Donnington Wood Infant School and Nursery

Science Progression

Understanding of the world		Understanding the world involves guiding children to make sense of their physical world and their community. The frequency and range of children's personal experiences increases their knowledge and sense of the world around them – from visiting parks, libraries and museums to meeting important members of society such as police officers, nurses and firefighters. In addition, listening to a broad selection of stories, non-fiction, rhymes and poems will foster their understanding of our culturally, socially, technologically and ecologically diverse world. As well as building important knowledge, this extends their familiarity with words that support understanding across domains. Enriching and widening children's vocabulary will support later reading comprehension									
		Nursery 2s			Nursery 3s			Reception			
		Autumn	Spring	Summer	Autumn	Spring	Summer	Autumn	Spring	Summer	
The Natural World		By the end of the phase I will … • Notice differences between people • Make connections between the features of their family and other families. • Notice differences between people. – recap body parts, uniforms, jobs. • Make connections and notice differences between different natural phenomena in their setting • Repeat actions that have an effect – banging, shaking • Repeat actions that have an effect – Vehicles - pushing, pulling, floating, sinking •			By the end of the phase I will … • Use all their senses in hands-on exploration of natural materials. • Talk about what they see using a wide vocabulary. • Explore how things work • Explore and talk about the different forces that they can feel – moving vehicles • Explore collections of materials with similar and/or different properties • Make healthy choices about food, drink, activity and toothbrushing. • Begin to understand the need to respect and care for the natural environment and all living things • Understand that living things grow and change over time – recognise key feature eg seed – plant, baby – adult • Be able to articulate the key features of the lifecycle of a plant (PP) eg seed/plant			By the end of the phase I will … • Know and talk about the different factors that support their overall health and wellbeing • Describe what they see, hear and feel whilst outside. – senses • Understand the effect of changing seasons on the natural world around them • Understand some key features of a basic lifecycle eg plant, animal, human • Talk about differences between materials and the changes they notice. • Talk about the need to respect and care for the natural environment and all living things. – litter, recycling, sorting • Recognise some environments that are different to the one in which they live. – link to natural home of animals that will be seen at safari park.			
		Explore natural materials inside and outside – Exploring outdoor areas. Explore and respond to different natural phenomena in their setting and on trips.	Explore materials with different properties – models, vehicles from different materials, boats. Explore natural materials inside and outside - ice, hot/cold, melting, wet/dry – winter Explore and respond to different natural phenomena in their setting – Spring	Explore natural materials inside and outside - Rainbow Garden Explore and respond to different natural phenomena in their setting and on trips – growing, flowers (expose to vocab) Explore materials with different properties – build farms, fences, stables, explore animal textures. To know what a plant is (PP) Know a range of words to describe simple changes such as colour or basic features e.g., leaf, flower (PP)	Know different ways to explore materials Begin to understand different senses they have eg touch, smell Begin to use some vocabulary to explore senses To recognise significant age groups e.g., babies, older siblings and adults (PP) Knows words to name parts of the body (S)	Know how to use their senses in hands-on exploration of natural materials. Know a wider vocabulary to talk about what they see Recognise the need to dress differently in different seasons (PP)	Know how to care for growing plants Know how to care for the natural environment Know names of living things they may find in the garden (S) Know that if we don't care for things they die or get damaged Know names of farm animals (S) Match adult and baby farm animals Know that living things live and die Know that living things get older and grow Understand that living things have needs that must be met to grow Know that plants grow from a seed/ bulb (PP) Know that plants change as they grow (PP) Know the names of some simple parts of a plant e.g., leaf, seed, flower (PP)	Know why it is important to exercise Know why it is important to sleep well Know what being healthy means Name main parts of our body (S) Know that they were once a baby (PP) Know that they can do things now that they couldn't in the past (PP) Know how to look after our school environment – willow school, litter at school	Know that the outside environment changes through the seasons Understand how trees change from Autumn to spring Know that weather changes through the seasons Know how to look after themselves in the winter eg coats, hats Know that different materials in clothing can suit different weathers eg waterproof keeps us dry, thick coats keep us warm Know that different materials can change – eg ice to water/water to ice Know how to look after their community - litter	Know why we visit the doctors/dentist Know how doctors and dentists can help us Know how to look after themselves in the sun eg sun cream and caps Know why we recycle our fruit – compost Know why we must keep our environment clear from rubbish – to protect animals Know that there are hot/cold places around the world (PCC) Know that some animals live in hot places and some in cold places (PCC) Match baby animals to adults	
	Context/experiences	Marvellous me Festivals/ celebrations	Transport People who help us	Our garden On the farm	Marvellous me Festivals/ celebrations	Transport People who help us	Our garden On the farm	Our body Our family	Local area People who help us	Minibeasts Pets	
		✓ Musical celebration- exploring instruments ✓ Autumn textures/seeds/leaves/ colours ✓ Looking in mirrors, studying each other's bodies. ✓	✓ CIL ✓ Tuff trays/water trays ✓ Willow school	✓ CIL ✓ Experiencing indoor and outdoor environment ✓	✓ Musical celebration- exploring instruments, making instruments.	✓ Visit from dentist ✓ Visit from school nurse ✓ Opticians visit ✓ PE – Exercising ✓ Jigsaw – Healthy me	✓ Park visit ✓ Farm on wheels ✓ Plant sunflower seed and care for– transfer to Reception - transition	✓ Rules in school ✓ Looking at pictures of themselves as babies – I can …. (W) ✓ Painting a picture of themselves (CWM) ✓ Heads shoulders Knees and toes (BI) ✓ Look at sunflowers planted in Nursery – how have they changed?	✓ Visit from dentist ✓ Visit from school nurse ✓ Opticians visit ✓ PE – Exercising ✓ Jigsaw – Healthy me ✓ Experiencing outside in winter – ice	✓ Bug hotel ✓ Viewing minibeasts ✓ How to look after pets ✓ Litter pick ✓ Composting fruit waste ✓ Using compost to plant ✓ Visit governor – tarantula ✓ Exotic zoo	
											The Natural World Explore the natural world around them, making observations and drawing pictures of animals and plants; - 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; - Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.

