A.R.H. Curriculum Progression Document - Science

Our school vision: Pupils will leave A.R.H. as happy, healthy and inspired young people who can confidently participate in the world as resilient, articulate citizens who have a life-long love of learning, creativity and discovery.

Our curriculum: Our curriculum is the vehicle to empower pupils with knowledge and skills. We strive to immerse young people in their topics which are designed to engage, provide real life links and progress all pupils' understanding.

'A.R.H. - Educating a community of life-long learners'

National Curriculum Aims – Subject		
Develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics.	Develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them.	Are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.

Year 1	Twisted Tales	Inspirational Occupation	Best of Leicester	Weird and Wonderful Weather	Marvellous Makers	World Explorers	STEM Week

NC Objective	Previous knowledge	Questions, knowledge and skills	Working Scientifically	Date Covered	Vocabulary
Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees	ELG The Natural World: Explore the natural world around them, making observations and drawing pictures of animals and plants.	Questions: How can I sort the trees in Leicester? Knowledge and Skills: To identify and name wild and garden plants: roses, daisies, dandelions, lavender. To understand that deciduous trees lose their leaves and evergreen trees do not.	Approach:- Identifying, grouping and classifying. Skills:- Asking questions Observing		Common, Plant, Tree, Wild plant, Garden plant, Fruit, Vegetables, Flowers, Petals, Bud, Deciduous, Evergreen, Trunk, Branches, Leaf, Leaves, Root, Bulb, Seed, Stem, Blossom
Identify and describe the basic structure of a variety of common flowering plants, including trees	ELG The Natural World: Explore the natural world around them, making observations and drawing pictures of animals and plants.	Questions: What are parts of a plant called? Knowledge and Skills: To identify and describe the parts of a tree: the roots, trunk, branches and leaves. To identify and describe the parts of a flower: roots, stem, leaves and petals. Explain that the roots collect nutrients, the stem carries these nutrients to different parts of the flow, the leaves gather sunlight and the petals are used to attract bees for pollination.			
Observe changes across the four seasons	ELG The Natural World: Understand some important processes and	Questions: How does the weather change during the year? Knowledge and Skills: Understand that there are four seasons.	Approach:- Observation over time Skills:- Asking questions Observing and measuring		Season, Weather, Summer, Winter, Autumn, Spring, Snow, Hail, Sleet, Fog, Sun, Hot
Observe and describe weather		Questions: Why is it cold at Christmas?			

associated with the seasons and how day length varies.	changes in the natural world around them, including the seasons and changing states of matter.	Knowledge and Skills: Describe the common weather associated with each season (sunny in Summer, rainy in Autumn, snowy in Winter and rainy but sunny in Spring). Explain how the day time varies over the course of the year.	Recording data		Day Daytime Wind Rain Warm Cold
Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.	UTW R: Describe what they see, hear and feel whilst outside	Questions: Which parts of my body help me to feel/see/hear/taste/smell? Knowledge and Skills: Understand which body part is associated to which sense. Name common parts of the body. See "key vocabulary" for these.	Approach:- Identifying, grouping and classifying Skills:- Asking questions Observing		Head Neck Arms Elbows Legs Skin Senses Taste Smell Vision Touch Knees Face Ears Eyes Hair Mouth Teeth Tongue Nose Hearing
Distinguish between an object and the material from which it is made	ELG The Natural World: Understand some important processes and changes in the natural world around them, including the seasons and changing states of	Questions: How are all of these ___ different? *(Show images of a particular object made out of different materials e.g. plastic/metal/wooden table)* Knowledge and Skills: To understand the different materials objects are made from. Materials that need to be covered are wood, glass and plastic.	Approach:- Identifying, grouping and classifying Comparative testing Problem solving Skills:- Asking questions Observing and measuring Making predictions Setting up tests Interpreting and communicating results Evaluations		Wood Plastic Glass Metal Water Rock Brick Paper Fabrics Elastic Foil Hard/soft Stretchy/stiff Shiny/dull Rough/smooth Bendy/ not bendy Waterproof/not waterproof Absorbent/not absorbent
Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock		Questions: What are the objects in my classroom made out of? Knowledge and Skills: Identify and name a variety of everyday materials: wood, plastic, metal.			
Describe the simple physical		Questions: What material should I use to make a ___? *(Link to making*			

properties of a variety of everyday materials	matter.	*project)*			
		Knowledge and Skills: To describe the simple physical properties of wood, plastic and metal: this will include descriptions of the materials being soft, hard, flexible, stiff, smooth and rough.			
Compare and group together a variety of everyday materials on the basis of their simple physical properties		Questions: How can I sort these materials into groups? *(Children to sort into groups after touching the items made from wood, metal and plastic, as well as discussing them to assess understanding)*			
		Knowledge and Skills: Understand how to sort wood, plastic and metal based on their properties of malleability, smoothness and softness. Apply this knowledge to sort these materials into groups based on their properties.			
Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals	ELG The Natural World: Explore the natural world around them, making observation s and	Questions: Can you name the 6 animal groups?	Approach:- Identifying, grouping and measuring Research Skills:- Asking questions Observing and measuring		Common animals Fish Amphibian Reptiles Birds Mammals Pets Omnivores Carnivores Herbivores Meat Plants
		Knowledge and Skills: Know the six different animals' groups (see key vocabulary). Sort animals into the five categories based on their characteristics. Characteristics include the animal's habitat, how they reproduce and what they look like.			
Identify and name		Questions: What do animals eat?			

a variety of common animals that are carnivores, herbivores and omnivores	drawing pictures of animals and plants.	Knowledge and Skills: Understand that a carnivore eats meat, an omnivore eats plants and meat and a herbivore only eats plants. To apply this understanding to give examples of animals from each group.			
Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets)		Questions: What's the same and what's different between the 6 animal groups?			
		Knowledge and Skills: Describe what makes animals different and use this knowledge to compare them.			
Asking simple questions and recognising that they can be answered in different ways Discuss and select questions. Understand and attempt to answer questions in different ways.					Question Answer Observe Observing Equipment Identify Sort Group Test Findings Describe
Observing closely, using simple equipment Recognise what simple equipment needs to be used to carry out an observation					
Performing simple tests Execute simple tests in order to gather information.					
Identifying and classifying Identify and classify different scientific topic relevant to Year 1.					
Using their observations and ideas to suggest answers to questions Discuss answers for different questions by using their observations.					
Gathering and recording data to help in answering questions. Gather simple data and understand its findings to help answer different questions.					

