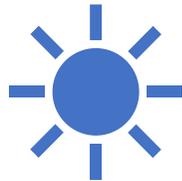
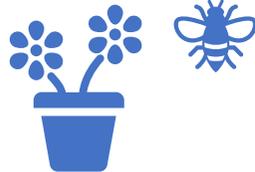


Understanding the World

- The Natural World

Concept Progression

The curriculum needs to be ambitious. Careful sequencing will help children to build their learning over time - Development Matters 2021 A high-quality science curriculum not only identifies the important concepts and procedures for pupils to learn, it also plans for how pupils will build knowledge of these over time. This starts in the early years. Ofsted Research Review: Science April 2021



Contents:

- **Key concepts in science**
- **Role of the adult**
- **Key scientific themes**
 - Materials (including natural)
 - Living things – Animals (including humans) / Plants
 - Different Environments / Different countries
 - Natural phenomena
 - How Things Work / Exploring Different Processes

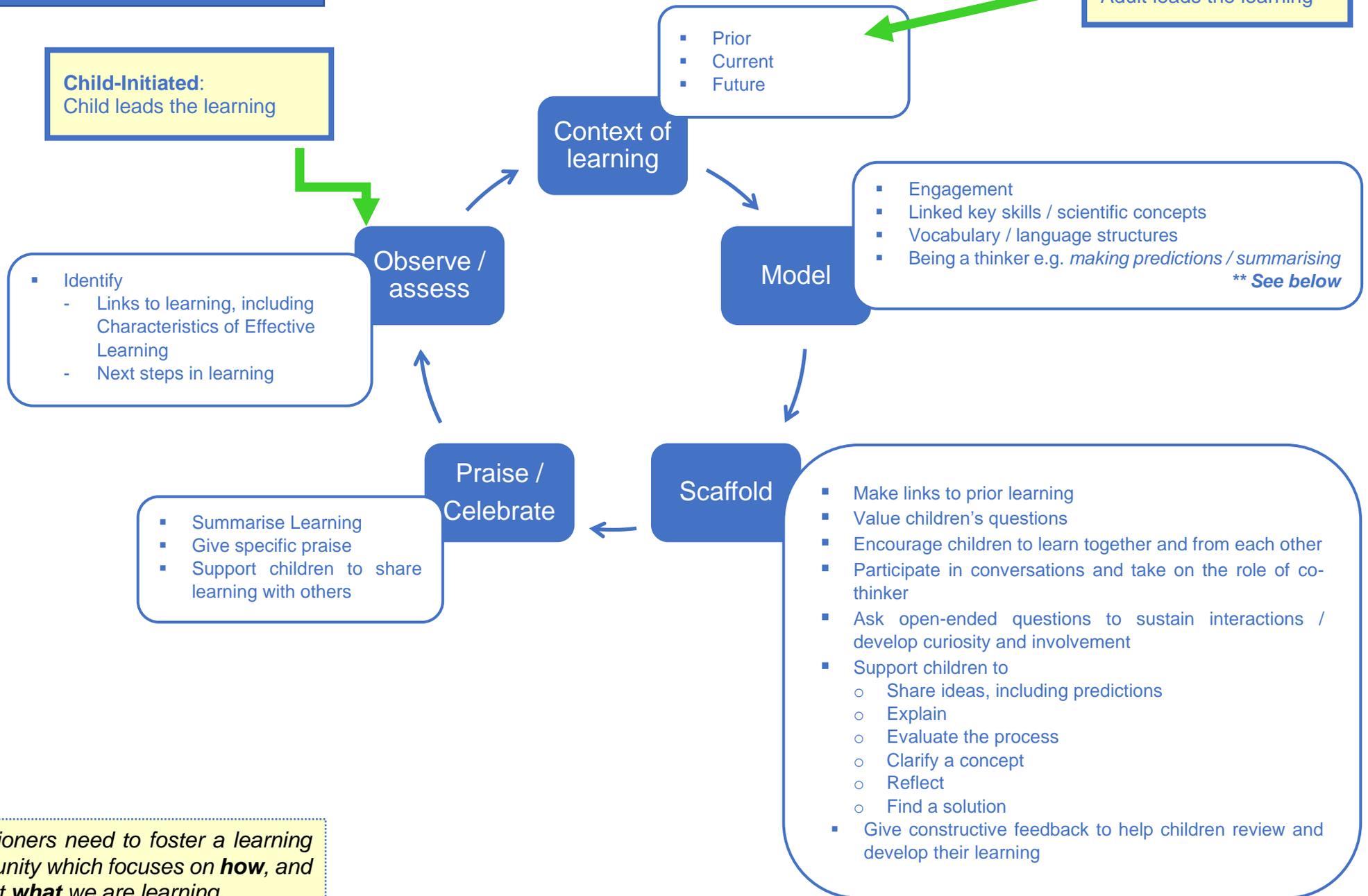
Key Concepts in Science

Key Concept	Description	EYFS Example
Organisation	Scientists have made the study of science more manageable by organising and classifying objects & natural phenomena. For example: natural objects can be assembled in hierarchies (<i>atoms, molecules, mineral grains, rocks, strata, hills, mountains, planets</i>) or arranged according to their complexity (<i>single-cell amoeba, sponges... on to mammals</i>)	<i>Children can learn to sort objects according to their characteristics e.g. leaves, shells, flowers etc.</i>
Systems	Scientists organise various components into systems. A system may be defined as a set of interconnected parts which function together as a complex whole. A solar system, for instance, contains a sun, planets, moons, dwarf planets and comets.	<i>Children can begin to learn about: their digestive system - how their mouth, tongue, teeth and tummy work together; a pulley system in the sand or water; or the ecosystem e.g. how the flowers and bees work together.</i>
Cause & Effect	Nature behaves in predictable ways. Searching for explanations is the major activity of science; effects cannot occur without causes.	<i>Children can learn about cause and effect by observing: the effect that light, water, and warmth have on seeds and plants; or how heating the ice makes it melt.</i>
Scale	The use of scale quantifies measurable items. Each type of scale has its own respective units of measurement. An example of relative scale is an astronomer using a large beach ball to represent the sun and several balls of various sizes for planets.	<i>Children can begin to compare quantities and sizes of a wide variety of objects. They also begin to understand that if they were making a model of an elephants and a mouse, the mouse should be much smaller than the elephant.</i>
Models	We create or design objects that represent other things.	<i>Children can make a picture or model to represent something they have observed.</i>
Change	The natural world continually changes, although some changes may be too slow to observe. Rates of change vary.	<i>Children can also observe and describe changes in the properties of water when it melts or freezes.</i>
Structure & Function	A relationship exists between the way organisms and objects look (feel, smell, sound, and taste) and the things they do.	<i>Children can learn that skunks let off a bad smell to protect themselves or to understand why a bird has a beak.</i>
Variation	To understand the concept of organic evolution, we first need to understand that all organisms and objects have distinctive properties. Some of these properties are so distinctive that no continuum connects them – e.g. living and non-living things. However, in most of the natural world, the properties of organisms and objects vary continuously.	<i>Children can learn to observe and arrange leaves by their colour tones.</i>
Diversity	This is the most obvious characteristic of the natural world. Even very young children know that there are many types of objects and organisms.	<i>Children can begin to learn about the importance of diversity in nature. They could explore and investigate a pond, for instance, to learn that different organisms feed on different things.</i>
Two Key Processes – Linked to Mathematical Development		
