

Mapplewells Primary and Nursery School Whole School Subject Map (Science)

		Autumn	Spring	Summer	
	Strand (s) (taken from KKPDs)	Strand: All living things and their habitats Forces Sound Materials and their properties	Strand: All living things and their habitats Materials and their properties Light	Strand: Electricity Plants Animals including humans Seasonal changes All living things and their habitats	
F1	KKPDs (and subject content choices)	Strand: All living things and their habitats SBN.5 know how to meet own care needs, (e.g. brushing teeth, using the toilet, washing and drying their hands thoroughly) Strand: Forces SPN.1 know the words; push, pull, stretch, twist (Forest School) Stand: Sound SPN.5 know we use our ears for listening (environmental sounds, inside and outside) SPN.6 know that sounds come from different objects Strand: Materials and their properties SCN.1 know the names of some simple materials (Paper, plastic, wood, straw, stick, bricks) SCN.2 know how to explore collections of materials, with similar and/or different properties. (Forest School) Working Scientifically Strand: Scientific attitudes WSN.1 know how to talk about what they see WSN.2 know how to use simple scientific vocabulary in their talk	Strand: All living things and their habitats SBN.1 know the name of some living things that are within the immediate natural environment SBN.2 know how to observe plants, animals, natural and found objects (Sea creatures, Crab, starfish, shrimp, sea anemone, Jelly fish) Strand: Materials and their properties SBN.4 know how to explore natural materials, using their senses. Strand: Light SPN.2 know the difference between day and night (Forest School) Working Scientifically Strand: Scientific attitudes WSN.1 know how to talk about what they see WSN.2 know how to use simple scientific vocabulary in their talk Strand: Planning WSN.3 know how to ask simple who, what and why questions	Strand: Electricity SPN.3 know some objects need electricity to work SPN.4 know how to keep safe around electricity Strand: Plants SBN.10 know what a seed is and that it will turn into a plant SBN.12 know how to plant a seed (cress, sunflower) Strand: Animals including humans SBN.7 know how to look after teeth (Learning for Life healthy lifestyles) SBN.8 know how exercise makes us feel (Forest School) SBN.9 know what an animal is and talk about the life cycle (Human's life cycle) Strand: Seasonal Changes SPN.7 know the different types of weather, (e.g. sunny, raining, cloudy) (Forest School) Strand: All living things and their habitats SBN.3 know how to care for living things and the environment (making bird feeders at Forest School) Working Scientifically Strand: Planning WSN.3 know how to ask simple who, what and why questions Strand: Analysis WSN.4 know how to talk about what is happening Strand: Measurements WSN.5 know the words; full, empty, long, short, fast, slow	
	Rationale for content choices	<u>Current Learning</u> Children will investigate what objects they can pull and push.	<u>Current Learning</u> Children will develop their vocabulary when recognising simple materials around the class and their environment, for example,	<u>Current Learning</u> Children will observe changes in the weather and use the correct vocabulary to describe it.	

**Mapplewells Primary and Nursery School Whole School Subject Map
(Science)**

	Children will learn that sounds come from different objects and they use their ears to hear sounds. Children will develop meeting their own care needs, for example, going to the toilet and washing their hands. <u>Future</u> In KS1 and KS2 children learn about how to keep themselves well through and healthy lifestyle. <u>Link</u> Forest school develops children use of scientific language and develops children's early understanding of science as it is something children can easily relate to and understand.	bricks, paper and wood. At Forest school, the children will collect a range of materials and begin to compare them, for example, hard and soft. <u>Future</u> Children will develop their use of scientific language, observation and investigation skills at Forest School each week. One of the chosen activities will be making bird feeders to hang around school. Children will learn about the vocabulary needed to describe the weather, this will be used when describing seasonal changes in Year 1. Children investigate what is a good material for a house and the reason for this. Links to their literacy learning 'The Three Little Pigs.' The children will test different materials for their suitability. <u>Link</u> Children will be learning about the UK to Africa, they will be comparing animal habitats in both locations.	Children will plant a sunflower seed and observe the seed growing into a plant, the children will discuss what changes they have observed and will develop their knowledge of what a plant needs to survive. <u>Future</u> The children will watch how tadpoles grow and develop, this builds the foundations ready for KS2, when children learn more about the different life cycles but specifically focus on the different functions of a human's body. The weather is beginning to change as it begins getting colder, the children are able to notice this change expanding their knowledge of weather. Develops the children disciplinary knowledge of predicting and testing out what will sink or float. Children grow sunflowers as it is best for this time of year, allows children to continue to be good citizens (substantive knowledge from Spring 1) take it home and continue to look after it. Whilst the children in Year 3, use this knowledge to support their understanding of pollination. <u>Link</u> Children will be learning about different features of our environment and how to care for these. In art the children will produce leaf drawings at Forest School.	
Enquiry Question	How do we celebrate differently?	Where would you like to explore?	What can we learn from stories?	
Subject Vehicle	Dr / En / Dis Understanding the world	Dr / En / Dis Understanding the world	Dr / En / Dis Understanding the world	
End points F1	Recall the knowledge specified within the KCPDs for Nursery. Talk about the differences in materials and how they can be changed Name some different materials e.g sand, water, wood Explore the natural world, commenting on what they can see, hear, feel etc. Understand and discuss the features of a life cycle. Understand that their behaviour can have an effect on the natural world and that we need to care for our planet (e.g. recycling). Explain how to care for themselves, such as brushing their teeth. Sort healthy and unhealthy foods, knowing the impact and effects they have on the body. Talk about how seeds grow into plants. Understand electricity is dangerous and that some objects need it to work. Distinguish between when it is day and night giving reasons why. Recognise that sounds come from different objects and are heard using our ears.			