Year 2	Terrible Tudors	Food Glorious Food	Into the Woods	A Pictures Tells a Thousand words	Magnificent Materials	STEM Week

NC Objective	Previous knowledge	Questions and skills	Working Scientifically	Date Covered	Vocabulary
Explore and compare the differences between things that are living, dead, and things that have never been alive	**ELG** The Natural World: Explore the natural world around them, making observations and drawing pictures of animals and plants. **Year 1-** Knowledge and Skills: Understand that there are variety animals (Fish Amphibian Reptiles Birds Mammals) which are grouped.	Questions: How can you tell if something is alive? Skills: To understand the difference between things that are living (grows, reproduces and takes in nutrients), dead (no longer has a heartbeat or brain function) and things that have never been alive (does not grow, reproduce or takes in nutrients). To use this knowledge to compare different things that are alive, dead or have never lived. Fire must be used as one of the examples.	Approach:- Identifying, grouping and classifying Research Skills:- Asking questions Observing and measuring		Living Dead Never Alive
Notice that animals, including humans, have offspring which grow into adults	**ELG** The Natural World: Explore the natural world around them, making observations and drawing pictures of animals and plants. **Year 1-**	Questions: Do all animals have babies? Skills: Understand that humans, cats and dogs have offspring that grow into adults.			Food Food chain Offspring Grow Adults Baby Toddler Child Teenager Survival Water Air Exercise Hygiene Nutrition Reproduce Human Alive Healthy

	Knowledge and Skills : Describe what makes animals different and use this knowledge to compare them (carnivores, herbivores and omnivores).				
Find out about and describe the basic needs of animals, including humans, for survival (water, food and air)	**ELG** The Natural World: Explore the natural world around them, making observations and drawing pictures of animals and plants **Year 1-** Knowledge and Skills : Describe what makes animals different and use this knowledge to compare them.	Questions: What needs do animals need to survive? Skills: Describe the basic needs of humans, dogs and cats. These basic needs are food, water, shelter, sleep and friendships.			
Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.	**ELG-** Personal, Social and Emotional Development- Manage their own basic hygiene and personal needs,	Questions: Why is it important to eat right and exercise? Skills: Describe why exercise and eating healthily is important and the impact it can have. Exercise is important as it keeps us fit, helps us to sleep, makes us feel better			

	including dressing, going to the toilet and understanding the importance of healthy food choices. **Year 1-** Understand which body part is associated to which sense. Name common parts of the body.	and helps to keep our heart and lungs in a good condition. Eating healthily is important to ensure that our body is getting the vitamins it needs. It also makes us happier, stops us getting ill and helps us to concentrate. Impacts to cover: Too much sugar, not enough sleep, eating lots of junk food and not exercising.			
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.	**ELG** The Natural World: Explore the natural world around them, making observations and drawing pictures of animals and plants. **Year 1 -** Understand what a carnivore, omnivore and herbivore are. To apply this understanding to give examples of animals from each group.	Questions: Why do animals need to eat to survive? Skills: Describe how animals get their food from plants and other animals. Children need to understand that energy is passed from animal or plant in the food chain up to the next. Use this knowledge and apply it into creating a simple food chain.	Approach:- Identifying, grouping and classifying Research Skills:- Asking questions Observing and measuring		
Observe and describe how	**ELG** The Natural World: Explore	Questions: What happens to a seed when it grows?	Approach:- Observation over time		Seed Seedling

seeds and bulbs grow into mature plants	the natural world around them, making observations and drawing pictures of animals and plants. **Year 1-** To identify and name a variety of wild and garden plants such as roses, daisies, dandelions and lavender. To identify and describe the parts of a tree: the roots, trunk, branches and leaves. To identify and describe the parts of a flower: roots, stem, leaves and petals. Explain that the roots collect nutrients, the stem carries these nutrients to different parts of the flow, the leaves gather sunlight and the petals are used to attract bees for pollination.	Skills: Understand and describe how a seed grows into a plant through the stages of seed/bulb/seedling to sprout, then small plant and adult plant.	Pattern seeking Comparative testing Skills:- Asking questions Making predictions Setting up tests Observing and measuring Recording data Interpreting and communicating results Evaluations		Bulb Germination Grow Healthy Water Light Suitable Temperature Reproduction
Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy		Questions: Do plants need the same things as animals to be healthy? Skills: Understand that plants need water, sunlight, and nutrients to grow healthily and describe what happens if one of the elements is missing or has too much of it. This will be done through an experiment			
Identify that most living things live in habitats to which	**ELG** The Natural World: Explore the	Questions: Would a whale live in the woods?	Approach:- Identifying, grouping and classifying		Habitats Micro habitats Sun Grass Shelter Seashore Woodland Ocean

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	natural world around them, making observations and drawing pictures of animals and plants. **Year 1-** Describe what makes animals different and use this knowledge to compare them. To identify and name a variety of wild and garden plants such as roses, daisies, dandelions and lavender.	Skills: Understand that a micro-habitat is a very small part of a habitat, such as a clump of grass or a space between rocks. It is a habitat for extremely small creatures, such as woodlice or a butterfly. An example of a butterfly microhabitat would be a flower patch. A microhabitat has its own temperature and light and its own creatures. Pupils to examine the micro-habitats around the school grounds.	Problem solving Research Skills:- Asking questions Observing and measuring Evaluations		Logs Stony path Under bushes Dry Damp Wet Rainforest Conditions Hot Warm Cold Bright Shade Dark
Identify and name a variety of plants and animals in their habitats, including micro-habitats	**ELG** The Natural World: Explore the natural world around them, making observations and drawing pictures of animals and plants. **Year 1-** To identify and name a variety of wild and garden plants such as roses, daisies, dandelions and lavender. To understand	Questions: Where do different animals live? Skills: Remember which animal lives in a certain habitat and describe why. Know the habitats of rainforests (wet, warm, no seasons), deserts (hot, dry little rainfall, tundra (cold, dark and not many animals or plants) and oceans (cover most of the world, filled with lots of life). Also explain three key things that make each habitat unique. Place animals in the correct habitat			

