**Science Curriculum Overview – 2023-24**

**Investigation titles in red**

**PoS - blue**

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|  | **Aut 1** | **Aut 2** | **Sp1** | **Sp2** | **Sum1** | **Sum2** |
| **R** | UtW: W ChangeMelting Chocolate | UtW:WPatternsGingerbread men | UtW:WMaterialsIce melting |  |  | UtW:WRamps |
| **Yr1** | Animals, including humansIdentify a variety of animalsName carnivores, herbivores and omnivores | Seasonal changeHot and coldObserve changes across the four seasonsObserve and describe weather associated with the seasons and how day length varies. | Everyday materialsWaterproof JacketsIdentify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, brick, rock, paper and cardboard.Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. | SeasonsObserve changes across the four seasonsObserve and describe weather associated with the seasons and how day length varies. | PlantsPlants: survivalName a variety of wild and garden plants, including deciduous and evergreen.Identify and describe the basic structure of a variety of common flowering plants | (Seasonal change – revisit)Observe changes across the four seasonsObserve and describe weather associated with the seasons and how day length varies. |
| **Yr2** | Animals including humansFood ChainsNotice that animals, including humans, have offspring which grow into adultsFind out about and describe the basic needs of animals, including humans, for survivalDescribe the importance for humans of exercising, eating the right amounts of different food, and hygiene | Living things and their habitatsMinibeastsExplore and compare the differences between things that are living, dead, and things that have never been alive.Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other.Identify and name a variety of plants and animals in their habitats, including micro-habitatsDescribe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food. | PlantsGrowingObserve and describe how seeds and bulbs grow into mature plantsFind out and describe how plants need water, light and a suitable temperature to grow and stay healthy | Uses of everyday materialsExploring the use of materials. Floating/sinkingDistinguish between an object and the material from which it is madeIdentify and name a variety of everyday materials including wood, plastic, glass, metal, water and rockDescribe the simple physical properties of a variety of everyday materialsCompare and group everyday materials |
| **Yr3**  | Animals including humansBonesIdentify that animals including humans, need right types and amount of nutrition. And that they cannot make their own food, they get nutrition from what they eat.Identify that humans and some other animals have skeletons and muscles for support, protection and movement | Forces and magnetsRampsCompare how things move on different surfacesNotice that some forces need contact between two objects, but magnetic forces can act at a distance.Observe how magnets attract or repel each other and attract some materials and not others.Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials.Describe magnets as having two polesPredict whether two magnets will attract or repel each other, depending on which poles are facing | PlantsPlantsIdentify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers.Explore the requirements of plants for life and growth (air, light, water, nutrients from soil and room to grow) and how they vary from plant to plant.Investigate the way in which water is transported within plants.Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal | LightShadowsRecognise that they need light in order to see things and that dark is the absence of light.Notice that light is reflected from surfaces.Recognise that light from the sun can be dangerous and that there are ways to protect their eyes.Recognise that shadows can be formed when the light from a source is blocked by an opaque object.Find patterns in the way that the size of shadows change. | RocksCompare and group together different kinds of rocks on the basis of their appearance and simple physical properties.Describe in simple terms how fossils are formed when things that have lived are trapped within a rock.Recognise that soils are made from rocks and organic matter |
| **Yr4** | Living things and their habitatsHabitatsRecognise that living things can be grouped in a variety of ways;Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment;Recognise that environments can change and that this can sometimes pose dangers to living things. | ElectricityCircuitsIdentify common appliances that run on electricity;Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers;Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery;Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit;Recognise some common conductors and insulators, and associate metals with being good conductors. | States of matterChanging StatesCompare and group materials together, according to whether they are solids, liquids or gases;Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C);Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. | SoundIdentify how sounds are made, associating some of them with something vibrating;Recognise that vibrations from sounds travel through a medium to the ear;Find patterns between the pitch of a sound and features of the object that produced it;Find patterns between the volume of a sound and the strength of the vibrations that produced it;Recognise that sounds get fainter as the distance from the sound source increases. | Animals including humansTeethDescribe the simple functions of the basic parts of the digestive system in humans.Identify the different types of teeth in humans and their simple functions;Construct and interpret a variety of food chains, identifying producers, predators and prey. |
|  **Yr5** | Earth and spaceDescribe the movement of the Earth and other planets relative to the Sun in the solar system;Describe the movement of the Moon relative to the Earth;Describe the Sun, Earth and Moon as approximately spherical bodies;Use the idea of the Earth’s rotation to explain day and night and the apparent movement of the sun across the sky. | Properties and changes of materialLunchbox designCompare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets;Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution;Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating;Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic;Demonstrate that dissolving, mixing and changes of state are reversible changes;Explain 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 of soda. | ForcesParachutesExplain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object;Identify the effects of air resistance, water resistance and friction, that act between moving surfaces;Recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect. | Living things and their habitatsDescribe the differences in the life cycles of a mammal, an amphibian, an insect and a bird;Describe the life process of reproduction in some plants and animals. | Animals including humansdescribe the changes as humans develop to old age |
| **Yr6** | Animals including humansIdentify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood;Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function;Describe the ways in which nutrients and water are transported within animals, including humans. | LightRecognise that light appears to travel in straight lines;Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye;Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes;Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them. | Living things and micro-organismsDescribe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals;Give reasons for classifying plants and animals based on specific characteristics. | ElectricityCircuitsAssociate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit;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;Use recognised symbols when representing a simple circuit in a diagram | Evolution and inheritanceRecognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago;Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents;Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. |

