



Curriculum Overview Science



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EYFS – Understanding the World

Birth to 3	Three- and four-year-olds	Reception	ELG The Natural World
<p>Explore materials with different properties.</p> <p>Explore natural materials, indoors and outside.</p> <p>Explore and respond to different natural phenomena in their setting and on trips.</p> <p>Make connections between the features of their family and other families.</p> <p>Notice differences between people.</p>	<p>Use all their senses in hands-on exploration of natural materials.</p> <p>Explore collections of materials with similar and/or different properties.</p> <p>Talk about what they see, using a wide vocabulary.</p> <p>Begin to make sense of their own life-story and family's history.</p> <p>Show interest in different occupations.</p> <p>Explore how things work.</p> <p>Plant seeds and care for growing plants.</p> <p>Understand the key features of the life cycle of a plant and an animal.</p> <p>Begin to understand the need to respect and care for the natural environment and all living things.</p> <p>Explore and talk about different forces they can feel.</p> <p>Talk about the differences between materials and changes they notice.</p> <p>Continue developing positive attitudes about the differences between people.</p>	<p>Explore the natural world around them.</p> <p>Describe what they see, hear and feel whilst outside.</p> <p>Recognise some environments that are different to the one in which they live.</p> <p>Understand the effect of changing seasons on the natural world around them.</p>	<p>Explore the natural world around them, making observations and drawing pictures of animals and plants.</p> <p>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.</p> <p>Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.</p>

Milestone 1 – Biology

Big Idea	Knowledge Category	Milestone Indicator -GDIS	Step 1 Year 1 – LANCS / GDIS	Next Step Year 2 – LANCS / GDIS
Diversity	Plants	B1: Identify and name a variety of common plants, including garden plants, wild plants, trees and those classified as deciduous and evergreen.	Identify and name a variety of common wild and garden plants,	Quick recall of a variety of common wild and garden plants Identify and name a variety of trees including evergreen and deciduous trees.
Diversity	Plants	B2: Identify and describe the basic structure of a variety of common flowering plants including stem/ trunk, leaves and flowers.	Use plants in local environment to identify and name parts including leaves, flowers (blossom), petals, fruit, roots, bulb, seed, trunk, branches, stem. Apply knowledge to unknown plants – local area – Salisbury / Love Lytham	Compare and contrast familiar plants. Apply structural knowledge to trees. Use similarities and differences in leaves to tree identification.
Diversity	Plants	B3: Observe and describe how seeds and bulbs grow into mature plants.	Observe the growth of flowers and vegetables that they have planted.	Observe and record with some accuracy, the growth of a variety of plants as they change over time from a seed or bulb, Observe similar plants at different stages of growth
Diversity Systems Cycles	Plants Humans and animals	B4: Find out and describe how plants need water, light and a suitable temperature to grown and stay healthy.	Observe the growth of flowers and vegetables that they have planted. With adult support, nurture these plants.	Set up a comparative test to show that plants need light and water to stay healthy.
Diversity	Animals and humans	B5: Identify and name a variety of common animals that are birds, fish,	Find out and describe how animals look different to one another.	Quick Recall of animal groups and examples of animals in these groups.

		amphibians, reptiles, mammals and invertebrates.	Group together animals according to their different features. Describe how they identify and group animals Recognise similarities between animals:	Apply knowledge of groups to group and classify unfamiliar animals
Diversity	Animals and Humans	B6: Identify and name a variety of common animals that are carnivores, herbivores and omnivores.	Group animals according to what they eat. Explore and describe animal teeth apply this to animal diet. Explore how animals can be grouped in different ways.	Quick recall of definition of herbivore, carnivore and omnivore. Quick recall of animals in each category. Apply knowledge of animal diets to food chains and habits.
Diversity Systems	Animals and humans	B7: Describe the structure of a variety of common animals	Apply knowledge of human body parts to the structure of a range of animals from different animal groups: head, body, way of moving, senses, body covering, tail.	Quick recall of a variety of animal parts. Compare and contrast the structure of animals of different animal groups.
Diversity Systems	Animals and humans Light Sound	B8: Identify, name, draw and label the basic parts of the human body and say which part of associated with each sense.	Recognise that humans are animals. Compare and describe differences in their own features-eye, hair, skin colour. Recognise that humans have many similarities	Quick recall of body parts Basic internal parts extend to eye and ear structure – this links to light and sound

			<p>Name the main body parts including head, neck, arms, elbows, legs, knees, face, ears, eyes, hair, mouth, teeth.</p> <p>Use their senses to compare different textures, sounds and smells.</p>	
Diversity Cycles	<p>Humans and animals</p> <p>Evolution and inheritance</p>	B9: Notice that animals including humans have offspring which grow into adults	Match and name adult and offspring from different animal groups.	<p>Quick recall of parent and offspring of a variety of animals from different animal groups.</p> <p>Apply knowledge to simple lifecycles.</p>
Diversity Cycles Health	<p>Humans and animals</p> <p>Plants</p> <p>RE PHSE</p>	B10: Investigate and describe the basic needs of animals, including humans for survival *water, food air).	Describe the basic needs of humans - link to RE need / want.	<p>Apply knowledge to lifecycles, food chains and habitats.</p> <p>Describe how a habitat meets these basic needs.</p> <p>Describe what animals need to be healthy compared to survive.</p>
Health	<p>Humans and animals</p> <p>PHSE RE</p>	B11: Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.	<p>Describe a healthy diet – breakfast, lunch and snack.</p> <p>Describe how their bodies feel before, after PE.</p> <p>Describe routines for maintaining hygiene.</p>	<p>Name the main food groups.</p> <p>Describe why they are important</p> <p>Describe what a healthy person does and eats.</p> <p>Understand the role of medicines.</p> <p>Ask questions about what things animals [humans]. need for survival & what humans need to stay healthy and</p> <p>Suggesting ways to find answers to their questions</p>

