Science Topic Plan and Subject Coverage Map 2021- Updated BH Nov 2021

Intent Our science is taught through a practical, investigation led approach which encourages children to ask and answer questions about the world around them. Their experiences are broadened through first hand exploration of nature and physical processes, which allows them to see themselves as scientists.

Implementation Through real life and creative contexts that children can engage and understand. Time is provided for class and partner discussion with a focus on building and supporting scientific vocabulary through speech and understanding. Recording is scaffolded throughout KS1 so that children become independent and confident to record and clearly communicate their results for others.

Impact Children understand how science has and can impact their world. They are inspired to see themselves as a scientist and show a progression of understanding and skills in their science knowledge and work.

Year Group	Year 1						Year 2					
Term	**Aut 1**	**Aut 2**	**Spr 1**	**Spr 2**		**Sum 2**	**Aut 1**	**Aut 2**	**Spr 1**	**Spr 2**		**Sum 2**
Topic	**This is Me**	**Giants, Grufalo and Flying Brooms**	**Blast Off**	**Paw and Claws**		**At the Seaside**	**Dragonology**	**Remembrance**	**Dinosaurs**	**Planet Earth**		**Queen Elizabeth II**
NC Areas of Science	**Animals including humans**	**Animals including humans**	**Animals including humans**	**Animals**		**Seasonal Walk**	**Use of Everyday Materials**	**Use of Everyday Materials**	**Animals including humans and Living things**	**Plants**		**Living things and their habitats**
NC Statements	-Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense	-describe and compare the structure of variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) -identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals	*-Find out about and describe the basic needs of animals, including humans, for survival (water, food and air)* ***YR 2*** *Humans the focus* *-Describe the importance for humans of exercise, eating the right amounts of different types of food and hygiene* ***YR 2***	Notice that animals, including humans, have offspring which grow into adults **YR2**		-observe changes across the 4 seasons -observe and describe weather associated with the seasons and how day length varies -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 *(Lesson undertaken each term to focus on current season as well as Summer 2)*	-distinguish between an object and the material from which it is made **YR1** -identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock **YR1** -describe the simple physical properties of a variety of everyday materials **YR1** -compare and group together a variety of everyday materials on the basis of their simple physical properties **YR1**	-- 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	- explore and compare the differences between things that are living, dead, and things that have never been alive *-identify and name a variety of common animals that are carnivores, herbivores and omnivores* ***YR1***	-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 -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
Target Tracker Statements	Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. (Animals, including humans)	Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. (Animals, including humans) Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). (Animals, including humans)	Describe the basic needs of animals, including humans, for survival (water, food and air). (Animals, including humans) **Yr 2** Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. (Animals, including humans) **Yr 2**	Understand that animals, including humans, have offspring which grow into adults. (Animals, including humans) **YR 2**		Observe changes across the four seasons. (Seasonal changes) Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. (Plants Identify and describe the basic structure of a variety of common flowering plants, including trees. (Plants) Observe and describe weather associated with the seasons and how day length varies. (Seasonal changes)	Distinguish between an object and the material from which it is made. (Materials) YR 1 Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. (Materials) YR 1 Describe the simple physical properties of a variety of everyday materials. (Materials) YR 1 Compare and group together a variety of everyday materials on the basis of their simple physical properties. (Materials) YR 1	Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. (Materials) Describe how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. (Materials)	Group animals according to what they eat. (Animals, including humans) YR 1 Explore and compare the differences between things that are living, dead, and things that have never been alive. (Living Things) (Living things and their habitats) Identify and name a variety of common animals that are carnivores, herbivores and omnivores. (Animals, including humans)	Observe and describe how seeds and bulbs grow into mature plants. (Plants) Describe how plants need water, light and a suitable temperature to grow and stay healthy, and describe the impact of changing these. (Plants)		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. (Living things and their habitats Identify and name a variety of plants and animals in their habitats, including micro-habitats. (Living things and their habitats) 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. (Living things and their habitats)