Equivalence	<i>What is the same about?</i>	
Transformation	<i>What is different or what has changed?</i>	

Role of the Adult

Adult Led:
Adult leads the learning

Child-Initiated:
Child leads the learning



*Practitioners need to foster a learning community which focuses on **how**, and not just **what** we are learning.*

Item 11. Encouraging sustained shared thinking in investigation and exploration			
Inadequate	Minimal	Good	Excellent
<p>1.1: Very little exploration and investigation is encouraged</p>	<p>3.1: Staff set out activities and open-ended resources deliberately to encourage exploration.</p>	<p>5.1: Staff encourage the children to use their imagination and creativity to explore and experiment. They encourage children to bring resources/ scientific equipment from area to area. <i>Staff encourage children to play with resources in an exploratory way e.g. mixing paint to look at colour change rather than painting, freezing small toys in ice to discover and talk about melting. They encourage children to use scientific and maths resources in their play, e.g. pipettes, magnifying glasses etc.</i></p>	<p>7.1: Staff model using scientific/problem-solving approaches for the children to watch. They support careful watching, prediction, anticipation, and evaluation through talk and action.</p>
<p>1.2: Staff show little understanding of science/maths/ problem-solving or concepts. <i>During activities where these ideas and concepts could be explored, opportunities for this are ignored e.g. during cake-making no mention of melting, liquids, and solids and/or changes that are seen during the heating/cooling or mixing etc</i></p>	<p>3.2: Staff discuss children’s explorations and investigations with them.</p>	<p>5.2: Staff model exploration, excitement and wonder for children to watch and then engage.</p>	<p>7.2: Staff use scientific words e.g. dissolve, linking these to the children’s experiences, as well as to more familiar ideas as they occur. <i>Staff link scientific ideas to experiences, e.g. while playing with the magnets, introduce the words ‘attract’ and ‘repel’; while cooking, introduce ‘melting’, ‘liquid’, ‘solid’; while using forces when playing outside, for instance, introduce the words ‘push’ and ‘pull’ so that the children have direct experience of these ideas and concepts as they are discussed. Then also make links to familiar ideas and concepts; it is melting like you ice cream does on a hot day, the magnet attracts like a big hug and repels like a push down a slide, or the wind is blowing you away. *** Not applicable when observing children under 3.</i></p>
	<p>3.3: Staff encourage children to make connections between what they observe and their previous experiences or with follow-up activities. They make use of pictures (e.g. in books or on the computer) and other resources to support this.</p>	<p>5.3: Staff point out, share, and explain the actions and interests of the children as they occur. They introduce simple scientific and explanatory concepts. <i>Examples might include discussion of different textures and surfaces and how they affect lay and movement, e.g. rough textures slow down the ball and bike, the smooth slide helps to make you go fast. Other example might be: it is loud because it is close, it looks small because it is far away, and pointing out shadows, animals, insects, and how plants move and grow etc.</i></p>	<p>7.3: Staff talk about and encourage parents/carers to join in with their children’s scientific/problem-solving activities and explorations.</p>
		<p>5.4: Science/maths activities are organised so that they build upon previous activities and explorations. <i>Progression should be evident in planning and other records or assessments.</i></p>	

Key Theme: Materials (*including natural*)

Progression in Learning Development Matters

- Explore materials with different properties
- Explore natural materials, indoors and outside
 - *Develop confidence to engage in sensory exploration, including touch, taste, smell, sound and visual stimulation*
 - *Begin to develop increased curiosity around chosen materials*
 - *Begin to develop likes / dislikes of different materials*

