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| Long Term Individual Subject Curriculum Plan 2020-21 |
| Subject: Science |
|  | Autumn 1 | Autumn 2 | Spring 1 | Spring 2 | Summer 1 | Summer 2 |
| Y6 | **Animals, including Humans - The Circulatory System**• Identify 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.Heart, pulse, rate, pumps, blood, blood vessels, transported, lungs, oxygen, carbon dioxide, nutrients, water,muscles, cycle, circulatory system, diet, exercise, drugs, lifestyle | **Evolution and Inheritance**• Recognise 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.Offspring, sexual reproduction, vary, characteristics, suited, adapted, environment, inherited, species, fossils | **Living Things and their Habitats - Classification** • Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals. • Give reasons for classifying plants and animals based on specific characteristics.Vertebrates, fish, amphibians, reptiles, birds, mammals, invertebrates, insects, spiders, snails, worms, flowering, non-flowering | **Light and Astronomy**• 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.As for Year 3 - Light, plus straight lines, light rays | **Electricity** • Associate 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.Circuit, complete circuit, circuit diagram, circuit symbol, cell, battery, bulb, buzzer, motor,switch, voltage | **Famous Scientists and Inventors** |
| Y5 | **Living Things and Their Habitats**• 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 animalsLife cycle, reproduce, sexual, sperm, fertilises, egg, live young, metamorphosis, asexual, plantlets,runners, bulbs, cuttings | **Properties and Changes of Materials**• 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. • 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 sodaThermal/electrical insulator/conductor, change of state, mixture, dissolve, solution, soluble,insoluble, filter, sieve, reversible/non-reversible change, burning, rusting, new material | **Earth and Space**• 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 skyEarth, Sun, Moon, (Mercury, Jupiter, Saturn, Venus, Mars, Uranus, Neptune), spherical, solar system,rotates, star, orbit, planets | **Forces**• Explain 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 effectForce, gravity, Earth, air resistance, water resistance, friction, mechanisms, simplemachines, levers, pulleys, gears. | **Animals including Humans**• Describe the changes as humans develop to old age.Puberty – the vocabulary to describe sexual characteristics |
|  | **Working Scientifically Skills UKS2****Plan scientific enquiries to answer questions, including recognising and controlling variables where necessary** * Children independently ask scientific questions.
* Given a range of resources, children decide for themselves how to gather evidence to answer a scientific question. They can justify their choice of scientific enquiry. They understand that secondary sources can be used to answer questions that cannot be answered through practical work.

**Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate** * Children select measuring equipment to give the most precise results.
* During an enquiry, children decide if they need to: take repeat readings (fair testing); increase the sample size (pattern seeking); adjust the observation period and frequency (observing over time); or check further secondary sources (researching); in order to get accurate data (closer to the true value).

**Record data and results of increasing complexity** * Children decide how to record and present evidence. They record observations e.g. using annotated photographs, videos, labelled diagrams, observational drawings, labelled scientific diagrams or writing. They record measurements e.g. using tables, tally charts, bar charts, line graphs and scatter graphs. They record classifications e.g. using tables, Venn diagrams, Carroll diagrams and classification keys.

**Identify scientific evidence that has been used to support or refute ideas or arguments** * Children answer questions based on their observations and measurements and information from secondary sources. They discuss whether other evidence supports or refutes their answer.
* They talk about how their scientific ideas change due to new evidence that they have gathered.
* They talk about how new discoveries change scientific understanding.

**Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations** * In their conclusions, children identify causal relationships and patterns in the natural world from their evidence, identify results that do not fit the overall pattern and explain their findings using their subject knowledge.
* They evaluate the choice of method used, including the control of variables, the precision and accuracy of measurements and the credibility of secondary sources used.
* They identify any limitations that reduce the trust they have in their data.
* Communicate their findings to an audience using relevant scientific language and illustrations.

