



Executive Summary for: Science Date: Autumn 2024 (Updated August '24 based on Second Edition of Collins Snap Science Scheme)

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Throughout Reception: Understanding Of The World

Children in Reception will be learning to:	Examples of how we support this:	Key Vocabulary:	
Explore the natural world around them.	<ul style="list-style-type: none"> -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. 	<ul style="list-style-type: none"> animals plants see touch feel float water senses 	<ul style="list-style-type: none"> hear natural ice melting material shadow magnet attract
Describe what they see, hear and feel whilst outside.	<ul style="list-style-type: none"> -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. 	<ul style="list-style-type: none"> world natural growing leaves see hear feel 	<ul style="list-style-type: none"> outdoors environment trees colour
Understand the effect of changing seasons on the natural world around them.	<ul style="list-style-type: none"> -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. 	<ul style="list-style-type: none"> weather seasons Autumn Winter Spring Summer 	<ul style="list-style-type: none"> observe behave change temperature world

Throughout Reception: Aspects of 'Physical and Personal Development'

Manage their own needs: <ul style="list-style-type: none"> • Personal hygiene -Know and talk about the different factors that support their overall health and wellbeing: <ul style="list-style-type: none"> • regular physical activity • healthy eating • toothbrushing • sensible amounts of 'screen time' • having a good sleep routine 	<ul style="list-style-type: none"> -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. 	<ul style="list-style-type: none"> hygiene health physical eating healthy tooth brushing sleep routine fruit vegetables exercise
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Term	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
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UNITS, CORE CONCEPTS, KEY VOCABULARY

<p>Autumn Units & Key Vocabulary</p>	<p><u>Health and Self-Care</u> Setting expectations for hygiene practices at school such as washing our hands after using the toilet. Key Vocab: Hygiene, health, physical, eating <u>The Natural World</u> 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</p>	<p><u>Seasonal Changes (Biology/Physics)</u> Key Vocab: Compare, describe, different, match, record, similar, weather, group, identify, observe, berry, bird, bud, deciduous, evergreen, flower, fruit, insect, leaf, nest, nut, petal, plant, seasons, seed, tree Key Scientist: Sir Christopher Wren (inventor of rain gauge); Beatrix Potter (natural scientist and conservationist, writer, illustrator) <u>Human Body and Senses (Biology)</u> Key Vocab: Classify, diagram, group, identify, pattern, rank, brain, hearing, mammal, sense, sight, smell, taste, torso, touch Key Scientist: David Julius and Ardem Patapoutian (discovery about our senses)</p>	<p><u>Local Habitats (Biology)</u> Key Vocab: compare, feed, move, record order, alive, breathe, consumer, dead, decay, decomposer, depend, food chain, habitat, insect, producer, shelter, survive, never been alive, omnivore, once alive. Key Scientist: Eugenie Clark (Shark lady: marine conservationist) Steve Backshall <u>Choosing Materials (Chemistry)</u> Key Vocab: compare, design, discover, fit for purpose, invent, record, suitable, use, comparative test, enquiry, fair, measure, bounciness, durable, elasticity, absorb, flexible, material, opaque, property, rigid, transparent, waterproof Key Scientist: Charles Macintosh (invented waterproof raincoat). Discuss how he is male/white as there was not equality in 19th century which we're working towards today.</p>	<p><u>Rocks, Soils and Fossils (Chemistry)</u> Key Vocab: Appearance, drain, flood, layer, similar, structure, texture, evidence, microscope, crystal/crystalline, erosion, fossil, hardness, organic, palaeontologist, remains, rock, sediment, weathering Key Scientist: Mary Anning (paleontologist) <u>Light and Shadows (Physics)</u> Key Vocab: Absence, absent, artificial, block, similar, surface, conclude, conclusion, data logger, bright, dark, darkness, dim, light, light source, lux, opaque, reflect, reflective, sensor, shadow, Sun, sunlight, translucent, transparent, ultraviolet, Key Scientist: Lewis Latimer (African American Scientist and inventor – invented an improved light bulb filament)</p>	<p><u>Changes of State (Chemistry)</u> Key Vocab: