St Chad's Curriculum 2022

Science Long Term Plan Cycle A			
Year group	Autumn	Spring	Summer
Nursery (3-4)	Understanding the World • Exploring natural and manmade materials. Talk about natural materials using a wide vocabulary linked to all my senses.	Understanding the World • Children will talk about natural materials using a wide vocabulary linked to all their senses. • Learn about some of the ways they have changed over their life. • Learn how to care for their environment and plant and care for plants.	Understanding the World • Learn to care for their environment and plant and care for plants. • Children will discuss the key features of life cycles using key vocabulary • Learn about the world around them observing animals and plants.
Reception	Understanding the World • Children will understand the terms 'same' and 'different'. • Children will explore and ask questions about the natural world around them.	Understanding the World • Children will talk about features of the environment they are in and learn about the different environments. • Children will make observations about plants discussing similarities and differences.	Understanding the World • Children will make observations about animals discussing similarities and differences. • Children will know some important processes and changes in the natural world, including states of matter.
Y1/2	<u>Local Detective Heroes</u> Materials (identifying- Y1) Materials (comparing- Y1)	<u>We do like to be beside the seaside</u> Animals including humans (parts-Y1) Animals including humans (types-Y1)	<u>Where would you prefer to live- England or Africa?</u> Materials (uses- Y2) Materials (changing shape-Y2)
Y3/4 (Y3)	<u>Local Detective Agency</u> Animals including humans Rocks	<u>Ruthless Romans</u> Forces and magnets Plants- what plants need	<u>Go Greece Lightning</u> Light Plants- parts of plants
Y5/6	<u>War child</u> Animals including humans (Y6) Properties and changes of materials (properties of materials) (Y5)	<u>Trailblazers</u> Forces (Y5) Animals including humans (Y5)	<u>Smashing Saxons</u> Light (Y6) Earth and Space (Y5)

St Chad's Curriculum 2022

Science Long Term Plan Cycle B			
Year group	Autumn	Spring	Summer
Nursery (3-4)	Understanding the World • Exploring natural and manmade materials. • Talk about natural materials using a wide vocabulary linked to all my senses.	Understanding the World • Children will talk about natural materials using a wide vocabulary linked to all their senses. • Learn about some of the ways they have changed over their life. • Learn how to care for their environment and plant and care for plants.	Understanding the World • Learn to care for their environment and plant and care for plants. • Children will discuss the key features of life cycles using key vocabulary • Learn about the world around them observing animals and plants.
Reception	Understanding the World • Children will understand the terms 'same' and 'different'. • Children will explore and ask questions about the natural world around them.	Understanding the World • Children will talk about features of the environment they are in and learn about the different environments. • Children will make observations about plants discussing similarities and differences.	Understanding the World • Children will make observations about animals discussing similarities and differences. • Children will know some important processes and changes in the natural world, including states of matter.
Y1/2	Great and Ghastly Events Living things and their habitats (Y2)	Memory Boxes Plants (Y1) Plants (Y2)	Unbelievable UK Animals including Humans (Y2)
	Seasonal change (Y1)		
Y3/4 (Y4)	Incredible Italia Animals including humans States of matter	Stones and Bones Sound Electricity	Land of the Pharaohs Living things and their habitat
Y5/6	Rags to Riches Living things and their habitats (Y5) Electricity (Y6)	Raid, invade, stayed Living things and their habitats (Y6) Evolution and inheritance (Y6)	Amazing Amazon Properties and changes of materials (changes of materials) (Y5)

