basic structure of a plant is what functions the different parts of a plant have	**I know:** that scientists ask questions and make predictions that scientists observe and measure that scientists gather and record data **I know how to:** ask simple questions and recognise that they can be answered in different ways. observe closely, using simple equipment; perform simple tests; identify and classify gather and record data to help in answering questions how to identify wild and garden plants the names of some wild and garden plants name the parts of a plant label the parts of a plant describe the functions of the parts of a plant classify flowering and non flowering plants; deciduous and evergreen plants; wild and garden plants. observe the growth of a plant from a seed and record my observations provide air, water and food to a growing plant and record my observations	testing observing closely observe observing identify classify sort group record diagram chart map data compare describe season Autumn Winter Spring Summer, seed bean shoot stem stalk plants structure parts roots stem soil stalk buds job role petals fruit seed bulb observe similar different	What is a plant? How does a plant grow? How does a plant survive? What different types of plant are there? What functions do the parts of a plant have?  Resources/staff subject knowledge: SCIENCE: An Introduction to PLANTS | Miss Ellis 💐 #plants - YouTube https://studio.discoveryeducation.co.uk/view?id=600fe0c0b3b3cf786c97fb1a&page_id=7f2a4906-79d1-45ca-8ccf-3f1713faccf4 https://www.youtube.com/watch?v=9bFU_wJgvBI https://studio.discoveryeducation.co.uk/view?id=777dfea2-6e2b-47e8-9304-f838c7dfaaa6&page_id=8e01d68b-ada4-4069-883f-6842d3fa2de8 https://school-learningzone.co.uk/key_stage_one/ks1_science/earth_and_space/the_seasons/seasons_

Year 2 - Working Scientifically Plants Animals Including Humans.	**I know:** that plants grow from seeds or bulbs. that germination is when a seed grows into a seedling. that seeds need air, water and the right temperature to germinate. that plants need air, water, the right temperature, and light to survive and grow. that animals, including humans, have offspring which grow into adults. what a life cycle is and that it has different stages. what some of the stages in a life cycle are. that animals, including humans, need food, air and water to survive. the different kinds of exercise and how they affect the human body. what a healthy, balanced diet contains and how it affects the human body. that observation over time is watching closely and carefully and looking for changes. that a prediction is making a guess based on facts and evidence what a Fair Test is. that testing needs to be fair to be reliable. that we collect data from our results. that we can share our data in a diagram, a map or a chart. that diagrams, maps and charts are that classifying is sorting into groups by comparing, contrasting and describing materials and objects based on specific criteria.	**I know:** that scientists ask questions and make predictions that scientists observe and measure. that scientists gather and record data. **I know how to:** observe closely, using simple equipment; perform simple tests; identify and classify. gather and record data to help in answering questions. ask simple questions and recognise that they can be answered in different ways. ask simple questions to find out if something is living, dead or has never lived at all. observe and describe how seeds and bulbs grow into mature plants. find out and describe how plants need air, water, light and a suitable temperature to grow and stay healthy. 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. create my own criteria for classifying adaptations and habitats.	fair test careful observation observe observing identify classify sort group record diagram chart map data compare contrast describe budflower blossom petal stem bulb seed water light suitable lifecycle, temperature grow healthy germination reproduction offspring grow adults nutrition reproduce survival exercise hygiene	What do plants need to grow? How can we vary the conditions that we plant the seeds in? Which different places shall we put the seeds? Which conditions do you think will be best for the seeds? Why?   <u>Resources/staff subject knowledge:</u>