Cool, empty, flow, heat, horizontal, space, vertical, degree Celsius (°C), volume, air, boil, boiling point, bubble, carbon dioxide, Change of state, cloud, compress, condense, condensation, evaporate, evaporation, expand, freeze, freezing point, gas, granule, granular, heat-sensitive, helium, ice, liquid, melt, melting point, oxygen, powder, rain, snow, solid, solidify, steam, viscous, water vapour, temperature, thermometer, weight, flexible, material, opaque, property, transparent. Key Scientist: Agnes Pockels (German chemist – properties of liquids and solids) <u>Electricity: Circuits (Physics)</u> Key Vocab: Appliance, complete, device, flow, function, manual, plug, socket, wire, battery, bulb, buzzer, cell, circuit, closed circuit, connection points, electrical appliance, electrical component, electrical conductor, electrical insulator, electricity, mains, motor, open circuit, switch, material. Key Scientist: Benjamin Franklin (He demonstrated that lightning and electricity are identical with his famous kite experiment.) Garett Morgan (African American Inventor – three-way traffic light)</p>	<p><u>Forces and Mechanisms (Physics)</u> Key Vocab: Anticlockwise, clockwise, system, air resistance, force meter, friction, fulcrum, gears, gravity, impact, lever, load, magnetism, mechanism, Newton (N), oppose, pivot, pulley, water resistance, contact force, force, non-contact force. Key Scientist: Sir Isaac Newton (gravity). <u>Properties and Uses of Materials (Chemistry)</u> Key Vocab: Construction, design, disassemble, dispose, flow, invent, invention, leak, pour, structure, brittle, ductile, fragile, impermeable, malleable, malleability, permeable, thermal conductor, thermal insulator, viscosity, viscous, wear and tear, absorb, absorbent, compost, decompose, durable, elastic, elasticity, electrical conductor / insulator, flexible, flexibility, hard, hardness, liquid, magnetic, non-magnetic, opaque, property, solid, transparent, transparency, weathering.</p>	<p><u>Classification of Living Things (Biology)</u> Key Vocab: Common, observable, arthropod, cone, conifer, Echinodermata, fern, flatworm, monera, moss, mould, needle, Protista, spore, taxonomy, amphibian, annelid, arachnid, bird, carpel, cold-blooded, crustacean, fish, flowering plant, fungi, insect, invertebrate, mammal, mollusc, myriapod, organism, reproduction, reptile, species, stamen, vertebrate, warm-blooded. Key Scientists: Carl Linnaeus (Classification System); Dame Sarah Gilbert (viruses and vaccines); Rosalind Franklin (chemist – viruses) <u>Evolution and Inheritance (Biology)</u> Key Vocab: Anomaly, camouflage, evolution, extinction, inherited, migrate, natural selection, offspring, variation, adaptation, adapted, fossil, habitat, organism, predator, reproduction, species. Key Scientist: Charles Darwin and Alfred Wallace (adaptation and evolution); Meeman Chang, s a Chinese paleontologist</p>
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Autumn Core Concepts	<p>1.1.Be increasingly independent in meeting their own care needs. E.g. using the toilet, washing and drying their hands thoroughly.</p> <p>3.2. Make healthy choices about food, drink, activity and tooth brushing.</p> <p>1.2.Explore the natural world around them</p>	<p>-observe changes across the four seasons</p> <p>-observe and describe weather associated with the seasons and how day length varies</p> <p>- identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense</p>	<p>- explore and compare the differences between things that are living, dead, and things that have never been alive</p> <p>- 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</p> <p>-identify and name a variety of plants and animals in their habitats, including micro-habitats</p> <p>-describe 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.</p> <p>-identify and compare the suitability of materials including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.</p>	<p>- Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties.</p> <p>-Recognise that soils are made from rocks and organic matter.</p> <p>- Describe in simple terms how fossils are formed when things that have lived are trapped within rock.</p> <p>- Recognise that we need light in order to see things and that dark is the absence of light.</p> <p>- Notice that light is reflected from surfaces.</p> <p>- Recognise that light from the Sun can be dangerous and that there are ways to protect our eyes.</p> <p>- Recognise that shadows are formed when the light from a light source is blocked by an opaque object.