Topics	**EYFS Nursery**	**EYFS Reception**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Planning and length of unit.	**Development Matters - UoTW: The Natural World**	**Development Matters - UoTW: The Natural World**	**The Education People Scheme / NC**	**The Education People Scheme / NC**	**The Education People Scheme / NC**	**The Education People Scheme / NC**	**The Education People Scheme / NC**	**The Education People Scheme / NC**
Living things and their habitats/seasonal change (y1) and evolution and inheritance (y6) **Substantive Knowledge**	• Understand the key features of the life cycle of a plant and an animal. • Begin to understand the need to respect and care for the natural environment and all living things.	• Recognise some environments that are different from the one in which they live. • Understand the effect of changing seasons on the natural world around them. **Early Learning Goals -** - Explore the natural world around them, making observations and drawing pictures of animals and plants. - Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class.	• Observe changes across the four seasons. • Observe and describe weather associated with the seasons and how day length varies.	• 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 micro-habitats. • Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.		• Recognise that living things can be grouped in a variety of ways. • Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. • Recognise that environments can change and that this can sometimes pose dangers to living things.	• Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. • Describe the life process of reproduction in some plants and animals.	• Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals. • Give reasons for classifying plants and animals based on specific characteristics. • 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.

		- Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.						● Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.

Disciplinary Knowledge (working scientifically)	• Explore and respond to different natural phenomena in their setting and on trips. • Talk about what they see, using a wide vocabulary.	• Explore the natural world around them. • Describe what they see, hear and feel whilst outside.	• Asking simple questions and recognising that they can be answered in different ways. • Observing closely, using simple equipment. • Performing simple tests. • Identifying and classifying. • Using their observations and ideas to suggest answers to questions gathering and recording data to help in answering questions.	• Asking simple questions and recognising that they can be answered in different ways. • Observing closely, using simple equipment. • Using their observations and ideas to suggest answers to questions gathering and recording data to help in answering questions.		• Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions. • Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.	• Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. • Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. Non statutory - • To be able to recognise which secondary sources will be the most useful for their research.	• Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. • Identifying scientific evidence that has been used to support or refute ideas or arguments. • Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. • Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. • Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables,

								scatter graphs, bar and li -ne graphs. ● Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations. ● Identifying scientific evidence that has been used to support or refute ideas or arguments. ● To be able to recognise which secondary sources will be most useful to research ideas (non-statutory).
Key Vocabulary	Autumn Winter Spring Summer Life cycle Weather	Autumn Winter Spring Summer Life Cycle Weather	**Tier 2:** season, changes, autumn, winter, spring, summer, weather, sunrise, sunset **Tier 3:** temperature **Disciplinary:** answer, classify, communicate, compare, data, enquiry, equipment, gather, group,	**Tier 2:** living, features, move, feed, grow, senses, shelter, depend/survive, suitability, transfer, environment **Tier 3:** reproduce, habitat, microhabitat, source, nutrients, energy, food chain, producer, prey, predator **Disciplinary:** answer, classify, communicate,		**Tier 2:** group, category, key, flowering, non-flowering, environment, surroundings, conditions, natural, human-made, endangered, extinct, positive, negative, indifferent, protect, manage, impact **Tier 3:** classification, vertebrate,	**Tier 2:** lifecycle, natural world, expertise, observe, document, study **Tier 3:** stages of development, sexual, asexual, reproduction, larvae, embryo, metamorphosis, naturalist, sexual/ asexual reproduction, pistal/carpel, stigma, style, ovary, stamen, anther,	**Tier 2:** insects, algae, moss, fern, conifer, bacteria **Tier 3:** vertebrate/non-vertebrate, taxonomy, arachnids, crustaceans, millipedes, annelids, echinoderms, molluscs, coelenterates, dichotomous key, ginkgoes, angiosperms, microorganism, microbes, fungi,

