

North Star Federation – Science Progression - EYFS

Area of Study	Pupils should be taught to...	
Understanding the World – The World	30 – 50 months	<ul style="list-style-type: none"> • Comment and ask questions about aspects of their familiar world, such as the place where they live or the natural world. • Talk about some of the things they have observed, such as plants, animals, natural and found objects. • Talk about why things happen and how things work. • Develop an understanding of growth, decay and changes over time. • Show care and concern for living things and the environment.
	40 – 60 months	<ul style="list-style-type: none"> • Look closely at similarities, differences, patterns and change.
	ELG	<ul style="list-style-type: none"> • 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.
Physical Development – Health and Self Care	30 – 50 months	<ul style="list-style-type: none"> • Observe the effects of physical activity on their bodies.
	40 – 60 months	<ul style="list-style-type: none"> • Eat a healthy range of foodstuffs and understand a need for variety in food. • Show some understanding that good practices with regard to exercise, eating, sleeping and hygiene can contribute to good health.
	ELG	<ul style="list-style-type: none"> • Know the importance for good health of physical exercise, and a healthy diet, and talk about ways to keep healthy and safe.
Expressive Art and Design – Exploring and using media and materials	30 – 50 months	<ul style="list-style-type: none"> • Begin to be interested in and describe the texture of things. • Explore and learn how sounds can be changed. • Explores colours and how colours can be changed.
	40 – 60 months	<ul style="list-style-type: none"> • Explores what happens when they mix colours • Experiments to create different textures • Manipulates materials to achieve a planned effect • Selects appropriate resources and adapts work where necessary
	ELG	<ul style="list-style-type: none"> • Children sing songs, make music and dance, and experiment with ways of changing them. They safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.

North Star Federation – Working Scientifically Curriculum Progression

Area of Study		National Curriculum Objectives	Non-Statutory Guidance
Ask questions and plan enquiries	KS1	<ul style="list-style-type: none"> Asking simple questions and recognising that they can be answered in different ways 	<ul style="list-style-type: none"> Explore the world around them and raise their own simple questions Ask people questions and use simple secondary sources to find answers
	LKS2	<ul style="list-style-type: none"> Asking relevant questions and using different types of scientific enquiry to answer them 	<ul style="list-style-type: none"> Raise their own relevant questions about the world around them Recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations
	UKS2	<ul style="list-style-type: none"> Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary 	<ul style="list-style-type: none"> Use their science experiences to explore ideas and raise different kinds of questions Recognise which secondary sources will be most useful to research their ideas and begin to separate opinion from fact
Set up enquiries	KS1	<ul style="list-style-type: none"> Performing simple tests 	<ul style="list-style-type: none"> Carry out simple tests Experience different types of science enquiries, including practical activities Begin to recognise different ways in which they might answer scientific questions
	LKS2	<ul style="list-style-type: none"> Setting up simple practical enquiries, comparative and fair tests 	<ul style="list-style-type: none"> Should be given a range of scientific experiences including different types of science enquiries to answer questions Start to make their own decisions about the most appropriate type of scientific enquiry they might use to answer questions Recognise when a simple fair test is necessary and help to decide how to set it up
	UKS2	<ul style="list-style-type: none"> Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary 	<ul style="list-style-type: none"> Use their science experiences to select and plan the most appropriate type of scientific enquiry to use to answer scientific questions Use their science experiences to recognise when and how to set up comparative and fair tests and explain which variables need to be controlled and why
Observe and measure	KS1	<ul style="list-style-type: none"> Observing closely, using simple equipment 	<ul style="list-style-type: none"> Observe changes over time Use simple measurements and equipment (e.g. hand lenses, egg timers) to gather data