- Use all their senses in hands-on exploration of natural materials
 - *Develop curiosity and involvement when exploring different materials*
 - *Begin to talk about likes / dislikes of different materials*
- Explore collections of materials with similar and/or different properties
 - *Begin to experiment with ways of grouping / sorting different objects by material and properties*
- Talk about the differences between materials and changes they notice
 - *Begin to use language to compare and order different materials*
 - *Begin to notice and talk about how the properties of materials have changed*
 - *Begin to observe and talk about natural processes*

- Explore the natural world around them
 - *Use all their senses appropriately to explore different materials, with increased concentration to address curiosity*
- Describe what they see, hear and feel while outside
 - *Talk about likes / dislikes of different materials*
 - *Talk about similarities, differences and patterns*
 - *Experiment with ways of grouping / sorting different objects by material and properties*
 - *Begin to identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock*
 - *Use language to compare and order different materials*
 - *Notice and talk about how the properties of materials have changed*
 - *Observe and talk about natural processes*
 - *Begin to make predictions when adding different materials together*

- 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
- Describe the simple physical properties of a variety of everyday materials
- Compare and group together a variety of everyday materials on the basis of their simple physical properties.

Birth to Three
Three to Four Year Olds
Reception
Year One

Key Concepts

Organisation Change Variation Diversity

Scientific Enquiry Skills

Observe Compare Classify Measure Communicate Infer Predict

Key Learning Experiences

Birth to Three

- **Free exploration:**

- Heuristic play – box of different open-ended objects □ Themed treasure baskets □ Sand play – dry / wet □ Water play □ Malleable play □ Creative play – paint / collage □ Grass □ Puddles □ Mud □ Autumn collections

- **Texture and sound books**

Linked texts: □ A wide variety of texture and sound books

Vocabulary Development

■ sand ■ water ■ big ■ small ■ look ■ see ■ feel ■ flower ■ tree ■ grass ■ leaf ■ shell ■ stone ■ stick ■ puddle ■ dry ■ wet ■ colours ■ hot ■ cold ■ nice ■ same

Nursery: Three & Four Year Olds

- **Exploration of natural materials:**

- Nature Walks – focusing on the development of each sense □ Themed Treasure Baskets – finding the odd one out □ Feely Box / Bag – Can you guess what I am feeling? □ Light Box – exploring different materials on a light box

- **Multi - sensory exploration of different media:**

- Gloop □ Rice / pasta □ Play dough □ Jelly □ Soil □ Wet & dry sand etc □ Natural materials mixed with water e.g. leaves / cones

- **Collecting natural materials (e.g. scavenger hunt, collecting walks):**

- Sorting □ Matching □ Comparing

- **Using natural materials within imaginative / creative play:**

- Small world □ Construction □ Transient art □ Creative area – collage; mobiles; models □ Malleable – combine with natural materials

- **Joining materials (e.g. water to flour, food colouring / paint to water):**

- Mixing □ Watching changes □ Experimenting

- **Natural processes – observe & talk about:**

- Freezing / Melting – snow, ice, chocolate, butter □ Light – looking through different coloured transparent materials □ Eggs – *How did the eggs change when we cooked them?*

- **Sing songs:** □ Splendid Senses □ The Mud Kitchen Song □ Pat a Cake

Linked Texts □ Mud - Mary Lyn Ray □ Leaf Man – Lois Ehlert □ The Three Little Pigs

Vocabulary Development

■ senses e.g. listen, smell, hear, see, touch ■ hard ■ soft ■ stretch ■ snap ■ different ■ change ■ mix ■ stir ■ sort ■ collect ■ add ■ freeze ■ melt ■ cook ■ join ■ light ■ colours ■ material

Reception

Exploration of natural materials:

- Nature Walks – spotting and collecting a variety of materials to make a journey stick □ Sensory I Spy Games e.g. *I hear with my little ear, something that sounds like ... I touch with my hands – something that feels like* (focusing on descriptive vocabulary)

Collecting natural materials, focusing on similarities, differences and patterns:

- Sorting - talk about the criteria □ Matching – talk about why things match □ Comparing □ Ordering – colour, size, weight, texture

Using natural materials within imaginative / creative play:

- Small world □ Construction □ Transient art □ Creative area – collage; mobiles; natural resource characters and pets (e.g. painting pet stones) □ Malleable – combine natural materials with playdough or clay □ Storytelling

Joining materials (e.g. paint mixing, baking, mixing herbs & spices etc, different materials with mud):

- Mixing □ Talking about changes □ Experimenting to change mixture / properties (altering types and quantities of materials mixed) & predict outcome - *What do you think will happen when...?*

Testing materials – Which material would be best for....? Why do you think it would be best?

- Keeping dry □ Making a bag □ Making a boat □ Making a bridge etc

Natural processes – observe, discuss & predict:

- Freezing / Melting – snow, ice and variety foods □ Light - light travelling through transparent materials – can extend to combining transparent materials □ Magnets – sorting for magnetic / non-magnetic & stronger / weaker □ Eggs – different methods of cooking / baking /whisking - *How many different ways can we change an eggs?*

Sing songs: □ Five Senses □ Mix the Colours Song □ This is the Way We Lay Our Bricks □ Bake a Cake

- Linked Texts** □ 'Stanley's Stick - John Hegley □ 'Everyday Materials (Ways Into Science) –Peter Riley □ Heating & Cooling – Cody Crane □ Mixed: A World of Colour – Aree Chung □ Swirl by Swirl: Spirals in Nature - Joyce Sidman

