RESPECT PRIDE INCLUSION CHALLENGE CREATIVITY RESILIENCE

NORTHSIDE Science Curriculum Overview

Respect, Pride, Inclusion, Challenge, Creativity, Resilience

	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Working Scientifically	Skills							
	Understanding and observing change. Sorting things by different criteria	Introducing scientific equipment. Testing their ideas Comparing and noticing changes over the time. Asking scientific questions Recording data in a simple way, eg. Charts, tick lists	**KS1** • 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.		**Lower KS2** • 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. • Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions • 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 results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • Identifying differences, similarities or changes related to simple scientific ideas and processes. • Using straightforward scientific evidence to answer questions or to support their findings.		**Upper KS2** • 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 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.
	Knowledge							
			At the end of KS1: ● Shows curiosity, asking questions about what they have noticed. ● Has developed understanding of scientific ideas through the use of different types of scientific enquiry to answer own questions, including observing changes over time, noticing patterns, grouping and classifying things, carrying out simple comparative tests and finding things out using secondary sources of information. ● Is beginning to use simple scientific language to talk about what they have found out and communicate their ideas to a range of audiences in a variety of ways.		**At the end of Lower KS2** ● Has broadened their scientific view of the world around them through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living and non-living things and familiar environments and by beginning to develop ideas about functions, relationships and interactions. ● Asks their own questions about what they observe and is able to make some decisions about which types of scientific enquiry are likely to be the best ways of answering them, including observing changes over time, noticing patterns, grouping and classifying things, carrying out simple comparative and fair tests and finding things out using secondary sources of information. ● Draws simple conclusions and uses some scientific language, to both talk and write about what they have found out. ● Reads and spells scientific vocabulary correctly and with confidence, using their growing word and spelling knowledge		**At the end of Upper KS2** ● Has developed a deeper understanding of a wide range of scientific ideas through exploring and talking about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically. ● Has encountered more abstract ideas and is beginning to recognise how these help them to understand and predict how the world operates. ● Is beginning to recognise that scientific ideas change over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative fair tests and finding things out using a wide range of secondary sources of information. ● Is able to draw conclusions based on their data and observations, using evidence to justify their ideas and their scientific knowledge and understanding to explain their findings.

