Netherton Moss Primary School — Long-Term Curriculum Plan for Science — 2024/25

Organisation of Knowledge		Working scientifically	Plants	Animals including humans	Everyday materials	Seasonal change
EYFS	Relevant ELG	**ELG: Listening, Attention and Understanding** ✓ Make comments about what they have heard and ask questions to clarify their understanding. **ELG: Fine motor skills** ✓ Use a range of small tools, including scissors, paint brushes and cutlery. **ELG: Building Relationships** ✓ Work and play cooperatively and take turns with others.	**ELG: The Natural World** ✓ Explore the natural world around them, making observations and drawing pictures of plants and animals. ✓ Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class. **ELG: Speaking** ✓ Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary.		**ELG: The Natural World** ✓ Understand some important processes and changes in the natural world, including the seasons and changing states of matter. **ELG: Speaking** ✓ Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary.	
	KS1 readiness objectives	✓ To feel confident to answer simple questions about observable properties of objects and people, animals and plants around them ✓ To compare objects in their environment and talk about similarities and differences ✓ To ask questions about the world around them, and seek to find their own answers	✓ To know what a plant is ✓ To know what a flower is ✓ To know where you see plants ✓ To describe different plants and flowers	✓ To know what an animal is ✓ To recognise and name a variety of different animals ✓ To know the names of different body parts of humans and animals they have experience of	✓ To recognise that different everyday objects are made from different materials ✓ To describe how different objects look and feel	✓ To know about different types of weather ✓ To observe changes in trees and plants as the seasons progress

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		Autumn Term 1st half	Autumn Term 2nd half	Spring Term 1st half	Spring Term 2nd half	Summer Term 1st half	Summer Term 2nd half
Year 1		Animals		Everyday Materials		Animals Including Humans	Plants
	Substantive Knowledge	✓ I can describe the key features of named animals ✓ I can label key features on a picture/ diagram ✓ I can name a range of animals which include animals from each of the vertebrate groups. ✓ I can describe what a range of animals eat.		✓ I can label a picture or diagram of an object made from different materials ✓ I can describe the properties of different materials		✓ I can play and lead 'Simon says'. ✓ During PE lessons, I can follow instructions involving parts of the body ✓ I can label parts of the body on pictures and diagrams ✓ I can explore objects using different senses	✓ I can name trees and other plants that they see regularly ✓ I can describe some of the key features of these trees and plants e.g. the shape of the leaves, the colour of the flower/blossom ✓ I can point out trees which lost their leaves and those that kept them the whole year ✓ I can point to and name the parts of a plant, recognising that they are not always the same e.g. leaves and stems may not be green
	Disciplinary Knowledge (Working Scientifically)	✓ I can sort and group animals using similarities and differences. ✓ I can use simple charts etc. to identify unknown animals ✓ I can create a drawing of an imaginary animal labelling its key features ✓ I can use secondary resources to find out what animals eat, including talking to experts e.g. pet owners, zoo keepers etc.		✓ I can sort objects and materials using a range of properties ✓ I can choose an appropriate method for testing an object for a particular property ✓ I can use their test evidence to answer the questions about properties e.g. Which cloth is the most absorbent?		✓ I can use first-hand close observations to make detailed drawings ✓ I can name body parts correctly when talking about measurements and comparisons 'My arm is x straws long.' 'My arm is x straws long and my leg is y straws long. My leg is longer than my arm.' 'We both have hands, but his are bigger than mine.' 'These people have brown eyes and these have blue.' ✓ I can talk about their findings from investigations using appropriate vocabulary ✓ 'My fingers are much better at feeling than my toes', 'We found that the crisps all taste the same.'	✓ I can sort and group parts of plants using similarities and differences ✓ I can use simple charts etc. to identify plants ✓ I can collect information on features that change during the year ✓ I can use photographs to talk about how plants change over time
		Observe Seasonal Change (On-going)					