Year 3 Working scientifically Animals including humans Plants	**I know:** that prediction is making an educated guess based on facts and evidence that the different elements of a Fair Test are called variables. that what we are measuring is the dependent variable. that we can record our results data in simple bar charts and tables with the correct labels. that a comparative test means comparing the results of one or more materials that living things: respire are sensitive, grow, reproduce, excrete, eat and drink. that the correct food and minerals is called nutrition. that animals, including humans, need the right types and amount of nutrition that they cannot make their own food; they get nutrition from what they eat that humans and some other animals have skeletons and muscles for support, protection and movement that a vertebrate has a backbone that an invertebrate has no backbone that some invertebrates have exoskeletons that vertebrates have endoskeletons that the skull protects the brain that the ribcage protects the heart and lungs that the skeleton provides support for the muscles that the muscles provide movement that the different parts of a flowering plant perform different functions the role that flowers perform in the lifecycle of a plant. that pollination is the transfer of pollen from one plant to another plant. that seeds are fertilised by pollination that fertilised seeds grow in the flowert hat seeds can be dispersed by birds, insects and wind. that in the right conditions, seeds germinate and grow know that plants require suitable conditions for growth and that these vary from plant to plant. that water is transported within plants.	**I know:** that scientists ask questions and make predictions that scientists observe and measure. that scientists gather and record data. **I know how to:** Ask relevant questions and using different types of scientific enquiries to answer them. set up simple practical enquiries, comparative and fair tests. create my own criteria for classifying skeletons and provide reasoned explanations for my criteria explain how living things obtain food identify why animals, including humans, need the right types of nutrients. discuss the structure and function of the human skeleton identify and name the different kinds of joints. discuss the importance of joints in the movement of the human skeleton. identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers explain what the functions of the different parts of flowering plant are explore the requirements of plants for life and growth and how they vary from plant to plant by devising an investigation investigate the ways 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	Research, relevant questions, scientific enquiry, comparative test, systematic, accurate measurement, thermometer, data logger Gather, record, classify, present, drawings, labelled diagrams, keys, bar charts, tables skeleton invertebrate vertebrate endoskeleton exoskeleton support, protection, skull, brain, ribs, heart, lungs, movement, joint, muscles, pull, contract relax, Nutrition, vitamins, minerals, fat, protein carbohydrates, diet	What is a skeleton? What are the main functions of a skeleton? What types of skeleton are there?   Do different plants need different conditions to grow? How can we vary the conditions that we plant the seeds in? Which different places shall we put the seeds? Which conditions do you think will be best for which plant? Why?

Year 4 – Working Scientifically Animals Including Humans Living Things and their Habitats	I know what parts make up the human digestive system. what the functions of the human digestive system parts are. the different types of human teeth. the functions of the different types of human teeth. that food chains can vary depending on the habitat. what a producer is and its function in a food chain. what a consumer is and its function in a food chain what a predator (and apex predator) is and its function in a food chain. what prey is and its function in a food chain. that characteristics of living things can be used to classify them. that classification is a system of sorting. that one system of sorting is a classification key. that humans exert big changes on the environment around them. that animals and plants cannot make big changes to their environment and are vulnerable to any changes that do occur. what environmental dangers animals and plants face in their habitat. what vulnerable means. what endangered and critically endangered mean. what extinct means.	I know that scientists ask questions and make predictions. that scientists observe and measure. that scientists gather and record data. I know how to ask relevant questions and using different types of scientific enquiries to answer them. set up simple practical enquiries, comparative and fair tests. 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, consumers, predators and prey. . I can 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.	Gather, record, classify, present, drawings, labelled diagrams, keys, bar charts, tables human digestive system, mouth, tongue, moistens, saliva, teeth, incisors, canine, molars, oesophagus, transports, enzymes, stomach, acids, small and large intestines, vitamins, producers, prey, predators, apex predators environment, flowering, non-flowering, plants, animals, vertebrate, fish, mammals, birds, reptiles, amphibians, invertebrates, ecological, deforestation, population, development	How do humans break down food? What are the different kinds of human teeth and what are they used for? What are the different parts of the human digestive system and what do they do? What does a producer/consumer/predator/apex predator/prey do in a food chain?  <u>Resources/staff subject knowledge:</u> 