Diversity Systems	Living things Materials	B12: Explore and compare the differences between things that are living, that are dead and things that have never been alive.	<p>Animals have senses to explore the world around them and to help them to survive.</p> <p>Recognise that animals need to be treated with care and sensitivity to keep them alive and healthy.</p> <p>Animals are alive; they move, feed, grow, use their senses and reproduce.</p> <p>Sort materials into natural or manufactured.</p>	<p>Quick recall of Mrs. Gren and the definition of these processes. Organise things into groups of living, dead, never been alive.</p> <p>Sort and classify things as to whether they are living, dead or were never alive.</p> <p>Record their findings using charts</p> <p>Describe how they decided where to place things,</p> <p>Exploring questions such as: 'Is a flame alive? Is a deciduous tree dead in winter?'</p> <p>Talk about ways of answering their questions.</p> <p>Use scientific vocabulary to reason why these groups have been chosen.</p>
Diversity Cycles Energy	Living things	B13: Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants and how they are dependent on each other.	<p>Observe animals in the local environment throughout the year to match describe, explore and answer questions about animals in their habitat.</p> <p>Observe, match and describe plants and animals in a woodland habitat</p>	<p>Describing the conditions in different habitats and micro-habitats (under log, on stony path, under bushes);</p> <p>Finding out how the conditions affect the number and type(s) of plants and animals that live there.</p>
Diversity	Living things	B14: Identify and name a variety of plants and animals in their habitats, including micro-habitats	<p>Match animals to habitat – garden, woodland, pond, park</p> <p>Observe living things in their habitats-wormery</p>	<p>Describe how different kinds of plants and animals live in different kinds of places.</p> <p>Describe how habitats provide the preferred conditions for the animals/plants that live there.</p> <p>Identify different habitats near school which need to be cared for</p>

				Compare animals in familiar habitats with animals found in less familiar habitats, for example, on the seashore, in woodland, in the ocean, in the rainforest.
Diversity Systems Energy	Living things	B15: 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.	Constructing a simple food chain that includes humans (e.g. grass, cow, human).	Research complex food chains – predator / prey / apex predator. Apply knowledge of food chains to simple human impact.
Diversity	Evolution and Inheritance	B16: Identify how humans resemble their parents in many features	Match and name adult and offspring from different animal groups. Match parent to child – sensitivity to families in class.	Quick recall of parent and offspring of a variety of animals from different animal groups. Apply knowledge to simple lifecycles. Describe the main changes as young animal offspring grow into adults (at least: between egg and adult bird; between egg and adult insect; between baby and adult mammal)

Milestone 1 – Chemistry

Big Idea	Knowledge Category	Milestone Indicator - GDIS	Year 1 -LANCS / GDIS	Year 2 – LANCS / GDIS
Diversity	Materials	C1: Distinguish between an object and the material from which it is made.	Name objects in the classroom, outside and around school. Identify the name of the material from which it is made – wood, plastic, glass, metal	<p>Compare the uses of everyday materials in and around the school with materials found in other places (at home, the journey to school, on visits, and in stories, rhymes and songs).</p> <p>Describe in simple terms how objects are made from their original material.</p> <p>Research people who have developed useful new materials; for example, John Dunlop, Charles Macintosh or John McAdam.</p>
Diversity	Materials	C2: Identify and name a variety of everyday materials including wood, plastic, glass, metal, water and rock.	Using objects from around school group objects made from the same material together.	Explore and experiment with a wide variety of materials: brick, paper, fabrics, elastic, foil, common rocks/precious metals, stones, ceramic, different plastics.
Diversity	Materials	C3: Describe the simple physical properties of a variety of everyday materials.	Use simple adjectives to describe objects. Explore, name, discuss and raise and answer questions about everyday materials so that they become familiar with the names of materials and properties such as: hard/soft;	<p>Quick recall of Year 1 properties and examples of materials to match.</p> <p>Extend properties to: waterproof/non waterproof/ absorbent, Opaque, translucent and transparent.</p>

			stretchy/stiff; shiny/dull; rough/smooth; bendy/not bendy.	Apply to the design of new products
Diversity Systems	Materials	C4: Compare and group together a variety of everyday materials on the basis of their simple physical properties.	Using familiar objects pupils should: Group soft / hard Group natural and manufactured objects Group materials into main groups. Choose and describe own groups to sort.	Quick recall of materials and groups. Describe how materials are grouped – common properties of groups Perform simple tests to explore questions, for example: 'What is the best material for an umbrella? ...for lining a dog basket? ...for curtains? ...for a bookshelf? ...for a gymnast's leotard?'
Diversity	Materials	C5: Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.	Apply to Forces – Push and Pull Experiment changing the shape of malleable materials. Name and define the different ways to change the shape.	Decide how to test each criteria. Name the materials to test Organise findings in a table Apply this knowledge to the function of the material / object
Systems Diversity	Materials	C6: Identify and compare the suitability of a variety of everyday materials including wood, metal, plastic, glass, brick/rock and paper/ cardboard for particular uses.	Identify and discuss the uses of different everyday materials – simple objects	Quick recall of the uses of everyday materials in familiar objects. Identify materials which are used for more than one thing (metal can be used for coins, cans, cars and table legs; wood can be used for matches, floors, and telegraph poles) or Identify different materials which are used for the same thing (spoons can

				<p>be made from plastic, wood, metal, but not normally from glass).</p> <p>Identify and explore how properties of materials make them suitable or unsuitable for particular purposes</p> <p>Discuss, research unusual and creative uses for everyday materials.</p>
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Milestone 1 – Physics

Big Idea	Knowledge Category	Milestone Indicator - GDIS	First Step Year 1 -LANCS	Next Step Year 2 - LANCS
Diversity Movement, Motion and mechanisms	Forces	P1: Notice and describe how things move, using simple comparisons such as faster and slower	Explore pushes and pulls in the local environment.	Devise simple tests to explore and measure changes in the movement of different objects.
Diversity Movement, Motion and mechanisms	Forces Electricity	P2: Compare how different things move	Observe and describe the movement of a range of things including magnets.	Compare 1 product that is made in different ways eg a toy car / train / doll. How does it move? What are the components? Which materials are used? What is the mechanism?
Diversity Energy	Light Humans and animals – eye structure Materials - reflective	P3: Observe a variety of sources of light, including electric lights, flames and the sun, explaining that we see things because light travels from them to our eyes.	Observe and name light sources. Describe the difference between a light source and reflected light – moon, mirrors. Observe and explore how shadows are created when the light source is blocked.	Quick recall of light sources. Label diagrams illustrating how light travels to the eye. Experiment with materials which reflect light. Devise simple tests to investigate changing the size of shadows.
Diversity	Sound	P4: Observe and name a variety of sources of sound, noticing that we hear with our ears.	Explore and name a variety of sound sources in the <u>local environment</u> .	Explore and name a variety of <u>musical instruments</u> and categorise sounds.