	LKS2	<ul style="list-style-type: none"> • Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers 	<ul style="list-style-type: none"> • Make systematic and careful observations • Help to make decisions about what observations to make, how long to make them for and the type of simple equipment that might be used
	UKS2	<ul style="list-style-type: none"> • Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat reading where necessary 	<ul style="list-style-type: none"> • Make their own decisions about what observations to make, what measurements to use and how long to make them for
Record	KS1	<ul style="list-style-type: none"> • Gathering and recording data to help in answering questions 	<ul style="list-style-type: none"> • Record simple data
	LKS2	<ul style="list-style-type: none"> • Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions • Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables 	<ul style="list-style-type: none"> • Take accurate measurements using standard units • Learn how to use a range of (new) equipment, such as data loggers / thermometers appropriately • Collect and record data from their own observations and measurements in a variety of ways: notes, bar charts and tables, standard units, drawings, labelled diagrams, keys and help to make decisions about how to analyse this data • Talk about criteria for grouping, sorting and classifying, and use simple keys
	UKS2	<ul style="list-style-type: none"> • Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs 	<ul style="list-style-type: none"> • Choose the most appropriate equipment to make measurements with increasing precision and explain how to use it accurately. • Decide how to record data and results of increasing complexity from a choice of familiar approaches: scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs • Use and develop keys and other information records to identify, classify and describe living things and materials, and identify patterns that might be found in the natural environment
Interpret and report	KS1	<ul style="list-style-type: none"> • Identifying and classifying • Using their observations and ideas to suggest answers to questions 	<ul style="list-style-type: none"> • Use simple features to compare objects, materials and living things and, with help, decide how to group them • With guidance, they should begin to notice patterns and relationships • Talk about what they have found out and how they found it out • With help, they should record and communicate their findings in a range of ways and begin to use simple scientific language

	LKS2	<ul style="list-style-type: none"> Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions Identifying differences, similarities or changes related to simple scientific ideas and processes Using straightforward scientific evidence to answer questions or to support their findings Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions 	<ul style="list-style-type: none"> With help, pupils should look for changes, patterns, similarities and differences in their data in order to draw simple conclusions and answer questions Use relevant simple scientific language to discuss their ideas and communicate their findings in ways that are appropriate for different audiences, <i>including oral and written explanations, displays or presentations of results and conclusions</i> With support, they should identify new questions arising from the data, making predictions for new values within or beyond the data they have collected. 			
	UKS2	<ul style="list-style-type: none"> Identifying scientific evidence that has been used to support or refute ideas or arguments Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations Using test results to make predictions to set up further comparative and fair tests 	<ul style="list-style-type: none"> Use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas, <i>use oral and written forms such as displays and other presentations</i> Look for different causal relationships in their data and identify evidence that refutes or supports their ideas Talk about scientific ideas have developed over time 			
Evaluate	LKS2	<ul style="list-style-type: none"> Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions 	<ul style="list-style-type: none"> With support, finding ways of improving what they have already done 			
	UKS2	<ul style="list-style-type: none"> Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations Using test results to make predictions to set up further comparative and fair tests 	<ul style="list-style-type: none"> Use their results to identify when further tests and observations might be needed Make their own decision on whether to take repeat measurements 			
Vocabulary	KS1	<p>Questions; answers; equipment; gather; measure; record; results; sort; group; test; explore; observe/atons; compare; describe; similar/ities; different/ces; beaker; pipette; syringe; changes over time; notice patterns; hand lenses; egg timers; identify; classify; data</p>	LKS2	<p>scientific enquiry; secondary sources; comparative/fair tests; careful; accurate; data; evidence; keys; bar charts; table; conclusions; predictions; support; thermometers; enquiry types; increase; decrease; classify; order; relationships; appearance; present results; data loggers</p>	UKS2	<p>Independent/dependent /controlled variable; accuracy; precision; degree of trust; classification keys; scatter graphs; line graphs; causal relationships; support/refute; data logger; opinion/fact</p>