**Use test results to make predictions to set up further comparative and fair tests** * Children use scientific knowledge gained from enquiries to make predictions they can investigate using comparative and fair tests.
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| Y4 | **Sound**• Identify 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.Sound, source, vibrate, vibration, travel, pitch (high, low), volume, faint, loud, insulation | **Electricity** • Identify 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.Electricity, electrical appliance/device, mains, plug, electrical circuit, complete circuit, component, cell, battery,positive, negative, connect/connections, loose connection, short circuit, crocodile clip, bulb, switch, buzzer,motor, conductor, insulator, metal, non-metal, symbol | **States of Matter**• Compare 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.Solid, liquid, gas, state change, melting, freezing, melting point, boiling point, evaporation, temperature,water cycle | **Animals including humans** • 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.Digestive system, digestion, mouth, teeth, saliva, oesophagus, stomach, small intestine, nutrients, largeintestine, rectum, anus, teeth, incisor, canine, molar, premolars, herbivore, carnivore, omnivore, producer,predator, prey, food chain | **Living things and their habitats**• Recognise 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.Classification, classification keys, environment, habitat, human impact, positive, negative, migrate, hibernate |
| Y3 | **Rocks and soils**• Compare 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 rock. • Recognise that soils are made from rocks and organic matter.Rock, stone, pebble, boulder, grain, crystals, layers, hard, soft, texture, absorb water, soil, fossil,marble, chalk, granite, sandstone, slate, soil, peat, sandy/chalk/clay soil | **Animals including humans – nutrition**• 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. Nutrition, nutrients, carbohydrates, sugars, protein, vitamins, minerals, fibre, fat, water  | **Forces and Magnets**• 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 facingForce, push, pull, twist, contact force, non-contact force, magnetic force, magnet, strength, barmagnet, ring magnet, button magnet, horseshoe magnet, attract, repel, magnetic material, metal, iron,steel, poles, north pole, south pole | **Light** • Recognise 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 are formed when the light from a light source is blocked by an opaque object. • Find patterns in the way that the size of shadows change.Light, light source, dark, absence of light, transparent, translucent, opaque, shiny, matt, surface,shadow, reflect, mirror, sunlight, dangerous | **Animals including humans – skeletons and muscles** • Identify that humans and some other animals have skeletons and muscles for support, protection and movement.Skeleton, bones,muscles, support, protect, move, skull, ribs, spine, muscles, joints | **Plants**• Identify 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. Photosynthesis, pollen, insect/wind pollination, seed formation, seeddispersal (wind dispersal, animal dispersal, water dispersal) |
|  | **Working Scientifically Skills LKS2****Ask relevant questions and use different types of scientific enquiries to answer them.*** Children consider their prior knowledge when asking questions and can independently use question stems.
* Given a range of resources, the children decide for themselves how to gather evidence to answer a question.
* They recognise when secondary sources can be used to answer questions that cannot be answered through practical work.
* They identify the type of enquiry that they have chosen to answer their question.

**Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment** **Set up simple practical enquiries, comparative and fair tests*** The children select from a range of practical resources to gather evidence to answer questions.
* They carry out observations and tests to classify; comparative and simple fair tests; observations over time; and pattern seeking.

**Gather, record, classify and present data in a variety of ways to help answer questions****Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables*** Children sometimes decide how to record and present evidence. They record their observations e.g. using photographs, videos, pictures, labelled diagrams or writing. They record their measurements e.g. using tables, tally charts and bar charts (given templates, if required, to which they can add headings). They record classifications e.g. using tables, Venn diagrams, Carroll diagrams.

**Identify differences, similarities or changes related to simple scientific ideas and processes*** Children interpret their data to generate simple comparative statements. They begin to identify naturally occurring patterns and causal relationships.

**Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions** * They draw conclusions based on their evidence and current subject knowledge.
* Identify ways in which they adapted their method as they progressed or how they would do it differently if they repeated the enquiry.
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| Y2 | **Living Things and Their Habitats**• Explore 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 microhabitats. • 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.Living, dead, never been alive, suited, suitable, basic needs, food, food chain,shelter, move, feedNames of local habitats e.g. pond, woodland etc.Names of micro-habitats e.g. under logs, in bushes etc. | **Fighting Fit – Animals, including humans**• Notice that animals, including humans, have offspring which grow into adults. • Find out about and describe the basic needs of animals, including humans, for survival (water, food and air). • Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygieneOffspring, reproduction, growth, child, young/old stages (examples - chick/hen, baby/child/adult,caterpillar/butterfly), exercise, heartbeat, breathing, hygiene, germs, disease, food types(examples – meat, fish, vegetables, bread, rice, pasta) | **Plants and Living Things**• 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. As for Year 1 plus light, shade, sun, warm, cool, water, grow, healthy | **Materials and Their Properties**• Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. • Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.Names of materials – wood, metal, plastic, glass, brick, rock, paper, cardboardProperties of materials – as for Year 1 plus opaque, transparent and translucent, reflective, non-reflective, flexible, rigidShape, push/pushing, pull/puling, twist/twisting, squash/squashing, bend/bending, stretch/stretching |
| Y1 | **Animals including humans**• Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. • Identify and name a variety of common animals that are carnivores, herbivores and omnivores. • Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). • Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.Head, body, eyes, ears, mouth, teeth, leg, tail, wing, claw, fin, scales,feathers, fur, beak, paws, hoovesNames of animals experienced first-hand from each vertebrate groupParts of the body Senses – touch, see, smell, taste, hear, fingers (skin), eyes, nose, earand tongue | **Seasonal change (and then ongoing)**•Observe changes across the four seasons. • Observe and describe weather associated with the seasons and how day length varies.Weather (sunny, rainy, windy, snowy etc.)Seasons (winter, summer, spring, autumn)Sun, sunrise, sunset, day length | **Plants**• Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. • Identify and describe the basic structure of a variety of common flowering plants, including treesLeaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, budNames of trees in the local areaNames of garden and wild flowering plants in the local area | **Materials**• 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. • Describe the simple physical properties of a variety of everyday materials. • Compare and group together a variety of everyday materials on the basis of their simple physical properties.Object, material, wood, plastic, glass, metal, water, rock, brick, paper, fabric,elastic, foil, card/cardboard, rubber, wool, clay, hard, soft, stretchy, stiff,bendy, floppy, waterproof, absorbent, breaks/tears, rough, smooth, shiny,dull, see-through, not see-through |
|  | **Working Scientifically Skills KS1****Observe closely, using simple equipment** * Children explore the word around them and make careful observations using their senses and equipment such as magnifying glasses or digital microscopes.
* Children start to take measurements, initially by comparisons, then using non-standard units.
* The children recognise ‘biggest and smallest’, ‘best and worst’ etc. from their data.

