







Science LTP and Sequence of learning

		S	cience Learning		
	Area of Learning	Exploring the natural and physical world around them	Skills and Knowledge we want the children to have at end of EYFS	ELG The Natural World	FS Vocabulary
FS	Understanding the world involves guiding children to make sense of their physical world and their community. The frequency and range of children's personal experiences increases their knowledge and sense of the world around them – from visiting parks, libraries and museums to meeting important members of society such as police officers, nurses and firefighters. In addition, listening to a broad selection of stories, non-fiction, rhymes and poems will foster their understanding of our culturally, socially, technologically and ecologically diverse world. As well as building important knowledge, this extends their familiarity with words that support understanding across domains. Enriching and widening children's vocabulary will support later reading comprehension.	PS1 Notice changes in weather and wear appropriate clothing. Begin to understand the need to respect and care for the natural environment and all living things. Talk about the differences between materials and changes they notice. PS2 Autumn Term Explore the natural world around them. Describe what they see, hear and feel whilst outside. Changing season Spring Term Draw and make observation of the plants and animals Forces they can feel (magnets, water) Changing season Changing matter Summer Term Draw and make observation of the plants and animals Changing season Contrasting environments	We want the children to know for Understanding of the World by the time they leave EYFS and enter Y1: 1. Know the town and country they live in (THIS IS GEOGRAPHY) 2. Know the parts of a plant or animal (Science) 3. Know the chronology of their life (HISTORY) 4. Know about a celebration in this country and another country (RE)	.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; 15 - 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.	weather seasons trees branches trunk bark alive dead minibeasts plant leaves bulb water sun stem root flower soil fruit blossom Magnets Attract and repel Materials - texture, appearance, change and strengths float/sink Water pressure Biology

<u>Domains</u>							
Working scientifically	Scientific discipline	Communicate (Tier 3 vocabulary)					
		Theme specific	Subject specific				

Year group	Strands							
			Biology	Physics	Chemistry			
Year 1	Exploring living things in our world (biology) Animals groups – carnivores etc. describe and compare Humans – identify, name body parts, senses Animals including humans	Ask questions Predict Observe Investigate Identify, classify and group Measure Record and Present Interpret and conclude Evaluate	Plants Humans inc animals Living things and their habitats Evolution and inheritance	Electricity Forces Seasonal changes Light Sound Earth and space	Materials Rocks States of matter	Body, head, hand, arm, foot, leg, chest, neck, face, shoulders, waist, elbow, knee, ankle, wrist, neck, abdomen, sense, sight, sound, touch, taste, smell, hear, see, eye, nose, mouth, tongue, fingers, ears, human, mammals, reptile, amphibian, birds, fish, habitat, claw, hoof, paw, flipper, antlers, horn, tusks, skin, fur, feathers, scales, wings, beak, gills, fin, tentacles, Carnivore, herbivore, omnivore,	KEY STAGE 1 Identify Describe Observe Question Answer Sort Compare Contrast Classify Equipment Data Measurement Patterns Enquiry	

	Exploring materials in our world (chemistry) Everyday materials - vocabulary, naming, sorting and grouping PoS1, 2 Everyday materials - physical properties, compare PoS 3,4 Materials	Ask questions Predict Observe Investigate Identify, classify and group Measure Record and Present Interpret and conclude Evaluate	Plants Animals inc Humans Living things and their habitats Evolution and inheritance	Electricity Forces Seasonal changes Light Sound Earth and space	Materials Rocks States of matter	wood, plastic, glass, metal, water, rock, hard, soft, stretchy, stiff, shiny, dull, rough, smooth, bendy, not bendy, waterproof, not waterproof, absorbent, not absorbent, opaque, transparent, properties.	
	Exploring living things in our world (biology) (gardening) Plants – identify and name plants. Describe and compare structures Plants	Ask questions Predict Observe Investigate Identify, classify and group Measure Record and Present Interpret and conclude Evaluate	Plants Humans inc animals Living things and their habitats Evolution and inheritance	Electricity Forces Seasonal changes Light Sound Earth and space	Materials Rocks States of matter	Plants, flowers, tree, vegetables, fruit, seeds, bulbs, roots, stem, petals, leaves, trunk, branches, deciduous, evergreen, light, water, soil, germinate, germination, seedling, young plant, adult plant.	
Year 2	Exploring materials in our world (chemistry) Changing shape - PoS2 Materials and their properties	Ask questions Predict Observe Investigate Identify, classify and group Measure Record and Present Interpret and conclude Evaluate	Plants Animals inc Humans Living things and their habitats Evolution and inheritance	Electricity Forces Seasonal changes Light Sound Earth and space	Materials Rocks States of matter	material, properties, absorbency, waterproof, strong, weak, hypothesis, pipette, permeable, impermeable, manmade, natural, melting, moulding, cooling, elastic, shape,	