	Strand (s) (taken from KKPDs)	Strand: Seasonal changes Forces Sound	Strand: Animals including humans Plants Living things and their habitats Seasonal changes Light	Strand: Materials and their properties Animals including humans Electricity	
F2	KKPDs (and subject content choices)	Strand: Seasonal Changes SPR.5 know the names of the four seasons (Forest School) SBR.7 know how to describe what they see, hear and feel Strand: Forces SPR.1 know a force can have an effect on an object, (e.g. playdough) (Forest School) Strand: Sound SPR.4 know that sounds can have different volumes (Instruments outside, continuous provision) Working Scientifically Strand: Scientific attitudes WSR.1 know how to ask questions to find out more. WSR.2 know how to articulate ideas in full sentences. WSR.3 know how to use scientific vocabulary in their talk	Strand: Animals including humans SBR.1 know and describe similarities and differences in relation to living things SBR.8 know, observe and discuss the changes that occur in the life cycle of an animal Strand: Plants SBN.1 know the name of some living things that are within the immediate natural environment (plants, trees) SBR.9 know how to care for a plant, including water and light (sunflowers) Strand: Living things and their habitats SBR.2 know and describe the habitat of familiar woodland animals SBR.4 know how human actions impact on the environment. (Rubbish in the sea, Recycling helps look after our planets resources – Travelling in cars, littering and recycling.) (Forest School) SBR.8 know, observe and discuss the changes that occur in the life cycle of an animal (butterflies) Strand: Seasonal Changes SBR.3 know and describe patterns and changes in nature (Difference appearance of the leaves for the seasons. Spring the season after winter, starts to get warmer, days are longer, new leaves on trees, lots of flowers and baby animals. Summer the season after spring, warmest season, people take holidays, it stays light until very late. Autumn the season after summer, gets colder, some trees change colour, leaves fall to the ground, conkers and acorns. Winter follows Autumn it is the coldest season. Some animals go to sleep and wake up again in Spring – Weather and Seasons) Strand: Light SPR.2 know the sun gives us natural light. (Forest School) Working Scientifically Strand: Scientific attitudes	Strand: Materials and their properties SCR.1 know the differences between simple materials and the changes they notice (e.g. adding water to sand) (Forest School) SCR.2 know the name of the everyday materials; wood, metal, glass, plastic (wood, metal, glass, paper and plastic) SCR.3 know some materials can change, (e.g. ice in the water tray, baking; combining ingredients; turning bread into toast) (Forest School) Strand: Animals including humans SBR.4 know how human actions impact on the environment. SBR.5 know and talk about the different factors that support overall health and wellbeing, (e.g. regular physical activity, healthy eating, having a good sleep routine) (Forest School) SBR.6 know the importance of oral hygiene Stand: Electricity SPR.3 know different electricity sources, (e.g. plug, battery) Working Scientifically Strand: Planning WSR.4 know how to use and understand questions such as ‘who; why; when; where and how’ Strand: Observing and Measuring WSR.5 know some simple scientific equipment WSR.6 know some simple ways of recording information, (e.g. bug hunt) Strand: Analysis WSR.7 know how to makes simple observations explain why some things occur, and talks about changes WSR.8 know how to describe events in order	

Mapplewells Primary and Nursery School Whole School Subject Map (Science)

		WSR.1 know how to ask questions to find out more. WSR.2 know how to articulate ideas in full sentences. WSR.3 know how to use scientific vocabulary in their talk Strand: Analysis WSR.7 know how to makes simple observations explain why some things occur, and talks about changes WSR.8 know how to describe events in order		
Rationale for content choices	<u>Prior learning</u> The children will build on their knowledge that different objects can make different sounds (F1) and now they will learn that different sounds have different volumes. <u>Current Learning</u> Children will learn that different sounds have different volumes, this will be explored in the continuous provision. At Forest School, the children will observe the changes in the weather. For example, if it is raining, there will be muddy puddles. <u>Future</u> The children will begin to understand what objects make sounds and the different sound that they make, in preparation for Year 3 when they learn about how sounds are made. <u>Links</u> The children will make observations of our environment, this will be developed during the children's weekly Forest School sessions where they will be looking how material can change.	<u>Prior learning</u> The children will revisit their learning using familiar plants and trees the children will have already some knowledge of Sunflower from F1, Poppies from Remembrance Day and daisy for seeing them around this time of year. The children will build upon knowledge and vocabulary of animals from F1 and will look at different habitats of animals, for example, woodland. <u>Current Learning</u> Children will know how to care for cress seeds. Once the children have planted the seeds as a class, they will then have the responsibility to care for them. At Forest school, the children build animal habitats and discuss why they have chosen to use certain materials. The children will develop an understanding about what woodland animals need to survive. <u>Future</u> The children will acquire knowledge of caring for a plant, in preparation for Year 1 when they will be drawing and labelling parts of a plant. Light will be explored in Year 3, when the children will be looking at different light sources. <u>Links</u> The children will be looking for different animals at Forest School.	<u>Prior learning</u> The children will build on their substantive knowledge of Recycling in F1. The children have looked at a negative impact on the environment, which develops look at the positive impact they could make by sustainable development and growing their own vegetables. <u>Current Learning</u> Children will begin to identify different electrical objects around the classroom and school and will develop their understanding that electricity is needed to make something work. <u>Future</u> The children will develop their substantive knowledge of seasonal changes by associating the weather with the seasons. Seasons will be explored further in Year 1- Autumn term, when the children label the changes they notice around the environment in each season. Looks at rubbish further afield (the sea) and the impact this has on animals as well as us. <u>Links</u> Seasonal changes will help to enhance the history aspect in this enquiry by children understanding how time passes.	
Enquiry Question	How do we celebrate differently?	Where would you like to explore?	What can we learn from stories?	
Subject Vehicle	Dr / En / Dis Understanding the world	Dr / En / Dis Understanding the world	Dr / En / Dis Understanding the world	
End points for F2	Recall the knowledge specified within the KCPDs for Reception. Identify different materials, exploring and describing changes to the state.			