	the differences between deciduous and evergreen trees	based on their characteristics: polar bear, whale, camel and snake.			
Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses	**ELG** The Natural World: Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. **Year 1-** To understand the different materials objects are made from. Materials that need to be covered are wood, glass and plastic.	Questions: How do you know which material is best for a certain job? Skills: Understand what material is suitable for a certain job (best material for mopping up spills) and describe why (soft and water-absorbent). Use this knowledge to compare the suitability of materials to the task of mopping up a spill (sponge, plastic, metal, wood, fabrics and ceramic).	Approach:- Identifying, grouping and classifying Comparative testing Pattern seeking Skills:- Asking questions Making predictions Setting up tests Observing and measuring Recording data Interpreting and communicating results Evaluations		Squashing Bending Twisting Stretching Transparent Opaque Translucent
Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching		Questions: How can you change the shape of different materials? Skills: Understand that some solid materials can be changed by squashing, twisting and stretching. The materials will be sponge, plastic, metal, wood, fabrics and ceramic. Describe how heating and cooling alter some solid materials. See "working scientifically" for more information.			
Asking simple questions and recognising that they can be answered in different ways. Discuss and select appropriate questions. Understand that questions can be answered in a selection of ways.					Question Classify Answer Record Observe Diagram Observing Chart Equipment Data Identify Compare Sort Contrast
Observing closely, using simple equipment Recognise what simple equipment needs to be used to carry out an observation. Discuss why the					

equipment should be selected for a particular observation.		Group Test Findings Describe Biology Chemistry Physics
Performing simple tests Execute simple tests to gather information. Discuss what appropriate test should be carried out.		
Identifying and classifying Identify, classify and group different scientific topics relevant to Year 2. Move from identifying characteristics to grouping according to them.		
Using their observations and ideas to suggest answers to questions. Discuss scientific answers for different questions by using their observations. Explain answers using simple scientific language.		
Gathering and recording data to help in answering questions. Gather simple data and understand its findings to help answer different questions including secondary resources.		

Year 3	Awesome Oceans	Kapow	Rock n Roll	Romans	Harry Potter	STEM Week

NC Objective	Previous knowledge	Questions and skills	Working Scientifically	Date Covered	Vocabulary
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 - **Done through detailed PSHE lessons that use cross curricular links with Science**	**ELG-** Personal, Social and Emotional Development Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices. **Year 2-** Describe why exercise and eating healthily is important and the impact it can have. Describe how animals get their food from plants and other animals. Use this knowledge and apply it into creating a simple food chain.	Questions: Why is a balanced diet important? Skills: Understand what food groups there are (Fruit and vegetables, Carbohydrates, Proteins, Dairy, Fats and oils.) and what these food groups provide the body. Understand what a healthy diet (Have a balanced diet, eat lots of fruit and veg, eat more fish, cut down on saturated fat and sugar, do not get thirsty and do not skip breakfast) is and why it is important (a well-balanced diet provides all of the: energy you need to keep active throughout the day. nutrients you need for growth and repair, helping you to stay strong and healthy and help to prevent diet-related illness).	Approach:- Identifying, grouping and classifying Research Skills:- Asking questions Observing and measuring Evaluating		Diet Healthy Nutrition Carbohydrates Protein Skeleton Vitamins Fats Fibres Minerals Exoskeleton Endoskeleton Muscles Ball Socket Hinge Gliding Invertebrate Bones Joints Vertebrate Relax Contract

Identify that humans and some other animals have skeletons and muscles for support, protection and movement.	**ELG** The Natural World: Explore the natural world around them, making observations and drawing pictures of animals and plants. Year 1-Know and understand that parts of the human body and be able to apply this knowledge to identify them. Understand which body part is associated to which sense.	Questions: Why do we need a skeleton and muscles? Skills: Understand the jobs of a skeleton: protect organs inside the body; allow movement; support the body and stop it from falling to the floor. Understand that humans have skeletons and some animals do. Remember some of the human bone names and describe their location. These will be the skull, shoulder blades, humerus, radius, ulna, spine, ribs, pelvis, femur, tibia, fibula, toes and fingers.			
Compare how things move on different surfaces Notice that some forces need	**ELG** The Natural World: Understand some important processes and changes in the natural world around them, including the seasons and changing states of	Questions: Why is it hard to walk on ice? Skills: Understand what force is produced between two surfaces (friction is a force between two surfaces that are sliding, or trying to slide, across each other). Investigate how this force is affected by different surfaces. These will include wood, carpet, metal, rubber and plastic. Questions: How can we prove that magnetic forces exist?	Approach:- Fair testing Identifying, grouping and classifying Problem solving Pattern seeking Skills:- Asking questions Making predictions Setting up tests Observing and measuring		Force Push Pull Open Surface Magnet Magnetic Attract Repel Magnetic poles North south Gravity Friction

contact between two objects, but magnetic forces can act at a distance	matter. **Year 1** - To understand what an object is made from such as wood, glass and plastic. Identify and name a variety of everyday materials such as wood, plastic and metal. **Year 2-** Understand what material is suitable for a certain job (best material for mopping up spills) and describe why (soft and water-absorbent). Use this knowledge to compare the suitability of materials to the task of mopping up a spill (sponge, plastic, metal, wood, fabrics and ceramic).	Skills: Understand how magnetic forces act: attract and repel. Investigate this through a scientific experiment. Understand that friction, tension and air resistance need contact between two objects.	Recording data Interpreting and communicating results Evaluating		
Observe how magnets attract or repel each other and attract some materials and not others		Questions: How do magnets affect the things around them? Skills: Understand what poles make a magnet attract or repel. Understand that some materials are magnetic whilst others are not. Materials to be investigated will include: metal, glass, fabric, ceramic, plastic, and wood.			
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		Questions: How do different materials react to magnetic forces? What do you notice? Skills: Understand what materials are magnetic. Use this knowledge to apply and group materials based on if they are magnetic or not. Materials to be investigated will include: metal, glass, fabric, ceramic, plastic, and wood.			
Describe magnets as having two poles		Questions: What is a magnetic pole? Skills: Understand that magnets have two poles and remember their names.			
Predict whether two magnets will attract or repel each other, depending on which poles are facing.		Questions: What happens when we put two magnets together? Skills: Use knowledge of magnetic poles to apply a prediction as to whether two magnets will attract or repel depending on the poles.			
Compare and group together	**ELG** The Natural	Questions: What are the similarities and differences between different	Approach:- Fair testing		Appearance Physical

different kinds of rocks on the basis of their appearance and simple physical properties	World: Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.	types of rocks? Skills: Describe the properties of igneous, metamorphic and sedimentary rocks and apply this knowledge to compare them.	Identifying, grouping and classifying Pattern seeking Skills:- Asking questions Making predictions Setting up tests Observing and measuring Recording data Interpreting and communicating results Evaluating		Properties Rock Soils Grains Fossils
Describe in simple terms how fossils are formed when things that have lived are trapped within rock	**ELG** The Natural World: Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.	Questions: How are fossils formed? Skills: Understand what a fossil is. Describe the process of how a fossil is formed.			Organic matter Sedimentary Igneous Metamorphic Hard/soft Shiny/dull Rough/smooth Absorbent/not absorbent
Recognise that soils are made from rocks and organic matter.	**ELG** The Natural World: Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.	Questions: What is soil made from? Skills: Understand where soils come from.			