NC **Working Scientifically** Year 1 and Year 2	- **Ask simple questions and recognise that they can be answered in different ways** - **Use simple equipment to observe closely.** - **Perform simple tests.** - **Identify and classify.** - **Use his/her observations and ideas to suggest answers to question.** - **Gather and record data to help in answering question**										
	Year 1					**Year 2**					
	Aut 1	**Aut 2**	**Spr 1**	**Spr 2**	**Sum 2**	**Aut 1**	**Aut 2**	**Spr 1**	**Spr 2**		**Sum 2**
Target Tracker Statements Working Scientifically and when it is taught during the Year **NB** *This is taught throughout the year but these are specific times*	Identify and classify (Aut 1 / Spr 1 / Seasonal walks) Gather and record data to help in answering questions (Aut 1 / Aut 2 / Seasonal walks)	Perform simple tests. (Aut 2 / Seasonal walks Use their observations & ideas to suggest answers to questions (Aut 2 / Spr 2)) Gather and record data to help in answering questions (Aut 1 / Aut 2 / Seasonal walks)	Identify and classify (Aut 1 / Spr 1 / Seasonal walks)	Use their observations & ideas to suggest answers to questions (Aut 2 / Spr 2)	Identify and classify (Aut 1 / Spr 1 / Seasonal walks) Perform simple tests. (Aut 2 / Seasonal walks)	Identify, group and classify. (Aut 1 / Aut 2 / Spr 1)	Ask simple questions and recognise that they can answered in different ways incl use of scientific language from the NC (Aut 2 Communicate their ideas, what they do and what they find out in a variety of ways. (Aut 2 / Spr 1 / Sum 2) Perform simple comparative tests. (Aut 2 / Spr 2) Identify, group and classify. (Aut 1 / Aut 2 / Spr 1) Use their observations & ideas to suggest answers to questions noticing similarities, difference and patterns (Aut 2 / Spr 2 / Sum 2) Gather and record data to help in answering questions incl from secondary sources of information (Aut 2 / Spr 2)	Communicate their ideas, what they do and what they find out in a variety of ways. (Aut 2 / Spr 1 / Sum 2) Identify, group and classify. (Aut 1 / Aut 2 / Spr 1)	Use simple equipment to observe closely incl changes over time. (Spr 2 / Perform simple comparative tests. (Aut 2 / Spr 2) Use their observations & ideas to suggest answers to questions noticing similarities, difference and patterns (Aut 2 / Spr 2 / Sum 2) Gather and record data to help in answering questions incl from secondary sources of information (Aut 2 / Spr 2)		Communicate their ideas, what they do and what they find out in a variety of ways. (Aut 2 / Spr 1 / Sum 2) Use their observations & ideas to suggest answers to questions noticing similarities, difference and patterns (Aut 2 / Spr 2 / Sum 2)
Working Scientifically How some is it taught **NB** *This is taught throughout the year but these are specific times*	- **Identifying** senses in outdoors. - **Classify & group** foods based on taste. - **Research** human body using books.	- **Research** animals using books - **Identify** similarities & differences. - **Classify & group** animals based on their group.	- **Sort** food into groups. - **Identify** what different food is.	- **Hypothesise** about what's in an egg. - **Observing** chicks hatching & growing. - **Research** the development of a chick.	- **Observe over time** the changes across seasons. - **Identify & Compare** trees / nature over time. - **Research** trees using books. - **Classify plants** in deciduous and evergreen	- **Identify** different types of materials - **Classify and Group** materials	- **Observation** of materials **& evaluate.** - **Comparative & fair** testing a range of materials. - **Pattern seeking** with results. - **Identifying** best materials for different purposes. - **Seek answers** to questions by **collecting, analysing & presenting data**	- **Classify / group** objects into categories. - **Identify** if an animal is an herbivore, carnivore, omnivore by what they eat. - **Identify** if an animal is an herbivore, carnivore, omnivore by teeth and claws - **Research** dinosaurs by looking at pictures of teeth & claws.	- **Hypothesise** what will happen to the growth of a seed/plant - **Observe** plants over different stages of their growth. - **Identifying** similarities & differences of plants. - **Pattern seeking** in their local environment. - **Comparative & fair testing** plants in different environments and variables. - **Seek answers** to questions by **collecting, analysing & presenting data** -		- **Identify** where plants are growing and where animals can be found. - **Compare** habitats of a pond and woods. - **First-hand observation** of frogspawn