</p> <p>- Find patterns in the way that the size of shadows change.</p>	<p>- Compare and group materials together, according to whether they are solids, liquids or gases.</p> <p>- 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).</p> <p>- Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</p> <p>-Identify common appliances that run on electricity.</p> <p>-Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.</p> <p>-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.</p> <p>-Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit.</p> <p>-Recognise some common conductors and insulators, and associate metals with being good conductors.</p>	<p>- Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.</p> <p>- Identify the effects of air resistance, water resistance and friction, that act between moving surfaces.</p> <p>- Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.</p> <p>- Compare and group together everyday materials on the basis of their properties, including their hardness, [solubility,] transparency, conductivity (electrical and thermal), and response to magnets.</p> <p>- Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.</p>	<p>- Describe 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.</p> <p>- Give reasons for classifying plants and animals based on specific characteristics.</p> <p>- Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.</p> <p>- Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.</p> <p>- Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</p>

<p>Spring Units & Key Vocabulary</p>	<p><u>Health and Self-Care</u> 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</p> <p><u>The Natural World</u> 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</p>	<p><u>Naming and Describing Materials (Chemistry)</u> Key Vocab: observe, magnifier, test, absorb, manufactured, material, natural, property, recycle, reuse, transparent, classify, group</p> <p>Key Scientist: Henry Bessemer, British Engineer (Steel)</p> <p><u>Properties and Uses of Materials (Chemistry)</u> Key Vocab: bar chart, test, bend, flexible, opaque, rigid, waterproof, group, observe, absorb, manufactured, material, natural, property, recycle, reuse, transparent</p>	<p><u>Changing Materials (Chemistry)</u> Key Vocab: action, discover, fit for purpose, invent, pull, push, suitable, use, elastic, squashy, stiff, stretchy, twist, bend, flexible, material, property, rigid.</p> <p>Key Scientist: Solar Roadways Vision</p> <p><u>Growing Seeds and Bulbs (Biology)</u> Key Vocab: compare, describe, record, accurate, effect, enquiry, explain, fair, observe, bulb, conditions, germinate, mature, seedling, flower, leaf, roots, seed, stem</p> <p>Invite a gardening expert in to class (parent community)</p>	<p><u>Forces, Friction and Magnets (Physics)</u> Key Vocab: Contact, pendulum, pull, pulling, push, pushing, rough, slide, smooth, surface, texture, stopwatch, value, attract, contact force, force, like poles, magnet, magnetic, non-contact force, north/south pole, repel, material.</p> <p>Key Scientist: William Gilbert (the first man to research the properties of the lodestone (magnetic iron ore)</p> <p><u>Movement and Nutrition for the Human Body (Biology)</u> Key Vocab: Balanced, contract, internal, protect, support, system, sequence, calcium, carbohydrate, cartilage, energy, exoskeleton, fat, fibre, fluid, heart, invertebrate, joint, mineral, nutrient, organ, protein, ribs, skull, spinal cord, spine, sugar, tendon, vitamin, X-ray, brain, amphibian, bird, diet, fish, invertebrate, mammal, reptile, vertebrate.</p> <p>Key Scientist: Mary Seacole (nurse)</p>	<p><u>Human Impact on the Environment (Biology)</u> Key Vocab: Biodegradable, compost, decompose, environment, filter, fungi, micro-organism, organism, pollution, decay, decomposer, food chain, habitat, organic, recycle, soil.</p> <p>Key environmental activist: Greta Thunberg Naturalist/conservationist: Chris Packham Inventor/Engineer: William Kamkwamba - Wind Power</p> <p><u>Digestion and Food Chains (Biology)</u> Key Vocab: Contract, flow, function, grind, anus, canine, chemicals, constipation, decompose, diarrhoea, digestion, extinct, food web, incisor, jaw, large intestine, mechanical, milk teeth, molar, oesophagus, predator, prey, rectum, saliva, small intestine, stomach, vomit, carnivore, consumer, depend, diet, energy, food chain, fossil, habitat, herbivore, nutrient, omnivore, palaeontologist, producer.