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	Knowledge							
Animals including humans	**Two Year old nursery** Explore and respond to different natural phenomena in their setting and on trips Know animals change over time (butterfly, frog) **Three year old nursery** Understand 'why' questions like - 'why do you think the caterpillar got so fat? Understand the key features of the life cycle of an animal. Begin to understand the need to respect and care for all living things. Know the names of the different stages of a butterfly and frog's life cycle. Know the order of the life cycle stages of butterflies and frogs.	Explore the natural world around them. Know the different stages of an animal's life cycle (chickens and penguins) Describe what they see, hear and feel while they are outside. Introducing vocabulary of our senses (smell, hear, see, taste, feel) Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what they have read in class. Know that animals live in different habitats. (Tropical animals, animals in the Arctic, desert animals and sea animals.)	Identify and name a variety of common animals including fish, amphibians, reptiles, birds, mammals. Identify pets and other common animals that are herbivores, omnivores and carnivores, having first established what sort of food each eats. Identify animals found in the local environment including zoo animals. Recognise the structure of a variety of common animals (fish,amphibians, reptiles, birds and mammals, including pets) Identify and name the basic parts of the human body (head, neck, arms, elbows, legs, knees, face, ears, eyes, hair, mouth teeth) and say which part is associated with which sense. Experiment – Exploring our senses Climate changes Ecosystem ---- Caring for planet (resources on white rose –sustainability)	Recognise that animals, including humans, have off-spring which grow into adults and how they grow from a baby - toddler – child – teenager - adult. Other examples could include: Egg – caterpillar – pupa – butterfly (metamorphosis) Lamb – sheep Kangaroo - joey Know that to survive, animals, including humans, need water, air, food and shelter. Know that exercise is important to humans and can describe why Knows which food groups common food belongs to; carbohydrates, fruit and vegetables, protein, fat and dairy. Healthy eating food plate. Know about general hygiene and its importance and can state examples of hygienic practice. Know how to brush your teeth, wash hands, wash your hair and have a bath. Know that you have to change your clothes. **Know the climate changes** and effects on crops. Know how global warming effect on ability to grow food Effects on health. *Experiment (hygiene)* – How easily do germs spread? Glitter and cream on hands; shaking hands. Children explore how to best clean hands	Know that animals, including humans, need the right types of and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat. - Compare with the nutritional needs and diets of animals, including pets. Know that food contains a range of different nutrients that are needed by the body to stay healthy – carbohydrates including sugars, protein, vitamins, minerals, fibre, fat, sugars and water. Food pyramid. Know that humans and some other animals have skeletons and muscles for support, protection and movement. Types of joint: hinge joint, ball and socket joint, gliding joint. Know that the heart is a muscle and the effect of exercise on our heart rate. Introduction to the main parts of the body associated with the skeleton and muscles (using common and scientific names, **see appendix 1**) Identify vertebrates and invertebrates. Vertebrates: cats, fish, frog, pigeon and lizard. Invertebrates: slug, snail, spider, jellyfish. **Climate changes and effects on crops- Global warming** **Water scarcity/**	Know the basic parts of the digestive system in humans (mouth, tongue, teeth oesophagus, stomach, gall bladder, pancreas, liver, anus, rectum and large and small intestine, Saliva glands and duodenum). Know and Identify different teeth in humans (molar, canine, incisor, premolar, wisdom teeth) and their simple functions. - Find out what damages teeth and how to look after them. - Compare the teeth of carnivores and herbivores Know which organisms are producers, predators and prey and apply to the construction and interpretation of food chains. Know the food chain of a fox. **Climate changes-** **Know which animals live in Oceans –** **Know how to safeguard oceans.** **e.g. Catastrophic storms**	Know and describe the changes as humans develop to old age - create and understand a Human timeline - investigate the growth of babies - predict and investigate the gestation periods of animals Know the relationship between size and gestation period. Know what happens as animals grow up and change through puberty. Know about how male and female human bodies change during puberty. Recap knowledge from Year 4 RSHE and clarify the scientific processes at work. **Climate changes-Bio diversity** Know the effects of Carbon emission on human body	Name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. • Circulatory system: bronchus, bronchiole, air sacs/alveoli, diaphragm, trachea, intercostal ribs and muscles, arteries, capillaries, veins.) Recognise the impact of diet, exercise, drugs and lifestyle on the way bodies function. Know and describe the ways in which nutrients and water are transported within animals, including humans. Revision of digestive system Know the circulation system in fish, insects and foxes. **Know how climate change** has dangerous effects on human body Know about intense drought and its effects- **Know what climate refugees** are–putting people at risk of famine Experiments: measuring heart rate change over time/exercise.

				to remove germs (water, water and soap, tissue). *Experiment (exercise)* – Observing and recording the changes to the body when doing different exercises.	**Greenhouse gases**			

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	Knowledge							
Plants	**Two year old nursery** Explore natural materials, indoors and outdoors. Explore and respond to different phenomena in their setting and on trips. **Three year old nursery** Understand 'why' questions - 'why do you think this plant has died?' Talk about what they see, using a wide vocabulary. Plant seeds and care for growing plants. Grow sunflowers. Understand the key features of the life cycle of a plant. Begin to understand the need to respect and care for the natural environment.	Explore the natural world around them. Describe what they see, hear and feel while they are outside. Recognise that some environments that are different to the one in which they live. Understand the effect of changing seasons on the natural world around them. Understand some important processes and changes in the natural world around them, including the seasons. Grow butter beans and beanstalks and observe pear tree.	Identify a range of common wild and garden plants, including deciduous and evergreen trees. Know the basic structure of a variety of common flowering plants, including trees - leaves, flower (blossom), petals, fruit, roots, bulb, seed, trunk, branches, and stem. *Grow plants: Sunflower/pumpkins* *Experiment – Observing the growth of different seeds*	Know that plants may grow from either seeds or bulbs. Know that seeds and bulbs can germinate and grow into seedlings then continue to grow into mature plants. Know that plants need water, light and a suitable temperature to grow and stay healthy. Know that some plants are better suited to growing in full sun and some in partial shade. Know that mature plants may have flowers which then develop into seeds, berries and fruits etc *Grow plants which require germination - broad beans/ mustard or cress.* *Experiment – Observing the growth of seeds in different environments (light, light with water, dark, dark with water).*	Know, identify and describe the functions of different parts of flowering plants (revisit year 1) Identify – leaves, flower (blossom), petals, fruit, roots, bulb, seed, trunk, branches and stem. Know the requirements of plants for life and growth (air, light, water, nutrients from soil, room to grow). Know through investigation the way in which water is transported within plants. Know which part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. *Grow plants: tomatoes and chilli plants.*			
	Skills							

