Science in the Early Years

What does a Scientist look like in the EYFS?

I want to become an **Exceptional Explorer** who can show curiosity about the world around them, understand how to read and draw a simple map, understand some differences between times and places.

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Characteristics of Effective Learning: Playing and exploring – children investigate and experience things and have a go; Active learning – children concentrate and keep trying if they encounter difficulties and enjoy achievements; Creating and thinking critically – children have and develop their own ideas, make links between ideas, and develop strategies for doing things. In addition, the prime area of learning PSED, CL and PD underpin and are an integral part of all areas of learning

Understanding the World Educational Programme: 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.

Intent: Science helps everyone to understand the world they live in. It is constantly changing our lives and it relates to things we see and do on a daily basis. At Tenbury we offer the children a science curriculum that evokes curiosity, excitement and understanding about the world around them. We encourage our children to ask questions and then experiment to find out the answers to their questions. We understand the need for practical, hands on experiences, allowing the children time to explore and investigate. We want to teach our children to love discovering new things, and think of themselves as scientists as they begin to understand the natural world around them.

Themes	**A1 – Happy To Be Me** **A2 – Over The Rainbow**	**Sp1 – Tell Us a Story** **Sp2 – Help Is At Hand**	**S1 – If You Go Down To The Wood** **S2 – What a Wonderful World**
Learning Overview	We will explore the natural world, commenting on seasonal changes and the weather. We will look what happens to trees and the weather during autumn and winter. We will use our senses during our exploration of the outdoor environment. We will explore and talk about different forces e.g. gravity, push and pull. We will also learn about life cycles of humans	We will look at the change of seasons and what happens to some plants and animals during spring. We will look at the schools grounds and local environment and see which animals and plants we can draw, observe and name. We will look at some farm animals and match the mother to her young. We will look at plants and animals from hot and cold countries. We will also learn about life cycles of a plant and chicken. We will look at the changes to melting chocolate. We will talk about dinosaurs being herbivores, carnivores and omnivores. We will think about which materials would be the strongest to build a bridge for goats to cross and a house for the three little pigs	We will recognise some similarities and differences in how our environment looks now compared to the past year. We will look at what happens to the weather/climate during summer. We will look at some animals that are nocturnal. We will explore materials and identify what materials would make the best boat. We will think about materials being waterproof or not waterproof and test our theories as well as identifying objects that float/sink and explain their reasons. We will learn about space and be able to name some of the planets. We will look at what we can do to help the environment by recycling. We will learn about caterpillars, bees and other insects. We will also learn about life cycles of some of these insects. We will look at the changes to ice when it is melted. We will look at some different foods that can be grown naturally.

Term	**Autumn 1**	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Science Evidence in Floor Book We revisit knowledge and skills throughout the year	To explore the natural world around them. To describe what they see, hear and feel whilst outside. To know all 5 senses and explain what they are. We will explain the life cycle of a human.	To understand what changes happen in Autumn and winter and note some differences. To explore and talk about different forces e.g. gravity, push and pull.	To explain the lifecycle of a plant. To know how to care for growing plants To talk about similarities and differences between materials and changes they notice. To name an animal and fruit that comes from a country in Africa.	To understand what changes happen in spring, discussing when and how things grow. To observe and draw pictures of animals and plants. To name 3 animals and their young To explain the lifecycle of a chicken. To know that things can melt and understands how to make these changes occur. To explore the lives and diets of	To identify the best material that is waterproof and best for its purpose. To know earth is the planet we live on. To name two nocturnal animals. To know that things can melt and freeze and understands how to make these changes occur. To understand how human activity can have a negative impact on the environment and what they can do to look after	To understand what changes happen in Summer. To give an explanation as to why something floats or sinks. To explain the lifecycle of a frog and butterfly. To know about healthy foods that grow naturally.

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				dinosaurs.	the natural world. To know why it is important to recycle and how this helps our planet earth.	
Science Sticky Knowledge Knowledge children need to know by the end of every half-term	I know I need to respect and care for the natural environment and all living things. I know all 5 senses and can describe the world through using my senses I know that we all started life as a baby and we will grow elderly.	I know what the weather is like in Autumn and winter.	I know that a plant needs light, soil and water to grow. I know that plants die if they don't have enough water. I know that the weather is different in different parts of the world. I know that food grows on trees and some comes from plants on and under the ground. I know the name of some African animals	I know some things that happen in spring. I know at least three animals and the name of the babies. I know some dinosaurs used to eat other dinosaurs and others used to eat plants. I know that a chicken lays an egg and the egg hatches into a chick. I know that chocolate melts when it gets warm.	I know that some materials are better suited to jobs than others. I know some similarities and differences in relation to materials I know that ice melts when it gets hot. I know that water turns into ice when it freezes. I know how important it is to recycle. I know that my actions affect the world.	I know the names of the four seasons. I know the main changes that happen in Autumn, Winter, Spring and Summer. I know some foods that are healthy and not healthy . I know the name of some insects. I know that a caterpillar becomes a butterfly I know that some materials float and some sink.
Key vocabulary	senses, natural, changes, hear, see, feel, touch, taste	season, autumn, winter, rain, wind, cloudy, cold	plant, grow, water, light, hot, push, pull, force, gravity, pressure, air, thrust	habitat, survive, observe, animal, lifecycle, diet, change, spring, 'meat eater;, 'plant eater'	materials, waterproof, float, sink environment, recycle freeze, ice, melt, recycle	autumn, winter, spring, summer, hot, sunny, care, healthy, float, sink, life cycle
Our Curriculum Goal	To become an **Exceptional Explorer** who can show curiosity about the world around them, understand how to read and draw a simple map, understand some differences between times and places.					
ELG **(End of the year only)**	• 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					
During KS1, children will learn	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. ANIMALS (INC HUMANS) 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. EVERYDAY MATRERIALS 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.					