North Star Federation – Science Knowledge Curriculum Progression

Strand	National Curriculum Objectives		Relevant / New Vocabulary
Biology			
Plants	KS1	<p>Names and physical characteristics</p> <ul style="list-style-type: none"> • I name a variety of common wild and garden plants. • I name the petals, stem, leaf and root of a plant. • I name the roots, trunk, branches and leaves of a tree. <p>Survival and growth</p> <ul style="list-style-type: none"> • I describe how seeds and bulbs grow into plants. • I describe what plants need in order to grow and stay healthy (water, light & suitable temperature). 	<p>Leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud, light, shade, sun, warm, cool, water, grow, healthy</p> <p>Names of trees in the local area Names of garden and wild flowering plants in the local area</p>
	LKS2	<ul style="list-style-type: none"> • I describe the function of different parts of flowering plants and trees. • I explore and describe the needs of different plants for survival. • I explore and describe how water is transported within plants. I describe the plant life cycle, especially the importance of flowers. 	<p>Photosynthesis, pollen, insect/wind pollination, seed formation,</p> <p>Seed dispersal – wind dispersal, animal dispersal, water dispersal</p>
Animals Including Humans	KS1	<p>Names and physical characteristics</p> <ul style="list-style-type: none"> • I name a variety of animals including fish, amphibians, reptiles, birds and mammals. • I classify and name animals by what they eat (carnivore, herbivore and omnivore). • I sort animals into categories (including fish, amphibians, reptiles, birds and mammals). • I sort living and non-living things. • I name the parts of the human body that I can see. • I link the correct part of the human body to each sense. <p>Survival and life cycles</p> <ul style="list-style-type: none"> • I explain the basic stages in a life cycle for animals, including humans. • I describe what animals and humans need to survive. • I describe why exercise, a balanced diet and good hygiene are important for humans. 	<p>Names and physical characteristics:</p> <p>Names of animals experienced first-hand from each vertebrate group.</p> <p>Parts of the body including those linked to PSHE teaching: Head, body, eyes, ears, mouth, teeth, leg, tail, wing, claw, fin, scales, feathers, fur, beak, paws, hooves</p> <p>Senses: touch, see, smell, taste, hear, fingers (skin), eyes, nose, ear and tongue</p> <p>Survival and life cycles Offspring, reproduction, growth, child, young/old stages (examples - chick/hen, baby/child/adult, caterpillar/butterfly), exercise, heartbeat, breathing, hygiene, germs, disease, food types (examples – meat, fish, vegetables, bread, rice, pasta)</p>

	LKS2	<p>Diet and the skeleton</p> <ul style="list-style-type: none"> • I explain the importance of a nutritious, balanced diet. • I explain how nutrients, water and oxygen are transported within animals and humans. • I describe and explain the skeletal system of a human. • I describe and explain the muscular system of a human. • I describe the purpose of the skeleton in humans and animals. <p>Digestive system and food chains</p> <ul style="list-style-type: none"> • I identify and name the parts of the human digestive system. • I describe the functions of the organs in the human digestive system. • I identify and describe the different types of teeth in humans. • I describe the functions of different human teeth. • I use food chains to identify producers, predators and prey. • I construct food chains to identify producers, predators and prey. 	<p>Diet and the skeleton</p> <p>Nutrition, nutrients, carbohydrates, sugars, protein, vitamins, minerals, fibre, fat, water, skeleton, bones, muscles, support, protect, move, skull, ribs, spine, muscles, joints</p> <p>Digestive system and food chains</p> <p>Digestive system, digestion, mouth, teeth, saliva, oesophagus, stomach, small intestine, nutrients, large intestine, rectum, anus, teeth, incisor, canine, molar, premolars, herbivore, carnivore, omnivore, producer, predator, prey, food chain</p>
	UKS2	<p>Human life cycle</p> <ul style="list-style-type: none"> • I create a timeline to indicate stages of growth in humans. <p>Healthy living</p> <ul style="list-style-type: none"> • I identify and name the main parts of the human circulatory system. • I describe the function of the heart, blood vessels and blood. • I discuss the impact of diet, exercise, drugs and life style on health. • I describe the ways in which nutrients and water are transported in animals, including humans. 	<p>Human life cycle</p> <p>Puberty: the vocabulary to describe sexual characteristics <i>NB. This needs to be taught alongside RSHE</i></p> <p>Healthy living</p> <p>Heart, pulse, rate, pumps, blood, blood vessels, arteries, veins, transported, lungs, oxygen, carbon dioxide, nutrients, water, muscles, cycle, circulatory system, diet, exercise, drugs and lifestyle</p>
Living things and habitats	KS1	<ul style="list-style-type: none"> • I identify things that are living, dead and never lived. • I describe how a specific habitat provides for the basic needs of things living there (plants and animals). • I identify and name plants and animals in a range of habitats. • I match living things to their habitat. • I describe how animals find their food. • I name some different sources of food for animals. • I explain a simple food chain. 	<p>Living, dead, never been alive, suited, suitable, basic needs, food, food chain, shelter, move, feed</p> <p>names of local habitats e.g. pond, woodland etc.</p> <p>names of micro-habitats e.g. under logs, in bushes etc.</p>
	LKS2	<ul style="list-style-type: none"> • I group living things in different ways. • I use classification keys to group, identify and name living things. • I create classification keys to group, identify and name living things (for others to use). • I describe how changes to an environment could endanger living things. 	<p>Classification, classification keys, environment, habitat, human impact, positive, negative, migrate, hibernate</p>