	Ask simple questions about their immediate environment. Use suitable vocabulary to make observations. Observe things closely through a variety of means, including magnifiers and photographs. Create their own environments by using play maps and small world equipment. Use all their senses in hands-on exploration of natural materials.	Explore the natural world around them, making observations and drawing pictures of plants. Make comments about what they have heard and ask questions to clarify their understanding. Learn new vocabulary and use it in different contexts. Describe events in some detail.	Observe different plants closely. Compare and contrast them. Describe how they identify and group them. Compare and contrast how plants change over time eg: buds opening or leaves falling off trees. Draw diagrams to show the parts of a plant.	Observe and record, with some accuracy, the growth of a variety of plants as they change over time from a seed or bulb. Make comparisons between plants as they grow. Set up a comparative test to show that plants need light and water to stay healthy.	Compare and record the effect of different factors on plant growth, for example the amount of light, the amount of fertiliser. Observe the different stages of plant cycles over a period; looking for patterns in the structure of seeds that relate to how these are dispersed. Investigate different types of plants and flowers – find and discuss parts of a flower			

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	Knowledge							
Living Things and their Habitats	**Two year old nursery** Explore natural materials, indoors and outdoors. Explore and respond to different phenomena in their setting and on trips. **Three year old nursery** Understand 'why' questions - 'Why do birds live in nests?' Talk about what they see, using a wide vocabulary. Plant seeds and care for growing plants. Understand that animals and plants have a life cycle. Begin to understand the need to respect and care for the natural environment.	Explore the natural world around them. Describe what they see, hear and feel while they are outside. Recognise that some environments are different to the one in which they live. Arctic, tropical climates and desert. Understand the effect of changing seasons on the natural world around them. Understand some important processes and changes in the natural world around them, including the seasons. Know how to compare different habitats (eg. tropical animals, farm animals, arctic animals, sea animals).		Know and explain 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, including microhabitats, provide for the basic needs of different kinds of animals and plants, and how they depend on each other. Know about the savannah, polar regions, woodlands and the ocean. Identify and name a variety of plants and animals in their habitats, including micro-habitats. Mini-beast hunt. Know 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. Know the food chain of a rabbit. **Changes to habitats** **Climate change and extinction**		Know that living things can be grouped in a variety of ways. Know the categories and sub-categories of vertebrates and invertebrates. Know and use classification keys to help group, identify and name a variety of living things in their local and wider environment. Know and give examples of how environments change and how this can sometimes pose dangers to living things. Know the plight of the snow leopard. (Link to Terrific Text). Know about the impact of palm oil. **Climate changes** **Biodiversity** Know how protecting the world's biodiversity is essential for limiting carbon emissions and adapting to climate impacts.	Know and describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. Elephant, newt, parrot, beetle. Know and describe the life process of reproduction in some plants and animals. - Asexual (one parent) and sexual (two parent) reproduction in plants. Tulip, ferns. *Experiments: dissect different parts of a tulip and investigate features of a fern.*	Know and 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. Sheep, vines, goats, olive trees, leeks. Give reasons for classifying plants and animals based on specific characteristics **Micro-Organisms** Know that micro-organisms are often too small to be seen. Know that micro-organisms can cause food to decay. Know that food needs to be handled and stored with care. Know that there are very small organisms called micro-organisms which can be harmful. Know that scientific ideas about diseases can be based on evidence. Know that micro-organisms feed and grow. Experiments: mould growth on bread over time. Yeast and balloons. **Land** Know how land plays a key role in the climate system as an essential carbon sink, regulating the planet's temperature. Severe fires/ melting polar ice