			identify, measure, observe, pattern, practical activity, question, record, relationship, secondary source, sort, test	compare, data, enquiry, equipment, gather, group, identify, measure, observe, pattern, practical activity, question, record, relationship, secondary source, sort, test		invertebrate, spores, dichotomous key, urbanisation, deforestation, pollution, climate change, population, fossil fuels, natural disaster, human impact, Venn diagram, conservation **Disciplinary:** analyse, bar change, chart, classify, comparative test, conclusion, data, data logger, diagram, display, enquiry, equipment, evidence, explain, fair test, findings, gather, group, identify, key, measurement, note, observe, pattern, predict, present, process, question, record, relationship, results, secondary source, similarity, sort, standard unit, systematic, table, thermometer, value	nectar, pollen, pollination, fertilisation, dispersal, tuber, bulb, runner, clone, vegetative propagation, sperm, egg, external/internal fertilisation **Disciplinary:** causal relationship, classification key, comparative test, conclusion, control, diagram, enquiry, equipment, evidence to support/refute, fair test, graph (scatter/bar/line), informationrecord, measurement, observation, pattern, prediction, repeat reading, research, results, secondary source, table, variable	protists **Disciplinary:** causal relationship, classification key, comparative test, conclusion, control, diagram, enquiry, equipment, evidence to support/refute, fair test, graph (scatter/bar/line), information record, measurement, observation, pattern, prediction, repeat reading, research, results, secondary source, table, variable **Tier 2:** diversity, siblings, characteristics, traits, habitats, climate, extinction, crossbreed **Tier 3:** evolution, mould/body/trace/ cast fossil, fossil record, species, variation, inheritance, inherited/environmental variation, selective-breeding, natural selection, adaptation, organism, pollinators
STEM Sentences			**I have noticed that …** **……. is the same as ……** **……. is it different to ……..** **I predict that …**	**I have noticed that … I know this because ……** **……. is the same as …….** **This is because ….** **……. is it different**		**……. is the same as …….** **This is because ….** **……. is it different to ……** **This is because ….** **In my investigation I**	**I predict ……** **I think this because …..** **To make my test fair I will…** **I will do this because …..**	**In my investigation I found out …** **I know this because my results show that …** **I believe that the scientific explanation**

			I have found out ….	to …… This is because …. I have found out …. This tells me that ….		found out … I know this because my results show that … I would now like to know …..	The variables I will change/keep the same are … By doing this I expect ……	for this is ….
Animals inc humans **Substantive Knowledge**	• Understand the key features of the life cycle of a plant and an animal. • Begin to understand the need to respect and care for the natural environment and all living things.	**Early Learning Goal -** - Explore the natural world around them, making observations and drawing pictures of animals and plants.	● Identify and name a variety of common animals that are birds, fish, amphibians, reptiles 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 (birds, fish, amphibians, reptiles and mammals, and including pets). ● Identify, name, draw and label the basic parts of the human body and say which parts of the body is associated with each sense.	● Notice that animals, including humans, have offspring which grow into adults. ● Find out about and describe the basic needs of animals, including humans, for survival (water, food and air). ● Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.	● Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat. ● Identify that humans and some animals have skeletons and muscles for support, protection and movement.	● Describe the simple functions of the basic parts of the digestive system in humans. ● Identify the different types of teeth in humans and their simple functions. ● Construct and interpret a variety of food chains, identifying producers, predators and prey.	● Describe the changes as humans develop from birth to old age.	● Identify and name the main parts of the human circulatory system, and explain 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.
Disciplinary Knowledge	• Talk about what they see, using	• Describe what they see, hear	● Observing closely, using	● Observing closely, using	● Asking relevant questions and using different	● Asking relevant questions and using different	● To be able to raise different types of	● Planning different types of scientific

(working scientifically)	a wide vocabulary.	and feel whilst outside.	simple equipment. ● Identifying and classifying. ● Using their observations and ideas to suggest answers to questions gathering and recording data to help in answering questions. ● Using secondary sources to find out information (non statutory). ● Able to sort and group animals.	simple equipment. ● Performing simple tests. ● Using their observations and ideas to suggest answers to questions gathering and recording data to help in answering questions.	types of scientific enquiries to answer them. ● Setting up simple practical enquiries, comparative and fair tests making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. ● Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. ● Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. ● Using straightforward scientific evidence to answer questions or to	types of scientific enquiries to answer them. ● Setting up simple practical enquiries, comparative and fair tests making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. ● Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. ● reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. ● Using straightforward scientific evidence to answer questions. or to	questions (non-statutory). ● Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary - ● Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. ● Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations. ● Identifying scientific evidence that has been used to support or refute ideas or arguments.	enquiries to answer questions, including recognising and controlling variables where necessary. ● Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. ● Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.