**Mapplewells Primary and Nursery School Whole School Subject Map
(Science)**

		Name some everyday materials e.g wood, metal, glass, plastic. Identify some similarities and differences between the natural world around them and contrasting environments. Identify similarities and differences between living things. Understand some important processes and changes in the natural world around them, including the seasons. Describe what plants need to survive. To take care and protect the natural world e.g: watering the plants in the garden daily etc. Identify the sun as a source of light. Express that sounds can be different volumes Compare and talk about the changes in season over time. Use vocabulary and knowledge to discuss the changes to the natural world, e.g: seasons, weather patterns etc.			
	Strand (s) (taken from KKPDs)	Materials and their properties	Plants Seasonal changes	Animals including humans Living things and their habitats Plants	
Year 1/2 Cycle B	KKPDs (and subject content choices)	Year 1 SC1.1 know the difference between an object and the material from which it is made SC1.2 know and name a variety of everyday materials, including wood, plastic, glass, metal, water, rock SC1.3 know the simple properties (e.g. hard, soft, stretchy, stiff, waterproof, not waterproof, opaque, transparent) of a variety of everyday materials SC1.4 know a variety of everyday materials and compare and group them together on the basis of their simple physical properties <u>Year 1- Working Scientifically</u> Strand: Scientific attitudes WS1.1 know how to ask simple questions WS1.2 know how to talk about what they have found out using simple scientific language WS1.3 know how to read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge at Year 1	Year 1 SB1.1 know and name a range of animals by fish, amphibians, reptiles, birds and mammals. (Forest School) SB1.2 know and name a variety of common animals by what they eat (carnivore, herbivore and omnivore) (Forest School) SB1.3 know the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) by describing and comparing (Forest School) SB1.4 know, name, draw and label basic parts of the human body which can be seen (Forest School) (Rising stars end of unit test) SB1.5 know the five senses and which part of the body is associated with each one (taste, smell, touch, hear, see) (Forest School) <u>Year 1- Working Scientifically</u> Strand: Scientific attitudes WS1.1 know how to ask simple questions WS1.2 know how to talk about what they have found out using simple scientific language WS1.3 know how to read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge at Year 1 Strand: Planning WS1.4 know how to ask simple scientific questions	Year 1 SP1.1 know how to observe changes across the four seasons (Forest School) (Curriculum Enquiry- Sutton in Ashfield) SP1.2 know how to observe and describe weather associated with the seasons (Forest School) (Curriculum Enquiry- Sutton in Ashfield comparing to South Africa) SP1.3 know how to observe and describe how day length varies SB1.6 know and name a variety of common wild and garden plants, including deciduous and evergreen trees (daffodils, poppies, daisies, dandelions, horse chestnut, silver birch) (Forest School) SB1.7 know the basic structure of a variety of common flowering plants (petals/flowers/fruit, stem, leaves, root, bulb seed), including trees (trunk, branches, leaves) and describe them (Forest School) <u>Year 1- Working Scientifically</u> Strand: Scientific attitudes WS1.1 know how to ask simple questions WS1.2 know how to talk about what they have found out using simple scientific language WS1.3 know how to read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge at Year 1	

Mapplewells Primary and Nursery School Whole School Subject Map (Science)

	Strand: Observing and Measuring WS1.5 know how to use simple equipment safely with appropriate support WS1.6 know how to gather and record data (with appropriate support) to help in answering questions WS1.7 know how to identify and classify findings with appropriate support WS1.8 know how to perform simple tests with appropriate support Year 2 SC2.1 know how materials can be changed by squashing, bending, twisting and stretching SC2.2 know and compare the suitability of a variety of everyday materials including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses (hard, soft, stretchy, waterproof, transparent, opaque) Year 2- Working Scientifically Strand: Scientific attitudes WS2.1 know how to ask simple questions about what they notice and recognise that they can be answered in different ways WS2.2 know how to communicate their ideas in a variety of ways using to others using simple scientific vocabulary WS2.3 know how to read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge at Year 2 Strand: Observing and Measuring WS2.5 know how to use simple equipment safely with reduced support WS2.6 know how to gather and record data (with reduced support) to help in answering questions WS2.7 know how to identify and classify findings with reduced support	Strand: Observing and Measuring WS1.5 know how to use simple equipment safely with appropriate support WS1.6 know how to gather and record data (with appropriate support) to help in answering questions WS1.7 know how to identify and classify findings with appropriate support WS1.8 know how to perform simple tests with appropriate support Strand: Analysis WS1.9 know how to use their observations and ideas to suggest answers to questions WS1.10 know how to explain what they have found Strand: Measurement WS1.11 use standard units appropriate for Year 1 Year 2 SB2.8 know how seeds and bulbs grow into plants by observing and describing (Forest School) SB2.9 know what plants need in order to grow and stay healthy (water, light & suitable temperature) (Forest School) Year 2- Working Scientifically Strand: Scientific attitudes WS2.1 know how to ask simple questions about what they notice and recognise that they can be answered in different ways WS2.2 know how to communicate their ideas in a variety of ways using to others using simple scientific vocabulary WS2.3 know how to read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge at Year 2 Strand: Planning WS2.4 know how to ask simple questions about what they notice and recognise that they can be answered in different ways Strand: Observing and Measuring WS2.5 know how to use simple equipment safely with reduced support	Strand: Planning WS1.4 know how to ask simple scientific questions Strand: Observing and Measuring WS1.5 know how to use simple equipment safely with appropriate support WS1.6 know how to gather and record data (with appropriate support) to help in answering questions WS1.7 know how to identify and classify findings with appropriate support WS1.8 know how to perform simple tests with appropriate support Year 2 SB2.1 know the differences between things that are living, dead and things that have never been alive by exploring and comparing (Forest School) SB2.2 know 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 (The ocean habitat and micro-habitats. Coral reef, rock pools, harbour, open oceans) (Forest School) SB2.3 know and name a variety of plants and animals in their habitats, including microhabitats (both familiar and less familiar habitats (e.g. woodland/ocean) (Woodland-school grounds: bugs. Savannah- zebra: herbivore. Lion- carnivore. Baboon- omnivore) (Forest School) SB2.4 know how animals obtain their food from plants and other animals, using food chains, and identify and name different sources of food SB2.5 know that young animals, including humans, grow into adults SB2.6 know the basic needs of animals, including humans, for survival (water, food, air) (Forest School) SB2.7 know why exercise; a balanced diet and good hygiene are important for humans Year 2- Working Scientifically Strand: Scientific attitudes	
--	--	--	--	--