	Substantive Knowledge	✓ I can name the four seasons and identify when in the year they occur. ✓ I can describe weather in different seasons over a year. ✓ I can describe days as being longer (in time) in the summer and shorter in the winter. ✓ I can describe other features that change through the yea					
	Disciplinary Knowledge (Working Scientifically)	✓ ✓ I can use their evidence gathered to describe the general types of weather and changes in day length over the seasons. ✓ I can use their evidence to describe some other features of their surroundings, themselves, animals, plants that change over the seasons ✓ I can demonstrate their knowledge in different ways e.g. writing seasonal pieces, creating seasonal artwork					
Year 2		Living things and their habitats.		Uses of Everyday Materials		Growing Plants	Animals including Humans
	Substantive Knowledge	✓ I can find a range of items outside that are living, dead and never lived ✓ I can name a range of animals and plants that live in a habitat and micro-habitats that they have studied ✓ I can talk about how the features of these animals and plants make them suitable to the habitat ✓ I can talk about what the animals eat in a habitat and how the plants provide shelter for them ✓ I can construct a food chain that starts with a plant and has the arrows pointing in the correct direction		✓ I can name an object, say what material it is made from, identify its properties and make a link between the properties and a particular use ✓ I can label a picture or diagram of an object made from different materials ✓ For a given object can identify what properties a suitable material needs to have. ✓ Whilst changing the shape of an object I can describe the action used ✓ I can use the words flexible and/or stretchy to describe materials that can be changed in shape and stiff and/or rigid for those that cannot ✓ I can recognise that a material may come in different forms which have different properties		✓ I can observe and describe how plants that they have grown from seeds and bulbs have developed over time ✓ I can identify plants that grew well in different conditions	✓ I can describe how animals including humans have offspring which grow into adults, using the appropriate names for the stages ✓ I can state the basic needs of animals, including humans, for survival. ✓ I can state the importance for humans of exercise, eating the right amounts of different types of food and hygiene. ✓ I can name foods in each section of the Eatwell guide
	Disciplinary Knowledge (Working Scientifically)	✓ I can sort objects by observable features into living, dead and never lived. ✓ I can give key features that mean the animal or plant is suited to its habitat. ✓ Using a food chain, I can explain what animals eat ✓ I can compare and contrast living things in order to explain why an animal or plant is suited to a habitat.		✓ I can sort materials using a range of observable properties ✓ I can explain using the key properties and scientific language, why a material is suitable or not suitable for a purpose ✓ I can begin to choose an appropriate method for testing a material for a particular property ✓ I can use their test evidence to select appropriate material for a purpose e.g. Which material is the best for a rain hat?		✓ I can spot similarities and difference between bulbs and seeds and describe them using simple scientific language. ✓ I can nurture seeds and bulbs into mature plants identifying the different requirements of different plants and recording what I notice	✓ I can describe, including using diagrams, or acting out the life cycle of some animals, including humans, and their growth to adults e.g. by creating a life cycle book for a younger child ✓ I can take simple measures/observe how animals, including humans, grow. ✓ Show what they know about looking after a baby/animal by creating a parenting/pet owners' guide ✓ I can explain how development and health might be affected by differing conditions and needs being met/not met.
		Observe Plants and Animals in the local environment throughout the year					
	Substantive Knowledge	✓ In addition to the KSD listed in the Autumn Term unit of work. ✓ I can describe how plants that they have grown from seeds and bulbs have developed over time ✓ I can identify plants that grew well in different conditions					
	Disciplinary Knowledge (Working Scientifically)	✓ I can nurture seeds and bulbs into mature plants identifying the different requirements of different plants ✓ I can use simple scientific language to talk about what I have noticed. ✓ I can observe closely and communicate with increasing accuracy the changes in things in the real world.					