					support their findings.	support their findings. -		
Key Vocabulary	Life cycle	Life cycle Hibernate Cocoon	**Tier 2:** head, neck, arms, elbows, legs, knees, face, ears, eyes, hair, mouth, teeth, tongue, feet, hands, torso, skin, senses, ears/hearing, hands/touch, nose/smell, eyes/sight, tongue/taste, birds, fish, feathers, scales, breathe, lay, young, diet **Tier 3:** characteristic, cold-/ warm-blooded, mammal, reptile, amphibian, carnivore, omnivore, herbivore **Disciplinary:** question/answer, observe, identify, classify, test	**Tier 2:** growth, human, child, toddler, teenager, adult, survive, shelter, exercise, muscles, heart, lungs, brain, meat, fruit, vegetables, dairy, fat, sugar, healthy, portion **Tier 3:** offspring, lifecycle, limbs, reproduce, energy, air (oxygen), temperature, hygiene, mental health **Disciplinary:** answer, classify, communicate, compare, data, enquiry, equipment, gather, group, identify, measure, observe, pattern, practical activity, question, record, relationship, secondary source, sort, test	**Tier 2:** growth, carbohydrate, fat, protein, dairy, domestic, pet, environment, diet, behaviour, company, health and welfare, skeleton, skull, ribcage, spine, muscle, relax, contract, **Tier 3:** nutrition, energy, calcium, joints, organs, triceps, bicep **Disciplinary:** analyse, bar change, chart, classify, comparative, test, conclusion, data, data logger, diagram, display, enquiry, equipment, evidence, explain, fair test, findings, gather, group, identify, key, measurement, note, observe, pattern, predict, present, process, question, record, relationship, results, secondary source, similarity, sort, standard unit, systematic, table, thermometer, value	**Tier 2:** teeth, digestive system, mouth, tongue, stomach, adaptation, energy, prey, predator **Tier 3:** incisor, canine, molar, premolar, carnivore, omnivore, herbivore, oesophagus, small and large intestine, food chain, producer, primary/secondary/ tertiary consumer **Disciplinary:** analyse, bar change, chart, classify, comparative test, conclusion, data, data logger, diagram, display, enquiry, equipment, evidence, explain, fair test, findings, gather, group, identify, key, measurement, note, observe, pattern, predict, present, process, question, record, relationship, results, secondary source, similarity, sort, standard unit, systematic, table, thermometer, value	**Tier 2:** toddler, stages, lifecycle, puberty, pubic hair, breasts, periods, womb, chemical, mass **Tier 3:** embryo, foetus, adolescent, hormones, genes,DNA, oestrogen, testosterone, pituitary gland, reproduction, menstruation, gestation period, viviparous, zygote **Disciplinary:** causal relationship, classification key, comparative test, conclusion, control, diagram, enquiry, equipment, evidence to support/refute, fair test, graph (scatter/bar/line), informationrecord, measurement, observation, pattern, prediction, repeat reading, research, results, secondary source, table, variable	**Tier 2:** pump, heart, lifestyle, drugs, medicine, illegal, vitamins **Tier 3:** circulatory system, organ, blood, vessels, arteries, veins, capillaries, living cells, oxygen, carbon dioxide, deoxygenated, oxygenated, platelets, plasma, red/white blood cells, antibodies, single/double circulatory system, nicotine, caffeine, proteins, stimulant, hallucinogen, depressant, nicotine, ethanol **Disciplinary:** causal relationship, classification key, comparative test, conclusion, control, diagram, enquiry, equipment, evidence to support/refute, fair test, graph (scatter/bar/line), informationrecord, measurement, observation, pattern, prediction, repeat reading, research, results, secondary source, table, variable
STEM Sentences			**I have noticed that …** **……. is the same as ……** **……. is it**	**I have noticed that …** **I know this because ……** **……. is the same as**	**I predict ……** **I think this because …..** **To make my test fair I**	**I predict ……** **I think this because …..**	**I predict ……** **I think this because …..**	**I predict ……** **I think this because …..**

