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

Term	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
UNITS, CORE CONCEPTS, KEY VOCABULARY							
Autumn Units & Key Vocabulary	**Health and Self-Care** Setting expectations for hygiene practices at school such as washing our hands after using the toilet. **Key Vocab:** Hygiene, health, physical, eating **The Natural World** Find out about birds' nests and visit the park to gather materials to gather. Look at trees in our setting and compare different types of sticks. Visiting the local park and looking for signs of Autumn. Making observations about Autumn leaves. Making observations about animals at this time of year (possibly creating a bird feeder). Describing what leaf man would pass if he went on a journey around our local area. Exploring and describing the woods in the park (linked to the Gruffalo) **Key Vocab:** animals, plants, see, touch, feel, senses, hear, world, natural, growing, leaves, see, hear, feel, weather, seasons, Autumn	**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	1.1.Be increasingly independent in meeting their own care needs. E.g. using the toilet, washing and drying their hands thoroughly. 3.2. Make healthy choices about food, drink, activity and tooth brushing. 1.2.Explore the natural world around them	-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	**Health and Self-Care** Thinking about how they can make healthy choices about the food they eat. (This could include planning a healthy meal); Creating their own short exercise routine; Encouraging children to carry out self-care activities independently; Exploring how they can take care of the world around them (particularly in relation to looking after plants and wildlife) **Key Vocab:** Eating, healthy, tooth brushing, sleep, routine, fruit, vegetables, exercise **The Natural World** Exploring ways of making different sounds; Exploring how to make porridge; Describing the process of making toast and observing how bread changes after being placed in a toaster; Growing Beans / sunflowers; Planting bulbs in our Reception Garden/ planters; Making observations about plants in our local area including the local park; Finding out about jobs relating to plants and taking care of our environment; Making a healthy fruit smoothie; exploration of ice; exploration of flowers with magnifying glasses. **Key Vocab:** plants, world, natural, growing, leaves, outdoors, environment, trees, colours, temperature, change, Spring, behave, ice, material, melting, water, float	**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,
Spring Core Concepts	2.1. Further develop the skills they need to manage the school day successfully: -Mealtimes; Personal; hygiene 2.1. Describe what they see, hear and feel whilst outside. 2.3. Understand the effect of changing seasons on the natural world around them. 2.4. Recognise some environments that are different to the one in which they live.	-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	**Health and Self-Care** Naming different parts of our body; Thinking about how we can show respect for our bodies (exercise and healthy eating) **Key Vocab:** exercise, healthy, body, physical, sleep, routine, fruit, vegetables, health	**Plant Detectives (Biology)** **Key Vocab:** deciduous, Evergreen, Tree, Leaves, Flowers (blossom), Petals, Fruit, Roots, Bulb,	**The Apprentice Gardener (Biology)** **Key Vocab:** seeds, Bulbs, Water, Light, Suitable temperature, Grow, Healthy, Germinate, Decompose	**How does your garden grow? Cont.. (Biology)** **Key Vocab:** air, Light, Water, Nutrients, Soil, Reproduction, Transportation, Dispersal, Pollination, Flower, seed dispersal, seed formation	**Sound: Good Vibrations (Physics)** **Key Vocab:** volume, Vibration, Wave, Pitch, Tone, Speaker, medium, ear, patterns, distance	**Everyday Materials (Chemistry)** **Key Vocab:** Thermal conductor, thermal insulator, electrical conductor, electrical insulator, properties, hardness, solubility, transparency, conductivity (electrical and thermal), magnetic	**Continued: Everything Changes: Evolution and Inheritance (Biology)** World Bee Day on 20th May!

	The Natural World Learning about the life cycle of a caterpillar and making observations of live caterpillars and butterflies; Investigating which mini beasts live in our school environment; Learning about what mini beasts need in order to survive and creating their own mini beast habitat; Discovering how palaeontologists find out about dinosaurs. **Key Vocab:** animals, see, hear, cycle, environment, palaeontologist, dinosaur, fossil, caterpillar, chrysalis, stage, butterfly, change, wings	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	**What's in your Habitat? (Biology)** **Key Vocab:** living, dead, Habitat, Energy, Food chain, Predator, Prey, Woodland, Pond, Desert	**Light: Can you see me? (Biology)** **Key Vocab:** light, Shadows, Mirror, Reflective, Dark, Reflection, light source, cast, surfaces, source, blocked, patterns, change	**Human Impact (Biology)** **Key Vocab:** environment, human impact, change, habitats, deforestation, positive, negative, nature, population, development, litter, climate change, conservation, food chain, endangered, pollution	**Reversible & Irreversible Changes (Chemistry)** **Key Vocab:** Reversible, irreversible, change, dissolving, burning, acid, state, reaction, process, melting, evaporating, rusting, chemists,	**Body Health (Biology) (links to PSHE unit)** **Key Vocab:** Circulatory system, heart, blood, pumps, oxygen, lungs, nutrition, diet, balanced, exercise, drugs, lifestyle, mental and physical benefits **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, sundial, Axis, Phases of the Moon, star, constellation, waxing, waning, full, new, year, month
Summer Core Concepts	3.1. Know and talk about the different factors that support their overall health and wellbeing: -Regular physical activity; Healthy heating; Tooth brushing; Sensible amounts of 'screen time'; Having a good sleep routine; Being a safe pedestrian **ELG** The Natural World-Explore the natural world around them, making observations and drawing pictures of animals and plants. **ELG** The Natural World-Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class. **ELG** The Natural World-Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.	-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	observe, changes, temperature, listen, notice, question, sort, familiar, similarities, differences, explore, drawings	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	**Many links are made to the class key texts:** Owl Bablies, Stickman, Leaf Man, The Gruffalo's Child, Snow Bears, My Bean Diary, Jack and the Beanstalk, The Extraordinary Gardener, The Hungry Caterpillar, Snail Trail, Mad About Mini beasts, Mad about Dinosaurs Many links are made across the Reception Curriculum – please see Reception Curriculum Maps	**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)