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		Autumn Term 1st half	Autumn Term 2nd half	Spring Term 1st half	Spring Term 2nd half	Summer Term 1st half	Summer Term 2nd half
Year 3		Animals Including Humans (Health & Nutrition)	Animals Including Humans (Skeletons & Movement)	Light	Plants	Rocks & Fossils	Forces & Magnets
	Substantive Knowledge	✓ I can name the nutrients found in food. ✓ I can state that to be healthy we need to eat the right types of food to give us the correct amount of these nutrients ✓ I can explain the function of the parts of a flowering plant. (Planting plants to grow in preparation for Summer Term 1)	✓ I can name some bones that make up their skeleton giving examples that support, help them move or provide protection. ✓ I can describe how muscles and joints help me to move.	✓ I can describe how we see objects in light and I can describe dark as the absence of light. ✓ I can state that it is dangerous to view the sun directly and state precautions used to view the sun, for example in eclipses. ✓ I can define transparent, translucent and opaque ✓ I can describe how shadows are formed by objects blocking light.	✓ I can describe the life cycle of flowering plants, including pollination, seed formation, seed dispersal, and germination ✓ I can give different methods of pollination and seed dispersal, including examples	✓ I can name some types of rock and give physical features of each. ✓ I can explain how a fossil is formed ✓ Can explain that soils are made from rocks ✓ and also contain living/dead matter	✓ I can give examples of forces in everyday life ✓ I can give examples of objects moving differently on different surfaces ✓ I can name a range of types of magnets and show how the poles attract and repel ✓ I can draw diagrams using arrows to show the ✓ attraction and repulsion between the poles of magnets
	Disciplinary Knowledge (Working Scientifically)	✓ I can classify food into those that are high or low in particular nutrients. ✓ I can answer questions about nutrients in food based on my gathered evidence. ✓ I can talk about the nutrient content of my daily plan	✓ I can my data to look for patterns (or lack of) when answering my enquiry questions ✓ I can give similarities e.g. they all have joints to help the animal move, and differences between skeletons	✓ I can describe patterns in visibility of different objects in different lighting conditions and predict which will be more or less visible as conditions change. ✓ I can clearly explain, giving examples, that objects are not visible in complete Darkness. ✓ I can describe and demonstrate how shadows are formed by blocking light ✓ Can describe, demonstrate and make predictions about patterns in how shadows vary	✓ I can explain observations made during investigations ✓ I can look at the features of seeds to decide on my method of dispersal ✓ I can draw and label a diagram of my created flowering plant to show its parts, their role and the method of pollination and seed dispersal	✓ I can an classify rocks in a range of different ways ✓ using appropriate vocabulary ✓ I can devise tests to explore the properties of rocks and use data to rank the rocks ✓ I can link rocks changing over time with their properties e.g. soft rocks get worn away more easily ✓ I can present in different ways their understanding of how fossils are formed e.g. ✓ in role play, comic strip, chronological report, stop-go animation etc. ✓ I can identify plant/animal matter and rocks in samples of soil ✓ I can carry out a test to explore the water retention of soils	✓ I can use my results to describe how objects ✓ move on different surfaces ✓ I can use my results to make predictions for further tests e.g. it will spin for longer on this surface than that, but not as long as it spun on ✓ that surface ✓ I can use classification evidence to identify that ✓ I know some metals but not all are magnetic ✓ Through my exploration I can show how like poles repel and unlike poles attract and name unmarked poles ✓ I can use test data to rank magnets
Year 4		Living Things and their Habitats	Animal Including Humans (Teeth & Digestion)	Materials and their properties (States of Matter)		Sound	Electricity
	Substantive Knowledge	✓ I can recognise that living things can be grouped in a variety of ways ✓ I can explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment ✓ I can recognise that environments can change and that this can sometimes pose dangers to living things	✓ I can describe the simple functions of the basic parts of the digestive system in humans ✓ I can identify the different types of teeth in humans and their simple functions ✓ I can construct and interpret a variety of food chains, identifying producers, predators and prey	✓ I can compare and group materials together, according to whether they are solids, liquids or gases ✓ I can 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) ✓ I can identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature		✓ I can identify how sounds are made, associating some of them with something vibrating ✓ I can recognise that vibrations from sounds travel through a medium to the ear ✓ I can find patterns between the pitch of a sound and features of the object that produced it ✓ I can find patterns between the volume of a sound and the strength of the vibrations that produced it ✓ I can recognise that sounds get fainter as the distance from the sound source increases	✓ I can identify common appliances that run on electricity ✓ I can construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers ✓ I can 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 ✓ I can recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit ✓ I can recognise some common conductors and insulators, and associate metals with being good conductors
	Disciplinary Knowledge (Working Scientifically)	✓ I can keep a careful record of living things found in different habitats throughout the year (diagrams, tally charts etc.) ✓ I can use classification keys to identify unknown plants and animals ✓ I can present their learning about changes to the environment in different ways e.g. campaign video, persuasive letter	✓ I can use diagrams or a model to describe the journey of food through the body explaining what happens in each part. ✓ I can record the teeth in their mouth (make a dental record) ✓ I can explain the role of the different types of teeth ✓ I can explain how the teeth in animal skulls show they are carnivores, herbivores or omnivores. ✓ Can create food chains based on research	✓ I can give reasons to justify why something is a solid liquid or gas ✓ I can give examples of things that melt/freeze and how their melting points vary ✓ From my observations, I can give the melting points of some materials ✓ Using my data, I can explain what affects how quickly a solid melts ✓ I can measure temperatures using a thermometer ✓ I can