Vocabulary Development

■ science ■ senses e.g. *touch, taste, feel* ■ sweet ■ sour ■ bright ■ clear ■ rough ■ smooth ■ shiny ■ shadow ■ dull ■ bumpy ■ waterproof ■ magnetic ■ freeze ■ melt ■ heat ■ frozen ■ sound ■ material names e.g. *plastic, glass, metal* ■ observe ■ magnifying glass ■ plant and tree parts e.g. *seed, plant, petal, stem, roots, leaves, branch, bark* ■ natural materials e.g. *conker, acorn, pinecone, pebble, rock* ■ experiment ■ test ■ pattern ■ texture

Key Theme: Living things – Animals (including humans) / Plants

Progression in Learning Development Matters

- *Begin to talk about the living things in their natural environment*
 - *Begin to look for and show an interest in plants and animals within the local environment*
 - *Begin to name some of the plants and animals they see in the environment and in books etc*
 - *Begin to understand that plants need water and animals need food*
 - *Begin to understand the importance of handling living things with care*
- Talk about what they see, using a wide vocabulary
 - *Name some of the plants and animals they see*
- *Understand what we use the different parts of our body for*
- Plant seeds and care for growing plants.
 - *Understand how to look after plants e.g. know that plants need water and light to grow / survive*
- Understand the key features of the life cycle of a plant and an animal
- Begin to understand the need to respect and care for the natural environment and all living things
 - *Begin to explore different animal habitats*
 - *Handle living things with care and understand why this is important*
- Explore the natural world around them (*including plants and animals*)
 - *Begin to recognise and name some familiar plants and animals in their local environment e.g. oak tree, robin etc*
 - *Begin to find out about plants and animals in contrasting natural environments*
- Describe what they see, hear and feel whilst outside (*including plants and animals*)
- Make observations and draw pictures of animals and plants
- Understand what some different parts of animals and plants are used for e.g. *roots helping the plant to take in water from the soil*
- Understand the effects of changing seasons on the natural world around them e.g. *how animals and plants may change or behave differently*
- Understand some important processes in the natural world around them e.g. *life cycles*
 - *Observe and begin to talk about how animals (including humans) and plants change during growth / life cycles, beginning to use some correct terminology e.g. cocoon, chrysalis etc*
- Understand the need to respect and care for the natural environment and all living things
 - *Handle living things with care and talk about why this is important*
 - *Understand and talk about how to look after plants and animals*
 - *Explore and talk about a variety of animal habitats and what animals need to survive*
 - *Begin to understand how plants and animals need one other e.g. flowers and bees, humans and plants*
- Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees
- Identify and describe the basic structure of a variety of common flowering plants, including trees.
- Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals
- Identify and name a variety of common animals that are carnivores, herbivores and omnivores
- Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets)
- Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense

Birth to Three
Three to Four Year Olds
Reception
Year One

Key Concepts

Organisation Cause & Effect Change Structure & Function Variation Diversity

Scientific Enquiry Skills

Observe Compare Classify Measure Communicate Infer Predict

Key Learning Experiences

Birth to Three

- **Opportunities to observe and explore living things in their natural environment:** □ Finding and watching minibeasts □ Watching and listening to birds □ Looking at, feeling and smelling a range of plants / flowers □ Handle living things, with support and modelling from adults
 - **Being involved in planting seeds and looking after plants:** □ Putting seeds in soil □ Watching seeds / plants grow □ Watering plants
 - **Being involved in feeding animals:** □ Filling up bird baths □ Feeding pets
 - **Sing Songs:** □ Incy Wincy Spider □ Old Mac Donald □ Mary, Mary Quite Contrary
- Linked texts:** □ 'Touch & Feel Animals' DK □ 'Fluffy Kitten' - Rod Campbell □ 'Busy Animal' Book Series - John Schindel

Vocabulary Development

■ pets e.g. *cat, dog* ■ flower ■ tree ■ grass ■ leaf ■ worm ■ fly ■ snail ■ spider ■ bird ■ human body part e.g. *head, leg, arms ...*

Nursery: Three & Four Year Olds

PLANTS

- **Exploration of a variety of plants:** □ Plant Walk - discover a variety of plants (*trees, flowers, shrubs etc*) □ Plants in Books – spot plants in books and begin to match pictures of plants to those in their natural environment
 - **Growth & Life Cycles:** □ Plant Seeds / Bulbs – label, watch them grow & water □ Spot Seeds: in common fruits / flowers
 - **Respecting and Caring for Plants:** □ Handle Plants - learn to handle with care & talk about why this is important
 - **Sing Songs:** □ Five Little Peas in a Peapod □ I'm a Little Bean Song □ Busy Farmer Ben
- Linked Texts** □ 'Jaspers Beanstalk' by Nick Butterworth □ 'Ten seeds' by Ruth Brown □ 'Tiny Seed' by Eric Carle

ANIMALS

- **Exploration of a variety of animals:** □ Animal Safari – find/spot a variety of animals (*birds, minibeasts etc*) □ Watch, Listen & Imitate – watch and listen to a variety of animals; talk about and name their movement and sounds; and imitate e.g. 'Move like a ...' or 'Make the sound of a ...' □ Find Out More - use online resources / books to watch & begin to find out about familiar animals
 - **Growth & Life Cycles:** □ How Humans Grow – sharing photographs □ Chicks – be involved in watching & caring eggs & chicks
 - **Our Bodies:** □ What can we do with our bodies use 'Happy to be Me' by Emma Dodd and the 'Amazing Me' series by Carol Thompson to explore what we use different parts of our bodies for
 - **Respecting and Caring for Animals:** □ Handle Animals - watch adults handle animals carefully & begin to learn to handle themselves
 - **Sing Songs:** □ I've Got a Body □ Five Speckled Frogs □ Five Little Ducks □ I Went to Visit a Farm One Day
- Linked Texts** □ Christopher Nibbles – Charlotte Middleton □ Happy to be Me - Emma Dodd □ Amazing Me Book Series - Carol Thompson □ 'Busy Animal' Book Series - John Schindel □ Walter's Wonderful Web – Tim Hopgood □ Chickens Aren't the Only Ones by Ruth Heller □ Who is in the Egg? – Alexandra Milton