</p> <p>Key Scientist: Rachel Carson (marine biologist – studied food chains in the ocean and noticed a problem). Key Scientist: Dr. Jessie G. Garnett (first black female dentist)</p>	<p><u>Earth and Space (Physics)</u> Key Vocab: Dawn, diameter, dusk, horizon, midday, spherical, sunrise, sunset, axis, moon, orbit, planet, rotate, solar system, star, year, dark, darkness, light, light source, opaque, shadow, sun.</p> <p>Key Scientist: Mae Jemison (is an American engineer, physician, and former NASA astronaut. She became the first black woman to travel into space). Maggie Aderin Pocock (black female astrophysicist with dyslexia)</p> <p><u>Plant and Animal Life Cycles (Biology)</u> Key Vocab: Dissect, anther, asexual, breeding, embryo, filament, female, fertilisation, gestation, larva, male, mate, metamorphosis, ovary, ovule, propagation, pupa, reproduction, seed dispersal, stamen, stigma, style, thorax, amphibian, bird, carpel, exoskeleton, flower, insect, life cycle, mammal, organism, pollen, pollination, pollinator, vertebrate.</p> <p>Key Scientist: Maria Sibylla Merian was a German-born naturalist and artist who revolutionized the study of insects and plants in the 17th and 18th centuries. Key focus on metamorphosis.</p>	<p><u>What Light Does (Physics)</u> Key Vocab: Block, travel, light ray, reflection, dark, darkness, light, light source, opaque, reflect, reflective, shadow, transparent, translucent.</p> <p>Key Scientist: Dr. Patricia Bath (Laser cataract surgery)</p> <p><u>Human Circulation (Biology)</u> Key Vocab: Circulate, contract, flow, pump, system, transport, aorta, arteries, atrium, blood, blood vessels, capillaries, cell, deoxygenated blood, hormone, oxygenated blood, plasma, platelets, pulmonary artery, pulse, red blood cells, valve, veins, ventricle, white blood cells, evaluate, model, secondary source, amphibian, bird, brain, breathe, carbon dioxide, chemicals, digestion, fish, gas, heart, large intestine, lungs, mammal, mechanical, nutrient, organ, oxygen, reptile, small intestine vertebrate.</p> <p>Key Scientist: William Harvey (English physician who was one of the first to describe accurately how blood was pumped around the body by the heart.)</p>
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<p>Spring Core Concepts</p>	<p>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.</p>	<ul style="list-style-type: none"> - distinguish between an object and the material from which it is made -identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock -distinguish between an object and the material from which it is made -describe the simple physical properties of everyday materials -compare and group together a variety of everyday materials on the basis of their simple physical properties 	<ul style="list-style-type: none"> -find out how the shapes of some solid objects made from some materials can be changed by squashing, bending, twisting and stretching -observe and describe how seeds and bulbs grow into mature plants. 	<ul style="list-style-type: none"> - Compare how things move on different surfaces. - Notice 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 poles. - Predict whether two magnets will attract or repel each other, depending on which poles are facing. - Identify that animals, including humans, need the 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. 	<ul style="list-style-type: none"> - Recognise that environments can change and that this can sometimes pose dangers to living things. - Describe 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. 	<ul style="list-style-type: none"> - Describe 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. - Describe 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. 	<ul style="list-style-type: none"> - Recognise 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. - Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. - Describe the ways in which nutrients and water are transported within animals, including humans.
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<p>Summer Units & Key Vocabulary</p>	<p><u>Health and Self-Care</u> 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</p> <p><u>The Natural World</u> 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</p>	<p><u>Animals (Biology)</u> Key Vocab: Adult, amphibian, carnivore, diet, fish, herbivore, mammal, omnivore, reptile, vertebrate, classify, group, identify, bird</p> <p>Key Scientist for Summer Term: Sir David Attenborough</p> <p><u>Identifying Plants and their Parts (Biology)</u> Key Vocab: Bark, roots, stem, trunk, classify, group, identify, observe, deciduous, evergreen, flower, leaf, plant</p>	<p><u>Growing Up (animals inc. humans) (Biology)</u> Key Vocab: record, birth, healthy, hygiene, invertebrate, life cycle, adult, amphibian, bird, diet, fish, insect, mammal, reptile, survive, vertebrate</p> <p>Key Scientist: Elizabeth Garrett Anderson (first English woman to qualify as a doctor in 1865)</p> <p><u>Growing Healthy Plants (Biology)</u> Key Vocab: comparative test, enquiry, explain, measure, patterns, predict, results, temperature, thermometer, bulb, conditions, germinate, healthy, light, mature, seedling, soil, leaf, roots, seed, stem</p> <p>Key Scientist: Marie Clark Taylor was the first African American woman to receive a Ph.D in botany.