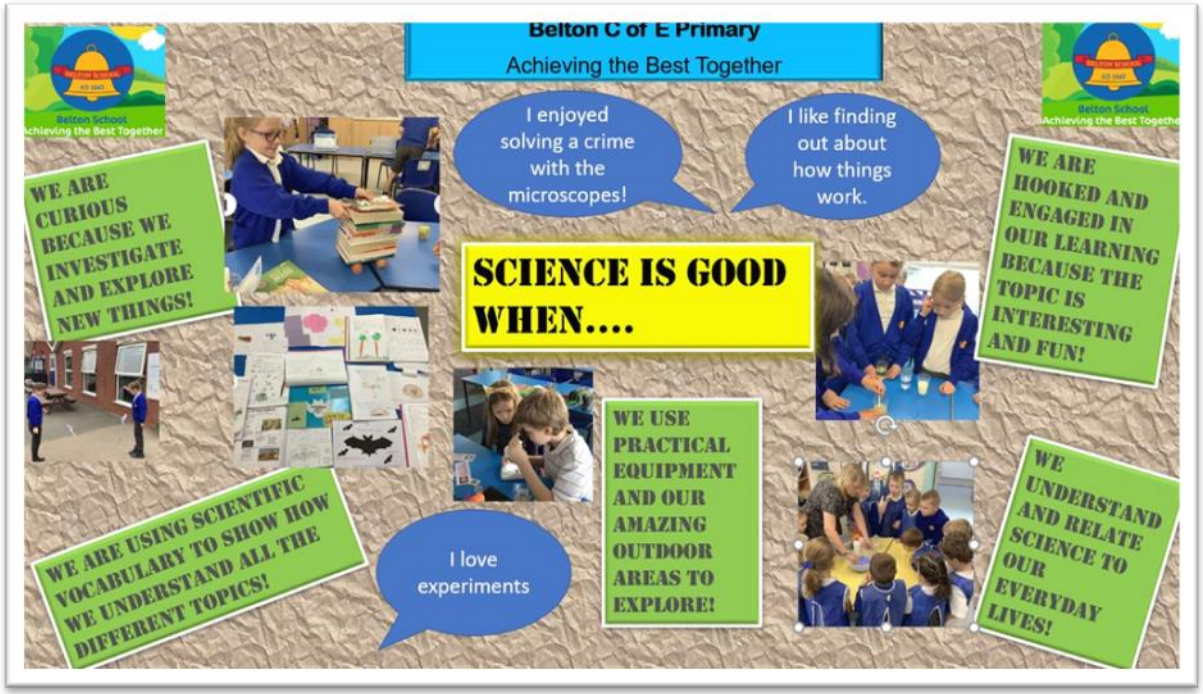

Belton C of E Primary School

Science Knowledge, Vocabulary and Skills Progression Document

Updated 2023

Biology Chemistry Physics

Cycle A

Term	Year 1 and 2	Year 3 and 4	Year 5 and 6
Autumn 1	Health & Survival Animals incl. Humans	Light	Studying Living Things Living things and their habitats (5)
Autumn 2	Exploring everyday materials Everyday materials	Animals incl. Humans – yr 3 Skeletons & Food	Light
Spring 1	Exploring everyday materials 2 – 3 Little Pigs Materials	Plants	Evolution and Inheritance
Spring 2	Plants – Yr 1	Forces	Changes of materials
Summer 1	Life Cycles Animals incl. humans	Classifying Living Things and Their Habitats – yr 4	Forces
Summer 2	Living Things and Their Habitats	Electricity	Blood + Transportation Heart Health Animals, including humans Also puberty sessions for yr 5/ 6 separately

Cycle B

Term	Year 1 and 2	Year 3 and 4	Year 5 and 6
Autumn 1	About Me Animals incl. Humasn	States of Matter	Properties of materials
Autumn 2	Seasonal changes	Animals, including humans Digestion & Teeth Yr 4	Living Things and their habitats (6)
Spring 1	About Animals Animals, including humans	Conservation Living Things & Their Habitats	Electricity
Spring 2	Plants – year 2 Plants	Sound	Looking after the environment
Summer 1	Uses of Everyday materials – Year 2	Scientific Enquiry	Space
Summer 2	Habitats from around the World Living Things and their Habitats Seasonal changes	Rocks	Lifecycles Living things and their habitats Teach puberty

Substantive Knowledge						
Animals and Humans						
	KS1		LKS2		UKS2	
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
PD & H & SC · To eat a healthy range of foodstuffs and understand a need for variety in food. · To show some understanding that good practices with regard to exercise, eating, sleeping and hygiene can contribute to good health. · To know the importance for good health of physical exercise, and a healthy diet, and talk about ways to keep healthy and safe	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	· 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.