Y1	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	Weather and Seasons Humans – Parts of the body and senses	**Plants and trees**	**Materials**	**Animals**	**Parts of a plant**	**Weather and Seasons**
Year 1 Milestones	Observe seasonal changes Observe and describe weather associated with the seasons and how day length varies. Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.	Identify & describe the basic structure of a variety of common flowering plants, including trees.	Distinguish between an object & 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 material Compare and group together a variety of everyday materials on the basis of their simple physical properties.	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 & describe the basic structure of a variety of common flowering plants, including trees. Observe seasonal changes	Observe seasonal changes Observe and describe weather associated with the seasons and how day length varies.
Skill Focus	**Question**	**Observation**	**Test**	**Classify**	**Hypothesise**	**Gather and Record**
	Working Scientifically **Asking simple questions** and recognising that they can be answered in different ways **Observing closely, using simple equipment** Performing simple tests Identifying and classifying Using their observations and ideas to suggest answers to questions Gathering and recording data to help in answering questions		**Working Scientifically** Asking simple questions and recognising that they can be answered in different ways Observing closely, using simple equipment **Performing simple tests** **Identifying and classifying** Using their observations and ideas to suggest answers to questions Gathering and recording data to help in answering questions		**Working Scientifically** Asking simple questions and recognising that they can be answered in different ways Observing closely, using simple equipment Performing simple tests Identifying and classifying **Using their observations and ideas to suggest answers to questions** **Gathering and recording data to help in answering questions**	

Y2	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	Basic needs of humans	**Living, dead, never alive Food chains**	**Materials**	**Life Cycles**	**Basic needs of plants Growing plants**	**Habitats including microhabitats.**
Year 2 Milestones	Find out about and describe the basic needs of animals, including humans, for survival (water, food and air) Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.	Explore & compare the differences between things that are living, dead, and things that have never been alive 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.	Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.	Notice that animals, including humans, have offspring which grow into adults	Observe and describe how seeds and bulbs grow into mature plants Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.	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 depend on each other Identify and name a variety of plants and animals in their habitats, including micro-habitats
Skill Focus	**Question**	**Classify**	**Test**	**Observe**	**Hypothesise**	**Gather and Record**
	<u>Working Scientifically</u> **Asking simple questions and recognising that they can be answered in different ways** Observing closely, using simple equipment Performing simple tests **Identifying and classifying** Using their observations and ideas to suggest answers to questions Gathering and recording data to help in answering questions		<u>Working Scientifically</u> Asking simple questions and recognising that they can be answered in different ways **Observing closely, using simple equipment** **Performing simple tests** Identifying and classifying Using their observations and ideas to suggest answers to questions Gathering and recording data to help in answering questions		<u>Working Scientifically</u> Asking simple questions and recognising that they can be answered in different ways Observing closely, using simple equipment Performing simple tests Identifying and classifying **Using their observations and ideas to suggest answers to questions** **Gathering and recording data to help in answering questions**	