	UKS2	<p>Animal and plant life cycles</p> <ul style="list-style-type: none"> • I describe the life cycle of different living things, e.g. mammal, amphibian, insect bird. • I describe the differences between different life cycles. • I describe the process of reproduction in plants. • I describe the process of reproduction in animals. <p>Classification of animal and plants</p> <ul style="list-style-type: none"> • I classify living things into broad groups according to observable characteristics and based on similarities & differences. • I describe how living things have been classified. • I give reasons for classifying plants and animals in a specific way. 	<p>Animal and plant life cycles</p> <p>Life cycle, reproduce, sexual, sperm, fertilises, egg, live young, metamorphosis, asexual, plantlets, runners, bulbs, cuttings</p> <p>Classification of animals and plants</p> <p>vertebrates, fish, amphibians, reptiles, birds, mammals, invertebrates, insects, spiders, snails, worms, flowering and non-flowering</p>
Evolution and inheritance	UKS2	<ul style="list-style-type: none"> • I describe how the Earth and living things have changed over time. • I explain how fossils can be used to find out about the past. • I explain about reproduction and offspring (recognising that offspring normally vary and are not identical to their parents). • I explain how animals and plants are adapted to suit their environment. • I link adaptation over time to evolution. • I explain evolution. 	<p>Offspring, sexual reproduction, vary, characteristics, suited, adapted, environment, inherited, species, fossils</p>
Chemistry			
Rocks	LKS2	<ul style="list-style-type: none"> • I compare and group rocks based on their appearance and physical properties, giving a reason. • I describe how fossils are formed. • I describe how soil is made. • I describe and explain the difference between sedimentary and igneous rock. 	<p>Rock, stone, pebble, boulder, grain, crystals, layers, hard, soft, texture, absorb water, soil, fossil, marble, chalk, granite, sandstone, slate, soil, peat, sandy/chalk/clay soil</p>

Materials	KS1	<p>Everyday materials – Names and properties</p> <ul style="list-style-type: none"> • I distinguish between an object and the material it is made from. • I explain the materials that an object is made from. • I name wood, plastic, glass, metal, water and rock. • I describe the properties of everyday materials. • I group objects based on the materials they are made from. <p>Everyday materials – Uses</p> <ul style="list-style-type: none"> • I identify and name a range of materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard. • I suggest why a material might or might not be used for a specific job. • I explore how shapes can be changed by squashing, bending, twisting and stretching. 	<p>Names object, material, wood, plastic, glass, metal, water, rock, brick, paper, fabric, elastic, foil, card/cardboard, rubber, wool, clay</p> <p>Properties hard, soft, stretchy, stiff, bendy, floppy, waterproof, absorbent, breaks/tears, rough, smooth, shiny, dull, see through, not see through progressing to opaque, transparent and translucent, reflective, non-reflective, flexible, rigid</p> <p>Shape push/pushing, pull/puling, twist/twisting, squash/squashing, bend/bending, stretch/stretching</p>
	LKS2	<p>States of matter</p> <ul style="list-style-type: none"> • I group materials based on their state of matter (solid, liquid, gas). • I describe how some materials can change state. • I explore how materials change state. • I measure the temperature at which materials change state. • I describe the water cycle. • I explain the part played by evaporation and condensation in the water cycle. 	<p>solid, liquid, gas, state, change, melting, freezing, melting point, boiling point, evaporation, temperature, water-cycle, condensing, energy, particles</p>