Vocabulary Development

■ senses e.g. *listen, smell, hear, see* minibeast names e.g. *caterpillar, ant* ■ wriggle ■ life cycles e.g. *egg, grow, change* ■ hatch ■ nest ■ human body part e.g. *lips, eyebrow, elbow ...* ■ animal body part e.g. *beak, legs, wings* ■ woodland animals e.g. *squirrel, hedgehog* ■ farm animals e.g. *cow horse, pig, sheep* ■ wild animals e.g. *lion, elephant, monkey* ■ fruit names e.g. *strawberries, blueberries ...* ■ some vegetable names

Reception

PLANTS

- **Exploration of a variety of plants:** □ Sensory Walks – explore different plants through touch, smell and sight □ Observation – talk about and describe plants observed; draw; paint; collage; make models/sculptures; and name and label parts of the plants (e.g. roots, leaves, stems, trunks, petals etc) □ Identifying – use books, experts and apps to help to identify familiar plants □ Plants Around the World – use books and online resources to find out about plants growing in contrasting environments e.g. deserts, rain forests etc
- **Life Cycles / Growth:** □ Growing Fruit and Vegetables – look at how different fruits and vegetables grow □ Collecting Seeds – collect a wide variety of seeds from flowers and fruits; look at them under magnifying glasses; try to plant some
- **Respecting and Caring for Plants:** □ Handling Plants - learn how to touch and smell plants gently and how to pick herbs sensitively □ Planting Seedlings – plant seedlings into a flower bed and look after them
- **Sing Songs:** □ The Gardener Plants the Seeds □ Planting Time

Linked Texts □ 'Lulu Loves Flowers' - Anna McQuin □ 'The Extra Ordinary Gardener' - Sam Boughton □ Flowers & Plants - Tracy Cottingham

ANIMALS

- **Exploration of a variety of animals:** □ Bird Watching & Listening – look and listen to birds, using books and posters to identify □ Observation – talk about and describe animals observed; draw; paint; collage; make models/sculptures; and name and label parts of the animals □ Sorting & Classifying – using small world animals or photos, sort into different categories (This could also be done as a scavenger hunt.) e.g. birds, mammals, fish, reptile, insects; animals who hibernate and those don't; nocturnal animals; animals that lay eggs □ Animals Around the World – use books and online resources to find out about animals living in contrasting environments e.g. deserts, rain forests etc; make suitable environments for small world animals
- **Growth of Animals:** □ Mums & Babies – match adult animals to baby animals, learning their names (e.g. cow and calf); talk about how animals change as they grow □ Caterpillars – be involved in watching & caring for eggs / caterpillars; make a model using playdough on paper plate (divided into quarters) to represent the life cycle
- **Animal Homes:** □ Make Animal Homes – make suitable homes for different animals in the outdoor learning environment e.g. minibeasts, birds, hedgehogs
- **Respecting and Caring for Animals:** □ Gain more confidence in handling a wider variety of animals □ Use books and online resources to find out more about how some animals and plants need/help each other
- **Sing Songs:** □ Here is the Beehive □ Walking through the jungle (adapt for different environments) □ Egg, Caterpillar, Pupa, Butterfly

Linked Texts □ 'Christopher's Caterpillars' by Charlotte Middleton □ Bird Builds a Nest - Martin Jenkins □ Bees-(Lift the Flap) –Carmen Saldana □ Bee: Nature's Tiny Miracle – Patricia Hegarty

Vocabulary Development

■ extended animal names e.g. including mammals, birds, fish, reptile, polar ■ hibernate ■ nocturnal ■ hunt ■ nature ■ minibeast ■ insect ■ life cycle e.g. egg, hatch, chrysalis, cocoon, body parts – wing, antenna ■ animal features e.g. feathers, fur, beak, scales, shell, talons ■ animal mums and babies e.g. cow / calf ■ plant and tree parts e.g. seed, plant, petal, stem, roots, leaves, branch, bark ■ extended fruit and vegetable names

Key Theme: Different Environments / Different countries

Progression in Learning Development Matters

Birth to Three
Three to Four Year Olds
Reception
Year One

- Explore natural materials outside
 - *Develop an understanding of the outdoors (different places)*
 - *Develop confidence to explore natural features in immediate outdoor environment*
 - *Begin to use a range of senses to explore different natural outdoor features*
 - *Begin to develop likes / dislikes of different natural features*

- Talk about what they see, using a wide vocabulary
 - *Participate in visits to different natural environments within locality and name key features*
 - *Begin to talk about likes / dislikes of natural features within locality*
 - *Begin to use language to compare different features within locality*
- Begin to understand the need to respect and care for the natural environment and all living things
 - *Learn to touch natural objects carefully*
 - *Learn to only collect only fallen natural objects – leaves / flowers*
- Know that there are different countries in the world and talk about the differences they have experienced of seen in photos
 - *Develop sense of immediate environment*
 - *Share own experiences of visiting different places, including countries*
 - *Listen to others as they share their experiences of visiting different place, including countries*
 - *Begin to develop an understanding of different countries through stories and non-fiction texts*