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EYFS science knowledge and skills linking to year 1			
Working scientifically	Plants	Animals (Including humans)	Everyday materials
Comments and asks questions about aspects of their familiar world such as the natural world, making observations and drawing pictures of animals and plants. Talks about why things happen and how things work Looks closely at similarities, differences, patterns and change Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter Explore and talk about different forces I can feel – gravity, push and pull toys	know that a plant needs light, soil and water to grow. Know that plants die if they don't have enough water. Know that some food grows on trees and some comes from plants on and under the ground.	I know the name of some insects. I know the name of some baby animals I know that a caterpillar becomes a butterfly I know that a tadpole becomes a frog I know that humans started life as a baby Identify which dinosaurs are meat or plant eaters	Know that some materials float and some sink. Know that some materials are more suited to jobs than others. Know some similarities and differences in relation to materials

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Our science journey through the year

Overview

Science

-In Science, we look at the world around us. Scientists try to find out how and why things happen.

- Scientists learn about their subject by observing (looking at things) and experimenting (testing things).

Early Science learning is found in the following EYFS areas of learning:

-Understanding the World

-Expressive Arts and Design

-Physical Development

To describe what they see, hear and feel whilst outside.

To name the 5 senses

To understand what changes happen in Autumn and winter and note some differences.

To understand what changes happen in spring, discussing when and how things grow.

To name and order the seasons.

To name 3 animals and their young.

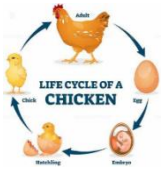
To know about healthy foods that grow naturally.

To know earth is the planet we live on.

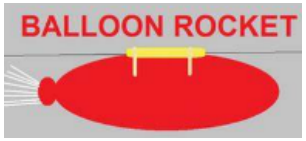
To understand how human activity can have a negative impact on the environment and what they can do to look after the natural world.

To explain the life cycle of a plant and a chicken.

To know how to care for a growing plant



To know that things can freeze and melt and understands how to make these changes occur.

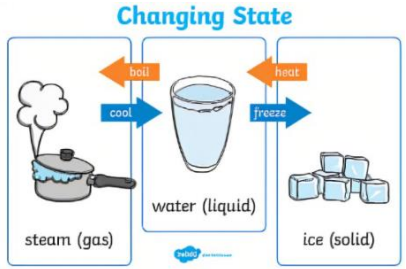


To talk about similarities and differences between materials and changes they notice.

To identify the best material that is waterproof and best for its purpose.

To give an explanation as to why something floats or sinks.

To explore and talk about different forces e.g. gravity, push and pull



- Discussions about dinosaurs eating other dinosaurs. Make links to animals and the food chain. Link back to healthy eating, balanced diet and what we eat.
- Exploring change of materials when making Easter chocolate nests – melting of chocolate.
- Planting and caring for flowers/vegetables.
- Animals and their habitats. What animals might we see at the zoo? What animals might we see at the farm? What animals might we find in our garden.
- Floating and sinking objects in the water tray.
- Trying healthy foods (PSHE)
- Melting ice cubes.
- Using magnets to explore different magnetic and non-magnetic objects.
- Painting with water on pavements and watching it dry quickly in warmer weather.
- Lifecycle of a butterfly – caterpillar experience
- Lifecycle of a frog – tadpoles from our school pond
- Autumn and Spring senses walk
- Explore the change of properties of sand in the sand tray (cause and effect)
- Discovering which type of sand builds the best sandcastle.
- Exploring our own shadows.
- Exploring different objects using senses that relate to different seasons (pinecones, conkers, bark, rocks, pumpkins, ice)

Key Vocabulary

Scientist

Experiment

Earth

Natural/Man-Made

Season

Animal

Plant

Environment

Healthy

Texture

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Continuous Provision

Our 'CHILD LED' Science journey through the year

Through our continuous provision, children have the opportunity to explore and use a variety of resources that enable them to develop their scientific skills. Our provision includes: Natural materials, magnets, cogs, small world animals (mini-beasts, farm, jungle, dinosaurs, sealife), torches, light box, mirrors, magnifying glasses, translucent resources, colour mixing paints, puzzles, animal products, seasonal fruit and vegetables, fiction and non-fiction books, Sensory toys/resources, push and pull toys, guttering, sand and water.