	Year 1						Year 2					
	Aut 1	**Aut 2**	**Spr 1**	**Spr 2**		**Sum 2**	**Aut 1**	**Aut 2**	**Spr 1**	**Spr 2**		**Sum 2**
Scientific Knowledge & Conceptual Understanding	Naming 5 senses and linking to body part.	Different types & categories of animals fish, amphibians, reptiles, birds, mammals. That they have different needs.	Humans need air, food, water for survival with shelter. There are different food groups incl. fruit & vegetables as one & sugar & fat as another	Chickens come from eggs as do some other animals Some animals are born live and do not come from eggs.		How plants, weather and daylight changes across the four seasons. Name parts of a tree and flower. Name 4 seasons		That materials have different properties which can be changed and make them really useful for certain objects.	Features of living and dead. How food groups determine if an animal is a carnivore, herbivore or omnivore.	How plants grow and the conditions they need. The life cycle a plant has.		How differences between places very close to each other result in a different range of plants & animals. That plants and other animals reproduce
Language Opportunities	Scientific vocabulary actively built up through topic & displayed. Language opportunity to present data & results to group.	Introduce & define features & categories. Correctly define through quiz & discussions. Justify decisions	Label food from home into food groups. Rate their meal based on how balanced and healthy they feel it is. Discussion about fitness, exercise & health.	Recording their observations using senses		Discussion about personal experiences and those in other countries. Discussion about changes in nature across the seasons. Link symbols to weather terminology		Build up a class scientific dictionary display. Stem sentences to support predicting and explaining reasons. Sharing results to group and class.	Group discussion when sorting by looking for similarities/ differences. Articulate their thinking & reasoning. Apply their reasoning to a new animal using scientific vocabulary accurately.	Discussions & questioning about why some plants have grown and others haven't. Record their findings as a group using scientific language.		Use scientific language from previous learning e.g. plants / animals. Identify differences between two habitats. Predict what living things that will be found there, then evaluate & suggest scientific reasons.
Scientific Questions to answer **(investigations)** **Need to build in investigation progression** **Think talk phrases**	"Do people with bigger feet need bigger gloves?"	"What animals would make good pets?" "What material is best for cleaning up pets mess?"	Plan a balanced meal for the astronauts. Which fitness statements are true for individuals, all humans or some humans	What is inside the egg?		Do they think it rains more at different times of the year?		"Which ball will be the bounciest?" "Which fabric is the stretches the most?" "Which fabric has the best durability for playing outside?" "Which is the strongest paper? – How do you know?	Is a wooden chair alive or has never been alive and why?	What conditions does a plant need to grow healthily?		What changes to animals and plants might happen in a long, hot summer if the pond dries up? What changes in species might occur if the trees were cut down and a grassy meadow planted instead?
Context to maximise engagement	Initial link to Head shoulders song. Sensory walk & tasting sessions. Make a sensory toy for a baby.	Room on the Broom story scenario. Make a suitable class pet through junk modelling.	Building a new space station. Plan & make a sandwich for the astronauts. Film clip from WALL-E.	Hatch eggs in classroom		Walks outside in school grounds in each season. Make a class weather station. Grow potatoes. Use materials to make a 3D flower / tree.		Real world questions to practically answer. Links to History and DT topic of WW1. Problem solving through group work.	BBC bite size / YouTube videos. Use real objects for exploration. Make a top trump card for dinosaur / animal.	Look at real seeds, bulbs and plants. Growing their own plants from variety of seeds. Trip to Kew Gardens.		Explore school grounds & visit Dead Water Valley. Produce an information sheet for their parents.
Apply Mathematical knowledge	How to measure in non-standard units or cm. How to record data on a table and use this answer a simple question.		Counting heart beats & put info into a simple table. Put class results into a simple pictogram.			Rain gauge and temperature collecting experiment. Time and hours to understand length of day.		Record results in a bar chart. Measuring in cm and with weights. Tally charts and jottings.		Measure plants using rulers in cm and mm.		
Implications of science today & in the future	Our senses help us explore the world around us and will link different body parts to senses.	Understand what animals (pet) need to be healthy and happy	Understand the balance of different food groups in order to make a healthy meal. Understand how exercise changes their body e.g. measure heartbeats.	First hand observations of the life cycle of a chick and how life comes from an egg. Understand how to take care of an animal.		Know how weather and seasons make an impact on their daily life e.g. clothing & activities. How weather forecasts can help them plan.		Understand how to select the most appropriate material depending on its properties	Identify what objects are alive or dead. Identify food groups and whether they or animals are herbivores, carnivores, omnivores.	Observe how a plant grows and learn more about how to take care of them and be responsible for its care.		Identify plants and animals in their immediate environment. Treat animals and the environment with care and sensitivity.

