Science Curriculum Overview

Cycle A	Autumn	Spring	Summer
Hodder Year 1/2	**Seasonal Diaries throughout the year**		
	Environment – Living things and their habitats • To know if a thing is living, dead or never alive. • To know what a habitat is. • To know how an animal survives in its habitat. • To know characteristics of plants and animals. • To know how animals and plants are suited to their habitat. **Opportunity to work scientifically:** **How can we investigate what animals live in our school grounds?**	**Animals – Humans** **Animal survival and growth** • To know that animals, including humans, have offspring which grow into adults. • To know the main stages of at least two different animal life cycles. • To know several ways that humans grow and develop through each life cycle stage. • To know the three basic needs of all animals to survive. **Health – How we grow and stay healthy** • To know the effects of exercise and begin to explain the importance of exercise for the human body. **Opportunity to work scientifically:** **How does exercise effect our bodies?**	**Seasons** • To know there are four season and what they are. • To know how the four seasons are different to each other. • To know what the weather is like in each season. • To know how the days length vary. **Opportunity to work scientifically:** **How does a specific area change throughout the seasons?** (Analysis of data collected throughout the year)
Ribble Year Y3/4	**Electricity** • To know common appliances that run on electricity. • To know how to construct a simple circuit containing a cells, wires, bulbs, switches and buzzers. • To know if a lamp will light in a simple circuit. • To know that a switch opens and closes a circuit. • To know some common conductors and insulators. **Opportunity to work scientifically:** **How to create a circuit to light a bulb / sound a buzzer?** **Light** • To know how we see things and how light travels in straight lines. • To know some surfaces and materials reflect light well. • To know dark is the absence of light. • To know how shadows are formed. • To know shadows can also be elongated or shortened depending on the angle of the light source. • To know the purpose of the pupil.	**Rocks and Fossils** • To know different types of rocks and their characteristics. • To know what fossils are and how they are formed. • To know how soil is formed. • To know that soils are made from rocks and organic matter. **Opportunity to work scientifically:** **How do different types of rocks and their properties change under different circumstances?** (Erosion) **Sound** • To know how sounds are made. • To know that vibrations from sounds travel through a medium to the ear. • To know about the pitch and volume of sounds. • To know the link between sounds and the distance from the source. **Opportunity to work scientifically:** **Which material is best at muffling sound?**	**Animals:** **Nutrition, diet, movement and the skeleton** • To know about different food chains. • To know what producers, predators and prey are in a food chain. • To know that animals, including humans, need the right types and amount of nutrition. • To know that animals, including humans, get their nutrients from the food they eat. • To know that humans and some other animals have skeletons and muscles for support, protection and movement. **Opportunity to work scientifically:** **To investigate which foods different animals eat.** **Teeth and the digestive system.** • To know the different types of teeth and their functions. • To know the simple functions of the basic parts of the digestive system in humans. **Opportunity to work scientifically:** **To investigate how the digestive system works.**

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	• To know how to protect our eyes from the sun. **Opportunity to work scientifically:** **How does the distance from the light source to object effect the shadow?**		
Wyre Year 5/6	**Electricity** • To know that a series circuit has only one route for the current to take. • To know electrons are the very small particles that travel around an electrical circuit. • To know that current is the flow of electrons, measured in amps. • To know that resistance is the difficulty that the electric current has when flowing around a circuit. • To know if more components are added, the power has to be shared and so they will be dimmer or quieter. • To know that just one part of this series circuit breaks, the circuit is broken and the flow of current stops. • To know, recognise and use conventional symbols for circuits. • To create a simple device using a circuit. • To plan an investigation based on the results of a previous investigation; **Opportunity to work scientifically:** **Can you alter how component functions within a circuit?** **Light** • To know shining a light through a transparent prism, separates out light into the colours of the visible rainbow. All the colours together merge and make visible light. • This is because light bends when it moves from air to water. When light bends in this way, it is called refraction. • To know a shadow is always the same shape as the object that casts it **Opportunity to work scientifically:** **To make a periscope and use it to explain the idea that light appears to travel in straight lines to explain how it works.**	**Animals, including humans** (including the circulatory system) • To name the main parts of the human circulatory system (heart, lungs, blood vessels). • To know the functions of the heart, blood vessels and blood in the circulatory system. • To recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. • To know ways in which nutrients and water are transported within animals, including humans. **Opportunity to work scientifically:** **An investigation into the impact of exercise on the functions of our bodies. This will be an independent investigation.**	**Living things in their environment: Classification** • To know the different types of reproduction: asexual and sexual and give examples of each. • To know that metamorphosis is an abrupt and obvious change in the structure of an animal's body and their behaviour. • To now that gestation is the length of a pregnancy. • To know that Carl Linnaeus first published a system for classifying all living things. An adapted version of this system is still used today: The Linnaeus System. • To know the eight levels of classification. • To know that microorganisms are very tiny living things that can only be seen using a microscope. • To know examples of microorganisms are viruses, bacteria, moulds and yeast. As well as some animals (dust mites) and plants (phytoplankton). **Opportunity to work scientifically:** **Use classification systems and keys to identify some animals and plants in the immediate environment.**