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Skills							
Ask simple questions about their immediate environment. Use suitable vocabulary to make observations. Observe things closely through a variety of means, including magnifiers and photographs. Create their own environments by using play maps and small world equipment. Use all their senses in hands-on exploration of natural materials.	Explore the natural world around them, making observations and drawing pictures of plants and animals. Make comments about what they have heard and ask questions to clarify their understanding. Learn new vocabulary and use it in different contexts. Describe events in some detail.		Answer questions about the local environment exploring living, dead and never lived. Classify objects Create simple food chains from first hand observation and research. Describe conditions in different habitats and micro-habitats. Examine how the conditions affect the number and type(s) of plants and animals that live there. Climate change- Wild life (resources on white rose) Experiment – Mini beast hunt. Recording data as a tally and then transferring it into a pictogram/bar chart.		Classify living things found in different habitats based on their features. Create identification key based on observable features. Ask and answer questions based on their observations of exploring local small invertebrates and using guides or keys to identify them. Use secondary sources to find out about how environments may naturally change Explore positive and negative human impact on environments. Use research to explore human impact on the local environment. **Investigation: Bugs in the local area. Children will find and classify bugs found in the playground.**	Observe and compare the life cycles of plants and animals in the local environment with other plants and animals around the world (the rainforest, under the oceans, desert areas and in prehistoric times), asking pertinent questions and suggesting reasons for similarities and differences. Draw and label appropriate scientific diagrams following use of secondary sources and first hand observations. Use data to compare and find patterns, for example to compare the gestation times for mammals and look for patterns e.g. in relation to size of animal or length of dependency after birth/Look for patterns between the size of an animal and its expected life span)	Devise classification systems and keys to identify some animals and plants in the immediate environment. Observe how different animals reproduce and grow. Explore the work of scientists and scientific research. Record data and results of increasing complexity using scientific diagrams, labels, classification keys, tables, bar, scatter and line graphs. Identify scientific evidence that has been used to support or refute ideas or arguments. Declining biodiversity Effects on health Ability to grow food Sea level rising Salt water emission

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	Knowledge							
Materials	**Two year old nursery** Explore materials with different properties. Explore natural materials, indoors and outside. **Three year old nursery** Use all their senses in hands-on exploration of natural materials. Explore collections of materials with similar and/or different properties.	Understand some important processes and changes in the natural world around them, including changing states of matter. Describe what they can see, hear and feel while they are outside.	**Grouping materials** • Distinguish between an object and the material from which it is made. • Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. • Know the simple physical properties of a variety of everyday materials. Soft, hard, bumpy, stretchy, glossy, shiny, bendy, smooth, rough, spiky Transparent opaque • Know that different materials can share the same properties (for example – glass and plastic can both be transparent. Experiments – materials that float and sink, materials that are magnetic,	**Uses of Everyday Materials** Know and explain why some materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard are particularly suited to a specific purpose. Know how they are made and what they can be used for and why. Linked to the Great Fire of London. Climate change Plastic (resource on white rose) *Experiment – exploring which materials twist, bend, stretch)*		**States of matter** Know how to distinguish between a solid, liquid and gas. Know that some materials change state when they are heated or cooled. E.g. chocolate and ice. Know the temperatures at which ice, water and water vapour change state. Know the part played by evaporation and condensation in the water cycle.	**Properties and changes of materials** Know and group together everyday materials on the basis of their properties: hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. Know that some materials will dissolve in liquid to form a solution. Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. E.g. sugar, salt and sand solutions Recognise that dissolving, mixing and changes of state are reversible changes. *Experiments:* *Wrap up a piece of ice in bubble wrap to explore thermal insulators.* *Dissolve different solids in water eg. sand, lentils, flour, sugar, etc.* *Create different solutions with sand, salt, sugar, etc and then separate through filtering, sieving and evaporating.* *Observe changes by heating and cooling chocolate.* *Observe bicarbonate of soda/ vinegar experiment.*	
	Skills							

	Ask simple questions about their immediate environment. Talk about what they see, using a wide vocabulary. Talk about the differences between materials and changes they notice. Observe things closely through a variety of oldmeans, including magnifiers and photographs. Create their own environments by using play maps and small world equipment.	Make comments about what they have heard and ask questions to clarify their understanding. Learn new vocabulary and use it in different contexts. Describe events in some detail.	Compare and group together a variety of everyday materials on the basis of their simple physical properties. Classify objects made of one material in different ways. Classify one type of object made from a range of materials eg: spoon collection made from different materials Test the properties of objects.	Investigate and observe what happens to different materials during testing and use this to inform explanation of their properties. Classify and sort materials. Explain from observations how materials change when a force is exerted. Investigate which materials are fit for purpose Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.		Observe closely and classify a range of solids and liquids Classify materials according to whether they are solids, liquids and gases. Investigate melting points. Observe changes that are non- reversible. Experiments: Chocolate heating and cooling investigation Tea towel evaporation investigation Fizzy drink investigation Precipitation model	Describe how to recover a substance from a solution. Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.	