Mapplewells Primary and Nursery School Whole School Subject Map (Science)

	WS2.8 know how to perform simple tests with reduced support	WS2.6 know how to gather and record data (with reduced support) to help in answering questions WS2.7 know how to identify and classify findings with reduced support WS2.8 know how to perform simple tests with reduced support Strand: Analysis WS2.9 know how to use their observations and ideas to suggest answers to questions and what they could do next WS2.10 know how to explain what they have found and how they found it Strand: Evaluating Strand: Measurement WS2.11 use standard units appropriate for Year 2	WS2.1 know how to ask simple questions about what they notice and recognise that they can be answered in different ways WS2.2 know how to communicate their ideas in a variety of ways using to others using simple scientific vocabulary WS2.3 know how to read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge at Year 2 Strand: Planning WS2.4 know how to ask simple questions about what they notice and recognise that they can be answered in different ways Strand: Analysis WS2.9 know how to use their observations and ideas to suggest answers to questions and what they could do next WS2.10 know how to explain what they have found and how they found it Strand: Evaluating	
Rationale for content choices	<u>Prior learning</u> Builds on knowledge of materials from EYFS. Uses substantive knowledge to support working scientifically by testing properties of materials to identify which would be best suited to make a rocket <u>Current Learning</u> Children will make a bag using suitable materials. The children will use the correct vocabulary to describe the properties of different materials and will compare the suitability. <u>Future</u> In Year 3, the children will be moving their learning onto rocks and their properties. In Year 4, they will learn that materials can change state when heated. <u>Links</u> Children will link their learning to their curriculum enquiry about the Great Fire of London, learning about properties of materials.	<u>Prior learning</u> Builds on how to care for plants and why they have grown from EYFS and how to care for them. <u>Current Learning</u> Children will learn about what humans and animal need to survive and will compare the difference between different stage of a human. For example, a baby requires more care compared to a teenager. Following on from this, the children will learn about the different stages of a human; baby, toddler, child, teenager, adult, elderly. <u>Future</u> The science enhances the children's understanding of the world around them. This will also work alongside the whole school driver-geography. The children will be looking at plants in school and their local environment. Children will build on their descriptive language and senses knowledge from EYFS to gain a deeper understanding of the seasons and the associated weather. <u>Links</u> Year 2 will be attending weekly Forest School sessions. Children will be looking at climate change in Africa, Egypt, China and Australia. This will link to seasonal changes.	<u>Prior learning</u> Develops knowledge from EYFS on familiar animals, broadening to look at less familiar habitats (oceans) Revisiting substantive knowledge on habitats Builds on EYFS learning about life cycles which will be developed further by looking at specific groups of animals The substantive knowledge builds on that of Ks1 as children learn about how plants grow and the different types of plants, this will also be covered during the children's weekly Forest School sessions. <u>Current Learning</u> The children will present their observations for the growth of their sunflower in a table. They will then write a conclusion to showcase their knowledge of what a plant needs to survive. <u>Future</u> The children will continue their learning of plants in Year 3 when learning about pollination and describing the function of a plant. In Year 4, the children will be learning about food chains. <u>Links</u> Year 1 will be attending weekly Forest School sessions	

Mapplewells Primary and Nursery School Whole School Subject Map
(Science)

			investigating animal habitats. For their residential they will be staying overnight at White Post Farm and learning about caring for animals. Making ‘Bee-bombs’ for enterprise.		
	Enquiry Question	How does the past affect the future?	Would I enjoy living anywhere in the world?	What does it mean to be an inventor?	
	Subject Vehicle	Dr / En / Dis	Dr / En / Dis	Dr / En / Dis	
	End points Y1	Recall the knowledge specified within the KCPDs for Year 1. Distinguish objects from materials. Describe the properties of everyday materials examining similarities and differences. Identify and group everyday materials based on properties. Describe and compare the observable features of animals from a range of groups. Group animals according to their types (e.g. reptiles, mammals, amphibians etc) Compare and contrasts a range of living and non-living things. Describe and explain the structure of basic structure of plants/trees. Describe and compare seasonal changes Describe the weather associated with each season. Describe how day length varies.			
	End points Y2	Recall the knowledge specified within the KCPDs for Year 2. Compare the suitability of materials for different purposes. Explain how materials can be changed by squashing, bending, twisting and stretching. Describe the basic needs of animals for survival and the main changes as young animals, including humans, grow into adults. Understand the basic needs of plants for survival and the consequence of changing these. Identify whether things are alive, dead or have never lived. Discuss how animals get their food from other animals and/or from plants, and use simple food chains to describe these relationships. Compare and contrast different plants and animals and describe how they are suited to different habitats.			
Year 3/ 4	Strand (s) (taken from KCPDs)	Living things and their habitats Animals including humans Working Scientifically: Scientific attitudes Planning Evaluating Measurement Observing and measuring during practical activities	States of matter Working Scientifically: Scientific attitudes Planning Analysis	Electricity Sound Working Scientifically: Scientific attitudes Planning Analysis Evaluating Measurements	