explain why there is condensation on the inside the hot water cup but on the outside of the icy water cup ✓ From my data, I can explain how to speed up or slow down evaporation ✓ I can present their learning about the water cycle in a range of ways e.g. diagrams, explanation text, story of a water droplet		✓ I can explain what happens when you strike a drum or pluck a string and use a diagram to show how sounds travel from an object to the ear ✓ I can demonstrate how to increase or decrease pitch and volume using musical instruments or other objects ✓ I can explain how loudness can be reduced by moving further from the sound source or by using a sound insulating medium	✓ I can communicate structures of circuits using drawings which show how the components are connected ✓ I can incorporate a switch into a circuit to turn it on and off ✓ I can add a circuit with a switch to a DT project and can demonstrate how it works ✓ I can give reasons for choice of materials for making different parts of a switch ✓ I can describe how their switch works

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		Autumn Term 1st half	Autumn Term 2nd half	Spring Term 1st half	Spring Term 2nd half	Summer Term 1st half	Summer Term 2nd half
Year 5		**Properties & Changes of Materials**		**Earth and Space**	**Forces**	**Living Things and Their Habitats**	
	Substantive Knowledge	✓ I can explain what dissolving means, giving examples. ✓ I can name equipment used for filtering and sieving. ✓ I can use knowledge of liquids, gases and solids to suggest how materials can be recovered from solutions or mixtures by evaporation, filtering or sieving. ✓ I can use understanding of properties to explain everyday uses of materials. For example, how bricks, wood, glass and metals are used in buildings. ✓ I can describe some simple reversible and non-reversible changes to materials, giving examples. ✓ I can explain that some changes result in the formation of new materials, this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.		✓ I can describe the movement of the Earth, and other planets, relative to the Sun in the solar system. ✓ Describe the movement of the moon relative to the Earth. ✓ Describe the Sun, Earth and Moon as approximately spherical bodies. ✓ Use the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky.	✓ I can explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and a falling object. ✓ I can compare how things move on different surfaces (Y3 recap) ✓ I can identify the effects of air resistance, water resistance and friction, that act between moving surfaces. ✓ I can recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.	✓ I can draw the life cycle of a range of animals identifying similarities and differences between the life cycles ✓ I can explain the difference between sexual and asexual reproduction and give examples of how plants reproduce in both ways ✓ I can describe the life process of reproduction of a tree, linked to seasonal changes (buds/flowers/spring) ✓ I can observe life cycle change, (summer) in relation to trees and plants in my locality ✓ I can engage with my local environment throughout the year, e.g., planting plants and seeds in Summer and observing how they grow, change and develop throughout the year.	
	Disciplinary Knowledge (Working Scientifically)	**Grouping and Classifying** ✓ I can compare and contrast everyday materials on the basis of their properties and use these similarities and differences to help classify a range of objects. **Collaborating** ✓ I can propose my own ideas and make decisions with agreement in a group. ✓ I can support, listen to and acknowledge others in a group, ✓ I understand that it is OK to disagree with peers and I can offer reasons for my opinion **Exploring and Observing** ✓ I can use my developing scientific knowledge, understanding and relevant scientific language and terminology to discuss, communicate and explain my observations. **Using Equipment and Measures** ✓ I can make my own decisions about what observations to make or measurements to use and how long to take them for. ✓ I can choose the most appropriate equipment to separate a mixture of solids, using my understanding of sieving, filtration and evaporation. **Planning and Testing** ✓ I can carry out fair tests and other investigations with increasing confidence. ✓ I can make decisions about which variables to change, measure and keep the same. **Explaining Results** ✓ I can use my developing scientific K&U and appropriate scientific language and terminology to explain my findings, data and answer my initial question.		**Modelling** ✓ I can make a visual representation to show the movement of the Earth around the Sun. ✓ I can create a model to represent the Earth's rotation on its axis around the sun and explain how this creates day and night. Going deeper I can explain how Earth's rotation on its axis causes the apparent movement of the sun across the sky each day. ✓ I can perform a model to explain how the Earth moves in relation to the Sun and how the Moon moves in relation to the Earth. **Exploring and Observing** ✓ I can discuss my ideas and develop descriptions from my observations using relevant scientific language and vocabulary. ✓ I can make first-hand observations of how shadows caused by the Sun change through the day and link this to the rotation of the Erath on its axis (revisit topic in the Spring term to reinforce understanding). **Communicating** ✓ I can use my developing scientific knowledge and understanding and relevant scientific language and terminology to communicate key conceptual learning about the Earth, Sun and Moon. **Researching** ✓ I can record, articulate and explain my finding about different time zones and explain these using my scientific knowledge and understanding (cross curricular links with Geography)	✓ I can explain the results of their investigations in terms of the force, showing a good understanding that as the object tries to move through the water or air or across the surface, the particles in the water, air or on the surface slow it down. ✓ I can demonstrate clearly the effects of using levers, pulleys and gears.	✓ I can present understanding of the life cycle of a range of animals in different ways e.g. drama, pictorially, chronological reports, creating a game ✓ I can identify patterns in life cycles ✓ I can compare two or more animal life cycles studied ✓ I can explain how a range of plants reproduce asexually	
		Living Things and Their Habitats					
		✓ I can describe the life process of reproduction of a tree, linked to seasonal changes (seed development/autumn) ✓ I can observe life cycle change, (autumn / winter) in relation to trees and plants in my locality ✓ I can engage with my local environment throughout the year, e.g., planting bulbs and seeds Autumn and observing how they grow, change and develop throughout the year.					

