Opportunities for Working Scientifically – Year 3

Science Topic	Exploration leading to Fair-test/pattern seeking	Observation over time	Classification and identification	Research using secondary sources
Plants	Compare the effect of different factors on plant growth, for example the amount of light, the amount of water. Try growing new plants from different parts of the parent plant, for example seeds, stem and root cuttings, tubers, and bulbs.	Discover how seeds are formed by observing the different stages of plant cycles over a period of time; looking for the patters in the structure of seeds that relate to how they are dispersed. Observe how water is transported in plants, for example putting cut, white carnations into coloured water and observing how water travels up the stem to the flowers		
Animals, including humans	Investigate what damages teeth		Compare and contrast the diets of different animals and decide on ways of grouping them according to what they eat. Compare the teeth of carnivores and herbivores	Use books and the internet to research types of teeth different animals have
Rocks	What happens when rocks are rubbed together or what changes occur when they are in water	Observe rocks exploring how and why they might have changed over time.	Using a hand lens or microscope to help identify and classify rocks according to whether they have grains or crystals, and whether they have fossils in them. Explore different soils and identify similarities and differences between them	
Light	Look for patterns in what happens to shadows when the light source moves or the distance between the light source and the object changes.			

Forces and magnets	Compare how different things move on different surfaces and gathering and recording data to find answers to their questions. Exploring the strength of different magnets and finding a fair way to compare them. Looking for patterns in the way that magnets behave in relation to each other and what might effect this e.g. poles		Compare and group things by how they move. Sort materials into those that are magnetic and those that are not.	Research uses of magnets

Opportunities for Working Scientifically – Y4

Science Topic	Exploration leading to Fair-test/pattern seeking	Observation over time	Classification and identification	Research using secondary sources
Living things and their habitats		They should identify how the local habitat changes throughout the year	Classify animals into major groups such as vertebrates (animals with backbones) into fish amphibians, reptiles, birds and mammals: invertebrates into snails and slugs, worms, spiders and insects. Plants are more difficult to classify, but can be grouped into categories such as trees, grasses, flowers, and non -flowering plants such as ferns and mosses Use guides and keys to identify local small invertebrates Make a guide to local living things	Use books and the internet to find the names of unknown plants
Animals, including humans	Investigate whether children with the longest legs jump the furthest/highest.		Identify and group animals with and without skeletons and observing and comparing their movement.	Use models and books to find out the names of bones.
States of matter	Explore the effect of temperature on different substances such as chocolate, butter and cream. Investigate the effect of temperature on washing drying or snowmen melting	Observe water as a solid, a liquid and a gas and should note the changes to water when it is heated or cooled. Observe and record evaporation over a period of time, such as a puddle in the playground or washing drying on a washing line	Group and classify a variety of different materials	
Electricity	Observing patterns, for example that the bulbs get brighter if more cells are added, that metals tend to be conductors of electricity, and that some materials can and some cannot be used to connect across a gap in a circuit		Group/classify materials by whether they are electrical conductors or insulators	

Sound	Explore how the pitch and volume of sounds can be changed in a variety of ways, and finding patterns in data. Finding patterns in the sounds that are made by different objects elastic bands of different thicknesses Make ear muffs from a variety of different materials to investigate which provides the best insulation against sound.		Classify musical instruments linked to sound properties	

Opportunities for Working Scientifically – Y5

Science Topic	Exploration leading to Fair-test/pattern seeking	Observation over time	Classification and identification	Research using secondary sources
Living things and their habitats		Observing and comparing the life cycles of plants and animals in their local environment with other animals around the world. Observe changes in an animal over a period of time e.g. rearing chicks	Compare how different animals reproduce and grow.	
Animals, including humans		Record the length and mass of a baby as it grows. (compare with an adult for the same time period)		Research the gestation periods of other animals and compare them with humans.
Properties and changes of materials	Explore reversible changes, including evaporating, filtering, sieving, melting and dissolving. Explore changes that are difficult to reverse, for example, **burning** (using indoor fireworks), rusting and other reactions, for example vinegar with bicarbonate of soda. Investigate questions such as 'Which materials would be the most effective for making a warm jacket, or wrapping ice cream to stop it melting.	Observe reversible and irreversible changes over time – what	Classify materials by properties	Research what glass, plastic are made from (HAPS only)
Earth and space		Find out about how ideas about the Earth have changed over time Describe the movement of the Earth and other planets in relation to the sun Describe the movement of the moon in relation to the Earth	Classify planets by mass, temperature, diameter etc.	Biography about Tim Peake

Forces	Design and make parachutes having carried out fair tests to determine which design are the most effective. Explore resistance in water by making and testing boats of different shapes. Explore the effects of levers, pulleys, gears and/ or springs			Research uses of levers, gears and pulleys

Opportunities for Working Scientifically – Y6

Science Topic	Exploration leading to Fair-test/pattern seeking	Observation over time	Classification and identification	Research using secondary sources
Living things and their habitats			Look at the classification system in more detail. Be introduced to the idea that broad groupings, such as micro-organisms, plants and animals can be subdivided. Through direct observations where possible they should classify animals into vertebrates and invertebrates. Use classification systems and keys to identify some animals and plants in the immediate environment	
Animals, including humans	Investigate the effect of different exercises on pulse rate.	Observe changes in pulse before, during and after exercise. Observe (through pictures and videos) changes in the body after prolonged use of drugs including smoking and alcohol.	Classify drugs.	Research drugs using books, fact sheets and internet
Evolution and inheritance	Analyse the advantages and disadvantages of specific adaptations, such as being on two feet rather than four, having a long or a short beak, having gills or lung, tendrils on climbing plants, brightly coloured and scented flowers	Observe changes in humans over time and predict what they will look like in the future.		Research Darwin and his research using internet and books.
Light	Investigate where to place rear view mirrors on cars; designing and making a periscope and using the idea that light appears to travel in straight lines to explain how I works. They might investigate the relationship between light sources, objects and shadows by using shadow puppets.			
Electricity	Systematically identifying the effect of changing one component at a time in a circuit; designing and making a set of traffic lights, a burglar alarm or some other useful circuit			