					changed, twist/twisting, squash/squash ing, bend/bending, stretch/stretchi ng, flexibility, fabric, fair, tear, rip, weight, grams, bar chart, results,	
Exploring living things in our world (biology) Offspring – PoS1 Basic needs – PoS2 Health, eating and hygiene – PoS3 Animals including Humans	Ask questions Predict Observe Investigate Identify, classify and group Measure Record and Present Interpret and conclude Evaluate	Plants Animals inc Humans Living things and their habitats Evolution and inheritance	Electricity Forces Seasonal changes Light Sound Earth and space	Materials Rocks States of matter	clean, hygiene, food energy, gills, lungs, germs, babies, egg, live young, nutrition, healthy, egg, chick, chicken; egg, caterpillar, pupa, butterfly; spawn, tadpole, frog; lamb, sheep. Growing into adults can include reference to baby, toddler, child, teenager, Egg, caterpillar, pupa (Chrysalis), adult. alter, pupate,	
Exploring living things in our world (biology) (cliff, beach, school) Animals and plants suited to	Ask questions Predict Observe Investigate Identify, classify and group Measure Record and Present Interpret and conclude Evaluate	Plants Animals inc Humans Living things and their habitats Evolution and inheritance	Electricity Forces Seasonal changes Light Sound Earth and space	Materials Rocks States of matter	habitat, environment, adaptation, grow, urban, natural, desert, forest, marine, fresh water, grassland, arctic, food chain, energy, bottom of the	

	habitat where they live – PoS2 Identify and name plants and animals in habitats – PoS3 Living, dead etc. Simple food chains Living things in habitats					food chain, top of the food chain, ecosystem, micro habitat, evolve, experiment.	
	Exploring living things in our world (biology) (gardening) Seeds and bulbs Simple growing conditions Plants	Ask questions Predict Observe Investigate Identify, classify and group Measure Record and Present Interpret and conclude Evaluate	Plants Animals inc Humans Living things and their habitats Evolution and inheritance	Electricity Forces Seasonal changes Light Sound Earth and space	Materials Rocks States of matter	water, light, suitable, temperature, grow, healthy, germination, reproduction, seed, bulbs, healthy, soil, nutrients, leaves, flowers, blossom, petals, fruit, roots, trunk, branches, stem	
Year 3	Exploring materials in our world (chemistry) Compare and group Fossil formation Soils Rocks	Ask questions Predict Observe Investigate Identify, classify and group Measure Record and Present Interpret and conclude Evaluate	Plants Animals inc Humans Living things and their habitats Evolution and inheritance	Electricity Forces Seasonal changes Light Sound Earth and space	Materials Rocks States of matter	Autumn 1- rock, granite, sandstone, chalk, limestone, marble, slate, soft, crumbly, hard, strong, fair test, acid, geologist, fossil. organism, sediment, sedimentary,	KEY STAGE 2 Prediction Conclusion Evidence Explanation Diagram Systematic Comparative test Fair test Construct Interpret

Link to Inventors - Mary Anning					igneous, metamorphic, extinct, minerals, crust, core.	Accurate Variables Causal relationships Improve Precision Quantitative
Exploring living things in our world (biology) Nutrition Skeletons and muscles Animals including humans	Ask questions Predict Observe Investigate Identify, classify and group Measure Record and Present Interpret and conclude Evaluate	Plants Animals inc Humans Living things and their habitats Evolution and inheritance	Electricity Forces Seasonal changes Light Sound Earth and space	Materials Rocks States of matter	Autumn 2- photosynthesis , chlorophyll, chloroplasts, carbon dioxide, grains, vegetables, fruits, protein, oils, nutrients, vitamins, minerals, fibre, saturated fats, unsaturated fats, carbohydrates, skeleton, vertebrates, invertebrates, exoskeleton, endoskeleton, hydrostatic skeleton, bones, joines, muscles, tendons, voluntary and involuntary movement.	
Exploring the influence/impact of forces on our world (physics) Movement on different surfaces	Ask questions Predict Observe Investigate Identify, classify and group Measure Record and Present Interpret and conclude Evaluate	Plants Animals inc Humans Living things and their habitats Evolution and inheritance	Electricity Forces Seasonal changes Light Sound Earth and space	Materials Rocks States of matter	Spring 1-force, push, pull, friction, motion, magnet, compass, magnetic field, north pole, south pole, repel, electrons,	