		<u>Living things and their habitats</u> SB4.1 know that living things can be grouped in a variety of ways SB4.2 know how to use classification keys in order to group, identify and name a variety of living things in their local and wider environment (Ocean habitat and woodland habitat) SB4.3 know that environments can change and that this can sometimes pose dangers to living things <u>Working scientifically</u> Strand: Scientific attitudes WS4.3 know how to read and spell scientific vocabulary correctly and with confidence, using their growing word reading and spelling knowledge at Year 4 Strand: Planning WS4.4 know how to ask relevant questions and decide independently which different types of scientific enquiries could be used to answer them WS4.5 know how to set up simple practical enquiries, comparative and fair tests independently Strand: Evaluating WS4.11 know how to use results to suggest improvements and raise further questions independently Strand: Measurement WS4.12 use standard units appropriate for Year 4 <u>Animals including humans</u> SB4.4 know the simple functions of the basic parts of the digestive system in humans (Mouth, oesophagus, stomach, liver, small intestine, large intestine, rectum) SB4.5 know the different types of teeth in humans and their simple functions (Canine, incisor, premolar, molar) SB4.6 know how to construct and interpret a variety of food chains, identifying producers, predators and prey <u>Working Scientifically</u>	<u>States of matter</u> SC4.1 know how to compare and group materials together according to whether they are solids, liquids or gases SC4.2 know that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens (°C) SC4.3 know the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature (visit from Seven Trent waters, children will be making their own water cycle in DT) <u>Working scientifically</u> Strand: Scientific attitudes WS4.3 know how to read and spell scientific vocabulary correctly and with confidence, using their growing word reading and spelling knowledge at Year 4 Strand: Planning WS4.4 know how to ask relevant questions and decide independently which different types of scientific enquiries could be used to answer them WS4.5 know how to set up simple practical enquiries, comparative and fair tests independently Strand: Analysis WS4.8 know how to report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions WS4.9 know how to use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions independently	<u>Electricity</u> SP4.1 know common appliances that require electricity to function (Coffee maker, kettle, toaster, blender, pressure cooker) SP4.2 know how to construct a simple series electrical circuit, identifying and naming its basic parts. (Including cells, wires, bulbs, switch and buzzers) SP4.3 know how to predict and test whether a lamp will light within a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery SP4.4 know that a switch opens or closes a circuit and associate this with whether or not a lamp lights in a simple series circuit SP4.5 know some common conductors and insulators and associate metals with being good conductors (Insulators: Glass, air, plastic, rubber, wood Conductors: copper, aluminium, gold, silver) <u>Working scientifically</u> Strand: Scientific attitudes WS4.3 know how to read and spell scientific vocabulary correctly and with confidence, using their growing word reading and spelling knowledge at Year 4 Strand: Planning WS4.4 know how to ask relevant questions and decide independently which different types of scientific enquiries could be used to answer them WS4.5 know how to set up simple practical enquiries, comparative and fair tests independently Strand: Analysis WS4.8 know how to report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions WS4.9 know how to use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions independently <u>Sound</u> SP4.6 know how sound is made, associating some of them with something vibrating SP4.7 know that vibrations from sounds travel through a medium to the ear	
--	--	--	--	---	--

		Strand: Observing and Measuring WS4.6 know how to make systematic and careful observations and, where appropriate, take measurements, using standard units, a range of equipment safely, including thermometers and data loggers WS4.7 know how to gather, record and classify and present data in a variety of ways to help in answering questions		SP4.8 know the patterns between the pitch of a sound and features of the object which produced it SP4.9 know the patterns between the volume of a sound and the strength of the vibrations that produced it SP4.10 know that sounds get fainter as the distance from the sound source increase <u>Working Scientifically</u> Strand: Scientific attitudes WS4.1 know how to draw simple conclusions and use some scientific language to write about what they have found out WS4.2 know how to decide independently which types of scientific enquiry are likely to be the best ways of answering questions Strand: Analysis WS4.10 know how to record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables Strand: Evaluating WS4.11 know how to use results to suggest improvements and raise further questions independently Strand: Measurement WS4.12 use standard units appropriate for Year 4	
	Rationale for content choices	<u>Prior learning</u> Developing children's understanding of plants and animals from Y3, children will look at food chains from ocean and woodland as they are habitats they are familiar with from Y2. <u>Current Learning</u> The children will observe the changes between two plants in different environments (sunlight, water and air) (dark and no water) the children will write a conclusion about their findings. <u>Future learning</u> Develop woodland further looking at impact of deforestation on the food chain. In Year 5, the children will be focusing on the reproduction cycle of a plant and animal.	<u>Current learning</u> Disciplinary knowledge will be developed with a practical exploration of the process within the water cycle. <u>Prior learning</u> Disciplinary knowledge focusing on the concept of flooding, using previous knowledge of natural disasters taught in Year 3. <u>Future learning</u> In Y5, the children will build on their knowledge of solids, liquids and gasses and look at recovering substances from a solution. <u>Links</u> Children will be creating their own water cycle in DT. Seven Trent water will be visiting the children.	<u>Current learning</u> Explore substantive knowledge of electricity including conductors, insulators and use this to create series circuits with different elements such as switch, buzzer and lamp. Sound will be exploring vibrations and using music to discover pitch and volume <u>Future learning</u> In Y6, the children will build upon their knowledge of electricity by testing voltage and current and how this affects the brightness of a bulb. <u>Prior learning</u> This will build upon the children's knowledge from EYFS that different objects can make different levels of sound.	