Recognise that they need light in order to see things and that dark is the absence of light	**ELG** The Natural World: Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.	Questions: How does darkness affect our sight?	Approach:- Fair testing Identifying, grouping and classifying Pattern seeking Skills:- Asking questions Making predictions Setting up tests Observing and measuring Recording data Interpreting and communicating results Evaluating		Light Dark Reflect Surface Blocked Solid Natural Artificial Sunlight Dangerous Protect eyes Light source Primary Secondary Shadow Natural Man-made
		Skills: Understand that light is the absence of dark. Understand that in order to see we need light.			
Notice that light is reflected from surfaces		Questions: How does light reflect off of different surfaces?			
		Skills: Understand that light can be reflected and describe how it is reflected.			
Recognise that light from the sun can be dangerous and that there are ways to protect their eyes		Questions: How can we protect ourselves from the sun?			
		Skills: Understand the dangers the sun can pose. Dangers to cover are sunburn, heat stroke, dehydration and blisters. Describe how humans can protect their eyes and body from the sun.			
Recognise that shadows are formed when the light from a light source is blocked by a solid object		Questions: How are shadows formed?			
		Skills: Understand how a shadow is formed by a light source being blocked. Describe these different light sources: the sun, electric lights, torches, fire, candles and fireflies.			
Find patterns in the way that the size of shadows change.		Questions: How can you change the size of a shadow?			
		Skills: To analyse how shadows can change shape depending on how close they are to a light source. Evaluate the impact this has on the shape of the shadow. This will need to be done through working scientifically and a fair test.			
Identify and describe the	**ELG** The Natural	Questions: What would happen if a part of the plant was missing?	Approach:- Observing over time		Transported Function

functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers	World: Explore the natural world around them, making observations and drawing pictures of animals and plants. **Year 1-** To identify and describe the parts of a tree such as roots, trunk, branches and leaves. To identify and describe the parts of a flower such as roots, stem, leaves and petals and what they do. **Year 2-** Understand and describe how a seed grows into a plant through various stages. Understand that plants need water, sunlight, and nutrients to grow healthily and describe what happens if one of the	Skills: Remember the parts of the plant and understand their jobs. Describe the jobs of each part and analyse what would happen if a part was missing. Explain that the roots collect nutrients, the stem carries these nutrients to different parts of the flow, the leaves gather sunlight and the petals are used to attract bees for pollination.	Identifying, grouping and classifying Fair testing Skills:- Asking questions Making predictions Setting up tests Observing and measuring Recording data Interpreting and communicating results Evaluating		Air Light Water Nutrients Room to grow Temperature Fertiliser Life cycle Flowers Pollination Seed formation Seed dispersal Support Reproduction Makes its own food
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		Questions: Do all plants need the same things to stay healthy? Skills: Understand that a plant has requirements to grow healthily but how this varies from plant to plant. Compare a cactus and a garden plant. Analyse the impact these requirements have on a plant if they were missing. Flowers planted close together and flowers planted with space. A cactus planted in a cold temperature and a warm temperature. Trees planted in a desert and trees planted in a rainforest.			
Investigate the way in which water is transported within plants		Questions: How is water transported in a plant? Skills: Understand how water is transported within a plant. Analyse how water is transported within different plants. Children will need to learn the word transpiration and understand its meaning.			
Explore the part that flowers play in		Questions: Why does a plant need seeds and what happens to them?			

the life cycle of flowering plants, including pollination, seed formation and seed dispersal.	elements is missing or has too much of it.	Skills: Understand how plants reproduce Through seeds, germination, growth, reproduction, pollination, and seed spreading stages. Understand what pollination and seed dispersal are. Analyse the impact roots, petals, leaves and stems have on the life cycle of a flowering plant.			
Asking relevant questions and using different types of scientific enquiries to answer them Ask scientific questions and use scientific vocabulary to answer them. Apply the knowledge of scientific enquiries in order to answer the questions.					Research Relevant questions Scientific enquiry Predictions Conclusions Careful observations Accurate measurements Differences Similarities Changes Record Drawings Labelled diagrams Keys Bar charts Tables Data Gather Classify Present
Setting up simple practical enquiries, comparative and fair tests Execute simple practical enquiries including comparative and fair tests in order to gather information. Discuss what appropriate test should be carried out.					
Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers Recognise how we can measure units by using a range of equipment. Experiment with various scientific equipment such as thermometers.					
Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions Interpret the data given in order to answer a selection of questions					
Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables Examine the data given and record it in a variety of scientific ways.					
Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions Analyse and execute findings in variety of ways including oral and written explanations, displays and presentations.					
Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions Interpret and examine the results in order to make conclusions, predictions and suggested improvements.					
identifying differences, similarities or changes related to simple scientific ideas and processes Analyse scientific ideas and processes and identify differences and similarities between them or changes					
Using straightforward scientific evidence to answer questions or to support their findings. Analyse scientific evidence to help answer questions or support findings.					

Year 4	Rockin Rainforests	Wonderful World of Chocolate	Groovy Greeks	Who dunnit?	Adventures Around Europe	STEM Week

NC Objective	Previous knowledge	Questions and skills	Working Scientifically	Date Covered	Vocabulary
Recognise that living things can be grouped in a variety of ways	**ELG** The Natural World: Explore the natural world around them, making observations and drawing pictures of animals and plants. **Year 1-** To identify and name a variety of wild and garden plants such as roses, daisies, dandelions and lavender. To understand the differences between deciduous and evergreen trees. **Year 2-** To understand the difference between things that are living, dead and things that have never been alive. To use	Questions: In how many different ways can you classify and sort living things? Skills: Understand that living things can be grouped in different ways and to use this knowledge to apply it. Must cover vertebrates and invertebrates and recap fish, amphibians, reptiles, birds, mammals, pets, omnivores, carnivores and herbivores	Approach:- Identifying, grouping and classifying Research Skills:- Asking questions Observing and measuring Interpreting and communicating results Evaluations		Environment Habitat Danger Deforestation Population Litter Development Human impact Nature reserves Vertebrate Invertebrate Plants Animals
Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment		Questions: Can you create a classification key to sort the animals that live in the rainforest? Skills: Understand what a classification key is and how it can be used to classify fish, amphibians, reptiles, birds and mammals. Analyse a classification key to help inform and gain new knowledge of living things and how they are grouped.			