Science Progression – Working Scientifically

	Nursery 2/3	Nursery 3/4	Reception	Y1	Y2	End KS1	beyond
			exploring	*with adult support*	*generally*		*independently*
Question	Understands 'who' 'what' 'where' in simple questions asked. Uses a variety of questions (eg. What, where, who)	Beginning to understand how and why questions asked. Questions why things happen and gives explanations. Asks e.g. who, what, when, how. Comments and asks questions about aspects of their familiar world such as the place where they live or the natural world.	Children follow instructions involving several ideas or actions. They answer 'how' and 'why' questions about their experiences and in response to stories or events.	**Ask Simple Questions** With help, I can use: Why, What if, How and When	**Ask Simple Questions** I can use practical activities to ask my own questions I can ask simple questions about how things change or how they happen or what will happen if...? I can sort questions into those that can be answered by trying it out and those that cannot.	Asking simple questions and recognising that they can be answered in different ways	simple questions are asked. questions that lead to scientific enquiry are asked independently.
Observe	Notices detailed features of objects in their environment.	Can talk about some of the things they have observed such as plants, animals, natural and found objects. Talks about why things happen and how things work.	Looks closely at similarities, differences, patterns and change. (Objects, materials, living things.) They make observations of animals and plants and explain why some things occur, and talk about changes.	**Observe closely with *simple* equipment** With help, I can use simple equipment to collect data I recognise some simple equipment we use	**Observe closely with *simple* equipment** I can make simple measurements I can use simple equipment e.g. handlenses and egg timers to gather data	Observing closely, using simple equipment	an explanation can be given as to why something has happened, using appropriate scientific vocabulary. close observations are made using simple equipment.
Test	Understands use of objects (eg. What do we use to cut things.) Explores objects by linking together different approaches: shaking, hitting, looking, feeling, tasting, mouthing, pulling, turning and poking.	Can select and use activities and resources with help. Uses various construction materials. Beginning to construct, stacking blocks vertically and horizontally, making enclosures and creating spaces. Joins construction pieces together to build and balance. Realises tools can be used for a purpose.	Manipulates materials to achieve a planned effect. Constructs with a purpose in mind, using a variety of resources. Uses simple tools and techniques competently and appropriately. Selects appropriate resources and adapts work where necessary.	**Perform simple tests** I state what I am doing now. I am beginning to say what to do next.	**Perform simple tests** I have experienced different ways of asking questions. I have started to work on different types of enquiry. I am beginning to recognise the ways I can answer questions. I can carry out simple tests.	Performing simple tests	more complex tests, such as fair tests, are beginning to be performed.

Classify	Beginning to organise and categorise objects, e.g. putting all the teddy bears together or teddies and cars in separate piles	Builds up vocabulary that reflects the breadth of their experiences.	Extends vocabulary, especially by grouping and naming.	**Identifying and Classifying** I use my senses to observe & start to describe simple features of objects, events / living things. I respond & begin to sort appropriately with regard to simple features. I can observe a change. I begin to make simple comparisons.	**Identifying and Classifying** I can explore the world around me. I can make comparisons of objects, materials and living things. I decide on how to group and sort things with help. I observe changes over time.	Identifying and classifying	classify using more complicated taxonomies, etc.
Gather & record	Distinguishes between the different marks they make. Creates and experiments with symbols and marks representing ideas of number.	Sometimes gives meaning to marks as they draw and paint	Gives meaning to marks they make as they draw, write and paint.	**Gather and record data** I communicate and draw simple pictures of my findings with help. I can add blocks to towers, showing early measurement. I can stick pictures onto a chart drawn for me. With help, I can use **simple books and other sources** to help find out about simple scientific ideas.	**Gather and record data** I can record simple data. I can record what I found out in a variety of ways. (*ICT and on paper, using text, drawings and labelled diagrams)* I fill in a tally chart if the teacher makes it for me or with help. I can use simple chart templates provided to communicate with help. I ask people questions to find out answers. I can use **simple** secondary resources to help find answers	Gathering and recording data to help in answering questions. (And recognise that they can be answered in different ways.)	observations are recorded using ICT & on paper, using text, drawings and labelled diagrams. prepared tables & block graphs are used to present information data is gathered & recorded to help in answering questions.
Hypothesise	Explores objects by linking together different approaches: shaking, hitting, looking, feeling, tasting, mouthing, pulling, turning and poking.	Talks about why things happen and how things work.	Develop their own narratives and explanations by connecting ideas or events.	**Use observations and ideas to suggest answers to questions.** I begin to tell others some differences and similarities. I use annotate drawings and simple sentences to communicate. I can state what happened or what we did.	**Use observations and ideas to suggest answers to questions.** I am beginning to notice patterns with help. I can talk about what has happened and how I found it out. I am beginning to use some simple scientific language to share what I found out. I describe obs. simply with a range of vocab.	Using their observations and ideas to suggest answers to questions	observations and ideas are used to suggest answers to questions. systematic observations and measurements of what is observed are made.