St Chad's Curriculum 2022

Working Scientifically/Disciplinary Knowledge

Working Scientifically/Disciplinary Knowledge	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Plan	Choose the resources they need for their chosen activities and say when they do or don't need help.	Ask simple questions. With support, suggest ways of answering a question.	Ask simple questions. Recognise that questions can be answered in different ways.	Ask relevant questions when prompted and use different types of scientific enquiry to answer them. Set up simple and practical enquiries, comparative and fair tests with some support.	Ask relevant questions. Use different types of scientific enquiries to answer their questions. Set up simple and practical enquiries, comparative and fair tests. Select appropriate equipment (from a selection).	Plan different types of scientific enquiries to answer a variety of scientific questions. With prompting, recognise and control variables where necessary. With support, select appropriate measuring equipment.	Plan different types of scientific enquiries to answer a variety of scientific questions. Recognise and control variables where necessary. Select all equipment needed. Consider alternative investigations and explain why they have chosen to complete their investigation.
Do	Know about similarities and differences in relations to places, objects, materials and living things. Make observations of animals and plants. Explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. Select and use technology for particular purposes.	Make relevant observations using simple equipment. Follow steps to conduct a simple test. Measure using uniform, non-standard units. Identify and classify with guidance.	Observe closely, using simple equipment. Perform simple tests. Measure using simple standard units and measuring equipment. Identify and classify.	Make systematic and careful observations, using simple equipment. With support, take accurate measurements using standard units, where appropriate.	Make systematic and careful observations using a range of equipment, including thermometers and data loggers. Take accurate measurements using standard units, where appropriate.	Use a range of scientific equipment to take measurements with increasing accuracy and precision. Begin to understand the need for repeat readings.	Use a range of scientific equipment to take measurements with increasing accuracy and precision. Identify when to take repeat readings
Record	Represent their own thoughts and feelings through design and technology, art, music,	With support, gather and record data.	Gather and record data to help answer questions. Record and communicate their findings in a range of	With modelling and guidance, gather, record, classify and present data in a variety	Gather, record, classify and present data in a variety of ways to help to answer questions.	Take and process repeat readings. Record data and results.	Take and process repeat readings. Record data and results of increasing

St Chad's Curriculum 2022

	dance, role play and stories.		ways e.g. two column table, block graph etc. and begin to use simple scientific language.	of ways to help to answer questions. With some support, record findings using simple scientific language, drawings and labelled diagrams. Record findings using keys and bar charts (with support), and tables.	Record findings using simple scientific language, drawings and labelled diagrams. Record findings using keys, bar charts, and tables	Record data using scientific diagrams and labels, keys, tables, bar charts and line graphs.	complexity using scientific diagrams and labels, classification keys, tables, bar charts and line graphs. Use more complex scales.
Review	Talk about the features of their own immediate environment and how environments might vary from one another. Explain why some things occur and talk about changes.	Recognise findings and describe observations.	Use their observations, ideas and data to suggest answers to simple questions.	Report on findings from enquiries, including oral and written explanations, of results and conclusions. Report on findings from enquiries using displays or presentations. Identify differences, similarities or changes related to simple scientific ideas and processes. Use straightforward scientific evidence to answer questions or to support their findings. Use results to draw simple conclusions.	Report on findings from enquiries, including oral and written explanations, of results and conclusions. Report on findings from enquiries using displays or presentations. Identify differences, similarities or changes related to simple scientific ideas and processes. Use straightforward scientific evidence to answer questions or to support their findings. Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions	Report and present findings from enquiries, including conclusions and, with prompting, suggest causal relationships. Report and present findings from enquiries in oral and written forms such as displays and other presentation. Identify scientific evidence that has been used to support or refute ideas or arguments. Use test results to suggest further comparative or fair tests.	Report and present findings from enquiries, including conclusions and causal relationships. Report and presents findings from enquiries in oral and written forms such as displays and other presentation. Report and present findings from enquiries, including explanations of the validity of their results. Suggest changes to increase the accuracy. Identify scientific evidence that has been used to support or refute ideas or arguments. Use test results to make predictions to set up further comparative and fair tests.
Vocabulary	Look closely, observe, watch, touch, feel, smell, listen, same, different, compare, ask questions, record, sort, group	Questions, answers, equipment, gather, measure, record, results, sort, group, test, explore, observe, compare, describe, similar/ities,	Previous vocab plus observe changes over time, notice patterns, secondary sources, hand lenses, egg timers, identify, classify, data.	Previous vocab plus scientific enquiry changes over time, notice patterns, secondary sources, comparative tests, fair	Previous vocab plus enquiry types increase, decrease, identify, classify, order, notice patterns, relationships,	Previous vocab plus, notice patterns, relationships, independent variable, dependent variable, controlled variable,	Previous vocab plus opinion/fact, confidently name scientific enquiry types.