	this knowledge to apply comparing the differences between them.				
Recognise that environments can change and that this can sometimes pose dangers to living things.	**ELG** The Natural World: Explore the natural world around them, making observations and drawing pictures of animals and plants.	Questions: How is deforestation affecting rainforest creatures? Skills: Analyse and evaluate the effects that deforestation, global warming and human impact, including nature reserves, can have on world, good or bad.			
Construct and interpret a variety of food chains, identifying producers, predators and prey.	**ELG** The Natural World: Explore the natural world around them, making observations and drawing pictures of animals and plants. **Year 2-** Describe how animals get their food from plants and other animals. Use this knowledge and apply it into creating a simple food	Questions: Where does a monkey belong in a food chain? Skills: To be able to analyse a food chain. To apply this knowledge to creating one on living things. Children will need to understand that energy is transferred in the food chain from producers to primary consumer, from primary consumer to secondary consumer, and from secondary consumer to tertiary consumer.			

	chain.				
Compare and group materials together, according to whether they are solids, liquids or gases	**ELG** The Natural World: Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. **Year 1-** Understand how to sort a variety of materials based on their properties and apply this knowledge. To describe the simple physical properties of a variety of materials such as soft, hard, flexible, smooth and rough. **Year 2-** Understand what material is suitable for a certain job	Questions: What are the properties of gases, liquids and solids?	Approach:- Observation over time Identifying, grouping and classifying Pattern seeking Research Skills:- Asking questions Observing and measuring Interpreting and communicating results		Solid Solidify Heat Cool Cooled Melt Freeze Gas Liquid Evaporate Condense Changing state Degrees Celsius Particles Temperature Vapour Water cycle
		Skills: Understand what a gas, liquid and a solid are. Apply the knowledge of states of matter to group and compare them based on their key characteristics. Must cover toothpaste as a discussion: is it a solid or a liquid. How do you know?			
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)		Questions: Will all of these ingredients melt at the same temperature?			
		Skills: Understand how states of matter can change by being heated or cooled. Understand at what temperature states of matter change. See key vocabulary for words the children need to cover in the lessons.			
Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.		Questions: Can all liquids evaporate and do all gases condensate?			
		Skills: Understand and describe how the water cycle works. Understand what evaporation and condensation is. Understand at what temperature evaporation occurs.			

	and describe why. Use this knowledge to compare the suitability of materials. Understand that some solid materials can be changed by squashing, twisting and stretching. Describe what actions change some solid materials.				
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	**UTW R:** Describe what they see, hear and feel whilst outside. **Year 1-** Know and understand that parts of the human body and be able to apply this knowledge to identify them. Understand which body part is associated to which sense.	Questions: What happens to the food we eat? Skills: Remember the parts of the digestive system and understand their functions (oesophagus, stomach, small intestine, large intestine and rectum). Describe what the functions are and the importance they have on the digestive system. Questions: What would happen if humans didn't have canines? Skills: Understand the different types of teeth (canine, molars and incisors) and describe their functions. Evaluate the effects of not having canines, molars or incisors.	Approach:- Identifying, grouping and classifying Observation over time Skills:- Asking questions Observing and measuring		Digestive system Saliva Oesophagus Stomach Canine Molars Incisors Small intestine Large intestine Rectum Teeth Wisdom
Identify common	**ELG** The	Questions: How do we use electricity	Approach:-		Appliances

appliances that run on electricity	Natural World: Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.	everyday? Skills: Understand what an electrical appliance is and identify them.	Fair testing Identifying, grouping and classifying Skills:- Asking questions Making predictions Setting up tests Observing and measuring Recording data Interpreting and communicating results Evaluations		Electricity Electrical circuit Cell Wire Bulb Buzzer Danger Safety Insulator Conductor Switch Open Closed Simple circuit
Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers		Questions: What is the smallest circuit you can make? What is the largest circuit? Skills: Understand and remember the different parts of a circuit (wire, bulb, cell and switch). Apply the knowledge of circuits to create a simple circuit.			
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		Questions: *(Display picture of an incomplete circuit)* Explain what would happen to the lamp in this circuit. Skills: Analyse and evaluate the effects of a light bulb in a complete or incomplete loop within a circuit. Create different circuits that are either a complete or incomplete loop and describe findings from this.			
Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit		Questions: Can you explain the purpose of a switch in a circuit? Skills: Analyse and evaluate the effects a switch can have on a light bulb when it is closed or opened. Create a circuit with a switch.			
Recognise some common conductors and		Questions: Can you justify which materials make the best insulators and conductors?			

insulators, and associate metals with being good conductors.		Skills: Understand what a conductor or insulator is. Understand what makes a good or bad conductor. Describe why metals make good conductors. Apply the knowledge of conductors and insulators to identify them.			
Identify how sounds are made, associating some of them with something vibrating	**ELG** The Natural World: Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.	Questions: How are sounds made?	Approach:- Pattern seeking Identifying, grouping and classifying Skills:- Asking questions Observing and measuring Interpreting and communicating results		Vibrate Vibration Air Medium Ear Hear Sound Volume Pitch Faint Fainter Loud Louder String Sound waves
		Skills: Understand how sounds are made by vibrations and be able to describe it.			
Recognise that vibrations from sounds travel through a medium to the ear		Questions: How are sounds heard?			
		Skills: Understand how vibrations travel through a medium through the ear. Describe how sound travels in waves.			
Find patterns between the pitch of a sound and features of the object that produced it		Questions: Why do violins and cellos make differently pitched sounds?			
		Skills: Analyse the patterns between pitch and the object that produced it. This will include investigating musical instruments: violin, keyboard, glockenspiel, tuning forks, drum and recorders.			
Find patterns between the volume of a sound and the strength of the vibrations that produced it		Questions: How can we alter the volume of a sound?			
		Skills: Use graphs to analyse the patterns between the volume of sound and the strength of the vibrations that produced it.			
Recognise that sounds get fainter		Questions: Can you explain how distance affects and sound?			