				Describe how the sound from the Kazoo can be created and changed.
Diversity Energy	Electricity	P5: Identify common appliances that run on electricity.	Name a variety of common appliances. Sort into battery and mains	Quick recall of electrical appliances. Categorise into battery, mains, alternative sources of energy
Systems	Electricity	P6: Construct a simple series electrical circuit	Observe, describe and label the internal workings simple electrical devices.	Name the components of an electrical circuit. Construct a circuit. Identify and fix a broken circuit
Systems Cycles	Earth and Space Seasonal change Light	P7: Observe the apparent movement of the sun during the day	Name different times of the day. Observe changes to their shadow when they stand in the same spot on a sunny day.	Recap understanding of how shadows are created Use knowledge of time and the compass to measure changes in a shadow of an object during the day. Use the globe to explain changes.
Cycles Diversity System	Seasonal change	P8: Observe changes across the 4 seasons.	With teacher support make daily observations about the weather and changes about the weather. Name the 4 seasons. Name the 4 months in each season Name the special features – human, physical of each season.	Complete a daily class calendar including weather/ sunrise / sunset Compare and contrast seasonal changes – link to changes in the local area. Research, record and spot patterns in the changes in day length in each season.

Diversity Cycles System	Seasonal change Earth and space	P9: Observe and describe weather associated with the seasons and how day length varies	Observe and identify types of weather and season associated with it. Name activities associated with each season. Have an awareness of sun safety.	Measure and record weather associated with the seasons using simple tests – weather station Use data logging equipment to record changes in light / temperature. Extreme weather – Geography Time – Maths Research day length at different times of the year.
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Milestone 2 – Biology

Big Idea	Knowledge Category	Milestone Indicator - GDIS	Year 3 – LANCS / POP	Year 4 – LANCS /POP
Systems	Plants	<p>B1: Identify and describe the functions of different parts of flowering plants</p> <p>And B4 could be taught together.</p>	<p>Describe and illustrate the functions if different parts of flowering plants.</p> <p>Pupils should be introduced to the relationship between structure and function: the idea that every part has a job to do.</p> <p>Bulb Project.</p> <p>Roots grow downwards and anchor the plant.</p> <p>Water, taken in by the roots, goes up the stem to the leaves, flowers and fruit.</p> <p>Nutrients (not food) are taken in through the roots. Stems provide support and enable the plant to grow towards the light.</p> <p>Plants make their own food in the leaves using energy from the sun.</p>	<p>Quick recall of parts and function.</p> <p>Quick recall of the parts of flowers</p>
Diversity Cycles	Plants	B2: Explore the requirements of plants for life and growth (air, light, water nutrients from soil to grow)	<p>Grow observe and record the growth of a range of plants.</p> <p>With support set up investigations to compare optimum conditions for growth.</p> <p>Provide opportunities for using data handling.</p>	Grow plants with unfamiliar root systems – strawberry / algae

		and how they vary plant to plant.		
Systems Cycle	Plants	B3: Investigate the way in which water is transported within plants.	Describe and illustrate the functions of different parts of flowering plants.	Investigate the way in which water is transported within plants – Set up simple tests to prove or disprove that roots act like straws sucking up water for the plant.
Systems Cycles	Plants	B4: Explore the role of flowers in the lifecycle of flowering plants, including pollination, seed formation and seed dispersal.	Label the parts of a flower. Link the parts to their function in pollination and seed formation. Sequence the stages in a plant lifecycle.	Identify and describe the function of the parts of a flower Apply knowledge to different flowers. Quick Recall of the stages of a plant lifecycle Describe how seeds are formed and dispersed.
Health Systems	Animals and humans	B5: Identify that animals, including humans need the right amounts of nutrition that they cannot make their own food and they get nutrition from what they eat.	Plant nutrition when investigating plant conditions. Name the food groups and their role in good health for humans.	Linked to digestion. Compare and contrast the diets of different animals (including their pets). Decide ways of grouping them according to what they eat. Research different food groups and how they keep us healthy. Designing meals based (Create / Invent/ Design) on what they find out.
Systems Diversity Energy	Animals and humans	B6: Construct and interpret a variety of food chains, identifying producers and prey.	Recap work on basic teeth structure from Year 1. Recap vocabulary from Year 2. Construct and interpret simple food chains with animals from contrasting locations (B12).	Apply knowledge from knowledge categories: teeth, animal groups and habitats. Construct and interpret a variety of food chains, identifying producers, predators and prey (<i>NB Link with types of teeth and eating.</i>)