- Explore the natural world around them
- Describe what they see, hear and feel when outside
- Recognise some environments that are different to the one in which they live
- 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
 - *Participate in visits to different environments and name key features*
 - *Talk about likes / dislikes of key features within different environment and begin to give reasons*
 - *Use language to compare different key features within different environments*
 - *Use language to begin to compare different environments, including those in different countries*

- Distinguish between an object and the material from which it is made

Key Concept

- Organisation Systems Cause and Effect Scale Models Changes Structure & Function
- Variation Diversity

Scientific Enquiry Skills

- Observe Compare Classify Measure Communicate Infer Predict

Key Learning Experiences

Birth to Three

- **Visiting and exploring different places around immediate environment:**
 - Outdoor play / exploration □ Walk around setting * *Take photographs / sound recordings to revisit experiences*
- **Exploration of different materials in natural environment:**
 - Crawling / rolling / walking on grass □ Walking / running through tall grass □ Walking / rolling down a mound □ Walking bare feet through dirt / sand / water □ Balancing on low level wooden beams □ Catch / chase a falling leaf □ Hide and Seek – hiding behind a tree □ Digging / raking dirt and mud □ Mark making in dirt / mud □ Scavenger Hunt – finding, sharing and labelling
- **Exploring natural materials through open-ended and messy play:**
 - Transient Art □ Collage □ Mud pies □ Nature soup (adding natural materials to water) □ Making mud □ Mud painting
- **Sing songs with actions:** □ Let's Go for a Walk Outside □ Leaves are Falling
Linked Texts: □ Stones (EyeLike Nature) □ Spot Goes to the Park / Beach – Eric Hill

Vocabulary Development

■ outdoors ■ garden ■ look ■ touch ■ listen ■ grass ■ sand ■ dirt ■ mud ■ water ■ puddle ■ tree ■ leaves ■ flowers ■ plants ■ pinecones ■ conkers ■ stones ■ sticks ■ twigs ■ grass ■ colours ■ wood

Nursery: Three & Four Year Olds

- **Exploration of different materials in natural environment:** *visits to different natural habitats (park)*
 - Treasure Hunt – finding different variations □ Scavenger Hunt – finding own different variations, sharing and labelling □ Tree / Leaf Study – finding, comparing different bark rubbings / leaves □ Stone Towers – finding stones that will stack on top of one another, exploring properties □ Sifting through dirt □ My Pebble Collection (egg box) – finding 6 different pebbles □ Match the object to the silhouette □ Matching objects with the same colour □ Exploring fine details using magnifying glasses – grass / mud / bark ..
- **Exploring natural materials through open-ended and messy play:**
 - Transient Art portrait □ Collage picture □ Painting with nature paint brushes □ Making different textured mud paint □ Creating a Sent Jar □ Making leaf confetti □ Printing – paint / dough □ Creating scenes in small world play □ Finding out what floats / sinks
- **Talk about different places / countries**
 - Walk around locality – shop / houses □ Home class bear □ Sharing family visits to different places □ Celebrating holidays (UK / abroad) □ Celebrating different festivals – link to role play * *Take photographs / sound recordings to revisit experiences* ** *Collage of photographs* *** *Class book* □ Watch videos / read non-fiction texts about different places
- **Sing songs:** □ And the Green Grass Grew All Around □ Muddy Melody □ Five Little Acorns
Linked Texts: □ Wow! Said the Owl – Tom Hopwood □ We're Going on a Bear Hunt – Michael Rosen □ A Stone Sat Still – Brendan Wenzel □ The Wheels on the Bus □ We all Go Traveling By – Sheena Roberts □ Love Our Earth – Jane Cabrera

Vocabulary Development

■ senses e.g. *listen, smell, hear, see* ■ names of different trees ■ bark ■ hard ■ soft ■ stretch ■ snap ■ night ■ dark ■ light ■ sky ■ star ■ magnifying glass ■ park ■ country

Reception

- **Exploration of different materials in natural environment:** *visits to different natural habitats (woodland / forest / beach)*
 - Chocolate Box (egg box), My Opposite Collection – finding 6 opposites e.g. *dry / wet leaf; small / big shell* □ How clean is snow? – melting snow from different places, observing particles with magnifying glasses □ Tree / Leaf Study through the seasons - comparing leaves / seeds □ Investigating pond water □ Symmetry in nature – finding natural symmetrical objects
- **Exploring natural materials through open-ended and messy play:**
 - Transient abstract / symmetrical art □ Collage scene □ Nature mandalas □ Pebble / rock sculptures □ Nature wind catcher □ Ice cube painting □ Small world play – developing own scene e.g. *rock pole and using to develop narrative* □ Making own memory game – matching object to place (leaf to tree / petal to flower / shell to rock pool)
- **Scientific activities**
 - Moving water (displacement) – adding objects to water jar □ Water absorption – 6 / 12 collected items into muffin tray, add water. What happens? □ Making different textured mud
- **Talk about different places / countries / space**
 - Celebrating family visits / holidays □ Celebrating different festivals – link to role play and small world play □ Paddington's Postcards /www.unicef.org.uk/paddingtons-postcards □ Watch videos / read non-fiction texts about different places
- **Sing songs:** □ Walking Through the Park / Woods ... What do you see? I can see a ... looking at me
Linked Texts: □ Leaf Thief – Alice Hemming □ Somebody Swallowed Stanley – Sarah Roberts □ Welcome to the Rock Pool – Ruth Owen □ What the Ladybird Heard at the Beach – Julia Donaldson □ A Hat for Mr Mountain – Soojin Kwak □ Molly and the Lighthouse – Malachy Doyle □ Air Miles – John Burningham □ Emma Jane's Aeroplane – Katie Haworth □ Solar System (Hello World) □ Look Inside: Space – Rob Lloyd Jones