Mapplewells Primary and Nursery School Whole School Subject Map (Science)

	Enquiry Question	How can we benefit from change?	Why is life drawn to rivers?	How does art change the world?	
	Subject Vehicle	Dr / En / Dis	Dr / En / Dis	Dr / En / Dis	
	End points for Y4	Recall the knowledge specified within the KCPDs for Year 4. Compare and contrast the characteristics of different states of matter and group materials on this basis. Describe how materials change state at different temperatures and use this to explain everyday phenomena, including the water cycle. Name, describe and explain the functions of the main parts of the digestive system. Construct and interpret food chains. Group living things in multiple ways using their own criteria. Explain how environmental changes may have an impact on living things. Explain how a switch works in an electrical circuit. Compare and contrast materials and identify if they are electrical conductors or insulators. Use and explain the idea that sounds are associated with vibrations, and that they require a medium to travel through, in order to be heard. Describe the relationship between the pitch of a sound and the features of its source; and between the volume of a sound, the strength of the vibrations and the distance from its source.			
	Strand (s) (taken from KCPDs)	Properties and change of materials Forces Working Scientifically: Scientific attitudes Planning Analysis Evaluating Measurements	Earth and space Working Scientifically: Scientific attitudes Planning Analysis Evaluating Measurements	Living things and their habitats animals including humans Working Scientifically: Scientific attitudes Planning Analysis Evaluating Measurements	
Year 5	KCPDs (and subject content choices)	<u>Properties and change of materials</u> SC5.1 know how to compare and group together everyday materials on the basis of their properties (e.g. hardness, solubility, transparency, conductivity, [electrical & thermal], and response to magnets) SC5.2 know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution (Separating a selection of materials using sieving, magnets and evaporation)	<u>Living Things and Their Habitats</u> SB5.1 know the differences in the life cycles of a mammal, amphibian, insect and bird (mammal-lion. Amphibian- poison dart frog. Inset butterfly, stick insect. Bird- golden eagle) SB5.2 know the life process of reproduction in some plants and animals Sexual and asexual reproduction in plants (Plants: Germination, Pollination, Fertilisation, Seed dispersal. Animals from the rainforest: Mammal, Amphibian, Insect, Bird) <u>Working Scientifically</u> Strand: Scientific attitudes WS5.1 know how to answer scientific questions using different types of scientific enquiry WS5.2 know how to read, spell and pronounce scientific vocabulary correctly at Year 5.	<u>Earth and Space</u> SP5.4 know the movement of the Earth and other planets relative to the Sun in the solar system SP5.5 know the movement of the Moon relative to the Earth (to use Google Earth to demonstrate how the moon changes) SP5.6 know the Sun, Earth and Moon as approximately spherical bodies	

Mapplewells Primary and Nursery School Whole School Subject Map
(Science)

	SC5.3 know how mixtures might be separated using knowledge of solids, liquids and gas, including through filtering, sieving and evaporating SC5.4 know the particular uses of everyday materials including metal, wood and plastic, based on evidence from comparative and fair tests (range of materials – metal, wood, plastic) SC5.5 know that dissolving, mixing and changes of state are reversible changes through investigation (Looking at specific foods, for example, chocolate) SC5.6 know that some changes result in the formation of new materials and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate soda <u>Working Scientifically</u> Strand: Scientific attitudes WS5.1 know how to answer scientific questions using different types of scientific enquiry WS5.2 know how to read, spell and pronounce scientific vocabulary correctly at Year 5. Strand: Planning WS5.3 know how to plan different types of scientific enquiries to answer questions, including recognising variables. Strand: Observing and measuring during physical activities Strand: Analysis WS5.6 know how to report and present findings from enquiries, including conclusions and causal relationships, in oral and written forms such as displays and other presentations. Strand: Evaluating WS5.9 know how to use test results to make predictions to set up further comparative and fair tests Strand: Measurements WS5.11 use standard units appropriate for Year 5 <u>Forces</u> SP5.1 know that unsupported objects fall towards the earth because of the force of gravity acting between the earth and the falling object	<u>Animals including Humans</u> SB5.3 know the changes as humans develop to old age Foetus (Baby, Childhood, Adolescence, Adulthood, Old age) <u>Working Scientifically</u> Strand: Scientific attitudes WS5.1 know how to answer scientific questions using different types of scientific enquiry WS5.2 know how to read, spell and pronounce scientific vocabulary correctly at Year 5	SP5.7 know about the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky <u>Working Scientifically</u> Strand: Scientific attitudes WS5.1 know how to answer scientific questions using different types of scientific enquiry WS5.2 know how to read, spell and pronounce scientific vocabulary correctly at Year 5.	
--	---	---	---	--

	SP5.2 know the effects of air resistance, water resistance and friction, that act between moving surfaces SP5.3 know that some mechanisms, including levers, pulleys and gears allow a smaller force to have a greater effect <u>Working Scientifically</u> Strand: Scientific attitudes WS5.1 know how to answer scientific questions using different types of scientific enquiry WS5.2 know how to read, spell and pronounce scientific vocabulary correctly at Year 5. Strand: Planning WS5.3 know how to plan different types of scientific enquiries to answer questions, including recognising variables. Strand: Observing and measuring during physical activities WS6.4 know how to take measurements, using a range of scientific equipment safely, with accuracy and precision, taking repeat readings where appropriate WS6.5 record data and results of increasing complexity using classification keys, tables, line graphs Strand: Analysis WS5.6 know how to report and present findings from enquiries, including conclusions and causal relationships, in oral and written forms such as displays and other presentations. Strand: Evaluating WS5.9 know how to use test results to make predictions to set up further comparative and fair tests Strand: Measurements WS5.11 use standard units appropriate for Year 5			
Rationale for content choices	<u>Prior learning</u> The substantive knowledge learnt will build on from the knowledge of everyday materials from year 2 and classifying/using these according to their properties. Expand children's knowledge of forces, building on what they learnt in Y3.	<u>Prior learning</u> This will build on the children prior knowledge of life cycles taught in KS1 about plants and go into a greater depth and understanding whilst also learning how animals and humans grow. <u>Current learning</u> Children will learn about the major systems of the human body, including the circulatory system, respiratory system, digestive system, and skeletal system. They explore the functions of each system and	<u>Prior learning</u> This will build on the children prior knowledge of life cycles taught in KS1 about plants and go into a greater depth and understanding whilst also learning how animals and humans grow. <u>Current learning</u> They will learn about the phases of the moon and the causes and occurrences of lunar and solar eclipses. The children will explore the components of the solar system,	