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Cycle B	Autumn	Spring	Summer
	Nature Journals throughout the year		
Hodder Year 1/2	**Animals – Other Animals** • To know a variety of common animals including fish, amphibians, reptiles, birds and mammals. • To know the structure of a variety of common animals. • To know that animals are carnivores, omnivores and herbivores. • To know that animals can be sorted into groups based on their structure. **Opportunity to work scientifically:** **Classification Corners – How to animal according to their characteristics?**	**Plants: Common Names and Basic Structure** • To know the basic structure of a variety of common flowering plants. • To know the parts of plants. • To know the different between deciduous and evergreen trees. • To know some common fruit and vegetable plants, **Plants: Plant growth** • To know what plants need to stay alive. • To know how seeds and bulbs grow into mature plants. • To know the different parts of a seed and how it germinates. • To know the life cycle of a plant. • To know how plants are suited to their environment. **Opportunity to work scientifically:** **How does light and water effect plants?**	**Material Properties – Everyday Materials** • To know what a material is made from. • To know the names of everyday materials – wood, metal, plastic, glass, water, rock. **Material Properties – Use of Materials** • To know what material is suited to a certain use. • To know how the shapes of objects can change the use. • To know the process of recycling. • To know about the inventor John McAdam. **Opportunity to work scientifically:** **Which material is the most waterproof?**
Ribble Year Y3/4	**Forces** • To know how things, move on different surfaces. • To know how magnets, attract or repel each other and attract some materials and not others. • To know magnetic and non-magnetic materials. • To know magnets, have two poles. **Opportunity to work scientifically:** **Do different surfaces cause friction of on a toy car?**	**States of Matter** • To know if materials are solid, liquid or gas. • To know what a solid, liquid or gas is. • To know that some materials change state when they are heated or cooled. • To know the part played by evaporation and condensation in the water cycle. • To know the link between the rate of evaporation and temperature. **Opportunity to work scientifically:** **Does temperature effect the process of evaporation?** **Habitats – grouping and classifying plants and animals** • To know that living things can be grouped in a variety of ways. • To know a variety of living things in their local and wider environment.	**Plants – functions or parts of plant growth** • To know the functions of the different parts of flowering plants. • To know the requirements of plants for life and growth and how they vary from plant to plant. • To know how water is transported within plants. • To know the part that flowers play in the life cycle of a flowering plant including pollination, seed formation and seed dispersal. **Opportunity to work scientifically:** **Does the temperature of water effect the transportation through xylems?**

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		• To know that some environments can change and that this can sometimes pose dangers to living things. **Opportunity to work scientifically:** **To use classification keys to identify a range of animals from different environments.** **Explore the human impact on habitats and environments.**	
Wyre Year 5/6	**Material properties and changes** • To know different materials are used for particular jobs based on their properties: electrical conductivity, flexibility, hardness, insulators, magnetism, solubility, thermal conductivity, transparency. • To know that reversible changes, such as mixing and dissolving solids and liquids together, can be reversed by sieving, filtering or evaporating. • To know that a solution is made when solid particles are mixed with liquid particles. This is dissolving. • To know that materials that will dissolve are known as soluble and materials that won't dissolve are known as insoluble. • To know that a suspension is when the particles don't dissolve. • To know that irreversible changes often result in a new product being made from the old materials (reactants). **Opportunity to work scientifically:** **Which materials would be the most effective for wrapping ice cream to stop it melting?**	**Earth and Space** • To know Mercury, Venus, Earth and Mars are rocky planets. • To know that Jupiter, Saturn, Uranus and Neptune are mostly made up of gases (helium and hydrogen) although they do have cores made up of rock and metal. • To know a satellite is any object or body in space that orbits something else, for example: the Moon is a satellite of Earth. • To know the Moon orbits Earth in an oval shaped path while spinning on its axis. • To know at various times in a month, the Moon appears to be different shapes. This is because as the Moon rotates round Earth, the Sun lights up different parts of it. • To know that the Earth rotates (spins) on its axis. It does a full rotation once in every 24 hours. At the same time that Earth is rotating, it is also orbiting (revolving) around the Sun. It takes a little more than 365 days to orbit the Sun. Daytime occurs when the side of Earth is facing towards the Sun. Night occurs when the side of Earth is facing away from the sun • To know that it appears to us to us that the Sun moves across the sky during the day but the Sun does not move at all. It seems to us that the Sun moves because of the movements of Earth. • To know about the geocentric model and that people believed that planets moved around the Earth in the past. **Opportunity to work scientifically:**	**Evolution and inheritance** • To know that animals and plants produce offspring that are similar but not identical to them. • To know in the same way that there is variation between parents and their offspring, you can see variation within any species, even plants. • To know characteristics are the distinguishing features or qualities that are specific to a species. • To know that adaptive Traits are characteristics that are influenced by the environment the living things live in (it's habitat). • To know adaptation is a trait (or characteristic) changing to increase a living thing's chances of surviving and reproducing. • To know that evolution is the gradual process by which different kinds of living organism have developed from earlier forms over millions of years. • To know about Natural Selection. • To know fossils are proof that living things have evolved over time. **Opportunity to work scientifically:** **Analyse the advantages and disadvantages of specific adaptations: beak shapes**

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		Compare the time of day at different places on the Earth through internet links and direct communication. **Forces – effects on movement** • To know mass is how much matter is inside an object. It is measured in kilograms (kg). Weight is how strongly gravity is pulling an object down. It is measured in newtons (N). • To know water resistance and air resistance are forms of friction. Friction is sometimes helpful and sometimes unhelpful. • To know upthrust is a force that pushes objects up, usually in water • To know buoyancy is when an object is buoyant if it floats. This is because the weight of the object is equal to the upthrust. • To know streamlined is when an object is shaped to minimise the effects of air or water resistance. **Opportunity to work scientifically:** **Carry out a fair test to determine which designs of parachute is the most effective.**	