Contract forces Magnetic and non-magnetic Poles Forces (including magnetic forces)					neutrons, iron, steel, nickel, cobalt, protons, atoms, attract, electromagnet.	
Exploring living things in our world (biology) Parts and function Conditions for growth Water transportation Life cycle Plants (gardening)	Ask questions Predict Observe Investigate Identify, classify and group Measure Record and Present Interpret and conclude Evaluate	Plants Animals inc Humans Living things and their habitats Evolution and inheritance	Electricity Forces Seasonal changes Light Sound Earth and space	Materials Rocks States of matter	Spring 2- stem, flower, leaves, roots, anchor, seeds, food, transport, holds, carries, water, flowers, nutrients, leaves, absorb, sunlight, prediction, conclusion, movement, respiration, growth, reproduction, excretion, nutrition, sensitivity, water transportation, investigation, germination, growing and flowering, fertilisation and seed formation, seed dispersal.	
Exploring the influence/impact	Ask questions Predict Observe Investigate	Plants Animals inc Humans Living things and their habitats	Electricity Forces Seasonal changes Light	Materials Rocks States of matter	Summer- light, darkness, white light, UV rays, sclera,	

	of forces on our world (physics) Need light to see Darkness is absence of light Shadows when light is blocked Patterns in shadow change Light and seeing	Identify, classify and group Measure Record and Present Interpret and conclude Evaluate	Evolution and inheritance	Sound Earth and space		iris, cornea, pupil, lens, conjunctiva, vitreous, choroid, optic nerve, macula, retina, light reflection, refraction, ozone layer, shadows, reflections, equator, infrared, ultraviolet, transparent, opaque, translucent.	
Year 4	Exploring living things in our world (biology) (School environment, improving habitats: wormery, bug house, bee house etc.) Living things can be grouped Classification keys Environments change Living things and their habitats	Ask questions Predict Observe Investigate Identify, classify and group Measure Record and Present Interpret and conclude Evaluate	Plants Animals inc Humans Living things and their habitats Evolution and inheritance	Electricity Forces Seasonal changes Light Sound Earth and space	Materials Rocks States of matter	Producer, unique, vertebrate, mammal, habitat, ecosystem, food chain, energy, consumer, snails, fish, birds, worms, movement, respiration, sensitivity, growth, reproduction	

Exploring the influence/impact of forces on our world (physics) Vibration Sounds travel Patterns in pitch and volume Sound Link to Inventors - Alexander Graham Bell	Ask questions Predict Observe Investigate Identify, classify and group Measure Record and Present Interpret and conclude Evaluate	Plants Animals inc Humans Living things and their habitats Evolution and inheritance	Electricity Forces Seasonal changes Light Sound Earth and space	Materials Rocks States of matter	vibrate, vibration, vibrating, air, medium, ear, hear, sound, volume, pitch, faint, fainter, high, low	
Exploring materials in our world (chemistry) Reversible change Heating and cooling Water cycle Compare and group solids, liquids and gases	Ask questions Predict Observe Investigate Identify, classify and group Measure Record and Present Interpret and conclude Evaluate	Plants Animals inc Humans Living things and their habitats Evolution and inheritance	Electricity Forces Seasonal changes Light Sound Earth and space	Materials Rocks States of matter	solid liquid gas state melting boiling evaporation condensatio n water cycle temperature thermomete r degrees celsius	
Changes of state						
Exploring the influence/impact	Ask questions Predict Observe	Plants Animals inc Humans Living things and their	Electricity Forces Seasonal changes	Materials Rocks States of matter	Circuit Wires Bulbs	