</p>	<p><u>Flowering Plants and Plant Growth (Biology)</u> Key Vocab: Compete, feature, function, space, transport, adaptation, adapted, anchor (verb), capture, nutrient, consumer, flower, food chain, habitat, producer, roots, seed, stem, sunlight.</p> <p>Key Scientist: Sir Joseph Banks (Botanist, who helped create Kew Gardens)</p> <p><u>Flowering Plants Life Cycle (Biology)</u> Key Vocab: Compete, formation, invent, savoury, scar, similar, structure, burr, carpel, dispersal, nectar, nutrient, ovary, ovule, pollen, pollination, pollinator, ripe, scent, sepal, stamen, flower, fruit, insect, petal, seed.</p> <p>Key Scientist: George Washington Carver (an African American agricultural scientist and inventor who promoted alternative crops to cotton and methods to prevent soil depletion.)</p>	<p><u>Sound (Physics)</u> Key Vocab: Communicate, pluck, taut, travel, air, decibel, gas, liquid, pitch, solid, sound, sound source, vibrate, vibration, volume, sensor, material.</p> <p>Key Scientist: Alexander Graham Bell (Scottish-born inventor, scientist and engineer who is credited with patenting the first practical telephone)</p> <p><u>Classification of Plants and Animals (Biology)</u> Key Vocab: Characteristic, feature, internal, observable, segment, annelid, arachnid, cold-blooded, crustacean, flowering plant, mollusc, myriapod, non-flowering plant, organism, warm-blooded, amphibian, bird, deciduous, evergreen, exoskeleton, fish, flower, insect, invertebrate, mammal, reptile, skeleton, vertebrate.</p> <p>Key Scientist: Kelsey Archer Barnhill (deep-sea ecologist who sends robots to the seafloor to collect samples of different animals to study) Liz Bonnin (TV presenter and wildlife conservationist).</p>	<p><u>Separating Mixtures and Changing Materials (Chemistry)</u> Key Vocab: Combine, grade (of sieve), inflate, particle, proportion, puncture, room temperature, sieve, contamination, dissolve, filter, insoluble, non-reversible: (also called irreversible), react, reaction, reversible, saturated, separate, soluble, solution, condense, carbon dioxide, crystal, crystalline, evaporate, evaporation, gas, liquid, solid.</p> <p>Key Scientist: Walter Lincoln Hawkins: Black American chemist and engineer who helped develop plastic materials. Spencer Silver: an American chemist and inventor who specialized in adhesives. Irene JoliotCurie 1897 – 1956. Codiscovered how to convert stable chemical elements into ‘designer’ radioactive elements; these have saved millions of lives and are used in tens of millions of medical procedures every year. Stephanie Kwolek: Invented Kevlar, the incredibly strong plastic used in applications ranging from body armour to tennis racquet strings.</p> <p><u>Human Growth and Reproduction (Biology)</u> Key Vocab: Ageing, milestone, stage, system, abdomen, Adam’s apple, breasts, childhood, genitals, gestation, infancy, menstruation / having a period, newborn, pregnancy, puberty, pubic hair, reproduction, sweat, teenage, umbilical cord, uterus, vagina, hygiene, large intestine, life cycle,</p>	<p><u>Electricity: Changing Circuits (Physics)</u> Key Vocab: Fan, flow, propeller, standard symbol, voltage, volts, battery, cell, circuit, connection points, electrical component, electrical conductor, electrical insulator, electricity, lux, switch.</p> <p>Key Scientist: Thomas Edison & Lewis Latimer (Light bulb invention) Nikola Tesla (electric system)</p> <p><u>Body Health (Biology)</u> Key Vocab: Balanced, deficiency, recovery, arteries, heart rate, malnutrition, pulse, salt, veins, carbohydrate, chemicals, fats, fibre, lungs, mineral, nutrient, oxygen, protein, vitamin.</p> <p>Key Scientist: James Lind (discovered vitamin C deficiency caused scurvy)</p>
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						mammal, muscle, organ, oesophagus, small intestine, stomach. Key Scientist: Charlotte Armah (leads experiments into whether eating certain foods helps prevent disease).	