Vocabulary Development

■ science ■ senses e.g. *touch, taste, feel* ■ bright ■ clear ■ rough ■ smooth ■ shiny ■ shadow ■ dull ■ bumpy ■ waterproof ■ freeze ■ melt ■ heat ■ frozen ■ sound ■ observe ■ plant and tree parts e.g. *seed, plant, petal, stem, roots, leaves, branch, bark* ■ natural materials e.g. *conker, acorn, pinecone, pebble, rock* ■ symmetry ■ test ■ forest ■ wood ■ pond ■ beach ■ holiday ■ countries ■ space

Key Theme: Natural phenomena

Progression in Learning Development Matters

Birth to Three
Three to Four Year Olds
Reception
Year One

- Explore and respond to different natural phenomena in their setting and on trips
 - *Show interest in experiencing different weather*
 - *Begin to develop an understanding of different clothing needed to go outside in the rain / cold ...*
- Talk about what they see, using a wide vocabulary
 - *Develop curiosity and involvement when exploring different weather*
 - *Begin to talk about likes / dislikes of different weather*
 - *Begin to use language to compare different weather*
 - *Develop an understanding of different clothing needed to go outside in snow / sun ...*
 - *Begin to develop an awareness of weather characteristics at different times of year*
 - *Begin to develop an awareness of some weather characteristics in different countries*
- Understand the effect of changing seasons on the natural world around them
 - *Name the different seasons*
 - *Observe and identify key characteristics of each season*
- Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter
 - *To begin to develop an understanding of water when frozen, melted and heated by the sun*
 - *To begin to develop an understanding of light (including colour and shadow) and heat*
- Understand the effect of changing seasons on the natural world around
- Observe changes across the four seasons
- Observe and describe weather associated with the seasons and how day length varies

Key Concept

Organisation Systems Cause and Effect Models Changes

Scientific Enquiry Skills

Observe Compare Classify Measure Communicate Infer Predict

Key Learning Experiences

Birth to Three

- **Free exploration of different weather:**
 - Standing / walking in the rain □ Splashing in puddles □ Watching the wind using pinwheels □ Making marks in ice / snow □ Filling buckets / containers with rain water / snow □ Painting around puddles □ Walk bare foot in warm sand / water – heated by the sun
 - **Sing songs:** □ Dr Foster □ Rain, Rain Go Away □ It is Raining □ I'm a Little Snowman □ Snowflake on my Nose □ Twinkle, Twinkle Little Star
- Linked Texts:** □ Weather, Little Kids First Board Book – National Geographic □ Autumn / Spring / Summer / Winter – Ailie Busby □ Rabbits in the Snow – Natalie Russell

Vocabulary Development

■ look ■ listen ■ feel ■ sun ■ moon ■ rain ■ dry ■ wet ■ colours ■ hot ■ cold ■ snow ■ wind ■ ice ■ colours

Nursery: Three & Four Year Olds

- **Experiencing different weather:**
 - Making a Botanical Sun Catcher □ Fly streamers / kites □ Run with / against the wind □ Blow and chase bubbles on a windy day □ Cloud chasing □ Setting up a rain catcher □ Rain Art □ Puddle small world play □ Melting ice sculptures – slow / fast □ Watching a rainbow □ Making rainbow bubbles (www.science-sparks.com/rainbow-bubbles) *See EY2P Weather Posters*
 - **Sing songs:** □ Barney, Mister Sun □ Wind Song □ Snowflake, Snowflake □ Five Little Snowmen □ Warm Clothes for when it Snows □ The Mittens on my Hands *See EY2P Weather Song Posters*
- Linked Texts:** □ All About Weather – Huda Harajli □ What Should I Wear? – Baby Professor □ Singing in the Rain – Tim Hopgood

Vocabulary Development

■ senses *e.g. listen, smell, hear, see* ■ weather *e.g. wind, sunny, snow, ice, splash* ■ day ■ night ■ dark ■ light ■ sky ■ star ■ melting ■ magnifying glass

Reception

- **Experiencing and exploring different weather:**
 - Setting up a Weather Station □ Forecasting weather using pine cones □ Puddle Measuring – throughout the day □ Make a sun dial □ Sky Study □ Snowflake study □ Making icicles □ Finding and creating own shadows □ Making rainbows □ Foam Rain Cloud experiment □ Heating water and dirt in the sun – what happens? *See EY2P Weather Posters* □ Watching videos / exploring non-fiction texts about weather in different countries
 - **Sing songs:** □ The Sun Song □ Ten Little Snowflakes □ The Playful Wind □ The Seasons Song □ Seasons of the Year □ Spring Time *See EY2P Weather Song Posters*
- Linked Texts:** □ First Big Book of Weather – National Geographic □ I-Spy Autumn (Collins Michelin) * *one for each season* □ The Storm Whale in Winter – Benji Davies □ One Springy Day – Nick Butterworth □ The Black Rabbit – Philippa Leathers