			different to …….. **I have found out ….**	**…….** **This is because ….** **……. is it different to ……** **This is because ….** **I predict that …** **I think this because ….** **I have found out ….** **This tells me that ….**	**will…** **I have found out ….** **Therefore my prediction was …** **In my investigation I found out …** **I know this because my results show that …** **I would now like to know …..**	**To make my test fair I will…** **In my investigation I found out …** **I know this because my results show that …** **I would now like to know …..** **I have found out ….** **Therefore my prediction was …**	**To make my test fair I will…** **I will do this because …..** **The variables I will change/keep the same are …** **By doing this I expect ……** **I have found out ….** **Therefore my prediction was …** **My prediction was correct because ….** **In my investigation I found out …** **I know this because my results show that …** **I believe that the scientific explanation for this is ….**	**To make my test fair I will…** **I will do this because …..** **The variables I will change/keep the same are …** **By doing this I expect ……** **I have found out ….** **Therefore my prediction was …** **My prediction was correct because ….**
Materials and states of matter and <u>rocks</u> **Substantive Knowledge**	• Talk about the differences between materials and changes they notice.	**Early Learning Goals -** - Explore the natural world around them, making observations and drawing pictures of animals and plants. - Know some similarities and differences between the natural world around them and contrasting	• Distinguish between and object and the material from which it is made. • Identify and name a variety of everyday materials, including wood, plastic, glass, water and rock. • Describe the simple physical properties of a variety of	• 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,	• 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	• 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	• 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. • Understand that some materials will	

		environments, drawing on their experiences and what has been read in class. - Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.	everyday materials. ● Compare and group together a variety of everyday materials on the basis of their physical properties. .	bending, twisting and stretching.	from rocks and organic matter.	degrees Celsius (°C). ● Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	dissolve in liquid to form a solution, and describe how to recover a substance from a solution. ● Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. ● Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. ● Demonstrate that dissolving, mixing and changes of state are reversible changes. ● Explain that some 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.	
Disciplinary Knowledge (working scientifically)	• Explore materials with different properties. • Explore natural materials, indoors and outside. • Use all their senses in hands-on exploration of natural materials. • Explore collections of materials with similar and/or different properties. • Talk about what they see, using a wide vocabulary. • Explore how things work.	• Explore the natural world around them. • Describe what they see, hear and feel whilst outside.	• Asking simple questions and recognising that they can be answered in different ways. • Observing closely, using simple equipment. • Performing simple tests. • Identifying and classifying. • Using their observations and ideas to suggest answers to questions gathering and recording data to help in answering questions. • Make simple measurements with equipment (non-statutory).	• Asking simple questions and recognising that they can be answered in different ways. • Performing simple tests. • Using their observations and ideas to suggest answers to questions gathering and recording data to help in answering questions. • Use simple secondary sources to find answers (non-statutory) • To be able to talk about what they have found out and how they have found it out (non-statutory). • To be able to, with help, notice relationships (non-statutory).	• Setting up simple practical enquiries, comparative and fair tests making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. • Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.	• Setting up simple practical enquiries, comparative and fair tests making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. • Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. • Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. • Using straightforward scientific evidence to answer	• Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. • Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. • Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. • Using test results to make predictions to set up further comparative and fair tests. • Reporting and presenting findings from enquiries, including conclusions, causal	