Systems Diversity	Animals and humans	B7: Identify that human and some animals have skeletons and muscles for support, protection, and movement.	<p>Quick recall of body parts from year 2.</p> <p>Compare the skeletons of birds, mammals, fish, amphibians, or reptiles.</p> <p>Identify similarities (backbone, ribs, skull, bones used for movement) and the differences in their skeletons.</p> <p>Explain how muscles, are attached to the skeleton for movement.</p> <p>Explore how humans grow bigger as they reach maturity by making comparisons linked to body proportions and skeleton growth – e.g. do people with longer legs have longer arm spans?</p>	<p>Quick recall of main bones.</p> <p>Link location of the parts of digestions with the skeleton.</p> <p>Identify animals without internal skeletons/backbones (invertebrates) and describe how they have adapted other ways to support themselves, move & protect their vital organs.</p> <p>Animals with or without a backbone – Classification</p>
Systems	Animals and humans	B8: Describe the simple functions of the basic part of the digestive system.	<p>Recall of food groups</p> <p>Recall of body parts year 2</p> <p>Recall of types of teeth</p>	<p>Quick recall teeth type and function.</p> <p>Identify the main body parts associated with the digestive system, for example, mouth, tongue, teeth, oesophagus, stomach and small and large intestine and explore questions that help them understand their special functions.</p> <p>Link function to the digestion of different food groups</p>
Diversity Systems Health	Humans and animals Evolution and inheritance	B9: Identify the different types of teeth in humans and their simple functions.	<p>Label the parts of the mouth</p> <p>Describe the functions of teeth. Link the function to eating</p> <p>Compare the teeth of carnivores and herbivores – link to food chains</p>	<p>Quick recall of types of teeth and function when learning about <u>digestion</u>.</p> <p>Quick recall of teeth types and shape related to function when learning about <u>food chains</u>.</p>

			Investigate and report on what damages teeth and how to look after them.	
Systems Diversity	Living things	B10: Recognise that living things can be grouped in different ways.	<p>Quick recall of animal groups. Quick recall of groups based on diet.</p> <p>Explore possible ways of grouping a wide selection of living things that include animals and flowering plants and non-flowering plants,</p> <p>Sort vertebrate animals into groups such as fish, amphibians, reptiles, birds, and mammals;</p>	<p>Quick recall of the different ways living things can be organised.</p> <p>Explore ways of grouping animals according to the habitat they live.</p> <p>Identify the different animals groups within a habitat – food chains</p>
Systems Diversity	Living things	B11: Explore and use classification keys.	<p>To be able to use a classification key to identify minibeasts.</p> <p>To be able to use a classification key to identify trees from the shape of their leaves.</p>	<p>Use keys to support understanding of flowering plants (including grasses) and non-flowering plants, such as ferns and mosses.</p> <p>Apply knowledge of keys to identify rocks.</p>
Diversity	Living things	<p>B12: Recognise that environments can change and that this can pose dangers to specific habitats.</p> <p>Link to B15</p>	<p>Recall of Mrs. Gren</p> <p>Research and investigate local impact of humans on the environment – forest school / Eco School / litter / waste / electricity / light pollution cars etc.</p>	<p>Recall of Mrs. Gren</p> <p>Research and report on examples of human impact on environments, for example, the positive effects of nature reserves, ecologically planned parks or garden ponds, and the negative effects of population and development, litter or deforestation.</p>
Diversity Cycles	Evolution and Inheritance	B13: Identify how plants and animals, including humans resemble	Observe and label the resemblance between plants and those from their seed.	

Energy		their parents in many features.		
Diversity	Evolution and inheritance.	B14: Recognise that living things have changed over time and that fossils provide information about how living things that inhabited the Earth millions of years ago.		<p>Name and describe a variety of plant and animal fossils.</p> <p>Explain the process of fossil formation link to rock formation.</p>
Diversity Systems Energy	Evolution and inheritance	<p>B15: Identify how animals and plants are suited to an adapt to their environment in different ways.</p> <p>Link to B12,</p>	<p>Recap Mrs. Gren Link to skeletons, diet, food chains, animal groups.</p> <p>Identify animals and plants that live in contrasting habitats. Research the similarities and differences.</p> <p>Apply to how they have adapted to survive.</p>	<p>Apply knowledge of habitats to Investigate specific occurrences of adaptation.</p> <p>Link to conservation.</p> <p>Link into B12.</p>

Milestone 2 – Chemistry

Big Idea	Knowledge Category	Milestone Indicator - GDIS	Year 3	Year 4
Diversity	Materials	C1: Compare and group together different kinds of rocks basis of their simple physical properties.	<p><i>Quick recall of different materials</i></p> <p><i>Quick recall of the functions of different materials.</i></p> <p><i>Quick recall of vocabulary used to describe different materials.</i></p> <p>Observe rocks, including those used in buildings.</p> <p>Recognise that rocks can feel and look different.</p> <p>Recognise that rocks can be different in different places/environments.</p> <p>Describe the properties of rocks.</p> <p>Apply the property of rocks to their uses.</p>	<p>Quick recall of material vocabulary.</p> <p>Identify and name common rocks using (equipment) a hand lens or microscope to help them.</p> <p>Identify and classify rocks according to whether they have grains or crystals, and whether they have fossils in them.</p> <p>Investigate what happens when rocks are rubbed together (<u>classify according to hardness</u>) or what changes occur when they are in water.</p> <p>Group rocks based on properties.</p> <p>Use classification keys to support grouping and naming.</p>
Diversity	Materials	C2: Relate the simple properties of rocks to their formation.	<p>Identify and Name rocks</p> <p>Use observations of rocks and their simple properties to groups them into – igneous and sedimentary.</p>	<p>Quick recall of rock names.</p> <p>Describe the properties of groups of rocks.</p>

				Use models, illustrations and key vocabulary to describe rock formation.
Diversity Cycles	Materials	C3: Describe in simple terms how fossils are formed when things that have lived are trapped within sedimentary rock.		Apply knowledge of rock formation to describe fossil formation. Use classification keys to name types of fossils.
Diversity Cycles	Materials	C4: Recognise that soils are made from rocks and organic matter.	<p>Explore different soils.</p> <p>Recognise that soils can feel and look different.</p> <p>Recognise that soils can be different in different places/environments.</p> <p>Investigate and describe the composition of soil</p> <p>Identify similarities and differences between them.</p> <p>Linked with work in geography, pupils should explore different kinds of rocks and soils, including those in the local environment.</p>	
Cycles	Materials	C5: Compare and group materials together according to whether they are solids, liquids or gases.	<p>Grouping and classifying a variety of different materials – physical familiar objects.</p> <p>Introduce scientific names.</p>	<p>Grouping and classifying a variety of different materials – some physical objects but also unfamiliar photos samples.</p> <p>Increase vocabulary of chemicals and substances,</p>