Communication, and Language (Prime Area)		
0/3	3/4	R
	Use a wider range of vocabulary.	Learn new vocabulary.
Generally focus on an activity of their own choice.	Understand 'why' questions, like: "Why is there a rainbow"?	Articulate their thoughts and ideas in well formed sentences.
Recognise and point to objects if asked about them.	Use talk to organise themselves and their play: "I'm going to mix red with yellow".	Use new vocabulary in different contexts.
Ask simple question about 'who', 'what' and 'where'.		Listen to and talk about selected non-fiction to develop a deep familiarity and new knowledge and vocabulary.
		Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen.

Physical Development (Prime Area)		
0/3	3/4	R
Build independently with a range of appropriate resources. (natural blocks, magnetic blocks)	Choose the right resources to carry out their own plan.	Develop their small motor skills so that they can use a range of tools competently, safely and confidently. Suggested tools: magnifying glass, compass
Use large and small motor skills to do things independently. (experiencing forces in motion e.g. push and pull – bikes, wheel barrows, pushchairs)	Match their developing physical skills to tasks and activities.(experiencing forces in motion e.g. push and pull – bikes, wheel barrows, pushchairs)	Confidently and safely use a range of large and small apparatus, indoors and outdoors, alone and in a group. (building a habitat)
	Choose the right resources to carry out their own plan.	

Personal, Social, Emotional Development (Prime Area)		
0/3	3/4	R

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Notice and ask questions about differences.	Select and use activities and resources, with help when needed. This helps them to achieve a goal they have chosen, or one which is suggested to them.	Show resilience and perseverance in the face of challenge.
	Being increasingly independent in their own care needs. Make healthy choices about food, drink, activity and tooth brushing.	Manage their own needs – personal hygiene

Mathematics (**Specific Area**)		
0/3	3/4	R
	Talk about and identifies the patterns around them. E.g. symmetrical pattern on a butterfly.	

Knowledge of The World (**Specific Area**)		
0/3	3/4	R
Explore materials with different properties.	Use all their senses in hands-on exploration of natural materials.	Explore the natural world around them.
Explore natural material, indoors and out.	Explore collections of materials with similar and/or different properties.	Describe what they see, hear and feel whilst outside
Explore and respond to different natural phenomena in their setting.	Talk about what they see, using a wide vocabulary.	Understand the effect of changing seasons on the natural world around them.
	Explore how things work	
	Plant seeds and care for growing plants.	Recognise some environments that are different to the one in which they live.
	Understand the key features of the life cycle of a plant and animal	
	Begin to understand the need to respect and care for the natural environment and living things	
	Explore and talk about different forces they can feel.	
	Talk about the differences between materials and changes they notice.	

Literacy (**Specific Area**)		
0/3	3/4	R
Ask questions about a book. Makes comments and shares their own ideas.	Use some of their print and letter knowledge in their early writing. For example, labelling a mini-beast.	

Add some marks to their drawing which they give meaning to. E.g. drawing a spider with legs.	Engage in extended conversations about stories, learning new vocabulary.	

Expressive Arts and Design (**Specific Area**)		
0/3	3/4	R
Explore paint using fingers as well as other parts of their body, as well as brushes and other tools.	Explore colour and colour mixing	
Explore different materials using all of their senses		

Forest Schools

Forest School takes place in a dedicated area of our school grounds. It gives the children the opportunities to explore and learn about their natural world. Activities include:

Sink and Float	Finding natural objects and guessing whether they will sink or float, then finding out actual results in the pond or a bucket of water.
Magnetism	Discuss poles of the earth, talk about north, south, east and west. Discover if anyone knows of an object that can give us information about direction. Then demonstrate north by magnetising a needle and threading through a leaf, which will then be placed to float on water.
Pond Dipping	Discovering life within a pond, discussing first ideas on what we may find, then using nets to see what we can find and talking about them. (Newts, ramshorn snails, dragonfly nymphs, etc.
Life Cycles	Learning about life cycles of flora (plants) and fauna (animals) within our forest school environment and witnessing metamorphosis events of some of those first hand, such as, ladybirds, Frogs, dragonflies etc.
Bug Hunts	Collect mini-beasts and look at them using magnifying pots. Discuss properties of the different creatures.
Habitats	Investigate different habitats within Forest Schools. Early Summer can show and tell all about our abundant minor bee and bombilious major (bee-fly) population and their unusual cuckoo like habitat behaviour.
Camouflage	Hang bits of wool caterpillar size around Forest School, some bright red colour and others green. Explain camouflage and its uses in nature. Take children on a walkthrough of the forest, asking them to count how many wool caterpillars they spot.
Fire	Discuss fire, its uses, its danger and how to be as safe as possible around a fire. Discuss what we think the three essential ingredients are for a fire to start (heat, fuel, oxygen) then demonstrate by lighting a campfire using flint and steel.
Catapult	Build and demonstrate a rope tension catapult and launch tennis balls at a stick tower adjusting tension and trajectory in order to knock it down.
Plant/Growing	Bulbs and seeds planted and understand the elements they need in order to thrive.