

Subject overview Science



Thurlaston CE (Aided) Primary School
Teaching and Living the Christian Way of Life
Building Our Lives on Jesus

Unit Key Skills and Knowledge

Class	Unit	Key Skills and Knowledge	Key Vocabulary
1	Working Scientifically	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> ask simple questions linked to the science work we are doing observe closely and describe what I see perform simple tests, using familiar, everyday equipment gather and record information to help answer questions (including using photographs and drawings) 	question, answer, observe, equipment, identify, classify sort, diagram, chart, map, data, compare, contrast, describe
	Animals and Humans	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> 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); <ul style="list-style-type: none"> identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. 	Fish, amphibian, bird, mammal, reptile, pet Omnivore, herbivore, carnivore Senses: taste, smell, vision, touch, hearing Head, legs, arms, eyes, legs, neck, knees, elbows, shoulders
	Marvellous Materials Everyday Materials	<p>Pupils should be taught to:</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; describe the simple physical properties of a variety of everyday materials; <ul style="list-style-type: none"> compare and group together a variety of everyday materials on the basis of their simple physical properties. 	Materials: wood, plastic, glass, water, metal, rock, brick, paper, elastic, foil Properties: hard/soft, rough/smooth, absorbent/waterproof, bendy/stiff, shiny/dull

	Plants	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • 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 trees. 	Wild/garden plants, deciduous, evergreen, trunk, branch, leaf, root, bud, flower, blossom, petal, stem, fruit, vegetables bulb, seed
	Seasonal Changes	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • observe changes across the 4 seasons; • observe and describe weather associated with the seasons and how day length varies. 	Spring, summer, autumn, winter, day, night, Warm, cold, hot, wind, rain, snow, hail, sleet, fog, sun
	Scientists and inventors	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • <i>explore and discuss Neil Armstrong's achievements.</i> • observe and describe the properties of the material that Lego is made from. Name the inventor of Lego. 	Space, Moon, Apollo 11, NASA, the Eagle, astronaut, Neil Armstrong, Buzz Aldrin, Michael Collins, Katherine Johnson, Gene Kranz, historic, important, significant, famous, person, people, explorer. Ole Kirk Christiansen, Plastic, properties, Lego
2	Working Scientifically	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • ask simple questions linked to the science work we are doing • observe closely and describe what I see • perform simple tests, using familiar, everyday equipment • gather and record information to help answer questions (including using photographs and drawings) plan and carry out a simple fair test 	question, answer, observe, equipment, identify, classify sort, diagram, chart, map, data, bar graph, compare, contrast, describe, fair test
	Awesome Animals	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • 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 hygiene. 	Adult, baby, toddler, child, child, egg, chick, chicken, caterpillar, pupa, butterfly, spawn, tadpole, frog, reproduce, nutrition, healthy, wter, food, air, exercise, hygiene
	Marvellous Materials Uses of	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses; 	Materials: wood, metal, glass, fabric, brick, rock, paper, cardboard, rubber, plastic Properties: squashing, twisting, bending, stretching

	Everyday Materials	<ul style="list-style-type: none"> • find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. 	
	Roots, Shoots and Fruits	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • 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. 	Germination, reproduction, deciduous, evergreen, trunk, branch, leaf, root, bud, flower, blossom, petal, stem, fruit, vegetables bulb, seed
	Habitat Homes	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • 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; <ul style="list-style-type: none"> • 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 alive, habitat, micro-habitat, food, food chain, predator, prey, seashore, woodland, rainforest, ocean, Conditions: hot/warm/cold, dry/damp/wet, bright/shade/dark
	Scientists and Inventors	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • find out about people who have developed new materials in the context of learning about Charles Macintosh. • I can describe Charles Macintosh and his famous invention 	Charles Mackintosh: waterproof, coat, material
3	Working Scientifically	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • ask relevant questions and use different types of scientific enquiries to answer them; • set up simple practical enquiries, comparative and fair tests; • make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers; • gather, record, classify and present data in a variety of ways to help in 	Relevant, questions, fair test, systematic, observe, accurate, measurements, equipment, gather, record, classify, present, labelled diagram, drawing, key, bar chart, table, conclusion, prediction, difference, similarity, change, evidence, interpret

		<p>answering questions;</p> <ul style="list-style-type: none"> • record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables; • report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions; • use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions; • identify differences, similarities or changes related to simple scientific ideas and processes; • use straightforward scientific evidence to answer questions or to support their findings. 	
	Sound	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • 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. 	Vibration, ear, hear, sound, volume, pitch, faint, loud, insulate, string, percussion, woodwind, brass
	Electricity	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • 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. 	Electric circuit, cell, wire, bulb, buzzer, switch, safety, insulator, conductor