Systems Diversity	Materials	C6: Observe that some materials change state when they are heated or cooled and measure the temperature at which this happened in degrees Celsius building on the teaching of Mathematics.	Investigate the effect of heating and cooling everyday materials. Explore Observe and describe the effect of temperature on substances such as chocolate, butter, cream (for example, to make food such as chocolate crispy cakes and ice-cream for a party).	Measure and record changes in temperatures and everyday materials are heated and cooled. Research and use diagrams and scientific vocabulary to describe the temperature at which materials change state, for example, when iron melts or when oxygen condenses into a liquid.
		C7: Identify the part played by evaporation and condensation in the water cycles and associate the rate of evaporation with temperature.	Observe and define and investigate evaporation and condensation. Observing and recording evaporation over a period of time, such as a puddle in the playground or washing on a line. Investigating the effect of temperature on washing drying or snowmen melting	Define key terms. Investigate the Water Cycle Use the data logger to detect/measure and compare temperatures – use this to create graphs. Link to water transportation in plants.

Milestone 2 – Physics

Big Idea	Knowledge Category	Milestone Indicator - GDIS	Year 3 -LANCS /GDIS	Year 4 – LANCS/GDIS
Diversity Movement, Motion and mechanisms	Forces Materials	P1: Compare how things move on different surfaces	<p>Recap TAPS task year 2.</p> <p>Compare how different things move and group them.</p> <p>Apply observations of movement on different surfaces to friction.</p> <p>Raise questions and carry out tests to find out how far things move on different surfaces.</p> <p>Gather and record data to find answers to their questions.</p>	
Movement, Motion and mechanisms	Forces Magnets	P2: Notice that some forces need contact between 2 objects, but magnetic forces can act at a distance.	Looking for patterns in the way that magnets behave in relation to each other and what might affect this, for example, the strength of the magnet or which pole faces another.	Recap when looking at P5.
Diversity Energy	Forces Magnets	P3: Observe how magnets attract or repel each other and attract some materials and not others	<p>Explore the strengths of different magnets Designing a fair way to compare them.</p> <p>Sort materials into those that are magnetic and those that are not.</p>	

Diversity Systems	Magnets Materials	P4: Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet.	<p>Identify some magnetic materials</p> <p>Explore the behaviour and everyday uses of different magnets (for example, bar, ring, button, horseshoe).</p> <p>Identify how these properties make magnets useful in everyday items and suggesting creative uses for different magnets.</p>	
Systems Cycles	Magnets	P5: Describe magnets having 2 poles	Geography KS1	<p>Quick Recall of Magnetic / Non-Magnetic materials.</p> <p>Label North and South Pole on Magnets.</p> <p>Explain why magnets have poles</p> <p>Apply knowledge to North and South Pole – iron core.</p>
Systems	Magnet Movement Motion and Mechanisms	P6: Predict whether 2 magnets will attract or repel each other depending on which poles are facing.		<p>Make predictions about whether 2 magnets will repel or attract. Set up investigations and record results.</p> <p>Apply knowledge of magnets to create a moving toy</p>
Systems Cycles	Light	P7: Recognise that light is required in order to see things and that dark is the absence of light.	Cover with P18 and 19	

System Diversity	Light Materials	<p>P8: Notice that light is reflected from surfaces.</p> <p>Recognise that light from the sun can be dangerous and that there are ways to protect your eyes.</p>	<p>Cover in a block with 18 – 19.</p> <p>Link to materials and their properties work in Year 2.</p> <p>Observe, describe, label light reflected from surfaces.</p> <p>Group materials on their reflective properties. Apply this to opaque, transparent, and translucent.</p>	<p>Quick recall of the properties of materials including reflective, magnetic, conductors.</p> <p>Practical applications of reflective surfaces.</p> <p>Link to reflection of the sun's light on the moon.</p>
Health	Light	P9: Recognise that light from the sun can be dangerous and that there are ways to protect your eyes.	PHSE Health	PHSE Health
Energy	Light	P10: To recognise that shadows are formed when light from a source is blocked by a solid object	Continuous provision – shadow stick.	<p>Quick recall light sources</p> <p>Quick recall transparent, translucent, opaque.</p> <p>Explore what happens when light reflects off a mirror or other reflective surfaces, including playing mirror games to help them answer questions about how light behaves.</p> <p>Observe and measure shadows and find out how they are formed and what might cause shadows to change.</p>

Diversity Energy	Light	P11: Find Patterns in the way the size of a shadow changes.		Describe how shadows are formed. Generate questions Spot patterns in what happens to shadows when the light source moves or the distance between the light source and the object changes. Find ways to measure patterns.
Energy Diversity Systems	Sound Materials	P12: Identify how sounds are made, associating some of them with something vibrating.	Link to music lessons Explore and investigate how sounds are made by the instruments being learnt in class.	Recognise that sounds can be made in a variety of ways (pluck, bang, shake, blow) using a variety of things (instruments, everyday materials, body). Finding patterns in the sounds that are made by different objects such as saucepan lids of different sizes or elastic bands of different thicknesses. Make [create/invent/design] and play their own instruments by using what they have found out about pitch and volume. Investigate how sounds travel away from their source in all directions. Explore how vibrations may not always be visible to the naked eye.