						questions or to support their findings.	relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.	
Key Vocabulary	plastic wood glass bricks metal leather	plastic wood glass bricks metal leather melting floating hot cold freezing	**Tier 2:** object, wood, plastic, metal, rock, water; hard/soft; stretchy/stiff; shiny/dull; rough/smooth; bendy/not bendy; waterproof/not waterproof. **Tier 3:** properties, material, opaque/transparent absorbent/not absorbent **Disciplinary:** answer, classify, communicate, compare, data, enquiry, equipment, gather, group, identify, measure, observe, pattern, practical activity, question, record,relationship, secondary source, sort, test	**Tier 2:** wood, metal, plastic, glass, brick, rock, paper, cardboard, strong, waterproof, bounce, grip (sole), squash, bend, twist, stretch, stretchy/not stretchy, fabric, **Tier 3:** property, material, object, suitability, purpose, solid, fair test **Disciplinary:** answer, classify, communicate, compare, data, enquiry, equipment, gather, group, identify, measure, observe, pattern, practical activity, question, record,relationship, secondary source, sort, test	**Tier 2:** rock, material, Earth, remains, heat, pressure, durable, preserve, decay, earthworm, leaves, soil **Tier 3:** mineral, crust, formation, physical properties, metamorphic, sedimentary, igneous, grains, molten, magma, lava, crystals, permeable,impermeable, sediment, fossil, palaeontologist, fossilisation, organic matter, erode **Disciplinary:** analyse, bar change, chart, classify, comparative test, conclusion, data, data logger, diagram,display, enquiry, equipment, evidence, explain, fair test, findings, gather, group, identify, key, measurement, note, observe,pattern, predict, present, process, question,record, relationship, results, secondary source, similarity, sort, standard unit,	**Tier 2:** melt, temperature, freeze,melt **Tier 3**: states of matter, solid, liquid, gas, matter, mass, volume, particles, properties, water vapour, melting point, freezing point, condensation, evaporation, water cycle, precipitation, water vapour **Disciplinary:** analyse, bar change, chart, classify, comparative test, conclusion, data, data logger, diagram, display, enquiry, equipment, evidence, explain, fair test, findings, gather, group, identify, key,measurement, note, observe, pattern,predict, present, process, question,record, relationship, results, secondary source, similarity, sort, standard unit, systematic, table, thermometer, value	**Tier 2:** material, mixture, burning, rust **Tier 3:** thermal, conductor, insulator, transference, independent/dependent/controlled variable, dissolve, solid,liquid, gas, states of matter, solution, filtration, sieving,evaporation,permeable, vapour, particles,irreversible, chemical changes, acid **Disciplinary:** causal relationship, classification key, comparative test, conclusion, control, diagram, enquiry, equipment, evidence to support/refute, fair test, graph (scatter/bar/line), information record, measurement, observation, pattern, prediction, repeat reading, research, results, secondary source, table, variable	

					systematic, table, thermometer, value			
STEM Sentences			**I have noticed that …** **……. is the same as ……** **…….. is it different to ……..** **I have found out ….**	**I have noticed that …** **I know this because ……** **……. is the same as …….** **This is because ….** **…….. is it different to ……** **This is because ….** **I predict that …** **I think this because ….** **I have found out ….** **This tells me that ….**	**……. is the same as …….** **This is because ….** **…….. is it different to ……** **This is because ….** **I predict ……** **I think this because …..** **To make my test fair I will…** **I have found out ….** **Therefore my prediction was …** **In my investigation I found out …** **I know this because my results show that …** **I would now like to know …..**	**I predict ……** **I think this because …..** **To make my test fair I will…** **In my investigation I found out …** **I know this because my results show that …** **I would now like to know …..** **have found out ….** **Therefore my prediction was …**	**I predict ……** **I think this because …..** **To make my test fair I will…** **I will do this because …..** **The variables I will change/keep the same are …** **By doing this I expect ……** **The equipment I have chosen to use is ….** **I have chosen this because ….** **I expect to find ….** **.** **……. is the same as …….** **This is because ….** **…….. is it different to ……** **….**	
Plants **Substantive Knowledge**	• Plant seeds and care for growing plants. • Understand the key features of the life cycle of a plant and an animal. • Begin to understand the need to respect and care for the natural environment and all living things.	• Understand the effect of changing seasons on the natural world around them. **Early Learning Goals -** - Explore the natural world around them, making observations and drawing pictures of	● Identify and name a variety of common plants, including garden plants, wild plants and trees, and those classified as deciduous and evergreen. ● Identify and describe the basic structure	● 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.	● Identify and describe the functions of different parts of plants; roots, stem, leaves and flowers. ● Explore the requirements of plants for life and growth (air, light, water, nutrients from soil and room to grow) and			

		animals and plants. - Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class. - Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.	of a variety of common plants including roots, stem/trunk, leaves and flowers.		how they vary from plant to plant. ● Investigate the ways in which water is transported within plants. ● Explore the role of flowers in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.			
Disciplinary Knowledge (working scientifically)	● Talk about what they see, using a wide vocabulary.	• Describe what they see, hear and feel whilst outside. • Explore the natural world around them.	● Asking simple questions and recognising that they can be answered in different ways. ● Observing closely, using simple equipment. ● Identifying and classifying. ● To be able to sort and group (non-statutory).	● Asking simple questions and recognising that they can be answered in different ways. ● Observing closely, using simple equipment. ● Performing simple tests. ● Using their observations and ideas to suggest answers to questions gathering and recording data to help in	● Setting up simple practical enquiries, comparative and fair tests making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers			