Year 5 - Working Scientifically Living thing and habitats Animals including humans	I know that a characteristic of life is reproduction that reporoduction can be sexual (male and female) that reproduction can be asexual (creating clones) that plants reproduce sexually and asexually that animals reproduce sexually that different classes of animals have different lifecycles. that amphicians and insects metamorphosise that mammals give birth to live young that gestation is the time a foetus takes to mature in the womb that mammals have a range of gestastion periods that all lifecycles have multiple stages that the human lifecycle has eight stages birth infant toddler child puberty adulthood old age death that puberty is the change between childhood and adulthood .	I know I know that scientists ask questions and make predictions. That a predication is called a hypothesis I know that scientists observe and measure in order to collect data. I know that scientists gather and record data. I know that data will either prove or disprove a hypothesis I know how to plan different and implement types of scientific enquiries to answer questions, including recognising and controlling variables when necessary. use test results to make predictions to set up further comparative and fair tests. take measurements, using a range of scientific equipment, including a thermometer, data logger and voltmeter with increasing accuracy and precision, taking repeat reading where appropriate, record data and results of increasing complexity (scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs) report and present findings from enquiries, including conclusions, causal relationships and explanations of a degree of trust in results, in oral and written form such as displays or presentations 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 the changes as humans develop to old age. Describe some of the cphysical and emotional changes that take place in puberty	Plan, variables, accuracy, precision, repeat readings Patterns, systematic, quantitative measurements, identify, classify, describe Scientific diagrams, labels, classification keys, scatter graphs, bar and line graphs Human development, puberty, gestation, mass, grows, reproduction, plants – sexual, asexual, animal naturalists, animal behaviourists,	How do plants and animals reproduce? What is asexual reproduction What is a lifecycle? What are the different lifecycles? What is metamorphosis? What is gestation? What is puberty? <u>Resources/staff subject knowledge:</u> 

Year 6 Working Scientifically Animals including humans Living things	I know that blood is pumped around the body by the heart the heart contains chambers called atriums and ventricles that blood travels through blood vessels that there are three types of blood vessel: veins, arteries and capillaries that nutrients and water are transported within animals.. that blood travelling towards the heart is deoxygenated the system of blood travelling round the body is called the circulatory system that the blood receives oxygen from the lungs (pulmonary system). that diet, exercise, drugs and lifestyle impact on the way the body functions. that classification is a system of sorting according to specific criteria. That Carl Linneas devised a system for the classification of all living things That this sytem is based on the similarities and differences of common observable characteristics. That animals and plants are classified in to Kingdom, Phylus, Class, Family, Genus, Species that the micro-organism is one of the smallest species of living organism.	I know that scientists ask questions and make predictions. that a predication is called a hypothesis that scientists observe and measure in order to collect data. that scientists gather and record data. that data will either prove or disprove a hypothesis I know how to plan different and implement types of scientific enquiries to answer questions, including recognising and controlling variables when necessary. use test results to make predictions to set up further comparative and fair tests. take measurements, using a range of scientific equipment, including a thermometer, data logger and voltmeter with increasing accuracy and precision, taking repeat reading where appropriate, record data and results of increasing complexity (scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs) report and present findings from enquiries, including conclusions, causal relationships and explanations of a degree of trust in results, in oral and written form such as displays or presentations 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. 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.	Plan, variables, accuracy, precision, repeat readings Patterns, systematic, quantitative measurements, identify, classify, describe Scientific diagrams, labels, classification keys, scatter graphs, bar and line graphs Internal organs – heart, lungs, liver, kidney, brain, skeletal, digest, digestion, blood vessels Damage – drugs alcohol, substance Micro-organisms, classification,	How is blood transported around the body? What is blood for? What does the heart do? What do the lungs do? How are plants and animals formally classified? Who invented the classification key? Why and how are living things classified? <u>Resources/staff subject knowledge:</u>