St Mary's Church of England Voluntary Aided Primary School

Executive Summary for: Science	Date: Autumn 2021
Leader: Lucy Richardson and Gill Haggan	Link Governor: Angela Johnson

Throughout Reception: Understanding The World			
Children in Reception will be learning to:	**Examples of how we support this:**	**Key Vocabulary:**	
Explore the natural world around them.	-Frequent opportunities for outdoor play and exploration. -Encourage interactions with the outdoors to foster curiosity and give children freedom to touch, smell and hear the natural world around them during hands-on experiences. -Create opportunities to discuss how we care for the natural world around us. -Opportunities to sing songs and join in with rhymes and poems about the natural world. -After close observation, draw pictures of the natural world, including animals and plants. -Observe and interact with natural processes, such as ice melting, a sound causing a vibration, light travelling through transparent material, an object casting a shadow, a magnet attracting an object and a boat floating on water.	animals plants see touch feel float water senses	hear natural ice melting material shadow magnet attract
Describe what they see, hear and feel whilst outside.	-Encourage focused observation of the natural world. -Listen to children describing and commenting on things they have seen whilst outside, including plants and animals. -Encourage positive interaction with the outside world, offering children a chance to take supported risks, appropriate to themselves and the environment within which they are in. -Name and describe some plants and animals children are likely to see, encouraging children to recognise familiar plants and animals whilst outside.	world natural growing leaves see hear feel	outdoors environment trees colour
Understand the effect of changing seasons on the natural world around them.	-Guide children's understanding by draw children's attention to the weather and seasonal features. -Provide opportunities for children to note and record the weather. Select texts to share with the children about the changing seasons. -Throughout the year, take children outside to observe the natural world and encourage children to observe how animals behave differently as the seasons change. Walks in Oakhill Park. -Look for children incorporating their understanding of the seasons and weather in their play.	weather seasons Autumn Winter Spring Summer	observe behave change temperature world
Throughout Reception: Aspects of 'Personal Development'			
Manage their own needs: • Personal hygiene -Know and talk about the different factors that support their overall health and wellbeing: • regular physical activity • healthy eating • toothbrushing • sensible amounts of 'screen time' • having a good sleep routine	-Model practices that support good hygiene, such as insisting on washing hands before snack time. -Narrate your own decisions about healthy foods, highlighting the importance of eating plenty of fruits and vegetables. -Help individual children to develop good personal hygiene. Acknowledge and praise their efforts. Provide regular reminders about thorough handwashing and toileting -Talk with children about exercise, healthy eating and the importance of sleep. -Use picture books and other resources to explain the importance of the different aspects of a healthy lifestyle.	hygiene health physical eating healthy tooth brushing sleep routine fruit vegetables exercise	