Movement Motion and Mechanisms	Sound Materials	P13: Recognise that vibrations from sounds travel through a medium to the ear.	Sounds can travel through solids, liquids and air/gas by making the materials vibrate. Sound travel can be reduced by changing the material that the vibrations travel through. Sound travel can be blocked.	Sounds are heard when they enter our ears (although the structure of the ear is not important key learning at this age phase). They might make ear muffs from a variety of different materials to investigate /test which provides the best insulation against sound. Use data logging equipment to detect/measure and compare sounds.
Diversity Systems	Electricity	P14: Identify common appliances that run on Electricity.	Quick recall of appliances from Year 2 as a starter – vocabulary.	Quick recall of appliances from Year 2 as a starter – vocabulary. Quick sort of mains / battery / other.
Systems	Electricity	P15: Construct a simple series electrical circuit, identifying and naming its basic parts including cells, wires, bulbs, switches and buzzers.	Choose appropriate parts from a range of equipment to construct a circuit.	
Systems	Electricity	P16: 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.	Investigate	
Systems	Electricity Materials	P17: Recognise that a switch opens and closes a circuit and associate this with whether a lamp lights a simple series circuit.		Quick recall constructing a circuit. Recognise and systematically fix errors in a circuit. Pupils should construct simple series circuits, trying different components,

				<p>for example, bulbs, buzzers and motors, and including switches, and use their circuits to create simple devices.</p> <p>Pupils should draw the circuit as a pictorial representation, not necessarily using conventional circuit symbols at this stage; these will be introduced in Year 6.</p> <p>Informally use the terms current and voltage, but these should not be introduced or defined formally at this stage.</p> <p>Take precautions for working safely with electricity.</p> <p>Observe/notice patterns, for example, that bulbs get brighter if more cells are added, some materials can and some cannot be used to connect across a gap in a circuit.</p>
Systems	Electricity Materials	P18: Recognise some common conductors and insulators and associate metals with being good conductors.		<p>Quick recap if materials that are magnetic.</p> <p>Link with P17 – design a switch – which materials to use.</p>

				Observing/noticing patterns , that metals tend to be conductors of electricity
Cycles Systems	Earth and Space Seasonal change	P19: Describe the movement of the Earth relative to the sun in the Solar system.	Label a diagram of the solar system Explain why Earth's movement gives rise today and night – Link this to P7. Explain why the Earth's Movement gives rise to the seasons.	Covered Year 5 – cycles – linked with English work.
Cycles Systems	Earth and Space Seasonal change	P20: Describe the movement of the moon relative to the Earth.		Covered in Year 5 – linked with English work.

Milestone 3 – Biology

Big Idea	Knowledge Category	Milestone Indicator - GDIS	Year 5 – LANCS / GDIS	Year 6 – LANCS / GDIS
Systems Diversity	Evolution and inheritance Plants Animals	B1: Relate Knowledge of plant studies to evolution and inheritance.	<p>Quick recall of work in Year 4 about human impact.</p> <p>Links to B12</p> <p>Plants and animals surviving in different environments</p> <p>Research examples of variation in offspring over time demonstrate an understanding that this makes animals more / less able to survive specific environments.</p> <p>Comparing how some living things adapt to survive in extreme conditions, e.g. cactuses, penguins and camels.</p> <p>Analysing the advantages and disadvantages of specific adaptations, such as being on two feet rather than four, having a long or a short beak, having gills or lungs, tendrils on climbing plants, brightly coloured and scented flowers.</p>	<p>Quick recall of Year 4 work Fossils.</p> <p>Links to History research work of palaeontologists such as Mary Anning and about how Charles Darwin and Alfred Wallace developed their ideas on evolution.</p>
Diversity Cycles	Plants	B2: Relate knowledge of plants to studies of all living things.	Quick recall life processes	<p>Microorganisms – TAPS</p> <p>Link to Classification</p>

Cycles Diversity	Animals and humans	B3: Describe the changes as humans develop in old age.	Describe the changes to the human body from childhood to adult hood. Investigate and compare measurable characteristics As part of work on the circulatory system – investigate changes in blood pressure – children and adults.	Year 6 will learn about the Reproductive systems as their system therefore changes will focus on this.
Systems	Animals and humans	B4: Identify and name the main parts of the human circulatory system /human reproductive system	Quick recall year 3 Skeletal system Quick recall Year 4 Digestive system Identify, draw and label parts of the human circulatory system. Explain the function of parts including veins and parts of the heart. As part of work on B3 investigate blood pressure. Observing/Measuring changes to breathing, heartbeat and or pulse rates after exercise.	Quick recall year 3: Skeletal system Quick recall Year 4: Digestive system Quick recall Year 5: Circulatory System Identify, draw, and label parts of the human reproductive system- male and female. Explain the function of parts. Link to PHSE work on Puberty.
Systems Health	Humans and animals	B5: Recognise the importance of diet, exercise, drugs and lifestyle on the way the human body functions.	Exploring the work of scientists and Scientific research about the relationship between diet, exercise, drugs, lifestyle and health. Observe, measure, record and describe the effect of exercise. Link to B4	PHSE curriculum.

			Research and describe the effect of diet, drug use.	
Systems Diversity	Humans and animals	B6: Describe the way nutrients and water are transported within animals and humans.		Quick recall year 3: Skeletal system Quick recall Year 4: Digestive system Quick recall Year 5: Circulatory System Describe the relationship between different systems in the human body. Describe and draw how water and nutrients are transported through the body Apply knowledge of humans to plants.
Cycles Diversity	Living things. Animals and humans	B7: Describe the differences in the lifecycles of a mammal, amphibian, insect and bird.	Draw, label and describe the stages of these lifecycles. Compare and contrast the stages in different animal groups.	Continuous provision Quick recall of these lifecycles when looking at the Human reproductive
Cycles Diversity	Living things	B8: Describe the life process of reproduction in some plants and animals.	Integration of the stages of the Plant Life cycle from Year 3 and 4. Label male and female parts of the flower and link to reproductive function. Compare similarities and differences to lifecycle work in different animal groups.	Compare stages of plant Lifecycle to human reproduction.
Systems Diversity	Living things.	B9: Describe how living things are classified into broad groups according to common observable characteristics	Quick recall of classification – living / non living / animal groups Sort vertebrate animals into groups such as fish, amphibians, reptiles, birds, and	Research and apply the work of Linnaeus. Extend this to identifying microorganisms. Researching unfamiliar animals and plants from a broad range of other habitats and