Summer Core Concepts	<p>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</p> <p>ELG The Natural World-Explore the natural world around them, making observations and drawing pictures of animals and plants.</p> <p>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.</p> <p>ELG The Natural World-Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.</p>	<p>-identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals</p> <p>-identify and name a variety of common animals that are carnivores, herbivores and omnivores</p> <p>-describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets)</p> <p>-identify and name a variety of common wild and garden plants, including deciduous and evergreen trees</p> <p>-identify and describe the basic structure of a variety of common flowering plants, including trees</p>	<p>-notice that animals including humans have offspring which grow into adults.</p> <p>-describe the basic needs of animals, including humans, for survival (water, food and air)</p> <p>-describe the importance of exercise, eating right amounts of different types of foods and hygiene for humans.</p> <p>-describe how plants need water, light and a suitable temperature to grow and stay healthy</p>	<p>- Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves [and flowers].</p> <p>- 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.</p> <p>- Investigate the way in which water is transported within plants.</p> <p>- Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</p>	<p>-Identify how sounds are made, associating some of them with something vibrating.</p> <p>- Recognise that vibrations from sounds travel through a medium to the ear.</p> <p>- Find patterns between the pitch of a sound and features of the object that produced it.</p> <p>- Find patterns between the volume of a sound and the strength of the vibrations that produced it.</p> <p>- Recognise that sounds get fainter as the distance from the sound source increases.</p> <p>- Recognise that living things can be grouped in a variety of ways.</p> <p>- Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment.</p>	<p>- That some materials dissolve in liquid to form a solution, and describe how to recover a substance from a solution.</p> <p>- To use knowledge of solids, liquids, and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.</p> <p>-To demonstrate that dissolving, mixing and changes of state are reversible changes.</p> <p>-To 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.</p> <p>- Describe changes as humans develop to old age.</p> <p>- Describe the life process of reproduction in humans</p>	<p>- Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit.</p> <p>- 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.</p> <p>- Use recognised symbols when representing a simple circuit in a diagram.</p> <p>- Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function</p>
Working Scientifically Vocabulary	observe, changes, temperature, listen, notice, question, sort, familiar, similarities, differences, explore, drawings	observe, similarities, differences, observations, magnifiers, comparisons, tests, group, identify, bar charts, rank	measurements, thermometer, temperature, comparative test, fair, observation over time, result, diagrams, patterns, enquiries, explanations.	compare, evidence, identifying and classifying, comparative test, enquiry, identify, observe, observation, conclusion, data, evidence, explain, explanation, measure, measurement, observe, observation, pattern, predict, prediction, classification, diagram, test, key, investigate, classify, conclude, research	control variable, fair test, interval, model, scale, variable, bar chart, classify, data, data logger, enquiry, evidence, explain, explanation, identifying and classifying, measure, measurement, observe, observation, observing over time, pattern, sensor, Carroll diagram, refute, support, Venn diagram, diagram, test,	accuracy, dependent variable, independent variable, line graph, accurate, comparative test, conclude, conclusion, control variable, enquiry, evaluate, fair test, precise, predict, prediction, refute, support, variable, criterion, survey, data, observe, observation, predict, predicting, scale, diagram, evidence, explain, explanation,	branching key, classify, enquiry, identify, identifying and classifying, observing over time, evidence, explain, explanation, model, conclude, conclusion, control variable, data, dependent variable, diagram, fair test, independent variable, measure, measurement, model, observe, observation, pattern, predict, prediction,

					evaluate, comparative test, investigate, rank, key (legend), identify, research, sequence, compare, accurate, conclude, conclusion, fair, predict, prediction, branching key.	model, pattern, flow chart, recommendation, secondary source	support, variable, comparative test, refute, line graph, secondary source.