				answering questions. ● To sort objects using observable features (non-statutory).	and data loggers. ● Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions. ● Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. ● Using straightforward scientific evidence to answer questions or to support their findings.			
Key Vocabulary	petal root flower soil grow nature	petal root flower soil grow nature	**Tier 2:** plants, wild plants, garden plants, weeds, trees, seeds, root, shoot, soil,magnifying glass, flower,petal, stem, leaf/leaves, tree, trunk,bark, branch, blossom, acorn **Tier 3:** local plant names, hand lens, common tree names, deciduous, evergreen **Disciplinary:** answer,classify, communicate, compare, data, enquiry, equipment, gather, group,identify,	**Tier 2:** seed, bulb, plant, protect, mature, roots, shoot,food supply, temperature **Tier 3:** coat, food store,seed leaves, germination, nutrients, absorb, energy,lifecycle, reproduce **Disciplinary:** answer, classify, communicate,compare, data, enquiry, equipment,gather, group, identify, measure,observe, pattern, practical activity,question, record,	**Tier 2:** seed, parent plant, roots,stem, leaves, trunk/branches, flowers, transport, absorb, tubes, flower, pollen, nectar, attract **Tier 3:** dispersal, germination, root hair, function, nutrients, carbon dioxide, growth rate, nutrient, drought, climate, pollination, reproduce **Disciplinary:** analyse,bar change, chart, classify, comparative test, conclusion, data,			

			measure, observe, pattern,practical activity, question, record,relationship, secondary source, sort, test	relationship,secondary source, sort, test	data logger, diagram, display, enquiry, equipment, evidence, explain, fair test, findings, gather, group, identify, key, measurement, note, observe, pattern, predict, present, process, question, record, relationship, results, secondary source, similarity, sort, standard unit, systematic, table, thermometer, value			
STEM Sentences			**I have noticed that …** **……. is the same as ……** **……. is it different to ……..** **……. is the same as ……** **This is because ….** **……. is it different to ……** **This is because ….** **I predict that …** **I think this because ….** **I have found out ….** **This tells me that ….**	**I have noticed that …** **I know this because ……** **……. is the same as ……** **This is because ….** **……. is it different to ……** **This is because ….** **I predict ……** **I think this because …..** **To make my test fair I will…** **I have found out ….** **Therefore my prediction was …** **In my investigation I found out …** **I know this because my results show that …**	**……. is the same as …….** **This is because ….** **……. is it different to ……** **This is because ….** **I predict ……** **I think this because …..** **To make my test fair I will…** **I have found out ….** **Therefore my prediction was …** **In my investigation I found out …** **I know this because my results show that …**			
Light					• Recognise that they need light in order to see things and that			• Recognise that light appears to travel in straight lines.

Substantive Knowledge					dark is the absence of light. ● Notice that light is reflected from surfaces. ● Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. ● Recognise that shadows are formed when the light from a light source is blocked by a solid object. ● Find patterns in the way that the sizes of shadows change.			● 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.
Disciplinary Knowledge (working scientifically)	• Repeat actions that have an effect. • Explore materials with different properties. • Explore natural materials, indoors and outside. • Explore and respond to different natural phenomena in their setting and on trips. • Use all their senses in hands-on exploration of natural materials. • Explore collections of materials with	• Explore the natural world around them. • Describe what they see, hear and feel whilst outside. **Early Learning Goal -** - Explore the natural world around them.			● Asking relevant questions and using different types of scientific enquiries to answer them. ● Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. ● Using results to draw simple conclusions, make			● Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. ● Using test results to make predictions to set up further comparative and fair tests. ● Reporting and presenting findings from