			<p>mammals; and invertebrates into snails and slugs, worms, spiders, and insects.</p> <p>Using classification systems and keys.</p> <p>Identifying [grouping and classifying] some animals and plants in the immediate environment.</p>	decide where they belong in the classification system [grouping and classifying] .
Systems Diversity	Living things	B10: Give reasons for classifying plants and animals based on specific characteristics.	Describe reasons for grouping (as above) using scientific vocabulary.	Research Microorganisms
Diversity Cycles	Living things	B11: Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.		<p>Quick recall of fossil formation and fossil types Year 4.</p> <p>Research and apply work of Mary Anning.</p> <p>Research work of Darwin Apply to how bird beaks are adapted to function.</p>
Cycles Systems Diversity	Living things	B12: Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.	Links to B1	<p>Observe and describe differences in parents and offspring.</p> <p>Explore the idea that characteristics are passed from parents to their offspring.</p> <p>Apply to different breeds of dogs, and what happens when, for example, Labradors are crossed with poodles.</p>

Milestone 3 – Chemistry

Big Idea	Knowledge Category	Milestone Indicator - GDIS	Year 5	Year 6
Diversity	Materials	C1: Compare and group together everyday materials based on evidence from comparative tests, including hardness, solubility, conductivity (electrical, thermal) and response to magnets.	<p>Teach, plan, do, review then apply(C4)</p> <p>Teach solubility separately as this will be first time covered.</p> <p>.</p> <p>Test materials systematically to build an understanding of materials</p> <p>Comparing the properties of a broad range of materials and relating these to what they learnt about magnetism in Year 3 and about electricity in Year 4.</p> <p>Name and describe a wide range of material based on the range of properties.</p>	Continuous Provision Vocab lists
Systems – to test this material we will.	Materials	C2: Understand how some materials will dissolve in liquid to form a solution	<p>Teach, plan, do, review then apply(C4)</p> <p>Observe and describe dissolving</p> <p>Test potential solutes – systematically</p> <p>Group materials based on solubility in different solutes (Link to C1).</p>	Continuous Provision Vocab lists

			Describe dissolving using knowledge of matter. Observe and describe processes. Test potential solutes – systematically	
	Materials	C3: Use knowledge of solids, liquids and gases to decide how mixtures can be separated – filtering, sieving and evaporating.	Solids, liquids and gases – Vocab lists to review from Year 4.	<p>Teach, plan, do, review then apply(C4)</p> <p>Quick recall of solids liquids and gases vocab.</p> <p>Define filtering, sieving and evaporating.</p> <p>Understand when each proves is chose.</p> <p>Observe and describe processes.</p> <p>Experiment with a range of materials</p> <p>Link knowledge to reversible changes (C5).</p> <p>Use this knowledge to problem solve.</p>
Diversity	Materials	C4: Give reasons based on evidence from comparative and fair tests for the particular uses of everyday materials including metals, wood and plastic.	<p>Apply to the milestone indicators covered in the year group.</p> <p>C1 C2</p>	<p>Apply to the milestone indicators covered in the year group.</p> <p>C5 C6 C3</p>

			Carry out tests to answer questions such as 'Which materials would be the most effective for making a warm jacket, for wrapping ice cream to stop it melting, or for making blackout curtains?'	
	Materials	C5: Demonstrate that dissolving, mixing and changes of state are reversible changes.	Link this to Dissolving.	Teach, plan, do, review then apply(C4) Link to mixing and changes of state.
	Materials	C6: 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, oxidation and the action of bicarbonate of soda.		Teach, plan, do, review then apply(C4). Observe and describe Investigate including changes associated with burning, and the action of acid on bicarbonate of soda (producing a gas / fizzing). Explore everyday chemical reactions: rusting and other reactions, for example vinegar with bicarbonate of soda. Research how chemists create new materials, for example Spencer Silver, who invented the glue for sticky notes or Ruth Benerito, who invented wrinkle-free cotton.

				<p>Observing and comparing the changes that take place, for example, when burning different materials or baking bread or cakes.</p> <p>Researching and discussing how chemical changes have an impact on our lives, for example cooking.</p> <p>Discuss [research] the creative use of new materials such as polymers, super-sticky and super-thin materials.</p> <p>Explain how they know when a change is reversible or irreversible</p> <p>Introduction of chemical equations – chemical sentences.</p>
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Milestone 3 – Physics

Big Idea	Knowledge Category	Milestone Indicator - GDIS	Year 5 -LANCS /GDIS	Year 6 – LANCS/GDIS
	<p>Forces and Magnets</p> <p>Materials</p>	<p>P1: Describe a magnet as having 2 poles.</p> <p>C1: Compare and group together everyday materials based on evidence from comparative tests, including hardness, solubility, conductivity (electrical, thermal) and their response to magnets.</p>	<p>Teach as part of a chemistry block</p> <p>Link to Earth and space – seasons/ rotation of the Earth.</p> <p>Teach, plan, do, review then apply(C4)</p> <p>Recap Magnetism from Milestone 2</p> <p>Test materials systematically to build an understanding of materials</p> <p>Compare the properties of a broad range of materials and relate this to magnetism.</p> <p>Name and describe a wide range of material based on the range of properties.</p> <p>Label North and South pole on Magnets.</p>	
	<p>Forces and Magnets</p> <p>Materials</p>	<p>P2: Predict whether two magnets will attract or repel each other, depending on which 2 poles are facing.</p> <p>C1: Compare and group together everyday materials based on evidence</p>	<p>Teach as part of Chemistry block</p> <p>Test materials systematically to build an understanding of magnets including looking at how magnets attract and repel.</p>	

		from comparative tests, including hardness, solubility, conductivity (electrical, thermal) and response to magnets .		
Motion, Movement and Mechanisms	Forces Earth and space	P3: Explain that unsupported objects will fall to Earth because of the force of gravity acting between the Earth and the falling object.	Link to movement of spherical bodies in space. Observe and describe the effect of the force of gravity.	
Motion, Movement and Mechanisms	Forces	P4: Identify drag forces such as air resistance , water resistance and friction that act between moving surfaces.	Air resistance – Rockets Quick Recall of Friction – Milestone 2 Investigate how air resistance can be useful or unwanted. Test how the effects air resistance can be reduced or increased for a preferred effect. Observe and describe how more than one force can act on an object simultaneously (either reinforcing or opposing each other).	Quick Recall of Friction Milestone 2 and Air Resistance Year 5 Investigate how water resistance can be useful or unwanted. Test the effects of water resistance can be reduced or increased for a preferred effect. Observe how more than one force can act on an object simultaneously (either reinforcing or opposing each other).
Motion, Movement and Mechanisms	Forces	P5: Describe in terms of drag forces, why moving objects that are not driven tend to slow down.	Air resistance – Rockets Exploring falling paper cones or cup-cake cases.	Water Resistance Explore Floating and sinking