	say which part of the body is associated with each sense					
Vocabulary:	head, body, eyes, ears, mouth, teeth, leg, tail, wing, claw, fin, scales, feathers, fur, beak, paws, hooves	offspring, reproduction, growth, child, young/old stages e.g., chick/hen, baby/child/adult, caterpillar/butterfly exercise, heartbeat, breathing, hygiene, germs, disease, food types eg meat, fish, bread, vegetables, rice etc	nutrition, nutrients, carbohydrates, sugars, protein, vitamins, minerals, fibre, fat, water, skeleton, bones, muscles, support,	Digestive system, digestion, oesophagus, stomach, small intestines, nutrients, large intestine, rectum, anus, mouth, teeth, saliva, incisor, canine, molar, premolar, herbivore, carnivore, omnivore, producer, predator, prey, food chain	Puberty – the vocabulary to describe the sexual characteristics	Puberty – the vocabulary to describe the sexual characteristics heart, pulse rate, pumps, blood, blood vessels, transported, lungs, oxygen, carbon dioxide, nutrients, water, muscles, cycle, circulatory system,
Living Things						
UTW · To know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments		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		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	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

might vary from one another.		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 micro-habitats · 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		environments can change and that this can sometimes pose dangers to living things.		specific characteristics.
Vocabulary:		living, dead, never been alive, suited suitable, basic needs, food, food chain, shelter, move, feed, names of local habitats,		classification, classification keys, environment, habitat, human impact, positive, negative, migrate, hibernate	life cycle, reproduce, sexual, sperm, fertilisers, egg, live young, metamorphosis, asexual, plantlets, runners, bulbs,	vertebrates, fish, amphibians, reptiles, birds, mammals, invertebrates, insects, spiders, snails, worms, flowering, non-flowering

		names of micro habitats eg, under logs, in bushes etc...			cuttings	
Plants						
UTW · To know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another.	· 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 changes across the four seasons · Observe and describe weather associated with the seasons and how day length varies.	· 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		· Reproduction of plants.	

			formation and seed dispersal.			
Vocabulary:	Plants, leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud	Plants, leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud, light, shade, warm, cool, water, grow, healthy	Photosynthesis, pollen, insect/wind pollination, seed formation, seed dispersal, wind dispersal, water dispersal, animal dispersal, stamen, stigma, carpel, fertilisation, dispersal, pollen, nectar, ovule, ovary, anther, filament		reproduction, asexual, sexual	
Evolution & Inheritance						
		Linked to Year 2 - Animals and Living things – offspring, habitats)	(Linked to Year 3 - rocks – fossils)		(Linked to year 5 – Living things – reproduction) ·	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, suited, adapted, environment, inherited, species, fossils,
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		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.

				• 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.		
Vocabulary:				electricity, electrical appliance/device, mains, plug, electrical circuit, complete circuit, components, cell, battery, positive, negative, connect/connections, loose connection, short circuit, crocodile clip, bulb, switch, buzzer, motor, conductor, insulator, metal, non-metal, symbol		Circuit, complete circuit, circuit diagram, circuit symbol, battery, bulb, buzzer, motor, switch, voltage
Forces						

EAD • To begin to be interested in and describe the texture of things. UTW • To know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another.	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 • 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	As Y1 plus: opaque, transparent, translucent, reflective, nonreflective, flexible, rigid, shape, push/pushing, pull/pulling, twist/twisting, squash/squashing, bend/bending, stretch/stretching		Solid, liquid, gas, state, change, melting, freezing, melting point, boiling point, evaporation, temperature, water cycle, condensation	Thermal, electrical insulator, conductor, change of state, mixture, dissolve, solution, soluble, insoluble, filter, sieve, reversible/nonreversible/irreversible, change, burning, rusting, new material	
Light						
	(Link to seasonal changes – sun safety – Introduce shadows and the sun being a source of 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			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

			ways to protect their eyes • Recognise that shadows are formed when the light from a light source is blocked by a solid object • Find patterns in the way that the size of shadows change			• 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, transparent, translucent, opaque, shiny, matt, surface, shadow, reflect, mirror, sunlight, dangerous			As Y3 plus: straight lines, light rays, reflect, refract, spectrum, shadows
Sound						
	(Link to music -pitch/long and short sounds/dynamics and tempo)	(Link to music -pitch/long and short sounds/dynamics and tempo)		• 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.		
Vocabulary:				Sound, source, vibrate, vibration, travel, pitch (high/low), volume, faint, loud, insulation		
Earth & Space						
	Link to KS1 – Geography Seas/ Oceans UK Continents North/ South Poles		(Link to LKS2 – Geography – Climate zones, topographical features) – Geography – Earth -		· 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	

			Climate zones/ topographical features)		· 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, moon, planets (Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune) spherical, solar system, rotate, star, orbit,	
Seasonal Changes						
KUW Understand some important processes and changes in the natural world around them, including the seasons	Observe changes across the 4 seasons observe Describe weather associated with the seasons know how day length varies.					
Vocabulary:	Season, spring, summer, autumn, winter, hibernate, temperature, weather					
Materials/ Properties and Changing Materials						
EAD · To begin to be interested in and	· Distinguish between an object and the material from which it is	· Identify and compare the suitability of a variety of everyday		· Compare and group materials together, according to whether they are	· Compare and group together everyday materials on the basis of their properties, including their hardness, solubility,	

describe the texture of things. UTW · To know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another.	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	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.		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.	transparency, conductivity (electrical and thermal), and response to magnets · 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,	As Y1 plus: opaque, transparent, translucent,		Solid, liquid, gas, state, change, melting, freezing,	Thermal, electrical insulator, conductor, change of state,	