	UKS2	Properties and changes <ul style="list-style-type: none"> • I compare and group materials based on their properties (e.g. hardness, solubility, transparency, conductivity, [electrical & thermal], and response to magnets). • I describe how a material dissolves to form a solution; explaining the process of dissolving. • I describe and show how to recover a substance from a solution. • I describe how some materials can be separated. • I demonstrate how materials can be separated (e.g. through filtering, sieving and evaporating). • I know and can demonstrate that some changes are reversible and some are not. • I explain how some changes result in the formation of a new material and that this is usually irreversible. • I discuss reversible and irreversible changes. • I give evidenced reasons why materials should be used for specific purposes. 	thermal/electrical insulator/conductor, change of state, mixture, dissolve, solution, soluble, insoluble, filter, sieve reversible/non-reversible change, burning, rusting, new material
Physics			
Light	LKS2	<ul style="list-style-type: none"> • I describe what dark is (the absence of light). • I explain that light is needed in order to see. • I explain that light is reflected from a surface. • I explain and demonstrate how a shadow is formed. • I can explore shadow size and explain. • I explain the danger of direct sunlight and describe how to keep protected. 	Light, light source, dark, absence of light, transparent, translucent, opaque, shiny, matt, surface, shadow, reflect, mirror, sunlight, dangerous
	UKS2	<ul style="list-style-type: none"> • I explain how light travels. • I explain and demonstrate how we see objects. • I explain why shadows have the same shape as the object that casts them. • I explain how simple optical instruments work, e.g. peri/telescope, binoculars, mirror, magnifying glass etc. 	Straight lines, light rays
Sound	LKS2	<ul style="list-style-type: none"> • I describe how sound is made. • I explain how sound travels from a source to our ears. • I know how sounds are made, associating some of them with vibrating. • I explore the correlation between pitch and the object producing a sound. • I explore the correlation between the volume of a sound and the strength of the vibrations that produced it. • I describe what happens to a sound as it travels away from its source. 	Sound, source, vibrate, vibration, travel, pitch (high, low), volume, faint, loud, insulation

Forces and magnets	LKS2	<ul style="list-style-type: none"> • I explore and describe how objects move on different surfaces. • I explain how some forces require contact and some do not, giving examples. • I explore and explain how objects attract and repel in relation to objects and other magnets. • I predict whether objects will be magnetic and carry out an enquiry to test this out. • I describe how magnets work. • I predict whether magnets will attract or repel and give a reason. 	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
	UKS2	<ul style="list-style-type: none"> • I explain what gravity is and its impact on our lives. • I identify and explain the effect of air resistance. • I identify and explain the effect of water resistance. • I identify and explain the effect of friction. • I explain how levers, pulleys and gears allow a smaller force to have a greater effect. 	Force, gravity, Earth, air resistance, water resistance, friction, mechanisms, simple machines, levers, pulleys, gears
Seasonal changes	KS1	<ul style="list-style-type: none"> • I observe and comment on changes in the seasons. • I name the seasons and suggest the type of weather in each season. 	Weather (e.g.sunny, rainy, windy, snowy) Seasons - Winter, Summer, Spring, Autumn Sun, sunrise, sunset, day length
Earth and space	UKS2	<ul style="list-style-type: none"> • I describe and explain the movement of the Earth and other planets relative to the Sun. • I describe and explain the movement of the Moon relative to the Earth. • I explain and demonstrate how night and day are created. • I describe the Sun, Earth and Moon (using the term spherical). 	Earth, Sun, Moon, (Mercury, Venus, Mars, Jupiter, Saturn, Uranus, Neptune) spherical, solar system, rotates, star, orbit, planets
Electricity	LKS2	<ul style="list-style-type: none"> • I identify and name appliances that require electricity to function. • I construct a series circuit. • I identify and name the components in a series circuit (including cells, wires, bulbs, switches and buzzers). • I draw a circuit diagram. • I predict & test whether a lamp will light within a circuit. • I describe the function of a switch in a circuit. • I describe the difference between a conductor and an insulator; giving examples of each. 	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
	UKS2	<ul style="list-style-type: none"> • I explain how the number & voltage of cells in a circuit links to the brightness of a lamp or the volume of a buzzer. • I compare and give reasons for why components work and do not work in a circuit. • I draw circuit diagrams using correct symbols. 	circuit, complete circuit, circuit diagram, circuit symbol, cell, battery, bulb, buzzer, motor, switch <i>(and all of their symbols)</i> , voltage <i>(in context of battery power, no more)</i>