Term	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	UNITS, CORE CONCEPTS, KEY VOCABULARY					
Autumn Units & Key Vocabulary	**Everyday Materials (Chemistry)** **Key Vocab:** Wood, Plastic, Glass, Paper, Water, Metal, Rock, Hard, Soft, Bendy, Rough, Smooth **Our Changing World: Seasons (Physics)** **Key Vocab:** Summer, Spring, Autumn, Winter, Sun, Day, Moon, Night, Light, Dark	**Materials: Good Choices (Chemistry)** **Key Vocab:** hard, Soft, Stretchy, Stiff, Shiny, Dull, Rough, Smooth, Bendy, Waterproof, Absorbent, Opaque, Transparent Brick, Paper, Fabrics **Changing Materials (Chemistry)** **Key Vocab:** Squashing, Bending, Twisting, Stretching, Elastic,	**Amazing Bodies (Biology)** **Key Vocab:** movement, Muscles, Bones, Skull, Nutrition, Skeletons, diet, healthy, nutrition, support, protection **The Power of Forces (Physics)** **Key Vocab:** magnetic, Force, Contact, Attract, Repel, Friction, Poles, Push, Pull	**Electricity: Switched On! (Physics)** **Key Vocab:** cells, Wires, Bulbs, Switches, Buzzers, Battery, Circuit, Series, Conductors, Insulators, brightness **Animals: Where does all that food go? (Digestion) (Biology)** **Key Vocab:** mouth, Tongue, Teeth, Oesophagus, Stomach, Small Intestine, Large Intestine, Herbivore, Carnivore, Canine, Incisor, Molar	**Body Pump (Biology)** **Key Vocab:** circulatory, Heart, Blood Vessels, Veins, Arteries, Oxygenated, Deoxygenated, Valve, Exercise, Respiration **Get Sorted (Chemistry)** **Key Vocab:** hardness, Solubility, Transparent, Opaque, Translucent, Magnetic	**Classification: The Nature Library (Biology)** **Key Vocab:** mammal, amphibian, insect, bird, fish, reptile, eggs, live young, classification, vertebrate, invertebrate, specific, characteristic, mollusc, arachnid, annelid, variation, key, micro-organism **Electricity: Danger Low Voltage (Physics)** **Key Vocab:** electricity, electrons, appliance, device, electrical circuit, complete circuit, circuit diagram, circuit symbol, components, cell, battery, positive, negative, terminal, connection, short circuit, wire, crocodile clip, bulb, bright/dim, switch, buzzer, volume, motor, conductor, insulator, voltage, current, resistance,
Autumn Core Concepts	-Exploring objects and materials, including their simple physical properties. -Observe and describe the four seasons.	-Identify and compare the suitability of everyday materials for particular uses. -How can some materials be changed?	-nutrition – animals get this from what they eat. -Role of skeletons and muscles. -Explore magnetic forces including attract and repel.	-Construct simple series circuits and name basic parts. -Explore whether a lamp will light in a series circuit, including those with a switch. -Describe functions of parts of digestive system, including types of teeth. -Food chains	-Explore the human circulatory system and describe functions of its parts. -Explore how nutrients and water are transported within animals. -Compare and group everyday materials on basis of their properties, including solubility and conductivity and response to magnets	-Give reasons for classifying plants and animals based on their characteristics. -Investigate and give reasons for variations in how components function in circuits (including series and parallel). Use recognises circuit symbols.
Spring Units & Key Vocabulary	**Using Our Senses: The Human Body (Biology)** **Key Vocab:** Senses, sight, smell, taste, hear, feel, touch, nose, ears, eyes, skin, taste buds, brain, texture **Our Changing World: Plants (Biology)** **Key Vocab:** Deciduous, Evergreen, seasons, Tree, Leaves, Flowers (blossom), Petals, Fruit, Oak, Holly, Willow, Birch, Chestnut, Conker, Daisy, Buttercup, Rose, Daffodil, fruit	**Growing Up (Biology)** **Key Vocab:** survival, Water, Air, Food, Adult, Baby, Offspring, Kitten, Calf, Puppy, **Take Care (Biology)** **Key Vocab:** Exercise, Hygiene	**Rock Detectives (Chemistry)** **Key Vocab:** fossils, Soils, Sandstone, Granite, Marble, Pumice, Crystals, sedimentary, metamorphic, igneous, absorbent/porous, durable, permeable, impermeable **How does your garden grow? (Biology)** **Key Vocab:** air, Light, Water, Nutrients, Soil, Reproduction, Transportation, Dispersal, Pollination, Flower, trunk, stem, leaves,	**In a State? (Chemistry)** **Key Vocab:** solid, Liquid, Gas, Evaporation, Condensation, Particles, Temperature, Freezing, Heating, Precipitation **Who Am I? (Biology)** **Key Vocab:** vertebrates, Fish, Amphibians, Reptiles, Birds, Mammals, Invertebrates, Snails, Slugs, Worms, Spiders, Insects, Environment, Habitats, classify	**Circle of Life (Biology)** **Key Vocab:** Foetus, Embryo, Womb, Gestation, Baby, Toddler, Teenager, Elderly, Growth, Development, Puberty; **Separating Mixtures (Chemistry)** **Key Vocab:** Magnetic, Filter, Evaporation, Dissolving, sieving, Mixing, chemist	**Light Up Your World (Physics)** **Key Vocab:** light, light source, darkness, reflect, reflective, shadow, block, absorb, direction, transparent, opaque, translucent, refraction, spectrum, rainbow **Everything Changes: Evolution and Inheritance (Biology)** **Key Vocab:** evolution, suited/suitable, adapted, adaptation, offspring, reproduction, variation, inherit, inheritance, fossils, Characteristics, Genetics, Charles Darwin, breeding, natural selection, Linnaeus,