as the distance from the sound source increases.		Understand that sounds get fainter as the distance increases. Apply this knowledge to real life. This will be done by working scientifically and analysing how sounds become fainter the further away from the source of sound we are.			
Asking relevant questions and using different types of scientific enquiries to answer them Ask appropriate scientific questions and use scientific vocabulary to answer them. Apply the knowledge of scientific enquiries in order to answer the questions. Analyse and select the appropriate scientific enquiry in order to answer any relevant questions.					Research Relevant questions Scientific enquiry Predictions Conclusions Careful observations Accurate measurements Differences Similarities Changes Record Drawings Labelled diagrams Keys Bar charts Tables Data Gather Classify Present Guides Evidence Improve Secondary sources Construct Interpret Oral and written explanations Fair test
Setting up simple practical enquiries, comparative and fair tests Execute simple practical enquiries including comparative and fair tests in order to gather information. Use your judgement to select an appropriate test.					
Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers Apply the knowledge of equipment in order to carry out an investigation. Demonstrate how to use various scientific equipment such as thermometers.					
Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions Demonstrate how to gather, record and classify data. Interpret the data given in order to answer a selection of questions.					
Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables Examine the data given and record it in a variety of scientific ways. Select the appropriate method to record.					
Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions Analyse and execute findings in variety of ways including oral and written explanations, displays and presentations. Select the appropriate way in which to showcase results such as oral or written, displays and present.					
Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions Interpret and examine the results in order to make conclusions, predictions and use judgement to suggested improvements. Analyse results in order to raise further questions.					
identifying differences, similarities or changes related to simple scientific ideas and processes Analyse scientific ideas and processes and compare differences and similarities between them or changes.					
Using straightforward scientific evidence to answer questions or to support their findings. Analyse and examine scientific evidence to help answer questions or support findings.					

Year 5	Narnia	Ancient Egypt	Wonders of the Universe	Innovative Inventions	Human Body	Stem Week

NC Objective	Previous knowledge	Questions and skills	Working Scientifically	Date Covered	Vocabulary
Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird	**ELG** The Natural World: Explore the natural world around them, making observations and drawing pictures of animals and plants. **Year 1-** Knowledge and Skills: Understand that there are variety animals (Fish Amphibian Reptiles Birds Mammals) which are grouped. To apply this understanding to give examples of animals from each group. Describe what makes animals different and use this knowledge to compare them (carnivores,	Questions: How are the lifecycles of animals the same? How are they different? Skills: Describe the differences of animal life cycles. Apply this knowledge to the life cycles. Evaluate the differences between the life cycles.	Approach:- Identifying, grouping and classifying Comparative testing Skills:- Asking questions Making predictions Setting up tests Observing and measuring Recording data Interpreting and communicating results Evaluations		Life cycle Birth Egg Hatch Gestation Life expectancy Reproduction Sexual/ asexual
Describe the life process of reproduction in some plants and animals.		Questions: Do plants and animals reproduce in the same way? Skills: Describe the life process of reproduction of a flower and a tree making particular reference to seed dispersal and pollination. Describe the life process and reproduction of a frog, a human, a snake and an elephant. Apply this knowledge of reproductions to examine to gestation periods of the animals above and why these periods may differ.			

	herbivores and omnivores). **Year 2-** Understand that animals including humans have offspring that grow into adults. **Year 3-** Understand how plants reproduce. Understand what pollination and seed dispersal is. Analyse the parts of the flower and the impact they have on the life cycle of a flowering plant. **Year 4-** Understand that living things can be grouped in different ways and to use this knowledge to apply it.				
Compare and group together everyday materials on the basis of their properties,	**ELG** The Natural World: Understand some important	Questions: *(Show pre-grouped items for children to test and explore)* Can you analyse how these materials have been grouped together?	Approach:- Identifying, grouping and classifying Fair testing		Reversible Irreversible Mixing Filtering Properties Separating

including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets	processes and changes in the natural world around them, including the seasons and changing states of matter. **Year 1-** To describe the simple physical properties of a variety of materials such as soft, hard, flexible, smooth and rough. Understand how to sort a variety of materials based on their properties and apply this knowledge. **Year 2-** Understand what material is suitable for a certain job and describe why. Use this knowledge to compare the suitability of materials. **Year 3-** Understand what	Skills: Understand more complex properties of materials including hardness, magnetism, transparency, permeability and flexibility. Apply the knowledge of material properties to be able to then group and compare them.	Skills:- Asking questions Making predictions Setting up tests Observing and measuring Recording data Interpreting and communicating results Evaluations		Dissolve Solution Evaporate Solid Liquid Gas Hardness Solubility Transparency Conductivity Thermal Electrical Response to magnets Magnetism Insulation
Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution		Questions: Can you predict the solubility of a material? Can you explain how to recover a dissolved material?			
		Skills: Understand what the process of dissolving is. Understand what materials will dissolve into a solution and how to recover it. Analyse the speed at which materials dissolve into a solution.			
Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating		Questions: Can you justify the best method to separate a mixture?			
		Skills: Understand how to separate mixtures. Use this knowledge to apply it and evaluate the most effective way of separating (magnetism, filtration, evaporation or sieving).			
Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic		Questions: What tests could be conducted to identify the best use of a material?			
		Skills: Justify the particular uses of materials by evaluating them through comparative and fair tests. Children learn about 6 different methods for separating solutions - picking out by			

	materials are magnetic. Use this knowledge to apply and group materials based on if they are magnetic or not. **Year 4-** Understand how states of matter can change by being heated or cooled. Understand at what temperature states of matter change. Understand and describe how the water cycle works. Understand what evaporation and condensation is. Understand at what temperature evaporation occurs.	hand, decanting, sieving, filtering, using a magnet, and evaporation. They consider 6 different mixtures / solutions and discuss the best way to separate each. They attempt to separate them using their chosen method. They discuss whether their method worked and why.			
Demonstrate that dissolving, mixing and changes of state are reversible changes		Questions: Can I get the salt out of the Nile? Skills: Understand that some changes of state can be reversible. Analyse what mixtures can be reversed.			
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.		Questions: How can I make carbon to write on my papyrus? https://www.stem.org.uk/resources/elibrary/resource/33261/carbon-candle Skills: Understand that some changes of states are irreversible due to the formation of a new material. Analyse what mixtures are irreversible. Observations of milk and vinegar, and observations of vinegar and bicarbonate of soda. Discuss and analyse the observations for these using the key vocabulary: reversible and irreversible.			
Describe the changes as humans develop to old age.	**ELG** The Natural World: Explore the natural world	Questions: Can you explain the changes to the human body as it ages? Skills: Understand the changes that	Approach:- Identifying, grouping and classifying Research		Foetus Fertilisation Baby Toddler Child Adolescence Teenager Adult Growth Old age