Mapplewells Primary and Nursery School Whole School Subject Map
(Science)

	Children will learn about mixtures and solutions and distinguish between them. They explore how different materials can be combined to form mixtures and how the components of a mixture can be separated using techniques like sieving, filtering, and evaporation. <u>Future</u> Deepen their understanding through exploration of chemical reactions, reversible and irreversible changes and look at the process of dissolving and separation, such as filtering. Children will develop disciplinary knowledge by carrying out scientific experiments to support their understanding of the substantive knowledge, for example, melting chocolate into a liquid and then freezing it back into a solid.	how they work together to maintain life and enable different bodily functions. <u>Future</u> In Y6, the children will deepen their understanding of how our body changes over time. <u>Links</u> This links to the children's learning in geography enquiry in the spring term, to support their learning and knowledge of changes in habitats due to the climate.	including the sun, planets, moons, asteroids, and comets. They learn about the characteristics of each planet and investigate the Earth's position in relation to the sun. <u>Future</u> In Y6, the children will deepen their understanding of how our body changes over time. <u>Links</u> This links to the children's learning in geography enquiry in the spring term, to support their learning and knowledge of changes in habitats due to the climate. <u>Prior learning</u> Links are made to the Earth and the solar system and the knowledge they acquired last year about planet Earth in geography. <u>Future</u> Children will develop their disciplinary knowledge by building on knowledge in Y3 and Y4 to plan and carry out a fair test involving water resistance and then present their findings to the class <u>Links</u> Geography- climate change and planet Earth	
Enquiry Question	How can we learn through our mistakes?	What is our planet trying to tell us?	How does art imitate life?	
Subject Vehicle	Dr / En / Dis	Dr / En / Dis	Dr / En / Dis	
End points for Y5	Recall the knowledge specified within the KCPDs for Year 5. Group and identify materials in different ways according to their properties, based on first-hand observation Justify the use of different everyday materials for different uses, based on their properties. Justify whether changes in materials are reversible or not. Discuss what happens when dissolving occurs in everyday situations. Demonstrate how to separate mixtures and solutions into their components. Describe and compare different reproductive processes and life cycles in plants and animals, including humans. Describe and explain changes as humans grow and age. Compare and contrast the effect of different forces on varying objects. Describe that some forces act at a distance e.g., gravity			

Mapplewells Primary and Nursery School Whole School Subject Map (Science)

		Identify simple mechanisms, including levers, gears and pulleys, that increase the effect of a force. Describe the shapes and relative movements of the Sun, Moon, Earth and other planets in the solar system. Explain the apparent movement of the sun across the sky in terms of the Earth's rotation and that this results in day and night			
	Strand (s) (taken from KKPDs)	Electricity Light Working Scientifically: Scientific attitudes Planning Observing and measuring during practical activities Analysis Measurements	Evolution and inheritance Working Scientifically: Scientific attitudes Planning Observing and measuring during practical activities Analysis Measurements	Animals including humans All living things and their habitats Working Scientifically: Scientific attitudes Planning Observing and measuring during practical activities Analysis Measurements	
Year 6	KKPDs (and subject content choices)	<u>Electricity</u> SP6.3 know that the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in a circuit. (use of bulbs, batteries and buzzers) SP6.4 know how to compare and give reasons for variations in how components function including the brightness of bulbs, the loudness of buzzers and the on/off position of switches (Comparison of bulbs and buzzers – brightness and volume) SP6.5 know which recognised symbols to use when representing a simple circuit in a diagram (electric circuit for a toy car) <u>Working Scientifically</u> Strand: Scientific attitudes WS6.1 know how to answer scientific questions using different types of scientific enquiry in the most appropriate ways WS6.2 know how to read, spell and pronounce scientific vocabulary correctly at Year 6 Strand: Planning WS6.3 know how to plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. Strand: Observing and measuring during physical activities WS6.4 know how to take measurements, using a range of scientific equipment safely, with accuracy and precision, taking repeat readings where appropriate	<u>Evolution and Inheritance</u> SB6.6 know that living things have changed over time and fossils provide information about living things that inhabited the Earth millions of years ago (Adaptation, Evolution, Inheritance) SB6.7 know that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents SB6.8 know how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution <u>Working Scientifically</u> Strand: Scientific attitudes WS6.1 know how to answer scientific questions using different types of scientific enquiry in the most appropriate ways WS6.2 know how to read, spell and pronounce scientific vocabulary correctly at Year 6 Strand: Observing and measuring during physical activities WS6.4 know how to take measurements, using a range of scientific equipment safely, with accuracy and precision, taking repeat readings where appropriate WS6.5 record data and results of increasing complexity using classification keys, tables, line graphs	<u>Animals including Humans</u> SB6.3 know and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. (Heart, Arteries, Lungs, Veins, Cells) SB6.4 know the impact of diet, exercise, drugs and lifestyle on the way their bodies function. (DARE) SB6.5 know the ways in which nutrients and water are transported in animals, including humans <u>Working Scientifically</u> Strand: Scientific attitudes WS6.1 know how to answer scientific questions using different types of scientific enquiry in the most appropriate ways WS6.2 know how to read, spell and pronounce scientific vocabulary correctly at Year 6 Strand: Planning WS6.3 know how to plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. Strand: Observing and measuring during physical activities WS6.4 know how to take measurements, using a range of scientific equipment safely, with accuracy and precision, taking repeat readings where appropriate WS6.5 record data and results of increasing complexity using classification keys, tables, line graphs Strand: Analysis WS6.6 know how to report and present findings from enquiries, including conclusions and explanations of and	