Working Scientifically Skills	Observing surroundings, Comparing objects of the same type, noticing differences, Describing and drawing what has been observed.	ask questions about what they notice and observe in the world around them <ul style="list-style-type: none"> • show curiosity about similarities and differences between living things and materials • use what they have noticed or observed to answer questions make observations using all their senses, using context-specific vocabulary to describe them <ul style="list-style-type: none"> • use magnifiers to look more closely • make comparisons follow simple instructions to carry out simple comparative tests <ul style="list-style-type: none"> • use practical resources provided, including water droppers use sorting hoops to group materials and objects using their own and given criteria <ul style="list-style-type: none"> • use simple ID sheets to identify living things gather first-hand data from a variety of sources <ul style="list-style-type: none"> • record their observations in words and labelled pictures (drawn and photos); simple prepared tables and 	ask questions about how things are similar and different, materials' suitability and how things change <ul style="list-style-type: none"> • begin to recognise that there are different ways to answer scientific questions, including naming things, sorting them and comparing them make more systematic observations of features and changes <ul style="list-style-type: none"> • take measurements using non- standard units (string, blocks), and then cm • learn that a thermometer is used to measure temperature learn to only change one thing in a comparative test to make sure it is fair <ul style="list-style-type: none"> • begin to plan simple tests independently • learn how to set up an observation over time enquiry • predict a result using prior experience and knowledge select their own sorting criteria <ul style="list-style-type: none"> • use observable features to classify living things using ID cards use prepared tables to classify living things and materials <ul style="list-style-type: none"> • construct simple bar charts using templates 	Suggest questions they could investigate. Learn the names of different types of enquiry. State what science they did to answer the question. Plan observing over time enquiries, making some decisions about what observations and/or measurements they will need to make and when. Plan simple comparative tests, making some decisions about what to change and what to measure. Make some decisions about which practical resources to use. Learn to use a data logger or light meter app, stopwatch, weighing scales (digital), rulers. Make observations using a digital microscope. Use standard units for measurements. Make systematic and careful observations. Gather evidence from a range of sources including first hand observation and experimental data, and secondary sources of information, to answer scientific questions. Use tally charts. Construct tables. Draw labelled diagrams with keys.	Decide how to gather evidence to answer a scientific question. Use a range of question stems. Answer questions posed by the teacher identifying the type of enquiry they have used to answer the question. Use the terms variable and control variable. Use a fair test planner to identify variables to change, measure and keep the same to answer a question. Plan and carry out a fair test. Plan and carry out a comparative test. Follow instructions to carry out a pattern seeking enquiry. Learn to use a thermometer. Use standard units for measurements. Use senses to make detailed observations. Become more systematic and accurate in data collection. Learn to use branching keys. Learn to draw a bar chart, labelling axes and choosing a scale with suitable intervals. Use (non-standard) symbols to represent an electrical circuit. Sequence flow charts. Learn to use Venn and Carroll diagrams. Make detailed observational drawing. Begin to make choices about how to report enquiry findings.	Identify independent and dependent variables and use these to generate fair and comparative test questions. Identify the important variables to control when carrying out a comparative or fair test. Research secondary sources to find answers to questions. Justify selection of enquiry type. Learn to use a force meter. Measure liquids accurately using measuring cylinders. Make decisions about whether repeat readings are required to get accurate data. Create tables to collect data. Draw and label line graphs, scatter graphs and bar charts with the variables on the correct axis, choose a suitable scale with equal intervals and plot data correctly. Draw labelled diagrams of mechanisms and structures. Use test results gathered or knowledge acquired to make Predictions. Pose further questions. Use data gathered to identify causal relationships. Explain how to increase the accuracy and precision of Measurements. Use key vocabulary accurately and consistently. Make decisions about salient and relevant data to present Recognise that there are many different ways to report findings: scales, charts, reports, annotated diagrams, graphs,	Make planning decisions about where and how to collect information (recognising and controlling variables, deciding what observation or measurements to make over time and for how long, using suitable samples to identify patterns). Recognise how secondary sources can be used to answer questions that cannot be answered through practical work. Ask and write enquiry questions. Construct data collection tables. Select measuring equipment to give the most precise results including force meters with a suitable scale, ruler or tape measure. Make decisions about whether further research (secondary sources) is required. Construct and use a range of ways to record and sort data. Create branching keys with four or more items. Draw circuit diagrams using recognised symbols. Recognise when further tests and observations are needed to answer questions. Analyse scatter graphs.