			<p>Designing and making [exploring] a variety of parachutes.</p> <p>Carrying out fair tests to determine which designs are the most effective.</p> <p>Explore falling objects and raise questions about the effects of air resistance.</p> <p>Explore the effects of air resistance by observing how different objects such as parachutes and sycamore seeds fall.</p> <p>Experience forces that make things begin to move, get faster or slow down.</p>	<p>Exploring resistance in water by making and testing boats of different shapes.</p> <p>Carry out fair tests to determine which designs are the most effective.</p>
Motion, Movement and Mechanisms	Forces and motion	P6: Understand that force and motion can be transferred through mechanical devices such as gears, pulleys, levers and springs.	<p>Explore mechanisms through DT tasks, lego and toys.</p> <p>Pupils might find out how scientists such as Galileo Galilei and Isaac Newton helped to develop the theory of gravitation.</p> <p>Observe and describe how the mechanisms work.</p>	<p>Pupils should explore the effects of levers, pulleys and simple machines on movement.</p> <p>Design and make [create/invent/design] artefacts that use simple levers, pulleys, gears and/or springs and explore their effects.</p>
Motion, Movement and Mechanisms	Forces and motion	P7: Understand that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect.	Continuous provision	Systematically test the effect of using levers and pulleys to lift heavy objects.

				<p>Demonstrate and explain how these mechanisms allow a small force to have a greater effect.</p> <p>Observe and describe gears on a bike and how they work to make movement easier.</p>
	Light	P8: Understand that light appears to travel in straight lines.	<p>Build on the work in year 3,</p> <p>Recap light sources, reflection and shadows.</p> <p>Discuss observation make predictions.</p> <p>Observe and explore where to place rear-view mirrors on cars.</p> <p>Designing and making [Create / Invent / Design] a periscope and using the idea that light appears to travel in straight lines to explain how it works.</p>	Continuous provision – books Light Kit
	Light	P9: Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eyes.	<p>Label diagrams</p> <p>Explore and observe rainbows, colours on soap bubbles, objects looking bent in water and coloured filters</p>	
	Light	P10: Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them and to predict the size of shadows when the position of the light sources changes.	<p>Investigate the relationship between light sources, objects and shadows by using shadow puppets.</p> <p>Explain why shadows are longer / shorter in different seasons.</p>	

	Light	P11: Explain that we see things because light travels from light sources to our eyes.	Apply to why we can't always see the moon	
	Sound	P12: Find patterns between the pitch of sound and features of the object that produced it.	Music lessons	<p>Explore and identify the way sound is made through vibration in a range of different musical instruments from around the world.</p> <p>Research how the pitch of sounds can be changed in a variety of ways.</p> <p>Observe and describe differences in pitch.</p> <p>Explain how pitch can be affected by the features of the object that produced it.</p>
	Sound	P13: Find patterns between the volume of a sound and the strength of the vibrations that produced it.		<p>Make observation about the differences in the volume of a sounds and the strength of the vibrations that produced this.</p> <p>Recognise that sounds can be made in a variety of ways (pluck, bang, shake, blow) using a variety of things (instruments, everyday materials, body).</p> <p>Research how volume of sounds can be changed in a variety of ways.</p>

				<p>Sounds travel away from their source in all directions.</p> <p>Vibrations may not always be visible to the naked eye.</p> <p>Test and measure these observations.</p> <p>Use data logging equipment to detect/measure and compare sounds.</p>
	Sound	P14: Recognise that sounds get fainter as the distance from the sound source increases.		<p>Systematically test the pattern between the volume and distance.</p> <p>Apply to thunder and lightening</p> <p>Use data logging equipment to detect/measure and compare sounds.</p>
Energy	Electricity	P15: Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells in a circuit.	<p>Building on their work in Year 4, pupils should construct simple series circuits, to help them answer questions about what happens when they try different components, for example, switches, bulbs, buzzers and motors.</p> <p>Represent a simple circuit in a diagram using recognised symbols.</p>	

			<p>Research a variety of cells</p> <p>Define voltage</p> <p>Observe and describe how changing the voltage effects the devices in a circuit.</p>	
Energy	Electricity	P16: Compare and give reasons for variations in how components function including the brightness of bulbs the loudness of buzzers and the on/off positions.	Test the effect of placing extra components.	TAPS – Christmas Cards Apply to mechanisms?
Energy	Electricity	P17: Use recognised symbols when representing a simple circuit in a diagram.	<p>Use symbols to draw the changes made in P15 and P16.</p> <p>Use/<u>interpret circuit diagrams</u> to construct a variety of more complex circuits predicting whether they will 'work'.</p>	Use symbols to draw the changes made in P16.
Energy	Earth and Space	P18: Describe the movement of the Earth relative to the sun in the Solar system.	<p>Describe the movement of the Earth relative to the sun.</p> <p>Apply this to seasonal changes</p> <p>Label Solar System</p> <p>Comparing the time of day at different places on the Earth through internet links and direct communication.</p> <p>Creating simple models of the solar system.</p>	Maths – Time Zones

			<p>Constructing simple shadow clocks and sundials, calibrated to show midday and the start and end of the school day.</p> <p>Finding out why some people think that structures such as Stonehenge might have been used as astronomical clocks.</p>	
Energy	Earth and space	P19: Describe the movement of the moon relative to the Earth.	<p>Identify the sun and Moon and Earth</p> <p>Describe the movement of the moon.</p> <p>Name the phases of the moon.</p> <p>Apply to calendar</p>	