	WS6.5 record data and results of increasing complexity using classification keys, tables, line graphs Strand: Analysis WS6.6 know how to report and present findings from enquiries, including conclusions and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations Strand: Measurements WS6.8 use standard units appropriate for Year 6 <u>Light</u> SP6.1 know that light appears to travel in straight lines and use this to explain that objects are seen because they give out or reflect light into the eye why shadows have the same shape as the object that casts them SP6.2 know that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes (light sources – sun, range of lights, bulbs) <u>Working Scientifically</u> Strand: Scientific attitudes WS6.1 know how to answer scientific questions using different types of scientific enquiry in the most appropriate ways WS6.2 know how to read, spell and pronounce scientific vocabulary correctly at Year 6 Strand: Planning WS6.3 know how to plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. Strand: Observing and measuring during physical activities WS6.4 know how to take measurements, using a range of scientific equipment safely, with accuracy and precision, taking repeat readings where appropriate WS6.5 record data and results of increasing complexity using classification keys, tables, line graphs		degree of trust in results, in oral and written forms such as displays and other presentations <u>All Living Things and Their Habitats</u> SB6.1 know that living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals SB6.2 know how to classify plants and animals based on specific characteristics and give reasons for this <u>Working Scientifically</u> Strand: Scientific attitudes WS6.1 know how to answer scientific questions using different types of scientific enquiry in the most appropriate ways WS6.2 know how to read, spell and pronounce scientific vocabulary correctly at Year 6 Strand: Analysis WS6.6 know how to report and present findings from enquiries, including conclusions and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations Strand: Measurements WS6.8 use standard units appropriate for Year 6	
--	--	--	---	--

Mapplewells Primary and Nursery School Whole School Subject Map (Science)

Rationale for content choices	<u>Prior learning</u> The substantive knowledge builds on knowledge of electricity and circuits in Y4 and children will be building and testing more complex circuits including parallel circuits. Children will make links with previous science learning and their knowledge of materials to investigate insulators and conductors. The substantive knowledge will build on the knowledge of light and dark from Y3. <u>Current learning</u> Children will learn about the components of a simple electric circuit, including batteries, wires, bulbs, switches, and resistors. They will explore how circuits work and understand the flow of electric current, as well as the role of conductors and insulators. <u>Future learning Year 7</u> - Waves; sound and energy transfer. - Echoes and ultrasounds. - Visible light and the reflection of light. <u>Links</u> Geography- renewable energy and climate change.	<u>Prior learning</u> The substantive knowledge builds on classification from Y4 but develops this further by classifying by more specific characteristics and justifying reasons. E.g. omnivores in a woodland habitat, trees by their leaf shape. Substantive knowledge builds on learning in Year 3 on fossils and how animals adapted to suit their habitats in Y2. <u>Current learning</u> The children will explore the functions of each system in more detail and understand how they work together to support life and bodily functions. They will deepen their understanding of the respiratory and circulatory systems. They will learn about the structure and function of the lungs, the process of breathing, and the exchange of gases in the body. <u>Future learning Year 7</u> - Adolescence and puberty. - Fertilisation and implantation, IVF, foetal development. - The menstrual cycle. - Plant reproduction, seed dispersal. <u>Links</u> Geography- looking at how animals and plants have to adapt to suit their environment.	<u>Prior learning</u> The substantive knowledge builds on classification from Y4 but develops this further by classifying by more specific characteristics and justifying reasons. E.g. omnivores in a woodland habitat, trees by their leaf shape. Substantive knowledge builds on learning in Year 3 on fossils and how animals adapted to suit their habitats in Y2. <u>Current learning</u> The children will explore the functions of each system in more detail and understand how they work together to support life and bodily functions. They will deepen their understanding of the respiratory and circulatory systems. They will learn about the structure and function of the lungs, the process of breathing, and the exchange of gases in the body. <u>Future learning Year 7</u> In Year 7 the children will learn about adolescence and puberty, building on their knowledge of changes to their bodies. This will contribute to their learning of fertilisation and implantation, IVF, foetal development. <u>Links</u> In geography, the children will be looking at how animals and plants have to adapt to suit their environment.	<u>Prior learning</u> The substantive knowledge builds on previous knowledge about the body from year 4 but now focuses on the circulatory system, including the heart, blood and vessels. The children will build on their knowledge from Year 3 when learning about rocks, the children will already have knowledge about how fossils are formed. <u>Current learning</u> They will explore how traits are passed from parents to offspring and the role of genes and DNA in determining these traits. The children will also learn about the theory of evolution by natural selection proposed by Charles Darwin. They will explore how populations of organisms change over time. <u>Future</u> Disciplinary knowledge developed through exercise and effect on heart rate and blood pressure making conclusions about how to determine if someone is healthy. The children will develop their knowledge of the skeleton, joints and muscles. <u>Links</u> Impact on diet (including nutrition and hydration), exercise, drugs and lifestyle in relation to impact on the body – links to PE/ PSHE in terms of healthy lifestyle and choices (drugs alcohol etc). Links to directly to PE when learning how exercise is good for fitness and wellbeing.
Enquiry Question	How can we learn from our mistakes?	What is our planet trying to tell us?	How does art imitate life?	
Subject Vehicle	Dr / En / Dis	Dr / En / Dis	Dr / En / Dis	
End points for Y6	Describe the effects of diet, exercise, drugs and lifestyle on how the body functions. Name, describe and explain the functions of the main parts of the circulatory system. Utilise the observable features of plants, animals and microorganisms to group, classify and identify them into broad groups, using keys or other methods. Apply the basic ideas of inheritance, variation and adaptation to describe how living things have changed over time and evolved. Describe and explain how fossils provide evidence for evolution. Use recognised symbols to represent simple series circuit diagrams			

Mapplewells Primary and Nursery School Whole School Subject Map
(Science)



		Explain that light from light sources, or reflected light, travels in straight lines and enters our eyes to explain how we see objects. Demonstrate and justify how and why shadows change shape.	
--	--	---	--