	around them, making observations and drawing pictures of animals and plants. **Year 1-** Know and understand that parts of the human body and be able to apply this knowledge to identify them. Understand which body part is associated to which sense. **Year 3-** Understand the jobs of a skeleton and muscles. Understand that humans have skeletons and some animals do.	the human body goes through from infant to elderly. Describe how humans develop to old age.	Skills:- Asking questions Observing and measuring		
Describe the movement of the Earth, and other planets, relative to the Sun in the solar system	**ELG** The Natural World: Understand some important processes and changes in the natural world	Questions: What is the heliocentric model of the solar system? Skills: Understand what planets there are and be able to name the planets of our solar system. Describe how the Earth and other planets move around the sun using	Approach:- Research Pattern seeking Observation over time Skills:- Asking questions Observing and measuring		Earth Sun Moon Planets Stars Solar system Orbit Axis Tilt

	around them, including the seasons and changing states of matter.	the key vocabulary of heliocentric movement.			Spherical Hemisphere Rotate Night Day Mercury Venus Mars Jupiter Saturn Uranus Neptune Pluto Season
Describe the movement of the Moon relative to the Earth		Questions: Why can't we always see the moon?			
		Skills: Understand and describe how the moon moves around the Earth.			
Describe the Sun, Earth and Moon as approximately spherical bodies		Questions: How can we prove the flat earthers wrong?			
		Skills: Understand and describe the Sun, Earth and Moon as spherical bodies. Analyse the evidence that supports this.			
Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.		Questions: Why did people believe the Sun went round the Earth?			
		Skills: Understand how the Earth has day and night. Describe how the Earth gets day and night. Describe how and why it appears that the sun moves across the sky.			
Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object	**ELG** The Natural World: Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. **Year 3-**	Questions: Why do objects fall to the Earth?	Approach:- Research Pattern seeking Identifying, grouping and classifying Skills:- Asking questions Observing and measuring		
		Skills: Apply the knowledge of forces to explain how unsupported objects fall to the ground. Analyse the effects of gravity on unsupported objects by creating parachutes for objects and investigating the speed at which they fall in comparison to unsupported objects.			
Identify the effects of air resistance,		Questions: What forces affect a bungee jumper when they leap?			Gravity 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.	Understand what force is produced between two surfaces. Analyse how this force is affected by different surfaces. Understand how magnetic forces act. Understand that some forces need contact between two objects.	Skills: Analyse the effects different forces (friction, air resistance and gravity) can have on moving surfaces. Evaluate the impact these forces can have on surfaces. Questions: 'Give me a lever long enough and a fulcrum on which to place it, and I shall move the world.' What did Archimedes mean by this? Skills: Understand what a mechanism is. Analyse and evaluate the effectiveness of levers, pulleys and gears have on allowing a smaller force to have a greater impact.			Water resistance Friction Force Effect Mechanism Pulley lever Gear
Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood	**ELG** The Natural World: Explore the natural world around them, making observations and drawing pictures of animals and plants. **Year 1-** Know and understand that parts of the human body and be able to apply this knowledge to identify them. Understand which body	Questions: How does our circulatory system work? Skills: Understand the main parts of the human circulatory system and apply this knowledge to identify them. Describe the function of the heart.	Approach:- Research Pattern seeking Identifying, grouping and classifying Skills:- Asking questions Observing and measuring		Heart Blood Blood vessel Artery Circulatory system Life style Diet Exercise Substances Impact Damage Nutrition Nutrients

	part is associated to which sense. **Year 3-** Understand the jobs of a skeleton and muscles. Understand that humans have skeletons and some animals do. **Year 4-** Remember the parts of the digestive system and understand their functions.				
Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function	**ELG**-Personal, Social and Emotional Development- Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices. **Year 2-** Describe why	Questions: How do diet, exercise and drugs affect our bodies? Skills: Evaluate the impact diet (healthy or unhealthy), exercise, drugs (both legal and illegal) and lifestyle (active or sedentary) can have on the body.			

	exercise and eating healthily is important and the impact it can have. **Year 3-** Understand what food groups there are and what these food groups provide the body. Understand what a healthy diet is and why it is important.				
Describe the ways in which nutrients and water are transported within animals, including humans.	**ELG**-Personal, Social and Emotional Development- Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices. **Year 2-** Describe the basic needs of animals including	Questions: How do our muscles and organs get the nutrients and water they need? Skills: Understand how nutrients and water are transported within humans. Apply this knowledge to describe how this process takes place. Analyse how this might differ between a human and other animals, such as fish. Analyse the impact that appropriate nutrients can have on animal.			

	humans. **Year 3-** Understand how water is transported within a plant. Analyse how water is transported within different plants.				
Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary Select an appropriate scientific enquiry in order to answer questions. Organise what variables there are and which ones can be controlled.					Plan Variables Measurements Precision Repeat readings Patterns Predictions Comparative test Scatter graph Line graphs Classification keys Explanations Support Arguments Refute ideas
Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate Demonstrate how to take measurements using a range of scientific equipment. Execute precise and accurate measurements. Understand the importance of repeat readings.					
Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs Create complex scientific recordings.					
Using test results to make predictions to set up further comparative and fair tests Evaluate test results in order to help set up future 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 Demonstrate how to present findings with increasing complexity such as casual relationships.					
Identifying scientific evidence that has been used to support or refute ideas or arguments. Evaluate the evidence to support or refute ideas.					

Year 6	Vile Victorians	Extinct	Australia	Stem Week		

NC Objective	Previous knowledge	Questions and skills	Working Scientifically	Date Covered	Vocabulary
Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit	**Year 4-** Understand what an electrical appliance is and identify them. Understand and remember the different parts of a circuit. Apply the knowledge of circuits to create a simple circuit. Analyse and evaluate the effects of a light bulb in a complete or incomplete loop within a circuit. Create different circuits that are either a complete or incomplete loop. Analyse and evaluate the effects a switch can have on a light bulb when it is closed or opened.	Questions: Can you justify the optimum number of batteries for a circuit?	Approach:- Fair testing Pattern seeking Skills:- Asking questions Making predictions Setting up tests Observing and measuring Recording data Interpreting and communicating results Evaluations		Brightness Volume Voltage Switches Danger Series circuit Circuit diagram Symbols Motor Buzzer Switch Wire Cell Danger Electrical safety
		Skills: Analyse and evaluate how the increase of voltage in a cell can impact the brightness of a lamp or the sound of a buzzer.			
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		Questions: How many ways can you find to affect the brightness of a bulb?			
		Skills: Create variations of circuits and compare how adding more bulbs affects their brightness; how adding more batteries affects the brightness of a single bulb and how using a parallel circuit, rather than a series circuit, can impact the brightness of a bulb. Evaluate the effectiveness of series and parallel circuits and describe how the bulbs are affected differently in the two different circuit types.			
Use recognised symbols when representing a simple circuit in a diagram.		Questions: *(Display a circuit with accurate symbols)* Can you recreate this circuit? Can you challenge someone else to create a circuit of your own design?			
		Skills: Understand the symbols of a circuit: bulb, buzzer, cell, wire, switch and motor. Apply this knowledge to create a simple circuit diagram.			