	similar and/or different properties. • Talk about what they see, using a wide vocabulary. • Explore how things work. • Talk about the differences between materials and changes they notice.				predictions for new values, suggest improvements and raise further questions.			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. ● Identifying scientific evidence that has been used to support or refute ideas or arguments.
Key Vocabulary	Light Dark	Light Dark Shadow			**Tier 2:** light, reflect, visible, visibility, dark, shiny, bright, dull, matt, mirror, angle, shadows, position, direction, damage, protection, sunrise, sunset, rotation, compass direction **Tier 3:** light source, opaque, translucent,transparent, filters, UV rays,retina, pupil **Disciplinary:** analyse, bar change, chart, classify, comparative test, conclusion, data, data logger, diagram, display, enquiry, equipment, evidence, explain, fair test, findings, gather, group, identify, key, measurement, note, observe, pattern,			**Tier 2:** beam, ray, shadow, cast, object, reflect, light source, **Tier 3:** energy, distortion, factor, incident ray, reflected ray, angle of incidence, angle of reflection,normal line, phenomenon, refraction, spectrum, prism **Disciplinary:** causal relationship, classification key, comparative test, conclusion, control, diagram, enquiry, equipment, evidence to support/refute, fair test, graph (scatter/bar/line), information record, measurement, observation, pattern, prediction, repeat reading, research, results, secondary

					predict, present, process, question, record, relationship, results, secondary source, similarity, sort, standard unit, systematic, table, thermometer, value			source, table, variable
STEM Sentences					**I have found out ….** **Therefore my prediction was …** **In my investigation I found out …** **I know this because my results show that …**			**I predict ……** **I think this because …..** **To make my test fair I will…** **I will do this because …..** **The variables I will change/keep the same are …** **I have found out ….** **Therefore my prediction was …** **My prediction was correct because ….in doing this I expect ……** **In my investigation I found out …** **I know this because my results show that …** **I believe that the scientific explanation for this is ….**
Forces and Magnets	• Explore and talk about different forces they can feel.	**Early Learning Goals -** - Understand some important processes and			• Compare how things move on different surfaces.		• Explain that unsupported objects fall towards the Earth because	

Substantive Knowledge		changes in the natural world around them.			• Notice that some forces need contact between two 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 two poles. • Predict whether two magnets will attract or repel each other, depending on which poles are facing.		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. • Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.	
Disciplinary Knowledge (working scientifically)	• Repeat actions that have an effect. • Explore materials with different properties. • Explore and respond to different natural phenomena in their setting and on trips.	**Early Learning Goals -** - Explore the natural world around them.			• Setting up simple practical enquiries, comparative and fair tests making systematic and careful observations and, where appropriate,		• Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs,	

	• Use all their senses in hands-on exploration of natural materials. • Explore collections of materials with similar and/or different properties. • Talk about what they see, using a wide vocabulary. • Explore how things work. • Talk about the differences between materials and changes they notice.				taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. ● Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. ● Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. ● Identifying differences, similarities or changes related to simple scientific ideas and processes.		bar and line graphs.	
Key Vocabulary	Push Pull	Magnetic Non-magnetic			**Tier 2:** push, pull, surface, movement, magnet, attract, repel, north/south pole, metal, iron, steel,nickel **Tier 3:** contact/non-contact force, friction, resistance, gravity, magnetic field, magnetism, horseshoe/bar/ring magnet		**Tier 2:** simple machine, effort, load, float, sink, streamlined, **Tier 3:** friction, resistance, forcemeter, contact force, gravity, gravitational pull, mass, matter, air resistance, water resistance, drag, upthrust, displace, lever, pulley, gear,	

					Disciplinary: analyse, bar change, chart, classify, comparative test, conclusion, data, data logger, diagram, display, enquiry, equipment, evidence, explain, fair test, findings, gather, group, identify, key, measurement, note, observe, pattern, predict, present, process, question, record, relationship, results, secondary source, similarity, sort, standard unit, systematic, table, thermometer, value		transmission, mesh, axle, fulcrum, pivot, mechanisms, redirecting force **Disciplinary:** causal relationship, classification key, comparative test, conclusion, control, diagram, enquiry, equipment, evidence to support/refute, fair test, graph (scatter/bar/line), information- record, measurement, observation, pattern, prediction, repeat reading, research, results, secondary source, table, variable	
STEM Sentences					**……. is the same as …….** **This is because ….** **…….. is it different to ……** **This is because ….** **I predict ……** **I think this because …..** **To make my test fair I will…** **I have found out ….** **Therefore my prediction was …** **In my investigation I found out …** **I know this because my results show that …**			