		<p>pictograms; block and paper strip bar charts</p> <ul style="list-style-type: none"> • use simple scientific language to describe their observations and answer questions • use their data to recognise and rank differences 	<ul style="list-style-type: none"> • add labels to diagrams identify patterns in their data • use data collected in enquiries to inform their answers to questions • begin to develop explanations based on evidence collected and previous experience and knowledge 	<p>Construct simple food chains.</p> <p>Use scientific language in writing and orally.</p> <p>Make some decisions about how to record observations.</p> <p>Use different ways to report enquiry findings: posters, writing explanatory sentences, labelled diagrams, oral presentation, drama.</p> <p>Use prior knowledge or data collected in lessons to predict outcomes of tests.</p> <p>Use evidence collect in a range of methods and their current knowledge to formulate simple conclusions.</p> <p>Begin to evaluate effectiveness of tests.</p> <p>Identify differences and similarities they have observed in data they have collected at first hand or from secondary sources, and relate them to simple scientific ideas and processes they have learned about.</p> <p>Refer to own data when answering questions.</p>	<p>Use appropriate scientific vocabulary consistently and accurately.</p> <p>Identify a simple pattern between two data sets.</p> <p>Use test results to propose solutions to problems.</p> <p>Use evidence to generate comparative statements.</p> <p>Begin to identify causal relationships.</p> <p>Use simple models to represent scientific processes.</p> <p>Use data they have collected to answer questions.</p> <p>Use scientific knowledge from secondary sources to answer questions.</p>	<p>charts, inventor’s notebooks, multimedia presentations such as website pages and television advertisements.</p> <p>Draw valid conclusions from data collected.</p> <p>Draw upon test data to construct an explanation.</p> <p>Use observations and test data to provide evidence to support or refute ideas or arguments.</p>	<p>Recognise that in a pattern seeking enquiry it is important to have as much data as possible.</p> <p>Use scientific language to communicate findings from a range of enquiries in written, oral, dramatic and multimedia presentations.</p> <p>Use and evaluate models to represent systems and processes. Evaluate methods used, control of variables, precision of measurements, credibility of secondary sources.</p> <p>Justify trust in data.</p> <p>Evaluate limitations of data collected or from secondary sources.</p> <p>Explain why scientists do not always agree.</p> <p>Differentiate between fact and opinion.</p>
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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)

<p>Whole Year</p>	<p>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</p> <p>Many links are made across the Reception Curriculum – please see Reception Curriculum Maps</p>	<p>Seasonal Changes links to Geog (Weather and Seasons); English (Autumn poems) and Autumn walk through Oakhill Park.</p> <p>Identifying plants and their parts links to DT stable structures</p> <p>Animals links to Whipsnade Zoo visit and Art (making birds)</p>	<p>Choosing Materials links to The Elves and the Shoemaker</p> <p>Growing Up links to PSHE (Healthy Me).</p>	<p>Rock, Soils and Fossils links to History The Stone Age; Links to History - Fossils providing historical evidence. Links to Spring 1 Art drawing with charcoal.</p> <p>Light and Shadows Links to Art Spring 1 drawing light and shadow using chalk and charcoal.</p> <p>Forces, Friction and Movement links to PE gymnastics balances and movement on apparatus. Links to History 'Railway Revolution' by thinking about how the motion of a train links to the fuel used.</p> <p>Movement and Nutrition for the Human Body links to PSHE Healthy Me.</p> <p>Flowering Plants and Plant Growth links to The Extraordinary Gardener and Art, Working with Shape and Colour</p> <p>Flowering plants life cycle links to Geog, Rio and South-East Brazil</p>	<p>Electricity (Circuits) links to DT Light Up Signs</p> <p>Human Impact on the Environment links to having a picnic with as little litter as possible and to DT Mini Greenhouse. It also links to their residential trip to The Hive.</p> <p>Digestion and Food Chains links to Geog The Rainforest; PSHE Healthy Me</p> <p>Classification of Plants and Animals links to Geog, The Amazon, DT Seasonal Food, The Great Kapok Tree Text in English</p> <p>Changes of State links to Geography (rivers) through water cycle.</p>	<p>Forces and Mechanisms links to DT Building Bridges and English Flotsam. Links to PE gymnastics balance and counter-balance.</p> <p>Properties and Use of Materials, links back to DT Building Bridges; links to DT choices of material based on use of product. English text, The Snowman</p> <p>Plant and animal life cycles link to Science Week</p> <p>Earth and Space links to English (non-fiction writing about Space)</p> <p>Separating mixtures and changing materials links to Geog Volcanoes</p> <p>Human Growth links to PSHE Changing Me</p>	<p>Evolution and Inheritance links to PSHE Celebrating Difference. links to RE Autumn 1 (creation and science).</p> <p>What Light Does links to Art, Brave Colour</p> <p>Human Circulation links to PSHE Healthy Me</p> <p>Body Health links to PSHE Changing Me and PE Athletics, Staying Healthy</p>
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