	Create a circuit with a switch.				
Recognise that light appears to travel in straight lines	**ELG** The Natural World: Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. **Year 3-** Understand that light can be reflected and describe how it is reflected. Understand how a shadow is formed by a light source being blocked. Describe the different light sources. To analyse how shadows can change shape depending on how close they are to a light source. Evaluate the	Questions: Is it possible to see around corners? *(link to periscopes, using mirrors to reflect light)* Skills: Understand that light travels in straight lines.	Approach:- Pattern seeking Fair testing Skills:- Asking questions Making predictions Setting up tests Observing and measuring Recording data Interpreting and communicating results Evaluations		Shadow Reflect Reflection Mirror Periscope Rainbow Light Travels Straight Object Filters Light source
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		Questions: How does the way light travels help us to see? Skills: Understand that light is reflected into our eyes for us to see them. Investigate this using periscopes and explain how the direction of light is altered using the mirrors in the periscope.			
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		Questions: Is it possible to see in the dark? Skills: Describe and interpret how we see objects from a light source using diagrams and examples.			
Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.		Questions: Why were Victorians able to use light to create silhouette art? Skills: Understand how light, which is travelling in straight lines, can cast a shadow. Describe why shadows have the same shape as the objects that cast them. Analyse how a shadow can change across the day through working scientifically and measuring the change of a shadows length, as			

	impact this has on the shape of the shadow.	well as analysing the change of its direction, across a school day.			
Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago	**ELG** The Natural World: Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. **Year 3 -** Understand what a fossil is. Describe the process of how a fossil is formed.	Questions: How has life on Earth changed over time and how do we know? Skills: Understand that living things have evolved over time explain the theory of evolution using Galapagos turtles, giraffes and polar bears as examples. Analyse the information fossils provide about the Earth millions of years ago.	Approach:- Pattern seeking Identifying, grouping and classifying Research Skills:- Asking questions Observing and measuring1		Evolution Inheritance Adaption DNA Genes Variation Inherited traits Adaptive traits Natural selection Habitat Environment Living things Parent Offspring Animals Plants
Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents	**ELG** The Natural World: Explore the natural world around them, making observations and drawing pictures of animals and plants. **Year 2-** Understand that animals	Questions: Nature v nurture – can you explain how genes affect offspring differently? Skills: Understand that living things have offspring that are not identical to their parents because of their genes and the number of shared chromosomes. Analyse the impact genes have on offspring, referring to elephants and their adaptations. Explore dominant and recessive genes and get children to explore these			

	including humans have offspring that grow into adults. **Year 5-** Describe the life process of reproduction in some plants and animals. Apply this knowledge of reproductions to identify other examples of life processes.	within the children in the classroom. Create a chart of information and use this to analyse data.			
Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.	**ELG** The Natural World: Explore the natural world around them, making observations and drawing pictures of animals and plants. **Year 2-** Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic	Questions: What is the difference between adaptation and evolution? Skills: Understand what adaption and evolution is. Apply this knowledge to identify how animals (polar bear, camel and peacock) and plants (trees in the rainforest, flowers and carnivorous plants) adapt to their environment.			

	needs of different kinds of animals and plants, and how they depend on each other. **Year 4-** Analyse and evaluate the effects that the environmental changes can have on world, good or bad.				
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	**ELG** The Natural World: Explore the natural world around them, making observations and drawing pictures of animals and plants. **Year 1-** Knowledge and Skills: Understand that there are variety animals (Fish Amphibian Reptiles Birds Mammals) which are grouped. To identify and	Questions: How are living things in Australia grouped by their characteristics?	Approach:- Identifying, grouping and classifying Skills:- Asking questions Observing and measuring		Characteristics Species Microorganisms Organism Vertebrate Invertebrate Domain Transport
		Skills: Describe how living things (mammals, fish, birds, reptiles, amphibians, insects, invertebrates, micro-organisms) can be grouped by their characteristics. Apply the knowledge of characteristics from living things to be able to group them into appropriate categories.			
Give reasons for classifying plants and animals based on specific characteristics.		Questions: What possible ways could you group living things based on their characteristics?			
		Skills: Apply the knowledge of characteristics from living things to be able to be able to justify how they are classified. Justify that a penguin a bird; justify that a frog is an amphibian; justify that a snake is a			

	describe the parts of a flower such as roots, stem, leaves and petals and what they do. **Year 2-** To understand the difference between things that are living, dead and things that have never been alive. To use this knowledge to apply comparing the differences between them. **Year 4-** Understand what a classification key is. Analyse a classification key to help inform and gain new knowledge of living things and how they are grouped.	lizard; justify that a whale is a mammal. Discuss the duck-billed platypus in detail, with particular reference as to why it is a mammal.			
Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary Select an appropriate scientific enquiry in order to answer questions. Organise what variables there are and which ones can be controlled. Assemble a plan to carry out a scientific investigation.					Plan Variables Measurements Precision

Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate Select appropriate equipment and demonstrate how to take measurements using a range of scientific equipment. Execute precise and accurate measurements. Understand the importance of repeat readings and apply it.		Repeat readings Patterns Predictions Comparative test Scatter graph Line graphs Classification keys Explanations Support Arguments Refute ideas Systematic Quantitative measurements Casual relationships Degree of trust
Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs Create complex scientific recordings and evaluate its effectiveness.		
Using test results to make predictions to set up further comparative and fair tests Evaluate test results and their effectiveness in order to help set up future tests. Formulate new predictions.		
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 Demonstrate how to present findings with increasing complexity such as casual relationships.		
Identifying scientific evidence that has been used to support or refute ideas or arguments. Evaluate and justify the evidence to support or refute ideas. Formulate arguments if needed against scientific evidence.		