Spring Core Concepts	-Explore which part of the body is associated with each sense -Identify and name a variety of garden and wild plants.	-offspring growing into adults. -basic needs of animals for survival. -importance of exercise, eating a variety of foods and hygiene for humans.	-Explore what rocks are made from and compare physical properties of rocks. -Formation of fossils -Functions of parts of plants and how water is transported.	-Compare and group materials: solid, liquid, gases. -Observe changes in state. -The water cycle. -Explore and use classification keys to help group and identify living things.	-Describe the changes as humans develop to old age. -Explore how mixtures might be separated: filtering, sieving, evaporating	-Use the idea that light travels in straight lines to explain how we see things and why shadows have the shape of the object. -Explore how fossils provide us with information. -Explore why offspring vary. -Adaptation and evolution.
Summer Units & Key Vocabulary	**Plant Detectives (Biology)** **Key Vocab:** deciduous, Evergreen, Tree, Leaves, Flowers (blossom), Petals, Fruit, Roots, Bulb, Seed, Trunk, Branches, Stem, **Looking At Animals (Biology)** **Key Vocab:** fish, Reptiles, Mammals, Birds, Amphibians (+ examples of each) Herbivore, Omnivore, Carnivore, Leg, Arm, Elbow, Head, Ear, Nose, Back, Wings, Beak	**The Apprentice Gardener (Biology)** **Key Vocab:** seeds, Bulbs, Water, Light, Suitable temperature, Grow, Healthy, Germinate, Decompose **What's in your Habitat? (Biology)** **Key Vocab:** living, dead, Habitat, Energy, Food chain, Predator, Prey, Woodland, Pond, Desert	**How does your garden grow? Cont.. (Biology)** **Key Vocab:** air, Light, Water, Nutrients, Soil, Reproduction, Transportation, Dispersal, Pollination, Flower, seed dispersal, seed formation **Light: Can you see me? (Biology)** **Key Vocab:** light, Shadows, Mirror, Reflective, Dark, Reflection, light source, cast, surfaces, source, blocked, patterns, change	**Sound: Good Vibrations (Physics)** **Key Vocab:** volume, Vibration, Wave, Pitch, Tone, Speaker, medium, ear, patterns, distance **Human Impact (Biology)** **Key Vocab:** environment, human impact, change, habitats, deforestation, positive, negative, nature, reserves, ecology, population, development, litter, greenhouse effect, emissions, climate change, sustainable, solar power, wind power, hydro power, fossil fuels, carbon dioxide	**Everyday Materials (Chemistry)** **Key Vocab:** Thermal conductor, thermal insulator, electrical conductor, electrical insulator, properties, hardness, solubility, transparency, conductivity (electrical and thermal), magnetic **Reversible & Irreversible Changes (Chemistry)** **Key Vocab:** Reversible, irreversible, change, dissolving, mixing, burning, acid, state, reaction, process, melting, evaporating, sieving, filtering, rusting, chemists, inventions	**Body Health (Biology)** **Key Vocab:** Circulatory system, heart, blood, blood vessels, pumps, oxygen, carbon dioxide, lungs, nutrients, water, diet, exercise, drugs, lifestyle **Space: The Earth and Beyond (Forces)** **Key Vocab:** Earth, planets, sun, solar system, moon, celestial body, spherical, rotation, spin, night and day, names of planets, dwarf planet, orbit, geocentric model, heliocentric model, shadow clocks, sundial, Axis, Phases of the Moon, star, constellation, waxing, waning, full, new, year, month
Summer Core Concepts	-Describe the structure of plants, including trees -Describe and compare the structure and diet of fish, amphibians, reptiles, birds and mammals.	-Describe how plants grow and what they need to do so. -Explore different habitats and how animals are suited to them. -Food chains -Difference between things living, dead, never been alive.	-Requirements of plants for growth and role of the flower. -Explore the concept of light and dark and how we see. -The formation and change of shadows. -the sun and how to protect our eyes.	-explore how sounds are made and how we hear them. -explore pitch and volume -Explore positive and negative human impact on environments.	-Compare and group everyday materials based on their properties. Give reasons for their uses. -Explore reversible and irreversible changes and that some result in new materials.	-Recognise the impact of diet, exercise, drugs and lifestyle on how our bodies function. -Describe the movement of the Earth, relative to other planets and the sun/moon. -Explain night and day.
Working Scientifically Vocabulary	Questions, answers, equipment, gather, measure, record, results, sort, group, test, explore, observe, compare, describe, similar/ities, different/ces, beaker, pipette, syringe What…? How ….? Why …?	observe, changes over time, notice, patterns, secondary sources, hand lenses, egg timers, identify, classify, data, slowly, quickly, describe, name, identify, label, record, measure, bigger and smaller, pattern, notice, cycle, predict	gradually, identify, observe, recognise, investigate, record, units, table, fair, evidence, research, length, observations, prediction, question, patterns, compare, describe, record, careful, enquiry, relevant, gather, classify, diagrams, conclusion, differences, similarities	Similarities, differences, research and sources, scientists, discovery, process, cycle, measurements, conclude, evaluate, rank, plan, vary, keep the same/constant, bar graph, table, tally, enquiry, increase, decrease, identify, classify, order, notice patterns, relationships, appearance, present results	Classify, interpret, pattern, relationship, prediction, analyse, interpret, conclude, evaluate, rank, variable, constants, control, repeat, key, relationship, line graph, independent variable, dependent variable, controlled variable, accuracy, precision, degree of trust, support/refute,	Hypothesis, variable, constants, evaluate, plan, conclude, interpret, classify, categorise, database, enquiry, control, repeat, support, refute, degree, of trust, opinion/fact, enquiry types, prediction, conclusion, improve, question, select, comparative, fair, measurement, observation, patterns, secondary sources