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Year 6		Evolution and Inheritance	Electricity	Living things and their habitats		Light	Animals including humans
	Substantive Knowledge	✓ I can explain the process of evolution ✓ I can give examples of how plants and animals are suited to an environment ✓ I can give examples of how an animal or plant has evolved over time e.g. penguin, peppered moth ✓ I can give examples of living things that lived millions of years ago and the fossil evidence we have to support this ✓ I can give examples of fossil evidence that can be used to support the theory of evolution	✓ I can make electric circuits and demonstrate how variation in the working of particular components, such as the brightness of bulbs can be changed by increasing or decreasing the number of cells or using cells of different voltages ✓ I can draw circuit diagrams of a range of simple series circuits using recognised symbols	✓ I can give examples of animals in the five vertebrate groups and some of the invertebrate groups ✓ I can give the key characteristics of the five vertebrate groups and some invertebrate groups ✓ I can compare the characteristics of animals in different groups including unfamiliar creatures such as micro-organisms. ✓ I can describe the useful and harmful characteristics of micro-organisms		✓ I can describe with diagrams or models as appropriate how light travels in straight lines either from sources or reflected from other objects into our eyes. ✓ I can describe with diagrams or models as appropriate how light travels in straight lines past translucent or opaque objects to form a shadow of the same shape.	✓ I can draw a diagram of the circulatory system and label the parts and annotate it to show what the parts do ✓ I can produce a piece of writing that demonstrates the key knowledge e.g. explanation text, job description of the heart ✓ I can explain the changes that takes place in boys and girls during puberty **RSE Curriculum** ✓ I can explain how a baby changes physically as it grows and also what it is able to do **RSE Curriculum**
	Disciplinary Knowledge (Working Scientifically)	✓ I can identify characteristics that will make a plant or animal suited or not suited to a particular habitat ✓ I can link the patterns seen in the model to the real examples ✓ I can explain why the dominant colour of the peppered moth changed over a very short period of time	✓ I can incorporate a switch into a circuit to turn it on and off ✓ I can change cells and components in a circuit to achieve a specific effect ✓ I can communicate structures of circuits using circuit diagrams with recognised symbols ✓ I can devise ways to measure brightness of bulbs, speed of motors, volume of a buzzer during a fair test ✓ I can predict results and answer questions by drawing on evidence gathered	✓ I can use classification materials to identify unknown plants and animals (Databases) ✓ I can create classification keys for plants and animals (Using two or more items) ✓ I can give a number of characteristics that explain why an animal belongs to a particular group. ✓ Identify the variables in an investigation into I microorganisms. ✓ Draw conclusions based on their results.		✓ I can explain how evidence from enquiries shows that light travels in straight lines ✓ I can predict and explain with diagrams or models as appropriate how the path of light rays can be directed by reflection to be seen, for example reflection in car rear view mirrors or in a periscope. ✓ I can predict and explain with diagrams or models as appropriate how the shape of shadows can be varied.	✓ ✓ I can use the role play model to explain the main parts of the circulatory system and their role ✓ I can use subject knowledge about the heart whilst writing conclusions for investigations ✓ I can explain both the positive and negative effects of diet, exercise, drugs and lifestyle on the body ✓ I can resent information e.g. in a health leaflet describing impact of drugs and lifestyle on the body