St Chad's Curriculum 2022

		different/ces, beaker, pipette, syringe.		tests, careful, accurate, observations, equipment, gather, measure, record, data, evidence, results, keys, bar charts, table, results, conclusions, predictions, support, thermometers.	appearance, present results, data loggers.	accuracy, precision, degree of trust, classification keys, scatter graphs, line graphs, causal relationships, support/refute, data loggers.	

EYFS	3-4 year olds (Development Matters)	Reception (Development Matters)	By the end of Reception (ELG)
	Children will explore natural and manmade materials. Children will talk about natural materials. Children will talk about some of the ways they have changed over their life. Children will show care for my environment and plant and care for plants. Children will talk about the key features of life cycles using key vocabulary. Children will talk about the world around us observing animals and plants.	Children will understand the terms 'same' and 'different'. Children will explore and ask questions about the natural world around them. Children will talk about features of the environment they are in and learn about the different environments. Children will make observations about plants discussing similarities and differences. Children will make observations about animals discussing similarities and differences Children will know some important processes and changes in the natural world, including states of matter.	Children can explore the natural world around them, making observations and drawing pictures of animals and plants. Children will know some of the similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class. Children will understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.

St Chad's Curriculum 2022

Areas of study/substantive knowledge

Areas of study/substantive knowledge	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
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.	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.	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.	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.	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.
Vocabulary	head, body, eyes, ears, mouth, teeth, leg, tail, wing, claw, fin, scales, feathers, fur, beak, paws, hooves, names of animals experienced first-hand from each vertebrate group, parts of the human body including those within the school's RSE policy, senses, touch, see, smell, taste, hear, fingers, skin, eyes, nose, ears, tongue	offspring, reproduction, growth, baby, toddler, child, teenager, adult, old person, names of animals and their babies (e.g. chick/chicken, kitten/cat, caterpillar/butterfly), survive, survival, water, food, air, exercise, heartbeat, breathing, hygiene, germs, disease, food types (e.g. meat, fish, vegetables, bread, rice, pasta, dairy)	nutrition, nutrients, carbohydrates, sugars, protein, vitamins, minerals, fibre, fat, water, skeleton, bones, muscles, joints, support, protect, move, skull, ribs, spine	digestive system, digestion, mouth, teeth, saliva, oesophagus, stomach, small intestine, large intestine, rectum, anus, incisor, canine, molar, premolar, herbivore, carnivore, omnivore, producer, predator, prey	puberty, the vocabulary to describe sexual characteristics in line with the school's RSE policy	heart, pulse, rate, pumps, blood, blood vessels, transported, lungs, oxygen, carbon dioxide, cycle, circulatory system, diet, drugs, lifestyle

St Chad's Curriculum 2022

Living things and their habitat		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.		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.	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.	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.
Vocabulary		Living, dead, never been alive, suited, suitable, basic needs, food, food chain, shelter, move, feed, water, air, survive, survival, names of local habitats (e.g. pond, woodland etc.), names of micro-habitats (e.g. under logs, in bushes etc.), conditions, light, dark, shady, sunny, wet, damp, dry, hot, cold, names of living things in the habitats and micro-habitats studied		Classification, classification keys, environment, habitat, human impact, positive, negative, migrate, hibernate	Life cycle, reproduce, sexual, sperm, fertilises, egg, live young, metamorphosis, asexual, plantlets, runners, cuttings	Vertebrates, fish, amphibians, reptiles, birds, mammals, warm-blooded, cold-blooded, invertebrates, insects, spiders, snails, worms, flowering, non-flowering, mosses, ferns, conifers