world (physics) Appliances	Investigate Identify, classify and group Measure Record and Present Interpret and conclude Evaluate	habitats Evolution and inheritance	Light Sound Earth and space		Buzzer Series Battery Insulator Conductor Metals Brightness Voltage Cells Component s Symbols	
things in our world (biology) Describe functions of digestive	Ask questions Predict Observe Investigate Identify, classify and group Measure Record and Present Interpret and conclude Evaluate	Plants Animals inc Humans Living things and their habitats Evolution and inheritance	Electricity Forces Seasonal changes Light Sound Earth and space	Materials Rocks States of matter	human digestive system mouth tongue-mixes , moistens, saliva teeth: incisors- cutting, slicing canines- ripping, tearing molars-chewi ng, grinding oesophagus transports stomach acid enzymes small	

						intestine large intestine carnivore herbivore omnivore brush floss food chain Sun producers prey predators	
	Exploring the influence/impact of forces on our world (physics) Inventors	Ask questions Predict Observe Investigate Identify, classify and group Measure Record and Present Interpret and conclude Evaluate	Plants Animals inc Humans Living things and their habitats Evolution and inheritance	Electricity Forces Seasonal changes Light Sound Earth and space	Materials Rocks States of matter	Invention, inventor, electricity, paleontologi sts, fossils, astronomer, scientist, experiment, audiometer aeronautics hydrofoil, telephone, telescope, telegraph, morse code, patent	
Year 5	Exploring the influence/impact of forces on our world (physics)	Ask questions Predict Observe Investigate Identify, classify and group Measure	Plants Animals inc Humans Living things and their habitats Evolution and inheritance	Electricity Forces Seasonal changes Light Sound Earth and space	Materials Rocks States of matter	support, fall, Earth, gravity, air resistance, friction, balancing force, weight,	

Gravity, friction, air and water resistance Levers, pulleys and gears – PoS 1, 2, 3	Record and Present Interpret and conclude Evaluate				newtons, resistance force, moving surfaces, accuracy, precision, casual relationships, mechanisms, levers, pulleys, transfers, gears, friction resistance force, support/refute,	
Exploring the influence/impact of forces on our world (physics) Movement of Earth in the solar system Movement of moon Earth's rotation – day and night Earth and space Link to Inventors - Galileo	Ask questions Predict Observe Investigate Identify, classify and group Measure Record and Present Interpret and conclude Evaluate	Plants Animals inc Humans Living things and their habitats Evolution and inheritance	Electricity Forces Seasonal changes Light Sound Earth and space	Materials Rocks States of matter	Earth, Sun, Moon, moon, planets, star, solar system, Mercury, Venus, Mars, Jupiter, Saturn, Uranus, Neptune, Pluto, dwarf planet, movement, rotate, orbit, axis, celestial body, spherical, sphere, day, night, light, heat, eclipse, satellite, universe, solar, astronomer, shadow clock, sundial, geocentric model, heliocentric model, revolve, spin, atmosphere, Alhazen, Copernicus, first quarter, full moon, Galileo,	

					illuminate, new moon, phase, third quarter	
Exploring materials in our world (chemistry) Using knowledge of solid, liquid and gases to separate mixtures – PoS 3 Reversible change, irreversible change - PoS 5, 6 Properties and changes of materials	Ask questions Predict Observe Investigate Identify, classify and group Measure Record and Present Interpret and conclude Evaluate	Plants Animals inc Humans Living things and their habitats Evolution and inheritance	Electricity Forces Seasonal changes Light Sound Earth and space	Materials Rocks States of matter	Properties, materials, grouping, classifying, permeability, absorbency, hardness, solubility, transparency, conductivity (electrical & thermal), magnets, Insulator, conductor, thermal, heat, temperature, fair test, variables, solid, liquid, gas, dissolve, mixture, soluble, reversible, irreversible, irreversible, chemical changes, reactant, product, carbon dioxide, solution, evaporation, magnetism, filtration, sieving	
Exploring living things in our world (biology) Life cycles – human changes as they develop – PoS 1, 2	Ask questions Predict Observe Investigate Identify, classify and group Measure Record and Present Interpret and conclude Evaluate	Plants Animals inc Humans Living things and their habitats Evolution and inheritance	Electricity Forces Seasonal changes Light Sound Earth and space	Materials Rocks States of matter	Scatter & line graphs, bar charts, causal relationships, support/refute, gestation, life cycle, sperm, egg, foetus, correlation, scientific	