INTENT/WHY?

Science at St. Mary's starts from the premise of practical exploration and the understanding that Science is an everyday presence in everyone's world. All children experience practical and theoretical lessons where questioning is encouraged and celebrated. This enables children to develop an age appropriate understanding of the world around them and the part they play in it. We want our children to understand how scientific enquiry and critical thinking can help deepen our understanding of the world and how human impact plays a very important role.

A high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world's future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key foundational knowledge and concepts, pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena.

LINKS TO? (Cross curricular History, Geography and Science links, PSHE, Values etc)

Whole Year	**Every Day Materials** links to History (Toys Then and Now) and English (The Three Little Pigs) and DT (making houses for the 3 Little Pigs) **Our Changing World: Seasons,** links to English (Autumn poems) and Autumn walk through Oakhill Park. **Plants** links to English (The Gigantic Turnip); DT (Shoebox Gardens) **Animals** links to Whipsnade Zoo visit	**Materials: Good Choices** links to History (Toys Now and Then) Take Care links to PSHE (Healthy Me). **The Apprentice Gardener** links to English (Lila and Secret of Rain)	**Amazing Bodies** links to English (Funny bones) **Rock Detectives** links to English (A Pebble in my Pocket) **How Does Your Garden Grow**? Links to English (The Extraordinary Gardener)	**Switched On!** Links to English (The Iron Man) and DT (making an Iron Man mask with flashing eyes) **Human Impact** links to English (The Great Kapok Tree) and having a picnic with as little litter as possible). It also links very much to our vision can caring for God's Creation.	**Body Pump** links to DT (making food for a healthy heart) Circle of Life links to Art (Scientific Illustration) **Every Day Materials** links to DT (using sustainable materials to make birdfeeders)	**Electricity, Danger Low Voltage** links to DT (making electrical Christmas decorations) **Plants and Animals** links to Art (human impact collage) **Space: Earth and Beyond** links to English (non-fiction writing about Space)