Science Progression – Scientific Knowledge

<table>
<tr><th></th><th>Nursery 2/3</th><th>Nursery 3/4</th><th>Reception</th><th>Y1</th><th>Y2</th><th>beyond</th></tr>
<tr><td rowspan="3">Plants</td><td rowspan="3">Notices detailed features of objects in their environment.</td><td rowspan="3">Can talk about some of the things they have observed such as plants, animals, natural and found objects.
Developing an understanding of growth, decay and changes over time.</td><td rowspan="3">Make observations of plants and explain why some things occur, and talk about changes.
Looks closely at similarities, differences, patterns and change.</td><td>identify & name a variety of common wild & garden plants, including deciduous & evergreen trees</td><td></td><td rowspan="3">identify & describe the functions of different parts of flowering plants
explore the requirements of plants for life & growth & how they vary from plant to plant
investigate the way in which water is transported within plants
explore the part that flowers play in the life cycle of flowering plants</td></tr>
<tr><td rowspan="2">identify & describe the basic structure of a variety of common flowering plants, including trees.</td><td>observe and describe how seeds and bulbs grow into mature plants</td></tr>
<tr><td>find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.</td></tr>
<tr><td rowspan="4">Living things and their habitats</td><td rowspan="4">Notices detailed features of objects in their environment.</td><td rowspan="2">Developing an understanding of growth, decay and changes over time.</td><td rowspan="2">Children know about similarities and differences in relation to living things.</td><td></td><td>explore & compare the differences between things that are living, dead, and things that have never been alive</td><td></td></tr>
<tr><td></td><td>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.</td><td></td></tr>
<tr><td rowspan="2">Comments and asks questions about aspects of their familiar world such as the place where they live or the natural world.
Shows care and concern for living things and the environment</td><td rowspan="2">Talks about features of their own immediate environment and how environments might vary from one another.</td><td></td><td>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 depend on each other</td><td></td></tr>
<tr><td></td><td>identify and name a variety of plants and animals in their habitats, including micro-habitats</td><td></td></tr>
<tr><td rowspan="2">Seasonal changes</td><td rowspan="2">Notices detailed features of objects in their environment.</td><td rowspan="2">Comments and asks questions about aspects of their familiar world such as the place where they live or the natural world.</td><td rowspan="2">Looks closely at similarities, differences, patterns and change.
Talk about the features of their own immediate environment and how environments might vary from one another</td><td>observe changes across the four seasons</td><td></td><td></td></tr>
<tr><td>observe and describe weather associated with the seasons and how day length varies.</td><td></td><td></td></tr>
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Animals including humans	Enjoys playing with small world models such as a farm. Beginning to organise and categorise objects, e.g. putting all the teddy bears together or teddies and cars in separate piles	Can talk about some of the things they have observed such as plants, animals, natural and found objects. Shows care and concern for living things and the environment	-Children know about similarities and differences in relation to living things.	identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals	notice that animals, including humans, have offspring which grow into adults	
				identify and name a variety of common animals that are carnivores, herbivores and omnivores	find out about and describe the basic needs of animals, including humans, for survival (water, food and air)	identify that animals, including humans, need the right types & amount of nutrition, & that they cannot make their own food; they get nutrition from what they eat
					describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.	
				describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets)		identify that humans & some other animals have skeletons & muscles for support, protection & movement
				identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.		
Everyday materials	Notices detailed features of objects in their environment. Creates sounds by banging, shaking, tapping or blowing. Explores and experiments with a range of media through sensory exploration, and using whole body.	Can talk about some of the things they have observed such as natural and found objects. Talks about why things happen and how things work.	Looks closely at similarities, differences, patterns and change Children know about similarities and differences in relation to materials. Experiments to create different textures.	distinguish between an object & 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 material	identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses	
		Realises tools can be used for a purpose	Selects and uses technology for particular purposes.	compare and group together a variety of everyday materials on the basis of their simple physical properties.		
	Experiments with blocks, colours and marks.	Uses various construction materials.	Manipulates materials to achieve a planned effect.		find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.	