Electricity **Substantive Knowledge**						• 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.		• 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**.**
Disciplinary Knowledge (working scientifically)						• Setting up simple practical enquiries, comparative and fair tests making		• Planning different types of scientific enquiries to answer questions,

						systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. ● Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. ● Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.		including recognising and controlling variables where necessary. ● Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. ● Using test results to make predictions to set up further comparative and fair tests. ● Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.
Key Vocabulary						**Tier 2:** appliance, mains electricity, battery, generated, power station, electrical energy, pylon, plug, socket **Tier 3:** convert, series circuit, component, bulb (lamp), lamp		**Tier 2:** symbol, device **Tier 3:** series circuit, cell, battery, component, voltage **Disciplinary:** causal relationship, classification key, comparative test, conclusion, control,

						holder, buzzer, cell, battery, wire, crocodile clip, electrical conductor, electrical insulator **Disciplinary:** analyse, bar change, chart, classify, comparative test, conclusion, data, data logger, diagram, display, enquiry, equipment, evidence, explain, fair test, findings, gather, group, identify, key, measurement, note, observe, pattern, predict, present, process, question, record, relationship, results, secondary source, similarity, sort, standard unit, systematic, table, thermometer, value		diagram, enquiry, equipment, evidence to support/refute, fair test, graph (scatter/bar/line), information record, measurement, observation, pattern, prediction, repeat reading, research, results, secondary source, table, variable
STEM Sentences						**I predict ……** **I think this because …..** **To make my test fair I will…** **In my investigation I found out …** **I know this because my results show that …** **I would now like to know …..**		**I predict ……** **I think this because …..** **To make my test fair I will…** **I will do this because …..** **The variables I will change/keep the same are …** **By doing this I expect ……** **The equipment I have chosen to use is ….** **I have chosen this**

								because …. **I expect to find …..** **……. is the same as …….** **This is because ….** **……. is it different to ……** **This is because ….** **I have found out ….** **Therefore my prediction was …** **My prediction was correct because ….**
Earth and Space and <u>Sound</u> **Substantive Knowledge**						• Identify how sounds are made, associating some of them with something vibrating. • Recognise that vibrations from a sound 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	• 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.	

						source increases.		
Disciplinary Knowledge (working scientifically)	• Repeat actions that have an effect. • Explore materials with different properties. • Explore natural materials, indoors and outside. • Use all their senses in hands-on exploration of natural materials. • Explore collections of materials with similar and/or different properties. • Explore how things work. • Talk about the differences between materials and changes they notice.	• Explore the natural world around them. • Describe what they see, hear and feel whilst outside.				• Asking relevant questions and using different types of scientific enquiries to answer them. • Setting up simple practical enquiries, comparative and fair tests making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. • Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. • Identifying differences, similarities or changes related to simple scientific ideas and processes.	• Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. • Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.	
Key Vocabulary	Loud Quiet	Loud Quiet Instrument				**Tier 2:** sound, vibrate/	**Tier 2:** Earth, sun, moon,	

						vibrations, medium, volume, distance, decrease, insulation **Tier 3:** energy, sound wave, sound source, insulator, pitch **Disciplinary:** analyse, bar change, chart,classify, comparative test, conclusion, data, data logger,diagram, display, enquiry,equipment, evidence, explain, fair test, findings, gather, group,identify, key, measurement, note, observe, pattern, predict, present, process, question, record,relationship, results, secondary source, similarity, sort, standard unit, systematic, table, thermometer, value	planet, star, solar system,rotate, seasons, shadows,position, 24 hours, daytime, night-time **Tier3:** orbit, atmosphere, scale, heliocentric, geocentric, planetary movement, axis **Disciplinary:** causal relationship, classification key, comparative test, conclusion, control, diagram,enquiry, equipment, evidence to support/refute, fair test, graph (scatter/bar/line), information record, measurement, observation, pattern, prediction,repeat reading, research, results, secondary source, table, variable	
STEM Sentences						**I predict ……** **I think this because …..** **To make my test fair I will…** **In my investigation I found out …** **I know this because my results show that …** **I would now like to know …..** **……. is the same as …….**	**I predict ……** **I think this because …..** **To make my test fair I will…** **I will do this because …..** **The variables I will change/keep the same are …** **By doing this I expect ……** **I have found out ….**	

						This is because …. **……. is it different to ……** **This is because ….**	**Therefore my prediction was …** **My prediction was correct because ….**	