	Teeth and Digestion	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • 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. 	<p>Digestion, mouth, tongue, saliva, oesophagus, stomach, acid, enzymes, small/large intestines, colon, incisors, canines, molars, grinding, chewing, cutting, ripping, tearing, slicing, floss, brush</p>
	States of Matter	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • 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. 	<p>Solid, liquid, gas, melt, cool, freeze, heat, evaporate, condense, temperature, degrees Celsius, thermometer, watercycle, water vapour</p>
	Light	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • 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. 	<p>Light, see, dark, reflect, surface, natural, artificial, shadow, blocked, solid</p>
	Rocks	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • 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. 	<p>Physical appearance, hard/soft, shiny/dull, rough/smooth, absorbent/not absorbent, sedimentary, soils, organic matter, grains, crystals</p>

	Magnets and Forces	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • compare how things move on different surfaces; • notice that some forces need contact between 2 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 2 poles; • predict whether 2 magnets will attract or repel each other, depending on which poles are facing. 	Force, push, pull, open, surface, magnetic, attract, repel, North/South poles
	Habitats	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • 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. 	Vertebrate: mammals, amphibians, reptiles, birds, fish, invertebrate,: snail, slug, worm, spider, insect, environment, plants (flowering/non-flowering), moss, fern, positive/negative human impact, nature reserve, ecology, littering, deforestation
	Plants	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • 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. 	Pollination, seed formation, seed dispersal, nutrients, fertiliser, life cycle
	Nutrition	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • 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; 	Nutrients, carbohydrate, protein, fat, fibre, water, vitamins, minerals

	Scientists and Inventors	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • To explain how fossils can be used to find the age of rocks by exploring William Smith's principle of fossil succession. • To explain how Marie Curie's work on x-rays helps us identify bones 	William Smith-Sedimentary, fossil, strata, William Smith, geology, Dr Lisa White. Marie Curie-x rays radiation, element, chemistry, physics
	Movement	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • identify that humans and some other animals have skeletons and muscles for support, protection and movement. 	Bones, joints, exoskeleton, endoskeleton, vertebrate, invertebrate, relax, muscles, ball/socket/hinge/gliding joint,
4	Working Scientifically	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary; • take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate; • record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs; • use test results to make predictions to set up further comparative and fair tests; • report and present findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations; • identify scientific evidence that has been used to support or refute ideas or arguments. • 	Plan, variable, measurement, accuracy, repeat, predict, conclusion, causal relationship, explanation, identify, classify, describe, patterns, systematic, quantitative, classification key, table, scatter graph, bar graph, line graph
	Light	<p>Pupils should be taught to:</p> <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; 	Travel, straight, reflect, reflection, light source, object, shadow, mirror, periscope, rainbow, filters

		<ul style="list-style-type: none"> • use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them. 	
	Forces	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • 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 effect. 	Gravity, air resistance, water resistance, friction, force, effect, move, accelerate, decelerate, brake, pulley, gear, spring,
	Animals including Humans	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • describe the changes as humans develop to old age. • 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. 	<p>Puberty, gestation, fertilisation, reproduce, foetus, baby, toddler, child, teenager, adult, life expectancy, adolescence, adulthood</p> <p>Internal organs: heart, lungs, brain, kidneys, liver, skeleton, muscles, circulatory system, digestion, blood vessels, blood, diet, exercise, lifestyle, impact, drugs, alcohol, damage, substances</p>
	Inheritance	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • 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 adapt. 	adaptation, inherited traits, adaptive traits, DNA, genes, variation, parent, offspring,
	Electricity	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • 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. 	Voltage, brightness, volume, switches, series circuit, safety, circuit diagram, switch, buzzer, bulb, motor, cell, symbol
	Properties of Materials	<p>Pupils should be taught to:</p>	Hardness, solubility, transparency, conductor, dissolve, separate, solid, liquid, gas, reversible/irreversible changes, mixing, evaporation, filter, conductivity, sieve, melt, freeze, rust, burning

		<ul style="list-style-type: none"> • 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 soda. 	
	Earth and Space	<p>Pupils should be taught to:</p> <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. 	Earth, sun, moons, planets (Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune), solar system, rotate, axis, orbit, day/night, seasons, hemisphere, spherical,
	Classification	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • 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; • give reasons for classifying plants and animals based on specific characteristics. 	Classify, compare, domain, kingdom, class, order, family, genus, species, characteristics, vertebrate, invertebrate, micro-organism
	Life Cycles	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • 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. 	Mammal, amphibian, insect, bird, asexual/sexual reproduction, rainforest, ocean, desert, prehistoric
	Scientists and Inventors	<ul style="list-style-type: none"> • To give reasons for classifying plants and animals based on specific characteristics in the context of Libbie Hyman's work on classifying vertebrates and invertebrates. • To understand Libbie Hyman's work about 	Libbie Maynard, classification, taxonomy, zoologist, vertebrate, invertebrate, characteristics

		<p>classification</p> <ul style="list-style-type: none">• To describe how scientific ideas have changed over time in the context of Margaret Hamilton's development of the software for the Apollo Moon missions. To describe Margaret Hamilton's life and work	Margaret Hamilton, classification, taxonomy, zoologist, vertebrate, invertebrate, characteristics
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