Animals including humans					diagram, support/refute, foetus, development, nutrition, uterus, baby, child, growth, comparison, development, centile, healthy, adolescence, adolescent, puberty, teenager, reproduction, penis, scrotum, sperm tune, testicles, genitals, childhood, erection, babyhood, period, wet dream, pubic hair, ejactulation, menarche, pregnancy, uterus/womb, masturbation, sperm, clitoris, foreskin, contraception, vagina, menstruation	
Exploring living things in our world (biology) Life cycles — animal Reproduction Living things in their habitats	Ask questions Predict Observe Investigate Identify, classify and group Measure Record and Present Interpret and conclude Evaluate	Plants Animals inc Humans Living things and their habitats Evolution and inheritance	Electricity Forces Seasonal changes Light Sound Earth and space	Materials Rocks States of matter	Sexual, asexual, reproduction, gamete, cell, pollen, ovule, fusion, fertilisation, pollination, cuttings, roots, male, female, sperm, ovum, penis, vagina, fertilise, pregnancy,	

						gestation, montreme, marsupials, placentals, young, family tree, chimpanzee, life cycle, endangered, extinct, metamorphosis, amphibian, insect, transform, larvae, pupa, nymph, egg, albumen, germainal disc, chalaza, shall membranes, shell, yolk, embryo, reproduce	
Year 6	Exploring living things in our world (biology) Classification according to observable characteristics Giving reasons for classification Living things and habitats	Ask questions Predict Observe Investigate Identify, classify and group Measure Record and Present Interpret and conclude Evaluate	Plants Animals inc Humans Living things and their habitats Evolution and inheritance	Electricity Forces Seasonal changes Light Sound Earth and space	Materials Rocks States of matter	Carl Linnaeus Kingdoms Multi-cellular Animals Plants Fungi Protists Prokaryotes Phylum Class Order Family Genus Species	
	Exploring living things in our world (biology) Identify and	Ask questions Predict Observe Investigate Identify, classify and group Measure	Plants Animals inc Humans Living things and their habitats Evolution and inheritance	Electricity Forces Seasonal changes Light Sound Earth and space	Materials Rocks States of matter	Circulatory Oxygenated blood Deoxygenated blood Atria	

name circulatory system Diet, drugs and exercise Nutrient and water transportation Animals including humans	Record and Present Interpret and conclude Evaluate				Left atrium Right atrium Left ventricle Right ventricle Valves Red blood cells White blood cells Platelets Plasma Pulmonary artery Pulmonary veins Arteries Veins Capillaries Diffusion Osmosis Recreational drugs Cigarettes Alcohol Ethanol Nutrients	
Exploring living things in our world (biology) Fossils Offspring and variation Adaption may lead to evolution (Museums in a Box - Hull Museums (Fossils)) Evolution and inheritance	Ask questions Predict Observe Investigate Identify, classify and group Measure Record and Present Interpret and conclude Evaluate	Plants Animals inc Humans Living things and their habitats Evolution and inheritance	Electricity Forces Seasonal changes Light Sound Earth and space	Materials Rocks States of matter	Evolution Charles Darwin Alfred Wallace Mary Anning Environment Adaptation Offspring Characteristics Fossils Adaptive traits Inherited traits Habitats Variation Natural selection Human intervention	

Exploring the influence/impact of forces on our world (physics) How voltage affects brightness of bulb etc. Give reasons for changes to circuit e.g. brightness of bulbs Using symbols to represent circuit Electricity Link to Inventors - Benjamin Frnaklin	Ask questions Predict Observe Investigate Identify, classify and group Measure Record and Present Interpret and conclude Evaluate	Plants Animals inc Humans Living things and their habitats Evolution and inheritance	Electricity Forces Seasonal changes Light Sound Earth and space	Materials Rocks States of matter	Voltage Battery Cell Switch Circuit Series circuit Motor Bulb Buzzer Symbol Component Resistance Electrons Amps Current Thomas Edison Nikola Tesla	
Exploring the influence/impact of forces on our world (physics) Light travels in straight lines How we see Light sources Shadows Light	Ask questions Predict Observe Investigate Identify, classify and group Measure Record and Present Interpret and conclude Evaluate	Plants Animals inc Humans Living things and their habitats Evolution and inheritance	Electricity Forces Seasonal changes Light Sound Earth and space	Materials Rocks States of matter	Shadows Sun Colours Rainbows Light sources Surfaces Reflect Incident ray Reflected ray The law of reflection Refraction Visible spectrum	