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|  Science Investigations and Wider Learning Links (WL) |
| Year | Intention | Implementation (Key Question for investigations) | Impact  | Next steps |
| R | * WL Topic “Ourselves”. Key Knowledge includes: similarities/differences and likes/dislikes. Address children’s desire to explore chocolate
* WL –Celebrations. Children will have the opportunity to develop communications in making gingerbread men.
* WL –Enchanted worlds: “Frozen”. Investigate which material will keep Mr. Frosty’s ice hand cold.
* WL- Summer topic. Children will know how to keep cool and be safe in hot weather.
 | Which chocolate button will melt the quickest?Which material is the best to stop the gingerbread men from going soggy?Which material is the best to stop Mr. Frosty’s hand from melting?What happens to the juice when we put it in the freezer? | Children will have an insight into how the planning boards work. They will begin to increase their scientific vocabulary.Know about different materials and the uses.Related this to keeping hands warm in winter by wearing gloves – they stop cold air getting in. Mr. Frosty’s best material stops the warm air getting in.Children will know that liquid will freeze in freezing temperatures and that ice-lollies can cool you down in hot weather. Record findings using simple sentences. |  |
| 1 | * WL – Hot and cold. Children will deepen their knowledge of countries and the weather, looking at seasonal changes.
* WL- Food. Children will explore a variety of food and know how to be healthy.
* WL- Plants. Children will explore the environment identifying plants.
* WL- Victorians. Knowing about Victorian clothing and explore different materials.
 | How do Polar bears keep warm?Which spoon holds the most rice?What does a plant need to survive?Which waterproof coat is the best for Mrs’ Hayes to stop the rain getting in? | Children will be able to describe conditions of the Artic and be able to relate this knowledge to polar bears keeping warm. Be aware of the importance of staying healthy. Links to capacity.Children will know how to care for the world and understand why we need plants.Make links that the Victorians didn’t have waterproof clothing.Begin to use some sub headings to record their work. |  |
| 2 | * WL\_ Aldridge. Children will know about local habitats, visit the woods make links with minibeasts and food chains.
* WL – pirates. Children will learn how pirates lived and how they travelled. They will explore materials to make a ship.
* observe and describe how seeds and bulbs grow into mature plants. find out and describe how plants need water, light and a suitable temperature to grow and stay healthy
 | Which micro habitat do woodlouse prefer and why?Which material is the best to prevent the pirate ship from sinking?What will the plant look like? | Children will be able articulate and be familiar with local habitats and know the cycles in food chains and why food chains are needed.Children will be able to explain and justify why some materials float and some sink.Deepen scientific vocabulary and explain the different steps in plant growth.Use subheadings to record work |  |
| 3 | * Children will explore their shadows at different times of the day and observe what happens.
* Children explore materials, friction and forces.
* Children will explore the skeletal bones, name them and know the purpose of the skeleton.
* Children will know parts of a plant and understand that plants draw minerals from the soil and water to grow.
 | Is your shadow bigger or smaller at noon?Which material is best to prevent you from slipping?Does the tallest child have the longest leg bone?What conditions are needed for a plant to grow? | Children will know that shadows will appear in different places at different times of the day due to the earth orbiting the sun.Children will be able to explain about friction and make links to suitable footwear in different situations.Children will know about the skeleton and growth. They will use scientific vocabulary to articulate findings.Know that different variables affect plant growth. Embed using subheadings into written work and use scientific vocabulary.GD children will generate their own investigation question using the given question as a prompt. |  |
| 4 | * Children will identify electrical conductors and insulators and which works best. They will explain how a circuit works and design their own Christmas flashing light circuit.
* Explore how different states of matter and know how a liquid turns into solids and vice versa.
* Children will explore the structure of human teeth and name key parts. Look at the effect of different drinks on tooth decay. Know what happens on tooth decay.
 | Which electrical component should I use in my circuit? Which materials best conduct electricity? How can I make a complete circuit?What temperature does a solid turn to a liquid at? What temperature does a liquid turn to solid? How does a solid turn into a liquid? When does evaporation occur? Condensation?Which drink is best for your teeth? What affects the rate of tooth decay? What is the importance of enamel? | Know about different conductivity of different materials. Explain how a circuit works using scientific vocabulary.Children will know a solid turn to liquid at its freezing point. Know how and when evaporation and condensation occurs.Children will know the structure of human teeth and label them using scientific vocabulary. They will know that the loss of enamel happens during tooth decay and why this is important.Record observations and conclude which drink is the healthiest for teeth.Children will write investigations using subheadings and incorporate age appropriate scientific vocabulary.GD children will generate their own investigation question using the given question as a prompt |  |
| 5 | * Children will explore gravity and create detailed diagrams showing the theory of gravity. Us a parachute and different size balls to explore gravity.
* Explore the life cycle of chicks, through monitoring incubated eggs.
 | Which ball will fall the quickest to the ground? How will chicks survive? | Use scientific vocabulary to explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling objectChildren will produce good quality written work using different genres and scientific vocabulary, explaining the life cycle of chicksGD children will generate their own investigation question using the given question as a prompt. |  |
| 6 | * Explore the effect of exercise on the heart rate. Cross reference heart rate in soldiers in the War. – WL topic
* Explore how light travels to our eyes so that we can see colour.
* Explore and build circuits using a variety of bulbs and batteries
 | What happens to our heart after exercise?How do our eyes see colour?Does the size of the battery affect the bulb brightness? | Produce quality written work, using planning board subheadings and scientific vocabulary, explain the heart rate after exercise.Work will be presented in a variety of ways explain key knowledge. The children will be able to explain links from parts of the eye to how light travels.Embed key knowledge of circuits and explain finding thinking critically.GD children will generate their own investigation question using the given question as a prompt using scientific vocabulary. |  |