St Chad's Curriculum 2022

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 trees.	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.	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.			
Vocabulary	Leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud, names of trees in the local area- e,g. oak, chestnut, silver birch, names of garden and wild flowering plants in the local area.	light, shade, Sun, warm, cool, water, space, grow, healthy, bulb, germinate, shoot, seedling	photosynthesis, pollen, insect/wind pollination, male, female, seed formation, seed dispersal (wind dispersal, animal dispersal, water dispersal), air, nutrients, minerals, soil, absorb, transport			
Seasonal change	Observe changes across the 4 seasons. Observe and describe weather associated with the seasons and how day length varies.					
Vocabulary	weather, sunny, rainy, raining, shower, windy, snowy, cloudy, hot, warm, cold, storm, thunder, lightning, hail, sleet, snow, icy, frost, puddles, rainbow, seasons, winter, summer, spring, autumn, Sun, sunrise, sunset, day length					

St Chad's Curriculum 2022

Materials (including States of Matter)	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.	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.		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.	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.	
Vocabulary	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	opaque, transparent, translucent, reflective, non-reflective, flexible, rigid, shape, push/pushing, pull/pulling, twist/twisting, squash/squashing, bend/bending, stretch/stretching		solid, liquid, gas, heating, cooling, state change, melting, freezing, melting point, boiling, boiling point, evaporation, condensation, temperature, water cycle	thermal insulator/conductor, change of state, mixture, dissolve, solution, soluble, insoluble, filter, sieve, reversible/non-reversible change, burning, rusting, new material	

St Chad's Curriculum 2022

Rocks			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.			
Vocabulary			rock, stone, pebble, boulder, grain, crystals, layers, hard, soft, texture, absorbs water, fossil, bone, flesh, minerals, marble, chalk, granite, sandstone, slate, types of soil (e.g. peaty, sandy, chalky, clay)			
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.			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.
Vocabulary			light, light source, dark, absence of light, surface, shadow, reflect, mirror, Sun, sunlight, dangerous			Light, absence of light, light source, darkness, shiny, matt, surface, mirror, sunlight, filter, refract, spectrum, wavelength, prism, visible, lens, angle, ray, beam, reflect, reflective, shadow, block, absorb, direction, transparent, opaque, translucent.

St Chad's Curriculum 2022

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. Recognise that sounds get fainter as the distance from the sound source increases.			
Vocabulary			sound, source, vibrate, vibration, travel, pitch (high, low), volume, faint, quiet, loud, insulation			
Forces (and magnets Y3)			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.		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.	
Vocabulary			force, push, pull, twist, contact force, non-contact force, magnetic force, magnet, strength, bar magnet, ring magnet, button magnet, horseshoe magnet, attract, repel, magnetic material, metal, iron, steel, poles, north pole, south pole		force, gravity, Earth, air resistance, water resistance, friction, mechanisms, simple machines, levers, pulleys, gears	

St Chad's Curriculum 2022

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.		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.
Vocabulary				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		Same as Y4 plus- circuit diagram, circuit symbol, voltage, bright/dim, resistance, terminal.

St Chad's Curriculum 2022

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 sky.	
Vocabulary					Sun, Moon, Earth, planets (Mercury, Jupiter, Saturn, Venus, Mars, Uranus, Neptune), spherical, Solar System, rotate, star, orbit, heliocentric model, geocentric model, rotation, axis, spin.	
Evolution and Inheritance (note for Year 6 – see Plants; Animals, including humans; Living things and their habitats; and Rocks for how some of these aspects have been covered lower down the school)						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.
Vocabulary						offspring, sexual reproduction, vary, characteristics, adapted, inherited, species, evolve, evolution, DNA, genes, fossils, fossilisation.