**Ask questions and recognise these can be answered in different ways*** Children ask questions about the world around them and answer them if appropriate.
* Children are involved in planning how to use resources provided to answer questions using scientific enquiries.

**Perform simple tests*** Children use practical resources provided to gather evidence to answer questions. They carry out tests to classify, comparative tests, pattern seeking enquiries and make observations over time.

**Identifying and classifying** * Children use their observations and testing to compare objects, materials and living things.
* They sort and group these things based on their own criteria.
* Children use simple secondary sources (e.g. identification sheets) to name living things. They describe the characteristics they used to identify a living thing.

**Gathering and recording data to help in answering questions*** Children record observations e.g. as photographs, videos, drawings, labelled diagrams or in writing.
* They record their measurements e.g. using prepared tables, pictograms, tally charts and block graphs.
* They classify using simple prepared tables and sorting rings.
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| st-stephens-final.png**EYFS****Understanding The World – Working Scientifically** *­ical* |
| **EYFS Development Bands** | **Key Learning**  | **Vocabulary** |
| **Birth To Five Matters**Range 5* Comments and asks questions about aspects of their familiar world such as the place where they live or the natural world.
* Talks about why things happen and how things work.
* Develop and understanding of growth, decay and changes over time.
* Shows care and concern for living things and the environment.
* Begin to understand the effect their behaviour can have on the environment.

Range 6* Looks closely at similarities, differences, patterns and change in nature.
* Knows about similarities and differences in relation to places, objects, materials and living things.
* Talks about the features of their own environment and how environments might vary from one another.
* Makes observations of plants and animals and explains why some things occur, and talks about changes.

**Statutory Framework Early years Foundation Stage Curriculum 2021***Statutory ELG: The Natural World*Children at the expected level of development will:- Explore the natural world around them, making observations and drawing pictures of animals and plants;- 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;- Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. | Explore/Observe: look closely at/notice.Describe: talk about what they notice/observe; talk about changes they notice and changes over time.Record: draw pictures, take photographs, make models or scrapbooks.Questioning: shows an interest in/is curious about; ask questions about what they notice/observe or changes that occur.Explain: talk about why things happen/occur; talk about how things work.Research: talk to people (visits/visitors/family), think of questions to ask to find things out and find out how things work; use first hand experiences/use secondary sources, (e.g. books, photographs, internet).Equipment and measures: use senses/use simple equipment to make observations, (e.g. magnifiers, pipettes, egg timers, digital microscopes, etc).Compare/sort/group/identify/classify: notice similarities, notice differences; talk about similarities and/or differences.Test: make suggestions, show resilience, work with others.Vocabulary: use simple vocabulary to name and describe objects, materials, living things and habitats. The objectives are taught through the medium oftopics or themes that the children show interest in. | Trees, plants, flowers, seeds, bulbs, vegetables, fruit, leaf, root, trunk, stem, branches, watering, pets, wild animals, insects, farm animals, birds, head, arms, legs, body, hands, feet, fingers, toes, senses, horns, tail, wings, beak, claws, paws, skin, fur, wool, feathers, scales, food, water, warmth, shelter, water, woodland, grass, hedgerows, desert, jungle, Arctic, season, weather, windy, cloudy, sunny, rain, snow, frost, hail, light, dark, leaves, bark, petals, autumn, summer, spring, winter, warm, damp, habitat, big, small, flying, perching, hopping, singing, nesting, swim, crawl, walk, run, gallop, jump, hop, soft, hard, rough, smooth, fluffy, bumpy, slimy, sticky, shiny, wet, dry, stiff, bendy, crunchy, same, different, dripping, flowing, pouring, running, splashing, squirting, drying, change, freeze, melt, shadow, sound, float, sink, balance, fall. |