Vocabulary Development

■ science ■ senses *e.g. touch, taste, feel* ■ bright ■ clear ■ shadow ■ dull ■ waterproof ■ freeze ■ melt ■ heat ■ frozen ■ sound ■ observe ■ weather *e.g. warm, icy, sunshine, windy, clouds, rainy, fog, thunder, lightning, rainbow, hailstone, storm* ■ season names *e.g. spring, summer, autumn, winter* ■ solid ■ liquid ■ test

Key Theme: How Things Work / Exploring Different Processes

Progression in Learning Development Matters

Birth to Three
Three to Four Year Olds
Reception
Year One

- Repeat actions that have an effect
 - *Explore movement (pushing / pulling) through everyday activities*
- Explore and talk about different forces they can feel
 - *Understand that objects can be moved by pushing or pulling*
 - *Begin to understand that 'push' means 'move away' and 'pull' means 'move towards'*
- Explore how things work
 - *Begin to explore and investigate mechanical toys*
- Understand some important processes
 - *An object colliding into another can move it*
 - *A small / big force (push or pull) can change the speed and distance of an object moving*
 - *The direction of an object can be changed when pushed or pulled*
 - *Humans are not the only forces that can make things move*
- Compare and group together a variety of everyday materials on the basis of their simple physical properties (Y1)
- Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching (Y2)
- Compare how things move on different surfaces (Y3)
- Observe how magnets attract or repel each other and attract some materials and not others. (Y3)
- Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials. (Y3)
- Describe magnets as having two poles. (Y3)
- Predict whether two magnets will attract or repel each other, depending on which poles are facing. (Y3)

Key Concept

Systems Cause and Effect Scale Models Changes

Scientific Enquiry Skills

Observe Compare Classify Measure Communicate Infer Predict

Key Learning Experiences

Birth to Three

▪ Exploring movement

- Travelling in different ways, including sliding / rolling / jumping
- Moving toys / objects by pushing and pulling e.g. *pushing / pulling a large cardboard box with teddies in*
- Brushing / raking
- Pushing / rolling / dropping / kicking a ball
- Rolling objects down a ramp / gutter
- Pressing buttons e.g. *sound and light books*
- Posting / pushing smaller objects into bigger objects
- Playdough printing

- #### ▪ Sing songs:
- Wind the Bobbin Up
 - If You're Happy and You Know it – rake the leaves / push the ball
 - Pop Goes the Weasel

Vocabulary Development

- look ■ feel ■ move ■ push ■ press ■ pull ■ up ■ down

Nursery: Three & Four Year Olds

▪ Exploring movement / forces

- Travelling in different ways, including hopping / skipping / turning / spinning
- Jumping and popping bubble wrap
- Rolling a ball to one another
- Playing skittles – different sized balls
- Rolling objects down a ramp – fast / slow
- Marble painting
- Bubble painting
- Exploring and identifying materials that bend / stretch / snap
- Running with the wind
- Free exploration with magnets
- Playing with magnetic toy sets e.g. *train track*
- Exploring objects that float / sink

▪ Exploring how things work

- Using switches - battery-operated toys / torches
- Shining light on different objects
- Operating windup toys
- Marble run
- Hooters and bells on bicycles
- Make tracks / patterns with different sized wheels – in paint / clay / dough

- #### ▪ Sing songs:
- Jack and Jill
 - Humpty Dumpty
 - Everybody Do This, Just Like Me – jump up high

Linked Texts: □ Bike on Bear – Cynthia Lui

Vocabulary Development

- float ■ sink ■ up ■ down ■ top ■ bottom ■ magnet ■ spring ■ squash ■ bend ■ stretch ■ turn ■ spin ■ smooth ■ rough ■ fast ■ slow ■ same ■ different

Reception

▪ Exploring movement / forces

- How my toy moves – children demonstrate how they can make their toy move e.g. *push a car*
- Sorting toys by how they move – push / pull
- Exploring the effect of different pushes – hard / soft
- Magnet maze
- Paint splatter patterns – dropping balloons filled with paint from different heights. What happens?
- Pushing, pulling, twisting and bending malleable (e.g. *pipe cleaners, elastics, sponges etc.*) and non-malleable objects/materials
- Bouncing balls on different surfaces. What happens / why?
- Moving an object without touching it e.g. *placing a cotton reel on a piece of board and tilting / blowing a marble / making a simple lever*
- Explore different forces – running in the wind / flying a kite / sailing a boat
- Sorting / identifying objects that float and sink
- Comparing how a thrown ball / balloon travel
- Toy zip line

Vocabulary Development

- forward ■ backwards ■ faster ■ slower ■ steeper ■ high ■ low ■ twist ■ pulley ■ weight ■

▪ **Exploring how things work**

□ Using Bee-bots □ Experimenting with cogs – Luna Park / Brio construction sets □ Exploring and using different pulley systems □ Making and flying paper aeroplanes □ Making a see-saw for a toy □ Using a rotary whisk □ Lights on bicycle spokes – observing movement □ Observational drawing of bike / scooter □ Boats races □ Balloon-powered car – what makes the car move? □

▪ **Sing songs:** □ London Bridge is Falling Down □ Ten Little Aeroplanes □ Aeroplanes, Aeroplanes □ I Like to Ride My Bicycle

Linked Texts: □ And Everyone Shouted ‘Pull’ – Claire Llewellyn □ Oscar and the Cricket - Geoff Waring □ The Enormous Turnip □ Blown Away by Rob Biddulph □ Mr Gumpy’s Motor Car – John Burningham □ Mrs Armitage on Wheels – Quentin Blake □ Paper Planes - Jim Helmore and Richard Jones □ Albert Upside Down – Ian Brown