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	Knowledge							
Light			**Non statutory** Understand that darkness is the absence of light. Know different light sources including the sun. Know it is dangerous to look directly at the sun. Know that light sources vary in brightness.		Know that they need light in order to see things and that dark is the absence of light. Know that light is reflected from surfaces. Know that light from the sun can be dangerous and that there are ways to protect their eyes. Know that shadows are formed when the light from a light source is blocked by an opaque object. Know and can explain some of the reasons why the size of shadows change. Experiment: Measure the shadows in the playground at different times of the day (linked to Stonehenge).			Know that light appears to travel in straight lines. Know the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye. Know the different parts of the eyes and know the jobs. Make periscopes. 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. Experiments: light travel using torches and card. Making periscopes. Light in bubbles/through prisms.
	Skills							
			Gather and record data to help answer questions. Observe closely and describe what they can see. Experiment: Explore materials that reflect light. Also investigate which material light can go through. Opaque		Observe and identify changes to the size and orientation of shadows, relative to their proximity to the light source. Investigate the visibility of different materials. Investigate the size of shadows according to times of day and year. Classify materials according to opaque, transparent and translucent. Investigate how shadows are formed. **Experiment- E.g. shadow puppets.**			Observe how light behaves, including light sources, reflection and refraction. Investigate the relationship between light sources, objects and shadows e.g. by using shadow puppets. Investigate and experience a range of interesting aspects of light such as rainbows, colours on soap bubbles, objects looking bent in water and white light being split by prisms.

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	Knowledge							
Forces					**Forces & Magnets** Know that friction affects the way that things move on different surfaces. Know that some forces need contact between two objects, but magnetic forces can act at a distance. Know that magnets attract or repel each other and attract some materials and not others. Know and can describe magnets as having two poles. Know whether two magnets will attract or repel each other depending on which poles they are facing.		**Forces** Know that unsupported objects fall to Earth because of the force of gravity acting between the Earth and the falling object. Know and identify the effects of air resistance, water resistance and friction. Know that some mechanisms including levers, pulleys and gears, allow a smaller force to have a greater effect. *Experiments:* *Weigh items using a newton meter to explore the difference between mass and weight.* *Create parachutes to investigate air resistance.* *Explore friction using shoes on different surfaces.* *Make mangonels to explore levers.*	
	Skills							
					Record and report on findings from investigations how things move on different surfaces. Compare and group materials following magnetic testing. Make and investigate predictions on whether Two magnets will attract or repel. Experiment-magnetism-test different materials using magnets. Investigate how things move on different surfaces		Investigate the effect of friction in a range of contexts. Investigate the pull on different objects. Investigate the effects of water resistance, air resistance in a range of contexts. Explore how levers, pulleys and gears work. Research how the work of scientists such as Newton helped develop the theory of gravitation	

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	Knowledge							
Electricity						Can identify and name appliances that require electricity to function. Know the basic parts of a circuit, including cells, wires, bulbs, switches and buzzers. Know that for an appliance to work within a circuit it has to be part of a complete loop with a battery. Know that a switch in a circuit is a temporary break in an otherwise complete circuit. Know all metals conduct electricity but some, such as aluminium and titanium are relatively poor conductors. Know the recognised symbols used to represent components of a circuit and uses these to represent a circuit pictorially.		Know that the brightness of a bulb, or the volume of a buzzer, correlates with the voltage of cells used in the circuit. Know and can give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches Know the effect of adding more components to a circuit with one cell and the effect of adding multiple cells. Know and can use the recognised symbols to represent a simple (series) circuit in a diagram. Experiments: adding different components to circuits and exploring the changes and reasons why.
	Skills							

						Construct and investigate a range of circuits. Investigate which materials can be used instead of wires to make a circuit. Classify materials that conduct electricity and those that don't. Investigate the effects Investigate the effect of a switch and combinations of switches in simple circuits. Apply their knowledge of conductors and insulators to design and make different types of switches. Global warming Green house gases Water scarcity **Investigations into the role of switches, the different ways that circuits can be made and what materials can be used to conduct electricity.**		Draw circuit diagrams of a range of simple series circuits, using recognised symbols. Communicate structures of circuits using circuit diagrams with recognised symbols Make electric circuits and demonstrate, following investigation, how variation in the working of particular components can be changed. Plan and select resources for a fair scientific enquiry, deciding which variables to control. Record results from an experiment using tables and graphs Evaluate and explain their investigation, results and conclusions