Science in the Early Years Curriculum

From the EYFS Development Matters 'Non-statutory curriculum guidance for the Early Years Foundation stage'

Science is found in several areas of the new guidance. Examples are detailed below. ***Nursery statements in italics***

Communication and Language	Personal, Social and Emotional Development	Mathematics	Understanding the world
Describe events in some detail. Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen. Use new vocabulary in different contexts. Engage in non-fiction books. Listen to and talk about selected non-fiction to develop a deep familiarity with new knowledge and vocabulary.	<u>To Support their overall health and wellbeing:</u> Regular physical activity Healthy eating Tooth brushing Sensible amounts of 'screen time' Having a good sleep routine Being a safe pedestrian Personal hygiene	Select, rotate and manipulate shapes to develop spatial reasoning skills. Looking at similarities and differences Compare length, weight and capacity	*Use all their senses in hands-on exploration of natural materials.* *Explore collections of materials with similar and/or different properties.* *Talk about what they see, using a wide vocabulary* *Plant seeds and care for growing plants.* *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.* Explore the natural world around them. Describe what they see, hear and feel whilst outside. Understand the effect of changing seasons on the natural world around them. Talk about the differences between materials and changes they notice. Explore and talk about different forces they can feel.

Year Group	Year R					
Term	**Aut 1**	**Aut 2**	**Spr 1**	**Spr 2**	**Sum 1**	**Sum 2**
Topic	**Once Upon a Rhyme**	**Rumble in My Tummy**	**When I Grow Up**	**Jack and The Beanstalk**	**The Very Hungry Caterpillar**	**Bear Hunt**

Links to the **NC Science Area of Teaching**	- Handwashing
	- Spiders – web and habitats
	- **Building a wall for humpty**
	- Sorting and Classifying shape
	- **Stars and Plants**
	- **Where does our food come from? (Harvest and farming)**
	- **Animals and their young matching**
	- **Weekly Forest Walk**
		- Comparison with amounts
		- **Favourite foods**
		- Cooking of noodles and curry
		- **Winter and talking about seasons and appropriate clothing**
		- **Weekly Forest Walk**
			- Hospital and Vet role play
			- **When I grow up – physical changes and ordering of ages**
			- **Dentist and dental hygiene**
			- Firefighters – what happens in a fire
			- Vet – what do they do and the animals they treat
			- **Balanced Diet with Dr Ranj**
			- **Weekly Forest Walk**
			
			Science Week Activities
				- **Healthy food and exercise – why is it important?**
				- Cooking – healthy stew
				- **PSED Jigsaw – I need exercise to keep my body healthy**
				- **Gardening and planting week**
				- **Observation of Beanstalk growth**
				- Easter – eggs and where they come from/why they are celebrated
				- **Weekly Forest Walk**
					- **Stages of a caterpillar life cycle**
					- **Spring growth/change/new life**
					- **Spring flower craft (talking about different parts of a flower)**
					- **Non-fiction story focus on mini beasts and insects**
					- **Seasons – Spring into summer**
					- **Weekly Forest Walk**
						- **Hibernate topic words and story**
						- Where do bears live – continents
						- **Labelling body parts of a bear – what do they do, why are they important?**
						- **Different types of bears (from forest walk) research and write facts about habitats of bears, different countries, climates.**
						  - **Climate change and melting ice**
						  - **Recycling and conservation**
						  - **Weekly Forest Walk**

***Bold indicates stronger links to the NC Science Areas**

These topics, areas of discussion and lessons are planned adult led areas of the week. These can change throughout the year depending on the cohort's interests and previous knowledge therefore please take this as a guide only.