	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	reflective, nonreflective, flexible, rigid, shape, push/pushing, pull/pulling, twist/twisting, squash/squashing, bend/bending, stretch/stretching		melting point, boiling point, evaporation, temperature, water cycle, condensation	mixture, dissolve, solution, soluble, insoluble, filter, sieve, reversible/nonreversible/irreversible, change, burning, rusting, new material	
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, absorb water, soil, fossil, marble, chalk, granite, sandstone, slate, peat, sandy/chalk/clay, permeable, impermeable, sedimentary, metamorphic, igneous			

Disciplinary Knowledge (Working Scientifically) (5 Types of enquiry skills - Observation over time, Pattern seeking, Identifying, classifying and grouping, Comparative and fair testing, Research using secondary sources)						
	KS1		LKS2		UKS2	
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Planning						
Having their own ideas- thinking of ideas; finding ways to solve problems; finding new ways to do things Making predictions Planning making	Ask simple questions when prompted Suggest ways of answering a question	Ask simple questions Recognise that questions can be answered in different ways	Ask relevant questions when prompted With support, set up simple and practical enquiries, comparative and fair tests Set up comparative	Ask relevant questions Set up simple and practical enquiries, comparative and fair tests.	With prompting, plan different types of scientific enquiries to answer questions With prompting, recognise and control variables where necessary	Plan different types of scientific enquiries to answer questions Recognise and control variables where necessary

decisions about how to solve a problem and reach a goal			tests			
Conducting Experiments						
Testing their ideas. Children use everyday language as they explore to talk about size, weight, capacity. They explore characteristics of everyday objects and shapes Children safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.	Make relevant observations Conduct simple tests, with support	Observe closely, using simple equipment Perform simple tests	Make systematic observations, using simple equipment Use standard units when taking measurements	Make systematic and careful observations using a range of equipment, including technology e.g. thermometers and data loggers Take accurate measurements using standard units, where appropriate	Select, with prompting, and use appropriate equipment to take readings (including repeat readings) Take precise measurements using standard units	Take measurements using a range of scientific equipment Take measurements with increasing accuracy and precision Take repeat readings when appropriate
Recording Evidence						
Developing ideas of grouping, sequencing, cause and effect	With prompting, gather and record data to help answer questions	Gather and record data to help answer questions	Record findings in various ways using scientific language Begin to record	Record findings using simple scientific language, drawings and	Begin to record data and results of increasing complexity using	Record data and results of increasing complexity using scientific diagrams

Children represent their own ideas thoughts and feelings through design and technology, art, music, dance, role play and stories.		Begin to use simple scientific language	findings using keys, bar charts, and tables Begin to gather, classify and present data in a variety of ways to help to answer questions	labelled diagrams Record findings using keys, bar charts, and tables Gather, record, classify and present data in a variety of ways to help to answer questions	scientific diagrams and labels e.g. classification keys, tables, scatter graphs, bar and line graphs.	and labels e.g. classification keys, tables, scatter graphs, bar and line graphs.
Reporting Findings						
Making links and noticing patterns Speaking: Uses talk to organise, sequence and clarify thinking and ideas Gives meaning to marks they make as the draw, write and paint Children can make observations about plants and animals and explain why	Begin to identify and classify	Identify and classify	With support, report on findings from enquiries, including oral and written explanations, of results and conclusions With support, report on findings from enquiries using displays or presentations	Report on findings from enquiries, including oral and written explanations, of results and conclusions Report on findings from enquiries using displays or presentations	Begin to report and present findings from enquiries, including conclusions and causal relationships Begin to report and presents findings from enquiries in oral and written forms such as displays and other presentation Begin to report and present findings from enquiries, including	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, and degree of, trust in

some things occur and talk about changes.					explanations of, and degree of, trust in results	results
Predictions and Conclusions						
Checking how well their activities are going Changing strategy as needed Reviewing how well the approach worked Understanding: Listens and responds to ideas expressed by others Children can discuss similarities and differences between living things, objects, and materials.	Begin to use observations to suggest answers to questions	Use their observations and ideas to suggest answers to questions	Begin to identify differences, similarities or changes related to simple scientific ideas and processes Begin to use results to draw simple conclusions, make predictions for new values, suggest improvements, and raise further questions Use straightforward scientific evidence to answer questions or to support their findings	Identify differences, similarities or changes related to simple scientific ideas and processes Use results to draw simple conclusions, make predictions for new values, suggest improvements, and raise further questions Use straightforward scientific evidence to answer questions or to support their findings	Begin to identify scientific evidence that has been used to support or refute ideas or arguments Begin to use test results to make predictions to set up further comparative and fair tests	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