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	Knowledge							
Seasonal Changes	**Two year old nursery** Explore and respond to different natural phenomena in their setting and on trips **Three year old nursery** Understand 'why' questions, like: 'why do you think the leaves are turning red?' Plant seeds and care for growing plants Begin in understand the need to respect and care for the natural environment.	Explore the natural world around them. Describe what they see, hear and feel while they are outside. Recognise that some environments that are different to the one in which they live. Understand the effect of changing seasons on the natural world around them. Understand some important processes and changes in the natural world around them, including the seasons.	**Seasonal changes** Know when each of the four seasons occurs. Know what the features of each season is and how they change during the year. Know the impact of global warming. Know that days are longer in summer (sunshine hours) than in winter Observe changes across the four seasons. Know about and can describe weather in different seasons over a year.					
	Skills							
	Ask simple questions. Use all their senses in hands-on exploration of natural materials Use suitable vocabulary to make observations. Talk about what they see, using a wide vocabulary. Observe things closely through a variety of means, including magnifiers and photographs. Create their own environments by using play maps and small world equipment.	Explore the natural world around them, making observations and drawing pictures of plants. Make comments about what they have heard and ask questions to clarify their understanding. Learn new vocabulary and use it in different contexts. Describe events in some detail.	Ask simple questions about the weather. Observe the seasons and days closely and describe what they can see. Gather and record data on the weather to help in answering questions. Perform simple tests. Demonstrate knowledge in different ways eg: seasonal artwork.					

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	Knowledge							
Earth and Space							**Earth and Space** Know the movement of the Earth, and other planets, relative to the Sun in the solar system. Know the movement of the moon relative to the Earth. Know the sun, moon and earth are approximately spherical. Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky. *Experiments:* *Using a globe and torch, investigate day/ night.*	
	Skills							
							Use secondary sources to help create models to show the movement of the Earth around the Sun and the Moon around the Earth. Use secondary sources to understand why day and night occur Make first-hand observations of the Moon for a month. Research time zones Consider the views of scientists in the past and how evidence was used to deduce the shapes and movements of the Earth, Moon and planets before space travel. Know and research global warming Rising sea levels, melting polar ice, flooding	

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	Knowledge							
Rocks					**Rocks** Know that rock is a naturally occurring material. Know there are different types of rock e.g sandstone, limestone, slate etc. which have different properties. Know rocks can be different shapes and sizes (stones, pebbles, boulders) and some absorb water. Know, in simple terms, how fossils are formed when things that have lived are trapped within rock. Know that North Finchley was once under water. Know that soils are made from rocks and organic matter.			
	Skills							
					Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. Devise tests to explore the properties of rocks. Present in different ways their understanding of how fossils are formed e.g. in role play, comic strip, chronological report, Identify plant/animal matter and rocks in samples of soil **Experiment- studying soil - How to check for the elements that make up soil and report their findings.**			

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	Knowledge							
Sound						**Sound** Know how sounds are made, associating some of them with vibrating. Know how sound travels from a source to our ears. Know the correlation between pitch and the object. Know the correlation between the volume of a sound and the strength of the vibrations that produced it. Know that sounds get fainter as the distance from the sound source increases		
	Skills							
						Make predictions and draw conclusions about the pitch and volume of sounds. Note how vibrations make sounds of different volumes and travel to our ears. Identify and show how sound travels through particles and into the ear. **Boomwacker investigation for pitch, Distance investigation in the playground. Different sounds investigation around the school**		

RESPECT PRIDE INCLUSION CHALLENGE CREATIVITY RESILIENCE

	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Knowledge							
Evolution and inheritance								Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. Linked to dinosaurs and Mary Anning. Know that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. Trip to Barnet Environment Centre and exploring fossils.
	Skills							
								Follow lines of enquiry to support explanation of the process of evolution. Demonstrate an understanding, with specific examples, of how an animal or plant has evolved over time e.g. penguin, peppered moth. Identify characteristics that will make a plant or animal suited or not suited to a particular habitat. Compare the ideas of Charles Darwin and Alfred Wallace on evolution. Research the work of Mary Anning and understand how this provided evidence of evolution. Referring to and using examples of fossil evidence that support the theory of evolution.

RESPECT PRIDE INCLUSION CHALLENGE CREATIVITY RESILIENCE